

Complex nexus: Economic development, rural-to-urban migration, and transition to adulthood in China

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ABSTRACT

Transition to adulthood in low- and middle-income countries (LMIC) has increasingly been diversified and individualized. Economic development and migration are often cited as reasons for diversification but have been analytically examined interactively. To examine the complex linkages between development, migration, and transition to adulthood, we use China data to cover a decade when it has experienced rapid economic development, a large flow of rural-to-urban migration, and changes in the transition to adulthood. Applying the latent class analysis and multinomial logistic regression on the Chinese General Social Survey 2008 and 2017, we obtain three main findings. First, economic development increases the diversification of the transition to adulthood. Second, rural-to-urban migration has a greater impact on the postponement than on other pathways. Third, the joint impact of economic development and migration is not evident: the change do not differ between men and women as well as young adults of different migration experience. These findings collectively imply signs of the diversification of transition to adulthood in China, but also entail the individualization behind it.

1. Introduction

Over the past decades, the transition to adulthood has generally become increasingly individualized in countries around the world. In high-income countries (HICs), this transition has become protracted and complex, with the pace of the changes varying across different countries (Billari & Liefbroer, 2010; Buchmann & Kriesi, 2011; Lesthaeghe, 2020). In low- and middle-income countries (LMICs),¹ similar patterns of postponement and individualization have also been observed (Batyra & Kohler, 2022; Pesando et al., 2021), with a standardization in the postponement of school completion and an individualization in marriage and childbearing (Juárez & Gayet, 2014). For instance, scholars have identified a decline in fertility in India (Vithayathil, 2013), a de-standardization of life trajectories in China (Wang & Feng, 2023), the growth of consensual unions in Burkina Faso (Calvès, 2016), and a decline in employment and fertility in Ethiopia (Seifu et al., 2011).

While the individualization of the transition to adulthood is a global phenomenon, the macro-level factors contributing to these changes can be divergent. In HICs, scholars frequently cite the Second Demographic

Transition (SDT) theory in conjunction with the increasing influence of individual autonomy (Lesthaeghe, 1995, 2014, 2020; Lesthaeghe & Neidert, 2006; Lesthaeghe & van de Kaa, 1986) and a post-materialist shift (Inglehart, 1977; Lesthaeghe, 2020). In contrast, studies in LMICs frequently associate the individualization of adulthood transition with economic development (A. Mason, 2002; Van Winkle & Wen, 2023; L. Yang et al., 2022; Zaidi & Morgan, 2017) and migration (Cerrutti & Massey, 2001; Mu & Yeung, 2020, 2023; Nie, 2022). Teller and Haile-mariam (2011) have referred to it as a “complex nexus,” emphasizing the importance of considering development factors when examining demographic responses in LMICs.

We propose to use economic uncertainty (Blossfeld et al., 2005) to conceptualize the interconnection between development, migration, and the transition to adulthood. Economic development could increase both opportunity and insecurity for youth (Juárez & Gayet, 2014; A. Mason, 2002) and thus influence their choices as they transition to adulthood (Blossfeld et al., 2005; O’Rand, 2003, 2011). Migration is an “intrinsic part of broader social change” (de Haas, 2021, pp. 12–13) that exposes young adults to different levels of economic uncertainty (J.

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¹ According to some calls of not using “the developed/developing countries” to classify country groups (2024), we use the terminologies of “high-income countries” and “low- and middle-income countries”. Yet, several studies cited in the paper still used the terminologies of “the developed/developing countries”, which are slightly different from HIC/LMIC, but referred to similar stratification of economic growth and population changes among the world.

Yang, 2013; Mu & Yeung, 2020, 2023). Together, development and migration may jointly result in an individualized transition to adulthood. With economic development, young adults have a more diverse set of trajectories to adulthood. Furthermore, the personal experience of economic development may vary, depending on young adults' migration experience.

To test these ideas, we use two waves of Chinese General Social Survey (CGSS, 2008 and 2017) in this study to trace the transition to adulthood over the course of a decade. This decade in China is characterized by rapid economic development (Lin & Liu, 2000), a substantial international migration flow (Peng, 2011), and the diversification of young adults' life course (Tian, 2016; Wang & Feng, 2023). This study examines (1) the patterns of change in the transition to adulthood in the context of rapid economic development; (2) the diversity in the adulthood experience due to rural-to-urban migration; and (3) the intersection between the patterns of change and the diversity in the adulthood experience. Through these analyses, we aim to trace the changes in the transition to adulthood in a LMIC with rapid economic development and to reveal the complex nexus between economic development, migration, and young adults' life course.

2. Theoretical background: economic development, migration, and the transition to adulthood

The transition to adulthood measures the timing and sequence of adulthood markers such as leaving school, entering the labor market, getting married, and childbearing (Liefbroer & Toulemon, 2010). The meaning of a certain adulthood marker might differ according to its timing and where it falls in sequence with other adulthood markers (Elder, 1994; Giele & Elder, 1998).

Over the past few decades, the transition to adulthood has become increasingly diversified in the LMICs, with visible regional variations. In Asia, some scholars have observed decreasing fertility (Vithayathil, 2013) and de-standardized life trajectories (Wang & Feng, 2023), while others have found a relatively ordered marriage and fertility pattern (Tian, 2016). In Latin America, disadvantaged women have been found to be more likely to enter into cohabitation, rather than marriage (Wiegand Cruz, 2023). Evidence from Sub-Saharan Africa has also shown signs of diversity in the transition to adulthood, such as the emergence of consensual union in Burkina Faso (Calvès, 2016) and employment and fertility changes in Ethiopia (Seifu et al., 2011).

In response to the Western-based transition theory, Teller and Haillemariam (2011) propose the concept of a "complex nexus" to highlight the impact of development factors on life trajectories. Following this concept, we use economic uncertainty (Blossfeld et al., 2005) to conceptualize the relationship between economic development, migration, and changes in the transition to adulthood. Each decision made during young adulthood years, such as leaving school, entering the labor market, forming a marriage, and having children, is surrounded by uncertainty. This uncertainty is generated by state, market, and familial institutions (O'Rand, 2003, 2011). Market conditions are of significant importance. When young adults make decisions regarding the timing and occurrence of adulthood markers, their decisions are largely influenced by the economic life they experience and the economic prospects they envision for the future (Aisenbrey & Fasang, 2017; Buchmann & Kriesi, 2011; Galambos & Martinez, 2007; Grant & Furstenberg, 2007). In the face of these challenges, young adults often postpone long-term commitments such as marriage and childbearing (Alkema et al., 2012; McDonald, 2006) and construct diverse trajectories according to their life circumstances (Brückner & Mayer, 2005; Mills & Blossfeld, 2013).

In LMICs, development often happens under economic globalization and is associated with structural changes in economy (Cheng & Mittelhammer, 2008; Kaya, 2010). In this context, economic uncertainty increases given that the economy has become more volatile, employment has become more diverse and even polarized (Vallas & Prener, 2012), and new challenges emerge for which the state has less ability to buffer.

Examples include those occurred as the changes in female employment in Mexico (Parrado & Zenteno, 2001), the diversification in investment in children's education in Rural Ethiopia (Lindskog, 2018) and various challenges including capital flows and label migration in East Asia society (A. Mason, 2002). Consequently, economic uncertainty can be perceived as an opportunity (A. Mason, 2002) or as a source of insecurity (Juárez & Gayet, 2014; A. Mason, 2002) for young adults. The uncertainty in young adulthood years makes life trajectories more difficult to predict (Zaidi & Morgan, 2017). It is also challenging to secure "a stable future" (Juárez & Gayet, 2014, p. 523). Given the heightened uncertainty during economic development, the transition to adulthood may become more individualized in response to the new challenges.

Young adults are exposed to different levels of economic uncertainty, and we consider migration to be an important differentiating factor. Migration largely relates to individuals' perception of economic development (de Haas, 2010a,b, 2021; Geiger & Pécoud, 2013; Hunter, Luna, & Norton, 2015), as it is a strategy to avoid and minimize the economic uncertainty within the social environment (Hunter et al., 2015). Economic and social exclusion may also lead migrants to experience more economic uncertainty than non-migrants (J. Yang, 2013). For example, migration reduces fertility, delays marriage and first birth (Lindstrom et al., 2021), and decreases the chance of marriage (Nie, 2022), while also reducing the fertility rate (Menashe-Oren & Sánchez-Páez, 2023).

We use two waves of China data (about 10 years apart) as a case study. The following section illustrates the features of the Chinese society in the past few decades—the signs of changes in the transition to adulthood, the heightened uncertainty due to rapid economic development, and the massive rural-to-urban labor migration—that make it a good analytical case to examine the demographic responses of young adults in the complex context of economic development and labor migration.

3. The Chinese case

China has clearly experienced tremendous social changes in the past three decades, especially rapid economic growth (Lin & Liu, 2000) and a large flow of rural-to-urban migration (Bernard et al., 2019; Peng, 2011), that have led to changes in the transition to adulthood. Generally, Chinese young adults would graduate from school at age 15 (junior high school), age 18 (senior high school), or age 22 (college degree). Work used to follow immediately after graduation, but the rising economic uncertainty makes it more flexible to make work arrangements (Chen & Hamori, 2013; Nawakitphaitoon & Tang, 2021). For family formation, though the legal ages of marriage in China are respectively 20 and 22 for females and males, people increasingly tend to marriage at their late 20s (Jiang et al., 2014) and give birth at that time or at early 30s (X. Yang et al., 2023).

However, scholars have not fully reached a consensus on what changes have happened in China. Tian (2016) traces the changes in the transition to adulthood from 1982 to 2005 and finds results suggesting a postponement in education completion and entering employment, but little change in marriage and fertility. Further studies also prove that the family trajectories in China have remained relatively standard, although occupational trajectories have become non-standard (Wang & Feng, 2023). Another research under holistic approach also revealed that the family life courses become relatively standardized (Van Winkle & Wen, 2023). In contrast, evidence from census data reveals a pattern of postponing marriage to a higher age in China (Yu & Xie, 2015), suggesting a possible de-standardized and individualized trend of family formation. These studies tend to describe changes in the transition to adulthood but do not link them to macro-level changes, such as economic development or migration. In this section, we propose several arguments on how development and migration influence the transition to adulthood and how these factors may interact with each other in Chinese society.

Chinese development is associated with heightened economic

uncertainty, which shapes the life conditions of young adults when they are making adulthood decisions. China has undergone great economic changes since the Reform and Open-up (Wu, 2019). Along with these changes, uncertainty around factors such as living costs, housing prices, and unemployment has largely increased due to “the consumer revolution” (Davis, 2000). As discussed in the previous section, economic uncertainty along with development could relate to choices in the transition to adulthood. Evidence in post-reform urban China has also shown that economic perspectives and resources largely shape marriage formation (Yu & Xie, 2015). Accordingly, we expect that *young adults’ transition to adulthood in China has been individualized during the economic development.*

In addition to the rapid development, people choosing to migrate or not encounter different levels of uncertainty; therefore, they may differ in their adulthood transition as well. We particularly focus on rural-to-urban migration in China. The household registration system in China (*Hukou*) divides the country into rural and urban areas (Peng, 2011). We expect that rural-to-urban migrants encounter more economic uncertainty, with lower socioeconomic outcomes (J. Yang, 2013), and that the insecurity of life status and aspiration for economic opportunities would lead to destandardized life trajectories. Scholars have found that rural-to-urban migration in China postpones marriage timing (Mu & Yeung, 2020) and increases the probability of cohabitation (Mu & Yeung, 2023). In this sense, we expect that *the individualization of the transition to adulthood depends on young adults’ migration status.*

The impact of economic development and that of migration may be interrelated, meaning that they may not each individually correlate with the transition to adulthood, but their intersection might. For the development of Chinese society, labor migration, especially rural-to-urban migration, is a key factor (Wei, 1997). Research in China demonstrates that the migration effects on demographic markers can change across periods, although the intersection between them has not been systematically tested. For example, the number of years that migrants have been living away from their original rural area could increase the odds ratio of cohabitation (Mu & Yeung, 2020). Therefore, we need to further verify *the co-influence of development and migration on transition to adulthood.*

Along with our other research on life course and the transition to adulthood, we would like to assess gender differentiation in our arguments. Firstly, economic development may influence females and males in divergent ways. Scholars have found that economic development affects the gender ideology of both men and women, with a greater impact on the gender attitudes of women (Qian & Li, 2020). Gender ideology may result in different adulthood transition results. For example, one research found that females and males in the United States hold different attitudes toward childlessness, which is partly due to their varied attitudes toward gender inequality (Koropecjy-Cox & Pendell, 2007). Secondly, the migration purposes of women and men may not be the same. Women in China migrate more for the purposes of their family members instead of their own (Chiang et al., 2014) and experience more gender segregation in the labor market (Fan, 2003), which suggests that female migrants may face more economic uncertainty. Finally, research has also pointed out that Chinese men and women may experience different transitions to adulthood, as scholars find that men are more likely to experience standardized education-employment trajectories than women (Wang & Feng, 2023). Thus, we test whether *the previously mentioned effects may differ between men and women.*

There are two unique aspects of economic uncertainty in Chinese. The concept economic uncertainty itself is “new” for the Chinese young adults. First, the decline of socialist work units (*Danwei*) created “a more mobile, heterogeneous and economically independent urban population” (Bray, 2006, pp. 530–531), leading to more economic uncertainty compared to nearly none before. The rapid marketization and corresponding economic growth heightened the economic inequality in China (Wu, 2019). Secondly, the economic development in China has brought a large volume of the rural-to-urban migration (Liang, 2001). Migration

experience further increased the economic uncertainty at the personal level (Liang, 2016).

We believe that by answering the questions in the Chinese context, our study could benefit the policy makers or researchers in other LMICs, especially in the Global South. Most of these countries also are facing tremendous social changes and their economy is somehow driven by migration population, such as Sub-Sahara Africa (Menashe-Oren & Sánchez-Páez, 2023) and Latin America (Esteve & Florez-Paredes, 2018; Wiegand Cruz, 2023).

4. Data and methods

4.1. Chinese General Social Survey 2008 and 2017

We use data from the Chinese General Social Survey (CGSS) conducted in 2008 and 2017 to verify the four arguments raised. The CGSS is a series of cross-sectional surveys that were first conducted in 2003 and then every two years afterward by the National Survey Research Center at Renmin University of China. This nationally representative survey includes a variety of demographic and social questions. We chose the 2008 and 2017 waves because the CGSS asked about both the exact time of entering labor market and the age of their child only in these two waves. Moreover, the social changes in economic uncertainty between these two years are the most tremendous. According to National Bureau of Statistics of China (2008, 2017), the Gross Domestic Products (GDP) increased from 319244.6 billion yuan to 832035.9 billion yuan, with a change in the house prices per square meter from 3800 yuan to 8008.11 yuan, from 2008 to 2017.

We focus on four adulthood markers in this study: completing education, getting into the labor market, getting married at the first time, and first childbearing. We retain samples that do not have missing information on education level, the time of first occupation, the time of first marriage, and the age of the first child. The 2008 sample includes 1626 women and 1643 men. The 2017 sample includes 1239 women and 1033 men.²

4.2. Variables

4.2.1. Latent class analysis for transition to adulthood

To distinguish different types of transition to adulthood, we create dummy variables describing the age-specific life trajectory based on four variables: education level, the time of first work, the time of first marriage, and the age of the first child. First, we code all four variables according to when the events occurred for the respondents. The education level is measured by the years of education, and we add the years of childhood (7 years in China) to calculate when an individual left school. The age of the first child is coded into the year of childbearing by using the age of the respondents. Second, we create 32 (8 ages × 4 types of transition) dummy variables for ages 18, 20, 22, 24, 26, 28, 30, and 32, respectively, for these four types of transition. Each dummy variable indicates whether a respondent has experienced a certain transition or not. We do not take any of the life events as “the next step” of the others, thus not adjusting the variables according to another. For instance, if a respondent reported their first child born at their 24 and never got married, the dummy variables for marriage are all 0, yet ones for childbearing are 1 after 24.

Latent class analysis (LCA)³ allows us to categorize the various transitions to adulthood based on the sequencing dummy variables. The

² The sample deletion in 2017 is due to the questionnaire design. Respondents were randomly distributed to answer parts B, C, or D. The question about the first child’s age were included in part D, so only about one third of respondents answered this question.

³ We used the polLCA package in R (Linzer and Lewis 2011) to analyze the latent classes.

goal of LCA is to detect unobserved groups by distinctive response patterns across a series of variables (McCutcheon, 1987)—in this case, the 32 dummy variables. The adoption of LCA and other types of class analysis in life course research can detect different types of life trajectories, providing a holistic view (Macmillan & Copher, 2005; Tian, 2017; Vidal & Lutz, 2018; Wang & Feng, 2023).

We do not use sequence analysis (SA), specifically multichannel/multidomain sequence analysis, to this study for two reasons. First, though some scholars argue that SA works better in life course data (Barban & Billari, 2012), others also proved that they result in the roughly same typologies (Han et al., 2017). Second and most importantly, in this study, we would like to examine the combination strategy of the life events. The specific research purpose suggests that we should not simply take any life events as next to the others. SA requires a distance matrix which implies the sequencing relations between life events, while LCA would not set such assumptions at the beginning. As a result, LCA, theoretically, could help us identify more diversity in the adulthood markers combination compared to SA.

As previous studies suggested, the demographic transition (for a review, see Zaidi & Morgan, 2017) and life courses (Wong, 2018) according to gender follow different pathways. As a result, we separately construct latent class models for subsamples of women and men. We test the goodness of fit for the models through BIC (Bayesian Information Criterion), AIC (Akaike Information Criterion), and log-likelihood. The smaller the absolute values of BIC, AIC, and log-likelihood are, the better the model fit the data. After comparing BIC, AIC, and log-likelihood in models as well as the numbers of classes (see Appendix Tables A1 and A2), we choose the eight-class models for both women and men in 2008, and the five-class and six-class models for women and men, respectively, in 2017.

4.2.2. Rural-to-urban migration status

A key independent variable in the research is rural-to-urban migration status, specifically post-adolescent migration.⁴ The hukou status at age 14 (“Hukou 14”) and current residence are used to construct the migration status. The current residence is measured as the current residence place (either rural or urban) in 2008, and as whether or not lived in the urban area for more than three years in 2017. Thus, migrants are those who had a rural hukou at age 14 and currently lived in urban area (for three years or more). Correspondingly, rural stayers are those who had rural hukou at age 14 and lived in the rural area, and urban stayers are those who had urban hukou at age 14 and lived in the urban area. This measure of migration status includes those who converted from rural hukou to urban hukou and those who did not. There is so few hukou converters in 2008 (N = 52) to make it a meaningful category in the analysis.⁵

Though we cannot determine whether at what age the respondents migrate, according to the Seventh National Census (see Fig. A2 in the Appendix), migration behaviors most probability happened between age 15 to 20. So, most respondents were likely to migrate before our observed age range (i.e., age 18 to 32).

4.2.3. Control variables

In addition to the key variables, some other variables are controlled for respondents’ living conditions, including birth cohorts, fathers’ years of education, and income. Variables such as education, employment status, marital status, or parenthood status cannot be included because they are used to construct the latent classes.

⁴ We choose the post-adolescent migration as the variable for the research, rather than pre-adolescent one, because the post-adolescent migration is more likely to be self-decided, while the pre-adolescent one reflects their parents’ migration.

⁵ We did a separate analysis on hukou converters and non-converters in 2017. See Appendix A5. The results show little difference between these two groups.

4.2.3.1. Birth Cohort. Previous research shows that a person’s birth cohort can strongly influence their life trajectories (Wang & Feng, 2023). As a result, we turn the birth year of respondents into four categories (“before 1960,” “1960–1970,” “1970–1980,” and “after 1980”) to control for cohort effects. The cohort division is according to historical events at their 18 when the transition to adulthood generally starts. The four cohorts spent adulthood years before the reform and open-up (starting from 1978), at the dual track system (1978–1991), at the rapid marketization era (1992–2001), and at the post-WTO era (after 2001), respectively.

4.2.3.2. Fathers’ Education Years. Fathers’ years of educations are controlled in the research as an indicator of respondents’ family background. The education levels of fathers obtained in the original questionnaires are transformed into their years of education.

4.2.3.3. Income. We also control respondents’ personal living conditions, using their personal income. Because the distribution is highly right-skewed, we take the natural logarithm of the income.

Table 1 shows the descriptive statistics of all the variables, including the LCA outcomes, which are explained further in the next section.

4.3. Analytic Strategies

To answer our research questions, we conduct our analysis in three steps. First, as previously mentioned, we use the LCA to capture the diversity in the transition to adulthood. Second, for the macro dimension of the economic development effect on the transition to adulthood, we examine the period changes of the latent classes. Third, we fit a multinomial logistic regression model to determine the effects of the rural-to-urban migration on the transition to adulthood, as well as the intersection between economic development and migration. In addition to the period changes and the rural-to-urban migration status, the birth cohort, fathers’ education years, and income (*ln*) are controlled in the models. To avoid the variation among province, all the models include a robust province-level standard error. As the analysis includes two cross-sectional datasets, the comparison of coefficients across years is meaningless. Therefore, the intersection is visualized through the adjusted predictions of latent classes from the regression models. Additionally, all these analyses are upon gendered subsamples.

Besides the main analysis, in the Appendix, some robustness checks

Table 1
Descriptive Statistics.

Variables/Years	Female		Male	
	2008	2017	2008	2017
Transition to Adulthood				
Early Starters	22.82	33.98	29.70	35.53
Regulars	43.05	31.23	48.20	25.65
Slow Starters	24.29	13.80	13.76	18.59
Reversers	4.43	10.17	6.51	10.45
Disconnectors (SMC-O)	5.41	10.82	1.83	4.74
Disconnectors (S-OMC)	-	15.07	-	5.03
Migration Status				
Rural Stayers	32.66	42.86	34.69	42.40
Rural-to Urban Migrants	39.91	40.03	38.77	39.40
Urban Stayers	27.43	17.11	26.54	18.20
Cohort				
Before 1960	24.42	23.16	29.10	23.14
1960 –1970	35.55	27.44	35.61	24.49
1970 –1980	30.01	19.21	28.67	20.91
After 1980	10.02	30.19	6.63	31.46
Education Years of Father	5.81	5.48	5.38	5.65
	(4.29)	(4.71)	(4.40)	(4.69)
Income (ln)	8.10	7.25	9.24	9.12
	(2.75)	(4.42)	(1.47)	(3.37)
N.	1626	1239	1643	1033

Note: Percentages and means in the cells. Standard errors in parentheses.

are done by subsampling the provinces through the development status and pace. Specifically, we divide the provinces into four tiers according to the quantiles of their Gross Regional Products (GRP) in 2016, the GRP increase from 2007 to 2016, and the increase of the average house price per square meter from 2007 to 2016. Then, we examine the effects of development and migration on transition classes within different provincial subsamples, to see whether the development or other societal changes influence the most.

5. Results

5.1. Individualization in the transition to adulthood in China

Fig. 1 presents the overall proportions of the respondents experiencing certain life events at certain ages, in 2008 and 2017, respectively. The education remains stable, but there is a postponement in the first job. That is, while young adults completed school at a similar pace, they found it harder to enter the labor market in 2017 than in 2008. Family formation is also postponed. Young adults still gave birth after marriage, but both markers appeared at a later age. Appendix A1 separates the results by birth cohorts. It shows the postponement mainly comes from the latter two cohorts, especially those born after the 1980s.

Figs. 2 and 3 first show the latent classes of transition to adulthood for women and men, respectively, in 2017. Not only is there postponing of family formation, but also other kinds of individualization in the pathways to adulthood.

In general, these classes represent three kinds of process: postponement, reversing, and disconnection. The three classes, “Early Starters,” “Regulars,” and “Slow Starters,” consist of those who transitioned to adulthood at different paces (fast, average, and slow), but in a similar sequence—marriage occurred after school completion and employment, and childbearing occurred after marriage. In other words, postponing happens more among the “Early Starters” than among “Regulars” and “Slow Starters.” Meanwhile, “Reversers” are those who experienced life events in different sequences. For example, most of them entered the labor market or got married before getting out of the school. Last, the “Disconnectors” are those who disconnect certain life events with the whole life course.

There is gender difference in terms of disconnectors. The female sample has only one type of disconnectors. The “Disconnectors (SMC-O)” are those who completed education, got married, and child at a regular pace and sequence, but were not employed for a relatively long

period. In addition to SMC-O, the male sample also includes the “Disconnectors (S-OMC)”, who only finished education at a relatively young age but did not complete the other three life events. That is, the non-working status does not affect women’s family formation, but significantly restrain men’s marriage prospects (Tian, 2013).

The life events in the life trajectories in 2008 (Appendix A3 and A4) basically are similar in terms of distances and sequences to the classes in 2017. The only exception is the education gradient. In 2008, the life trajectories are more differentiated between higher-educated and lower-educated young adults, in 2017, such education difference largely disappears. For further comparison, the paper combines the two “Regular” categories (higher-educated regulars and lower-educated regulars) in 2008 to compare with the “Regular” category in 2017.

Figs. 4 and 5 demonstrate the changes in the percentage of each life trajectory from 2008 to 2017 for women and men. The overall changes in both genders are that the percentages of “Regulars” fell from a total of approximately 45% in 2008 to 31.1% for women and 25.3% for men in 2017. The decrease in relatively regular classes suggests individualization in life trajectories. However, a surprising finding is that the female “Slow Starters” fell by 10% with economic development and male ones increased only around 5%. Meanwhile, the percentage of female “Early Starters” even grew up by 11.2%. The increasing percentages in “Reversers” and “Disconnectors” are, nonetheless, consistent with the idea that the life trajectories of young adulthood would reverse, and the marriage and procreation would be disconnected. The percentages of “Reversers” and “Disconnectors” (of both types) increased about twice in 2017 than in 2008.

The findings from the period changes in the transition to adulthood suggest that the general social changes might not postpone the pace of pathway to adulthood, but make the young adult life trajectories more individualized, in both reversing and disconnecting ways. They are along with our argument 1 that the development would influence the adulthood transition. However, the argument could be further emphasized on its detailed effects, that development in China would reverse and disconnect the life trajectories of people.

5.2. Rural-to-urban migration and transition to adulthood

Tables 2 and 3, respectively, are the multinomial logistic regressions on the latent classes of the transition to adulthood. They mainly show how rural-to-urban migration influenced the life trajectories. As multinomial logistic regressions are calculated through Maximum Likelihood

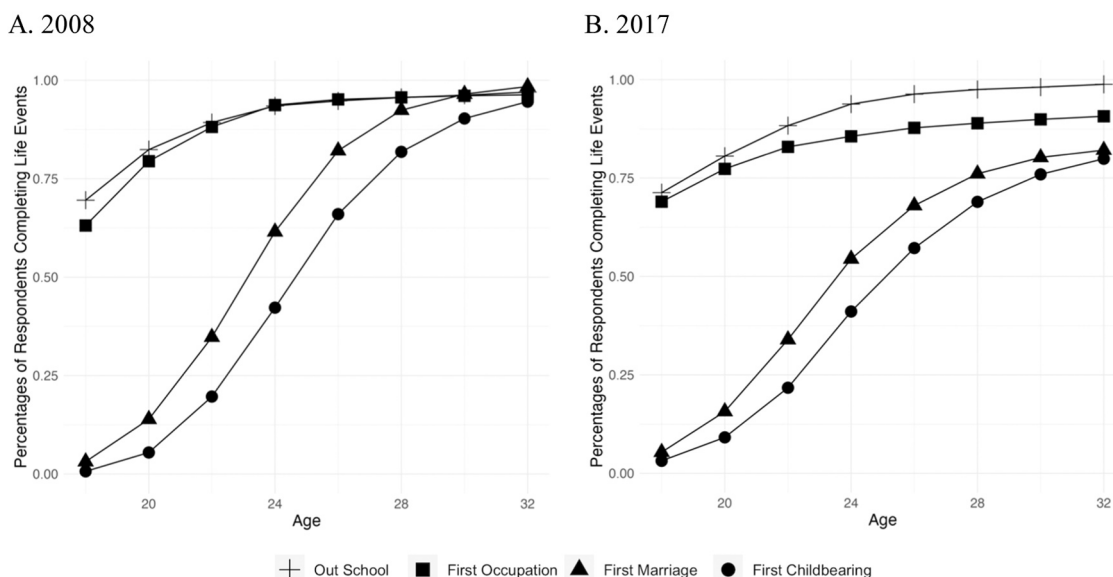


Fig. 1. Percentages of respondents completing life events through ages. Note: the points are the percentages of the population completing certain life events.

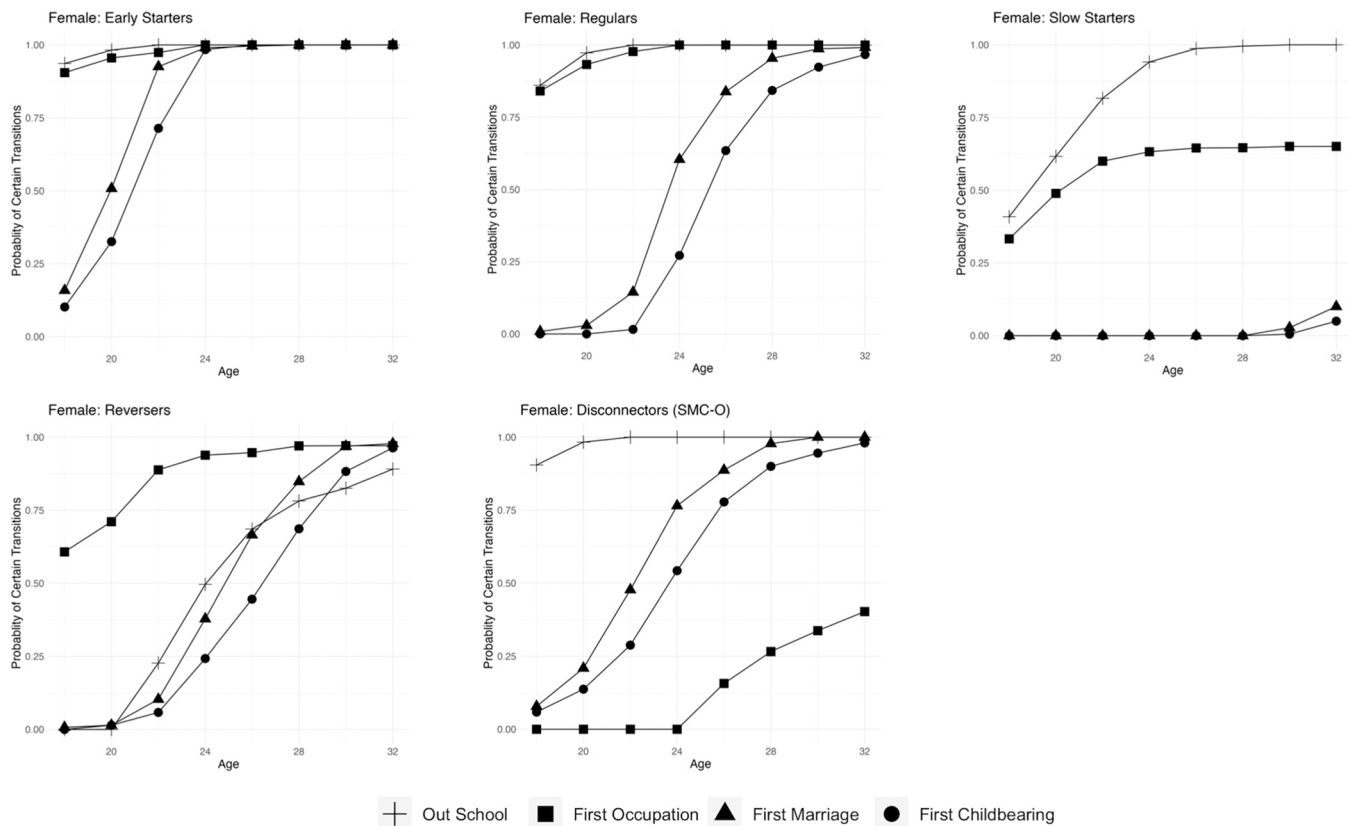


Fig. 2. Latent classes of transition to adulthood in 2017, Female. Note: the points are the probability of the population in the classes completing certain life events.

Estimate (MLE), the coefficients should not be compared through different models. It is clear from the tables that the rural-to-urban migration status largely influenced the pace of the conventional combination of life events. The same finding occurs for both genders in the two years that the rural stayers are the most likely to fall into the “Early Starters” class, followed by migrants. For the “Slow Starters,” the effects are the opposite that urban stayers are more likely to be in that class.

Compared with the gradual effect of rural-to-urban migration on the conventional life trajectories, the other effects are relatively small and inconsistent. In 2008, the rural-to-urban migration hardly influences “Reversers” and “Disconnectors” among women, while the male migrants and urban stayers are more likely to be “Reversers.” The same effects on the “Reversers” occur in 2017 for both women and men. These findings suggest that the “Reversers” might be the managers and non-manual employees who went back to enroll in college courses, and females started to have more chances to reverse their life trajectories in 2017. In addition, male urban stayers would be more likely to be in the pathway of “Disconnectors (S-OMC)”. It implies that the competition in the labor and marriage market for men in urban areas became intense in 2017 rather than either the one in 2008 or for other social groups.

Tables 2 and 3 also provide the results on the effect of control variables on the transition to adulthood in the years of 2008 and 2017, showing the population structures of these classes. Surprisingly, the birth cohorts in 2008 was negatively related to being “Slow Starters” and “Reversers” for both men and women. In other words, the results demonstrate that in 2008, the “Regulars” had the highest proportion in the later birth cohorts for women, and the “Early Starters” had the highest proportion for men. This might result from the historical events, as people grew up in the Cultural Revolution and the early era of the reform would suffer more from unstable life events (Xie et al., 2008). Compared with 2008, the positive effect of the latter two birth cohorts on being “Slow Starters”, “Reversers” (only for females) and

“Disconnectors” in 2017 reveals possible postponing in the transition to adulthood, similar to the results of Fig. A1.

In 2008, fathers’ education years might reduce the relative risk ratios (RRR) of being “Early Starters” and increase those of being “Reversers.” These effects somehow remained for women in 2017 that fathers’ education would increase both RRR of being “Slow Starters” and “Reversers”. However, the number of fathers’ education years only related to the probability of being male “Reversers” and “Disconnectors (S-OMC),” indicating that the higher education level of fathers might empower men to choose relatively unconventional life pathways.

Individual income influences the life trajectories of men and women in different ways, although a higher income, similar to fathers’ education years, increased the relative risk ratios of being “Reversers” for both genders in 2008. The higher income would reduce the relative risk ratios of being female “Disconnectors (SMC-O)” in both 2008 and 2017, and the ones of being male “Disconnectors (S-OMC)” in 2017. Furthermore, despite no effect on the pace of life trajectories in 2008, the income in 2017 is negatively related to the probability of being female “Early Starters” and male “Slow Starters.” The results indicate that females with higher incomes would be more likely to be in regular or slow-paced life pathways, while the males with higher socioeconomic status would finish their adult transition relatively earlier. Overall, the rural-to-urban migration status mainly postpones and reverses the life trajectories of both genders, while it hardly disconnects life events. The results are similar to our argument 2 that migration in China would have effect on transition to adulthood. In addition, we could refine the assertion that the rural-to-urban migration experiences mainly make people start their life events more slowly or reversely, but still try to complete all events. Moreover, the effects are relatively stable through the years from 2008 to 2017, which would be further compared through the adjusted predictions.

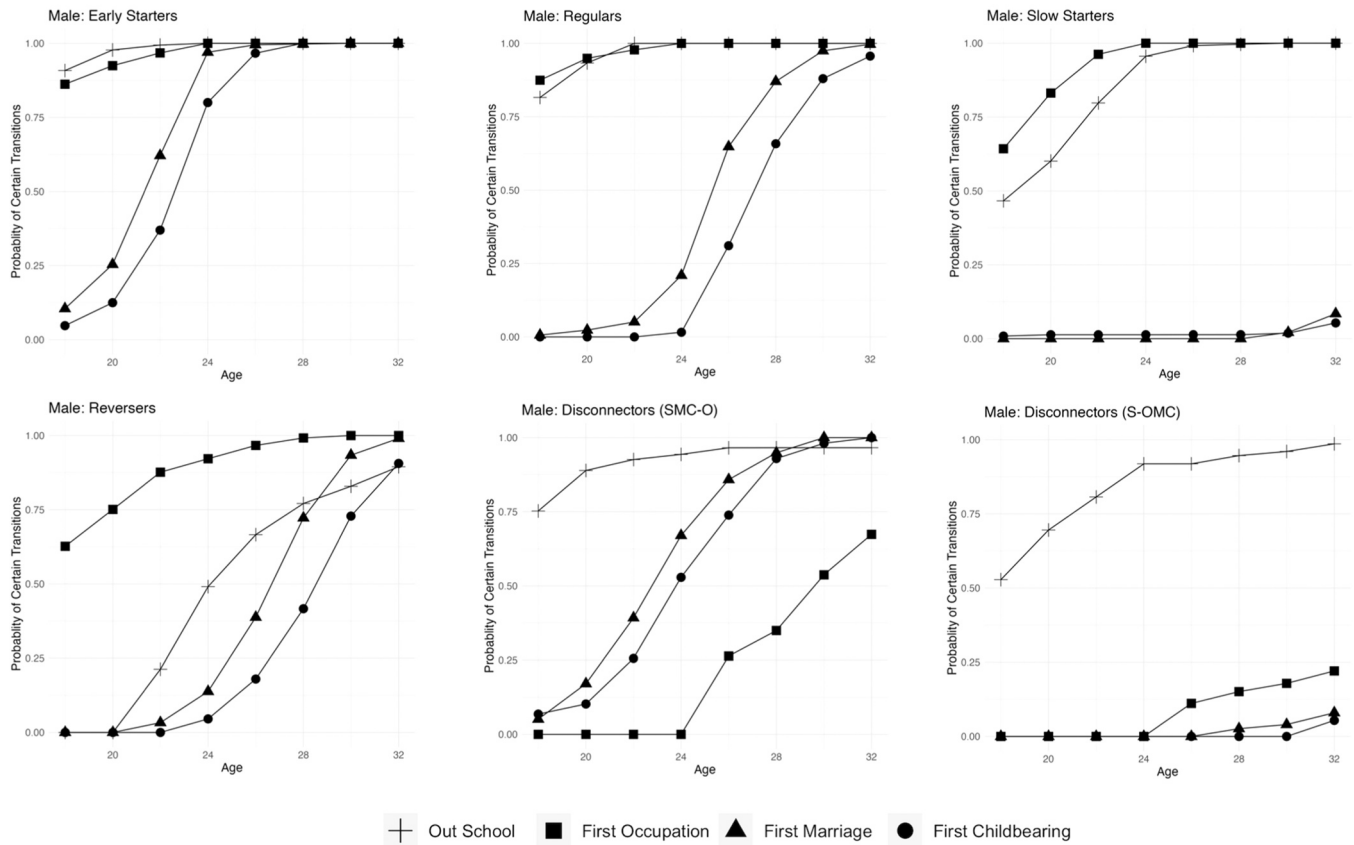


Fig. 3. Latent classes of transition to adulthood in 2017, Male. Note: the points are the probability of the population in the classes completing certain life events.

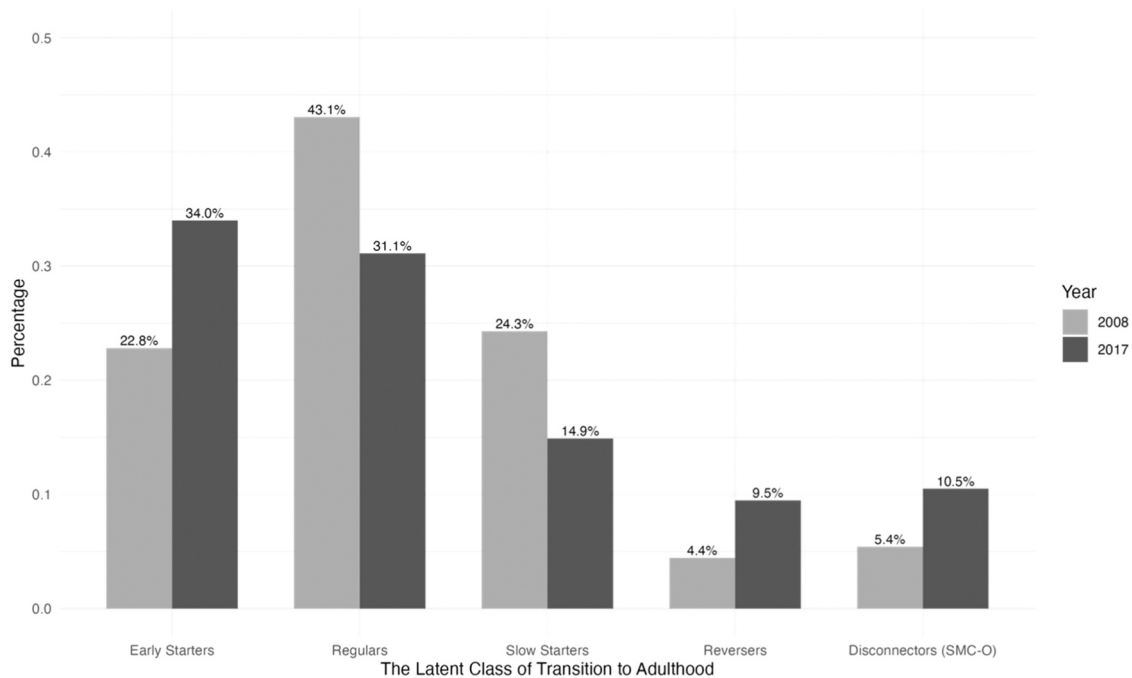


Fig. 4. The Percentages of the Latent Classes, Female.

5.3. Intersections between economic development and migration

The findings on the rural-to-urban migration effects show how individual experiences, including migration and gender, influence the

changes in adulthood transitions. Accordingly, we examine the intersection between individual experiences and social changes by comparing the differences between the migration effects in the models in Tables 2 and 3. First, the migration status is seen as a whole to

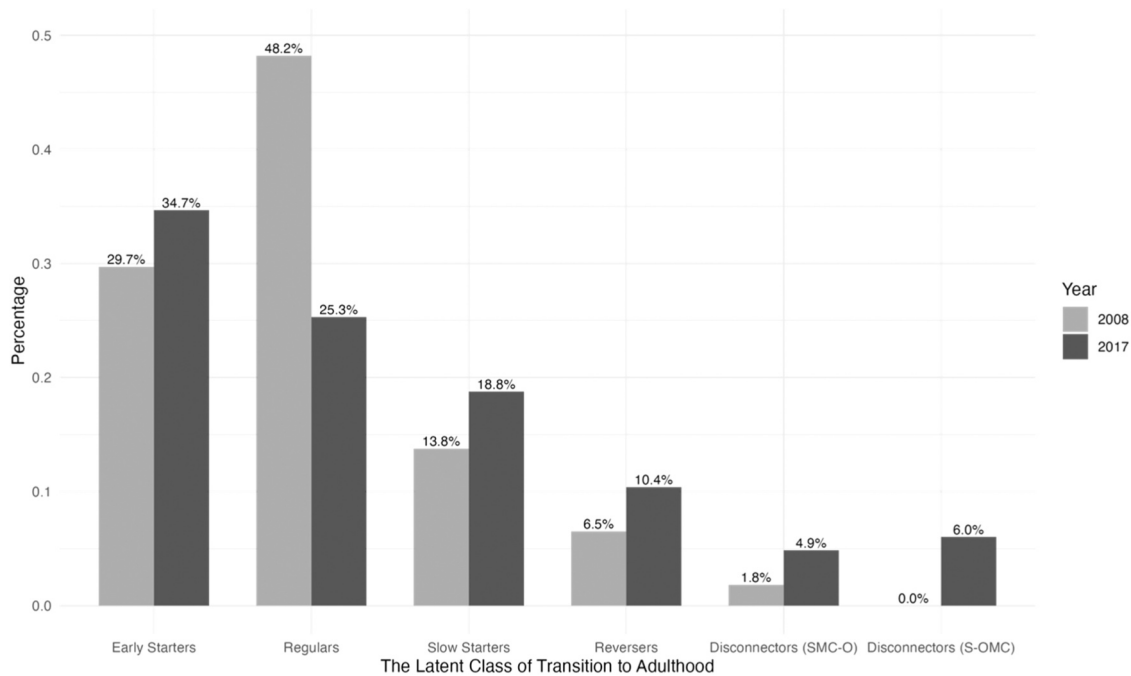


Fig. 5. The Percentages of the Latent Classes, Male.

Table 2
Multinomial Logistic Regression of Life Course Classes (Compared to Regular) in 2008.

Independent Variables	Female				Male			
	Early	Slow	Reverse	Disconnect (SMC-O)	Early	Slow	Reverse	Disconnect (SMC-O)
Migration type (Rural Stayers=0)								
Migrants	-1.035 * ** (0.146)	0.439* (0.175)	0.381 (0.386)	0.433 (0.432)	-0.689 * ** (0.146)	0.180 (0.212)	1.400** (0.504)	-0.744 (0.451)
Urban Stayers	-1.831 * ** (0.227)	0.624* (0.257)	0.060 (0.503)	0.506 (0.453)	-1.282 * ** (0.201)	0.861*** (0.188)	0.970* (0.491)	-1.007 (0.621)
Cohort (Before 1960 =0)								
1960 –1970	0.007 (0.198)	-0.797 * ** (0.129)	-0.884 * * (0.304)	-0.553 (0.364)	0.833*** (0.183)	0.011 (0.168)	-0.239 (0.286)	0.154 (0.475)
1970 –1980	-0.072 (0.269)	-0.641 * ** (0.186)	-0.501 (0.360)	-0.439 (0.307)	0.540* (0.223)	0.095 (0.210)	-0.809 * * (0.267)	0.436 (0.471)
After 1980	0.531 (0.279)	-1.588 * ** (0.368)	-15.223 * ** (0.378)	-0.788 (0.427)	0.968*** (0.188)	-14.933 * ** (0.309)	-2.830 * * (0.999)	0.590 (0.527)
Education Years of Father	-0.051 * * (0.018)	0.011 (0.015)	0.162*** (0.030)	-0.040 (0.032)	-0.041 * (0.017)	0.001 (0.014)	0.080** (0.026)	-0.046 (0.044)
Income (ln)	0.009 (0.034)	-0.041 (0.028)	0.547*** (0.150)	-0.187 * ** (0.038)	-0.131 * * (0.042)	0.001 (0.065)	0.515*** (0.104)	0.317 (0.231)
Constant	0.224 (0.396)	-0.105 (0.314)	-8.094 * ** (1.241)	-0.403 (0.499)	0.888* (0.450)	-1.615 * * (0.605)	-8.144 * ** (1.072)	-5.721 * * (1.969)
N.	1626				1643			
BIC	4160.563				3924.914			

Note: standard errors in parentheses.

* p < .05
** p < .01
*** p < .001.

examine whether its effects change over time. Second, three categories inside the migration status are considered separately in women and men to observe the diversification in the genders and the living environments effect.

Fig. 6 presents the Adjusted Predictions (AP) of the multinomial logistic regressions on the latent classes by migration status and periods. For multinomial logistic models, we could calculate the AP to see the difference among social groups. As AP is a kind of predicted probability, it could be compared between different models. A comparison of the estimates and 95% confidential intervals between the period of 2008 and 2017 yields the same results as before, with the general percentages falling for the “Early Starters” and “Regulars,” but increasing for the

“Reversers” and “Disconnectors.” In addition, the attachment to an urban area increases the probability of postponed classes. The findings are the same in that the social changes lead to more changes in the sequence, and the individual experiences of the changes lead to postponing of life trajectories.

The other finding from the clear comparison in the Fig. 6 is that the rural-to-urban migration effects hardly changes over time. Although the general predictions of certain classes changes, the pattern of migration status and transition to adulthood remains almost the same. Thus, the intersection is minimal between migration and economic development.

However, when we analyze the three categories in the migration status, the comparison results in some slight differences. As shown in

Table 3
Multinomial Logistic Regression of Life Course Classes (Compared to Regular) in 2017.

Independent Variables	Female				Male				
	Early	Slow	Reverse	Disconnect (SMC-O)	Early	Slow	Reverse	Disconnect (SMC-O)	Disconnect (S-OMC)
Migration type (Rural Stayers=0)									
Migrants	-0.626 ** (0.240)	0.010 (0.258)	1.561*** (0.394)	-0.096 (0.247)	-0.581 ** (0.205)	0.667** (0.225)	1.500*** (0.431)	0.183 (0.331)	0.756 (0.494)
Urban Stayers	-1.528 *** (0.336)	1.070** (0.336)	2.105*** (0.537)	-0.108 (0.456)	-2.246 *** (0.336)	1.246*** (0.242)	1.533** (0.528)	-0.321 (0.582)	1.853*** (0.394)
Cohort (Before 1960 =0)									
1960 –1970	0.334 (0.218)	0.001 (0.447)	0.461 (0.334)	-0.119 (0.296)	0.597** (0.229)	0.161 (0.502)	-0.287 (0.528)	1.171 (0.621)	0.123 (1.391)
1970 –1980	0.446 (0.255)	0.156 (0.605)	1.106** (0.389)	1.386*** (0.298)	0.340 (0.269)	0.659 (0.407)	0.049 (0.448)	2.492*** (0.743)	2.837* (1.162)
After 1980	0.503* (0.243)	2.989*** (0.342)	1.603*** (0.394)	0.814* (0.363)	0.846*** (0.249)	2.656*** (0.352)	0.490 (0.376)	1.844** (0.703)	3.938*** (1.113)
Education Years of Father	-0.026 (0.018)	0.208*** (0.035)	0.154*** (0.038)	-0.022 (0.020)	-0.031 (0.023)	0.013 (0.024)	0.108** (0.035)	-0.014 (0.062)	0.102* (0.051)
Income (ln)	-0.034 * (0.016)	-0.023 (0.029)	0.061 (0.040)	-0.101 * * (0.033)	-0.021 (0.028)	-0.061 * (0.028)	0.635** (0.205)	-0.062 (0.061)	-0.318 * * * (0.040)
Constant	0.520 (0.272)	-4.063 * * * (0.335)	-4.949 * * * (0.777)	-0.724 * (0.364)	0.629* (0.249)	-1.604 * * * (0.459)	-9.587 * * * (2.344)	-2.620 * * * (0.776)	-3.329 * * (1.112)
N.	1239				1033				
BIC	3143.596				2745.378				

Note: standard errors in parentheses.

* p < .05
** p < .01
*** p < .001.

Fig. 6, the predictions of transition classes might be somehow not continuous on certain points of migration status. The breaking points imply diverse meaning of the specific parts of experience. If the gap is between “rural stayers” and “migrants,” it means that the post-adolescent urban experience is more crucial. Otherwise, if it is between “migrants” and “urban stayers,” the childhood rural experience is more significant.

5.4. Robustness checks

In this sense, a slight change occurs in the gender differences for the migration effects from 2008 to 2017. As shown in Fig. 6A, a significant gap exists between the women who are rural stayers and migrants in the classes of “Early Starters” and “Slow Starters.” Compared to the women, the breakpoint of the probability in latent classes appears to be between rural stayers and migrants. Fig. 6B displays that men are more likely to be among “Slow Starters” and “Disconnectors (S-OMC)” rather than “Regulars” or “Slow Starters,” if they have ever been rural residents, regardless of their later migration. But the gender difference does not seem to be significant; the confidence intervals in the corresponding categories overlap with each other. Thus, the joint effect between development and migration do not differ between men and women.

Fig. A5 further shows the predicted probability of latent classes in 2017 under the four-category migration status which splits the migrants into nonconverters and converters. The results show little difference in the patterns of transition to adulthood between the two groups. It further suggests that the migration effects differ according to the focus on rural or urban experiences rather than current *Hukou* status.

In the Appendix, we further do several analyses in subsamples to examine the robustness of the results, especially on whether what part of development influence the most. Fig. A6, A7, and A8 show the AP in multinomial logistic regressions respectively within subsamples by GRP (in 2016), GRP-increase and house price-increase (from 2007 to 2016). Among these results, the general pattern remains the same that period effects are more on reversers and disconnectors and migration effects on postponers and reversers. It leads to the conclusions, that the findings above are more related to the uncertainty under economic development, instead of other societal changes, and they are basically consistent in

different migration destinations.

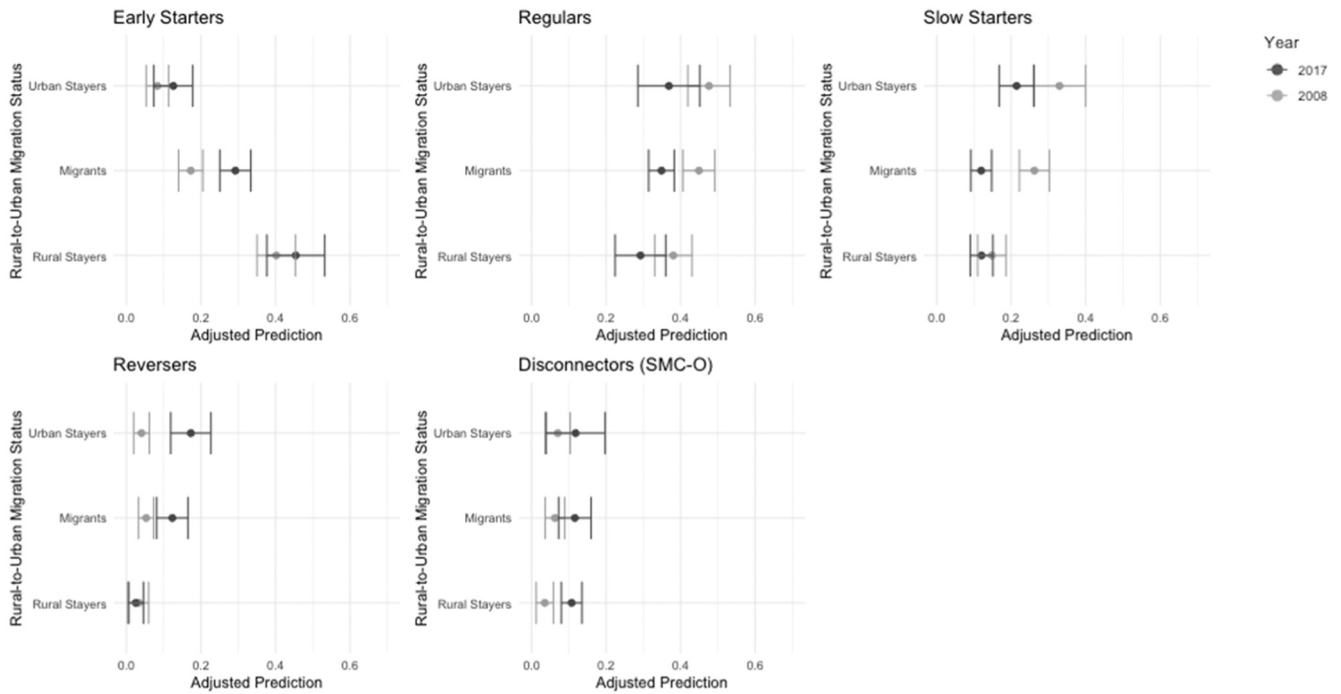
6. Conclusion and discussion

Table 4 summarizes the major findings of the paper, providing insight into the two types of previously overlooked diversifications. First, the latent classes of the transition to adulthood in China show signals of postponing, reversing, and disconnecting life trajectories in the whole population. Second, the findings suggest that the social changes increase the odds of changing the sequence of events within life pathways, while the rural-to-urban migration acts more on postponement in conventional sequences. Meanwhile, the intersection between period changes and migration occurred more in terms of the gender differentiation of migration effects. In particular, the early life trajectories of women increasingly depend on their post-adolescent urban experience, while those of men rely more on their childhood rural lives.

These results correspond to the literature on population dynamics around the world and add new knowledge on how development and migration work together to affect the transition to adulthood. Basically, our findings are consistent with the existing literatures on the effects of development and migration on the transition to adulthood. We prove again how they make life trajectories more individualized, similar to other studies (for development example, see Pesando et al., 2021; for migration examples, see Mu & Yeung, 2020, 2023). Further, this paper contributes to the literature by illustrating what perspectives these two factors would influence and whether they would interact with each other.

The results highlight two different influencing pathways of uncertainty on the transition to adulthood resulting from migration and development. Migration seems more likely to be a positive and active reaction in the face of economic uncertainty. Although migrants may pause some life events due to uncertainty, they eventually complete them as a whole, leading to a situation of postponement or reversal rather than dis-conjunction. However, the societal changes of development lead to more uncertainty that people experience passively. Under this situation, people have greater difficulty to bring back the events, thus events are disconnected from each other or are finishing in

A. Female



B. Male

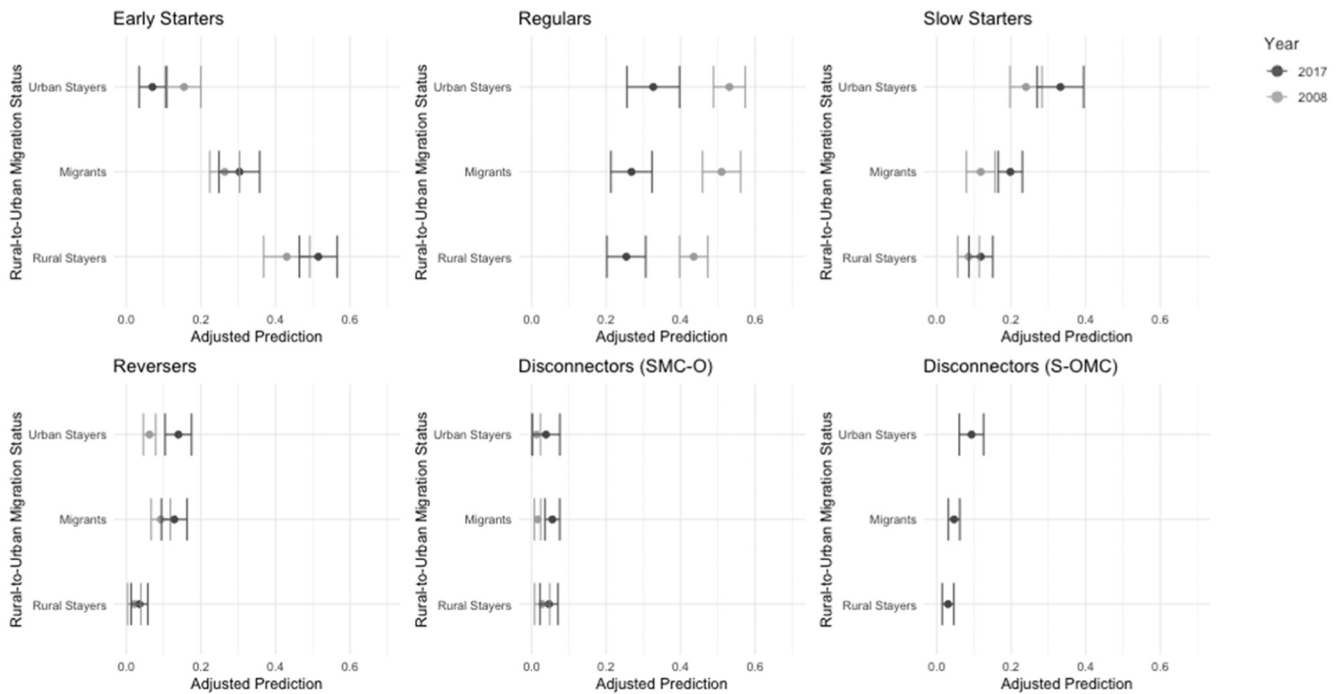


Fig. 6. The Adjusted Predictions (AP) of Transitions Classes by Migration Status. (Gender Subsamples). Note: The points are the predicted probability by the multinomial logistic regressions of the latent classes in certain migration status in 2008 and 2017, and the bars are the 95% confidential intervals of the predicted probability.

disordered ways. In this sense, we can also understand why both factors increase the probability of reversal, as it could simultaneously be considered a means of completing life events or the experience of having events in rather disconnected ways.

The study has two limitations. First, due to data limitation, details about the timing and detailed information of migration are hard to

obtain for the analysis. Though we point out that rural-to-urban migration often happens as labor flows (Song, 2017) and mostly occurs at an early age (Zhao, 1999), which assumes that the life events of post-adolescent migration happen before or during the transition to adulthood (also in Fig. A2). Meanwhile, we cannot trace the origins and destinations of migrants. As a result, it is hard to capture the regional

Table 4
The Effects of Development on the Transition to Adulthood ^a.

Gender	Female			Male		
	Independent Variables /Compared with Regulars ^b	Postpone	Reverse	Disconnect	Postpone	Reverse
Development	No	Yes	Yes	No	Yes	Yes
Rural-to-urban Migration	Yes	Yes ^c	No	Yes	Yes	No
Development × Migration	Urban Experience ↑			Rural Experience ↑		

Note:
^a The table is the summary of the results above, including Figs. 4, 5, and 6 and Tables 2 and 3. The marks are for the effect of certain perspectives of development on the transition to adulthood: “No” means no consistent effect, and “Yes” means positive effects, and the upward arrow means that the influence increased across the time.

^b The “Postponed Trajectory compared with Regulars” includes the latent classes of “Slow Starters”; the “Twisted Trajectory” includes the class of “Reversers”; the “Disconnected Trajectories” includes the other two “Disconnectors;”

^c The rural-to-urban migration only significantly increase the probability of being reversers among females in 2017.

variations in the migration. Last, although claiming to extend the findings of the Chinese case to LMICs in general, the paper is limited to the data from mainland China. Although China could to a large extent be considered as a typical case among the LMICs, more studies on other LMICs need to be conducted to test this assumption.

For Chinese society, the paper calls for more policy attention for the young migrants group. The results suggest that migrants from rural to urban areas currently postpone their family formation, suggesting that the government may need more social welfare programs or policies for migrants. Although the postponement may result from migrants’ own choices or life pressures, it could also be caused by insufficient social support, especially on the cost of living. For example, city governments could adjust policies on mortgages for migrants.

Further, the paper contributes to the theorization of the complex development/population nexus through two insights. First, the concurrent classes in China of postponed, reversed, and disconnected life trajectories indicate that the transition to adulthood in LMICs could be slightly divergent from the prediction of previous theories. As Zaidi and Morgan (2017) argue in their review of the SDT, the postmodern values of the Western countries should not be seen as the “end stage.” Our findings further imply that the population dynamics in LMICs happen simultaneously in multiple ways, owing to ongoing development and the population’s exposure to the divergent global society. Second, the

diverse effects of economic development suggest the multidimensionality of social changes. The changes in the transition to adulthood might not only follow the general development of the society, but they could be strongly correlated with individual living experiences. By decomposing the multidimensions in economic development, scholars could investigate more details behind the complex nexus.

Along with the theoretical implications, the paper has methodological implications. It suggests that population dynamics need to be viewed as life courses and that more measurement of social changes is needed, especially from individual perspectives. Scholars have recently mentioned the problem of using macro trend indicators and focusing on isolated point-in-time work or family outcomes in the social changes studies in the Egyptian context (Buyukkececi et al., 2023). Yet, little work has been done to apply these ideas to empirical research. Future research needs to adopt more holistic and multidimensional measurement in development and life course research.

CRedit authorship contribution statement

Felicia F. Tian: Writing – review & editing, Project administration, Conceptualization. **Yangyu Wang:** Writing – original draft, Visualization, Formal analysis, Conceptualization.

Appendix

1. The Fit statistics of latent class models

Table A1 Fit statistics of latent class models for males and females in 2008.

A. Female				
Latent Class N.	AIC	BIC	Log-likelihood	p-value
4	26642.96	27372.28	-13190.48	1.00
5	26236.90	27149.94	-12954.45	1.00
6	25635.73	26732.50	-12620.87	1.00
7	23712.02	24992.51	-11626.01	1.00
8	23036.58	24500.79	-11255.29	1.00
9	23715.67	25363.60	-11561.83	1.00
10	23074.04	24905.70	-11208.02	1.00
11	22552.52	24567.90	-10914.26	1.00
12	22212.57	24411.67	-10711.28	1.00
B. Male				
Latent Class N.	AIC	BIC	Log-likelihood	p-value
4	25760.25	26477.42	-12749.13	1.00
5	24123.18	25021.05	-11897.59	1.00
6	24295.66	25374.19	-11950.83	1.00
7	23072.55	24331.75	-11306.28	1.00
8	22443.46	23883.32	-10958.73	1.00
9	22531.58	24152.18	-10969.79	1.00
10	21523.37	23324.57	-10432.68	1.00
11	21782.91	23764.78	-10529.45	1.00
12	21394.72	23557.27	-10302.36	1.00

Table A2 Fit statistics of latent class models for males and females in 2017.

A. Female				
Latent Class N.	AIC	BIC	Log-likelihood	p-value
4	23791.28	24483.41	-11764.64	1.00
5	22193.15	23059.63	-10932.57	1.00
6	22325.15	23365.99	-10965.57	1.00
7	21342.55	22557.74	-10441.27	1.00
8	21038.64	22428.19	-10256.32	1.00
9	19769.41	21333.31	-9588.70	1.00
10	19511.66	21249.91	-9426.83	1.00
11	19067.22	20979.83	-9171.61	1.00
12	19020.97	21107.93	-9115.49	1.00
B. Male				
Latent Class N.	AIC	BIC	Log-likelihood	p-value
4	20352.97	21019.11	-10045.48	1.00
5	19178.52	20012.47	-9425.26	1.00
6	17598.60	18600.36	-8602.30	1.00
7	17700.20	18869.76	-8620.10	1.00
8	16795.94	18133.31	-8134.97	1.00
9	16560.52	18065.70	-7984.26	1.00
10	16594.65	18267.63	-7968.32	1.00
11	16146.90	17987.69	-7711.45	1.00
12	15996.10	18004.70	-7603.05	1.00

2. Percentages of respondents completing life events through ages, by Years and Birth Cohorts*

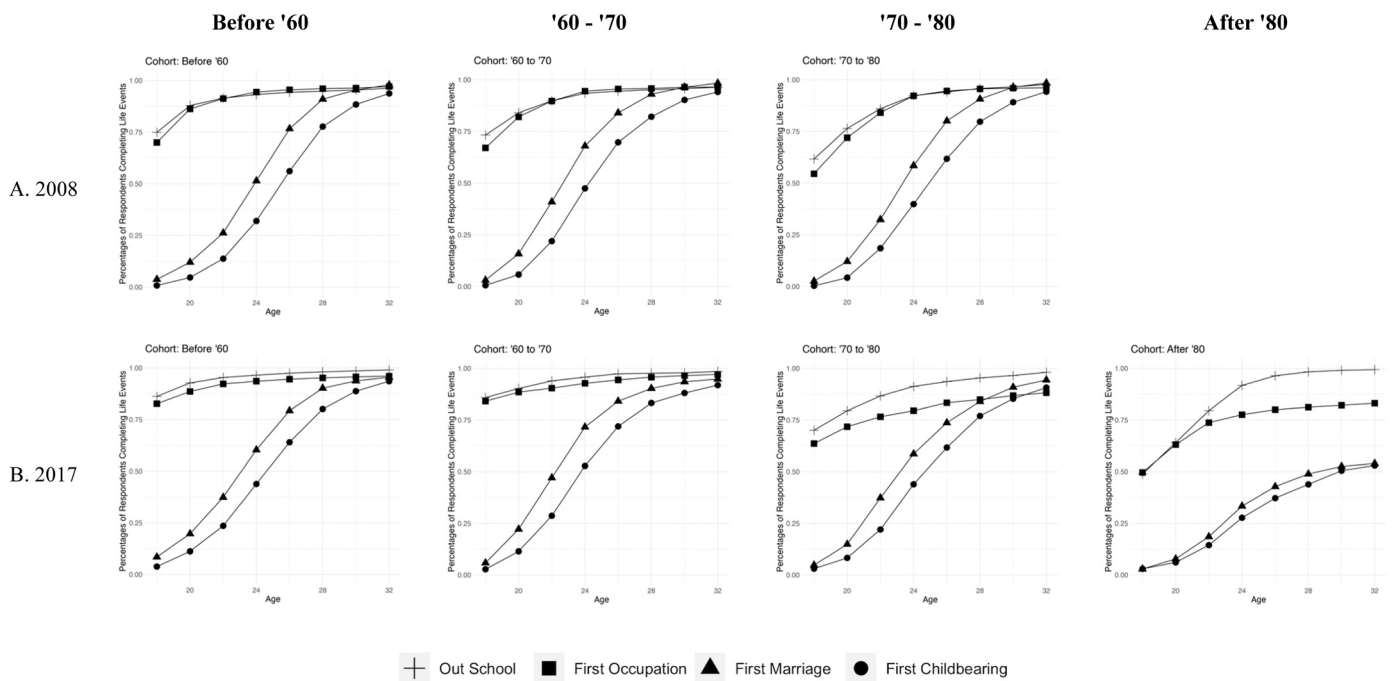


Fig. A1 Percentages of respondents completing life events through ages, by Years and Birth Cohorts. Note: the points are the percentages of the population completing certain life events.

3. Floating population by Age

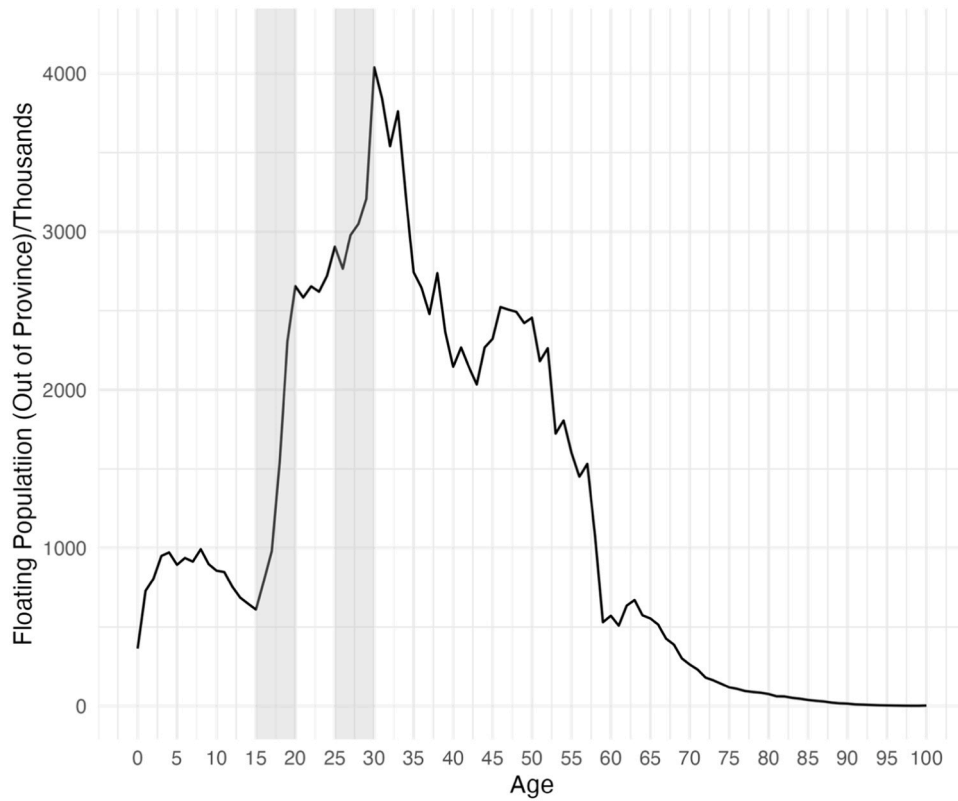


Fig. A2. Floating Population by Age. Note: The areas filled with gray color are those ages with highest changes in floating population.

As the gray areas represents where the most changes happened, it implies the ages when most people choose to migrate. According to Fig. A1, people might be more likely to migrate out of their province at their late 10 s and late 20 s

4. Latent classes of transition to adulthood in 2008

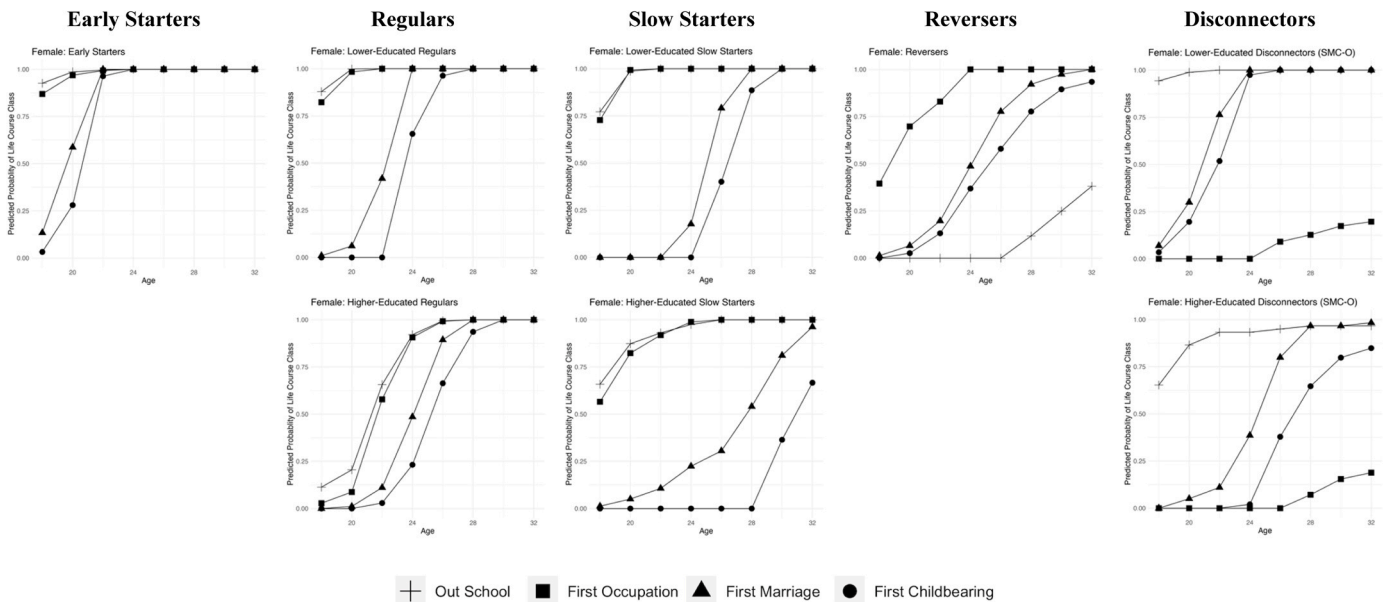


Fig. A3. Latent classes of transition to adulthood in 2008, Female. Note: the points are the probability of the population in the classes completing certain life events.

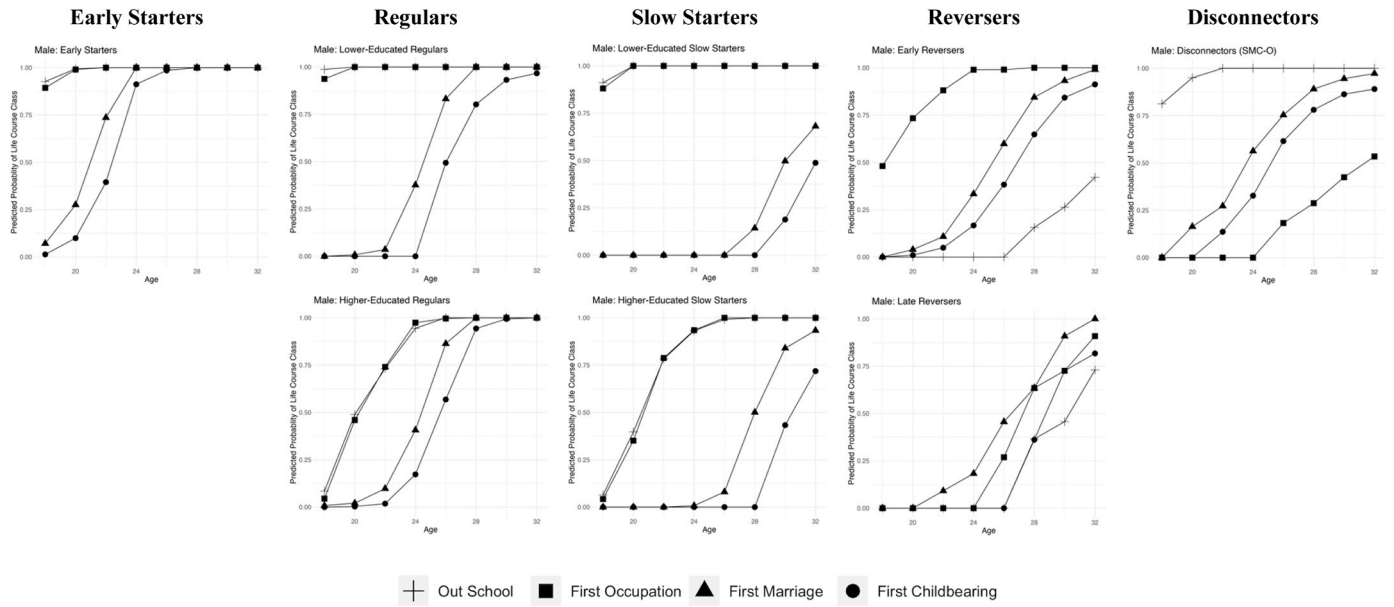
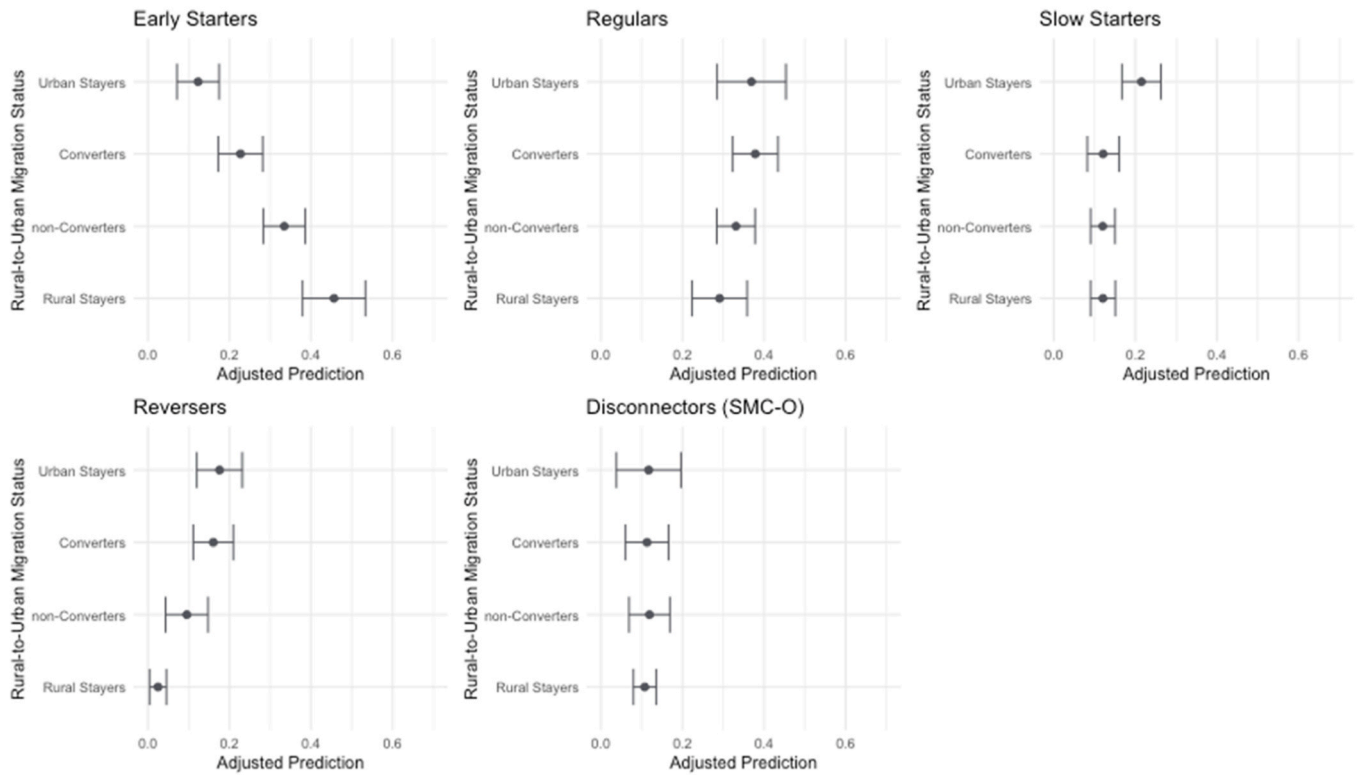


Fig. A4. Latent classes of transition to adulthood in 2008, Male. Note: the points are the probability of the population in the classes completing certain life events.

5. Predicted probability of latent classes by migration status in 2017

A. Female



B. Male

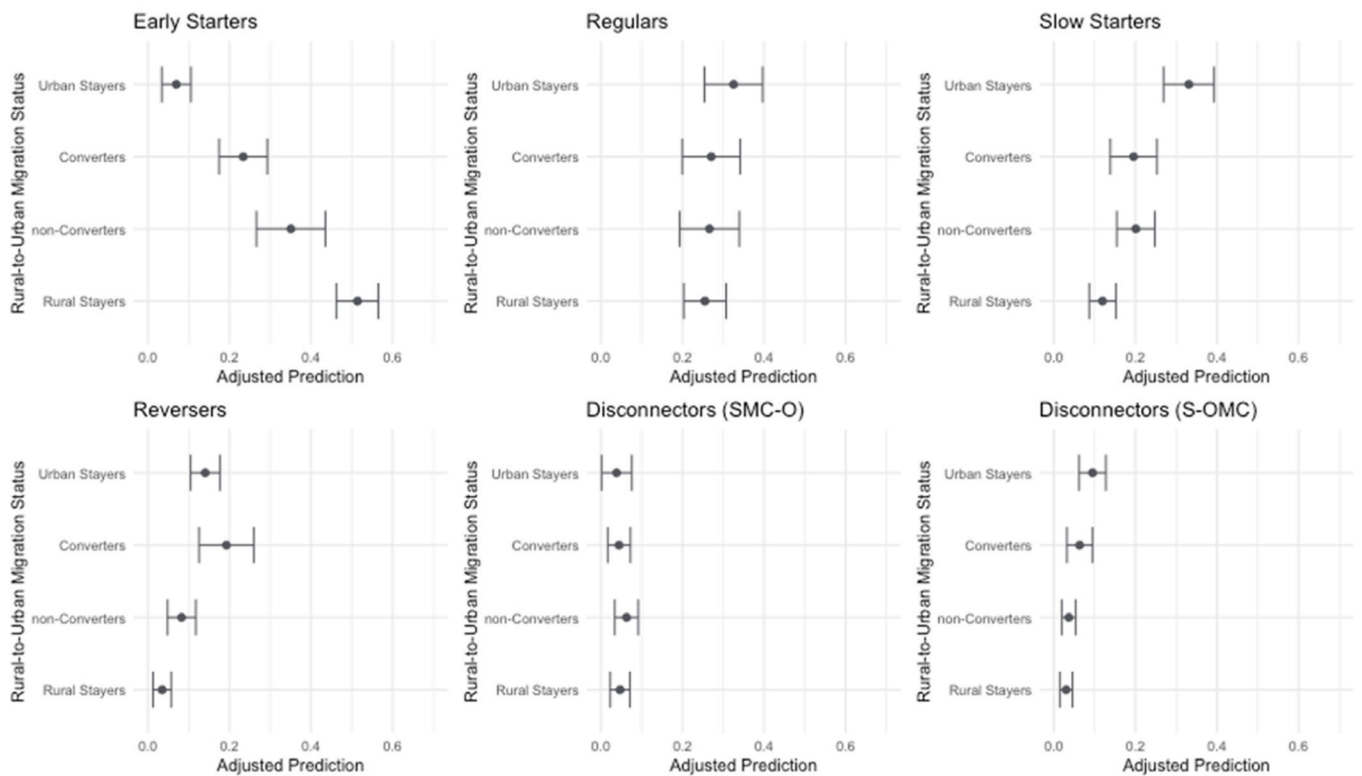
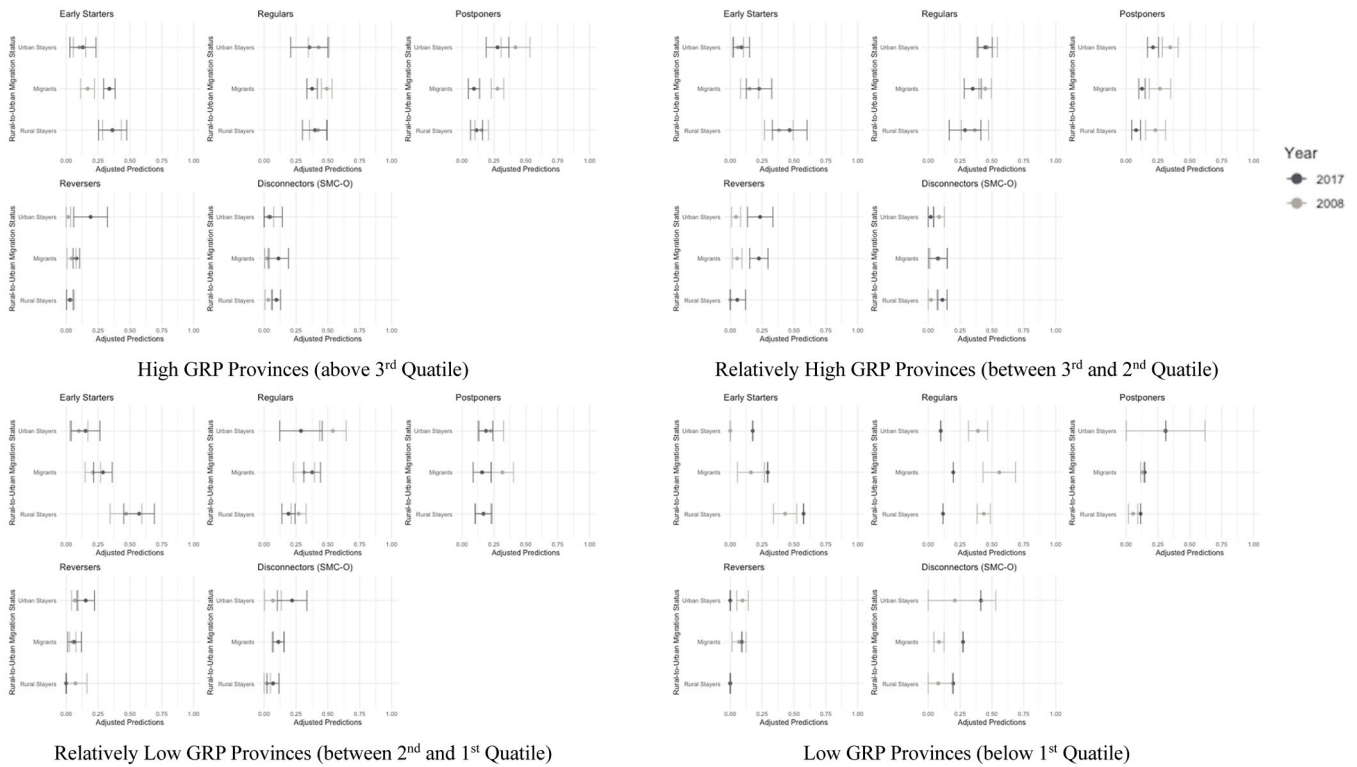


Fig. A5. The AP of Transition Classes by Migration Status, 2017 (Gender Subsamples). Note: The points are the predicted probability by the multinomial logistic regressions of the latent classes in certain migration status in 2008 and 2017, and the bars are the 95% confidential intervals of the predicted probability.

6. Predicted probability of latent classes by migration status in different province groups

6. Predicted probability of latent classes by migration status in different province groups

A. Female



B. Male

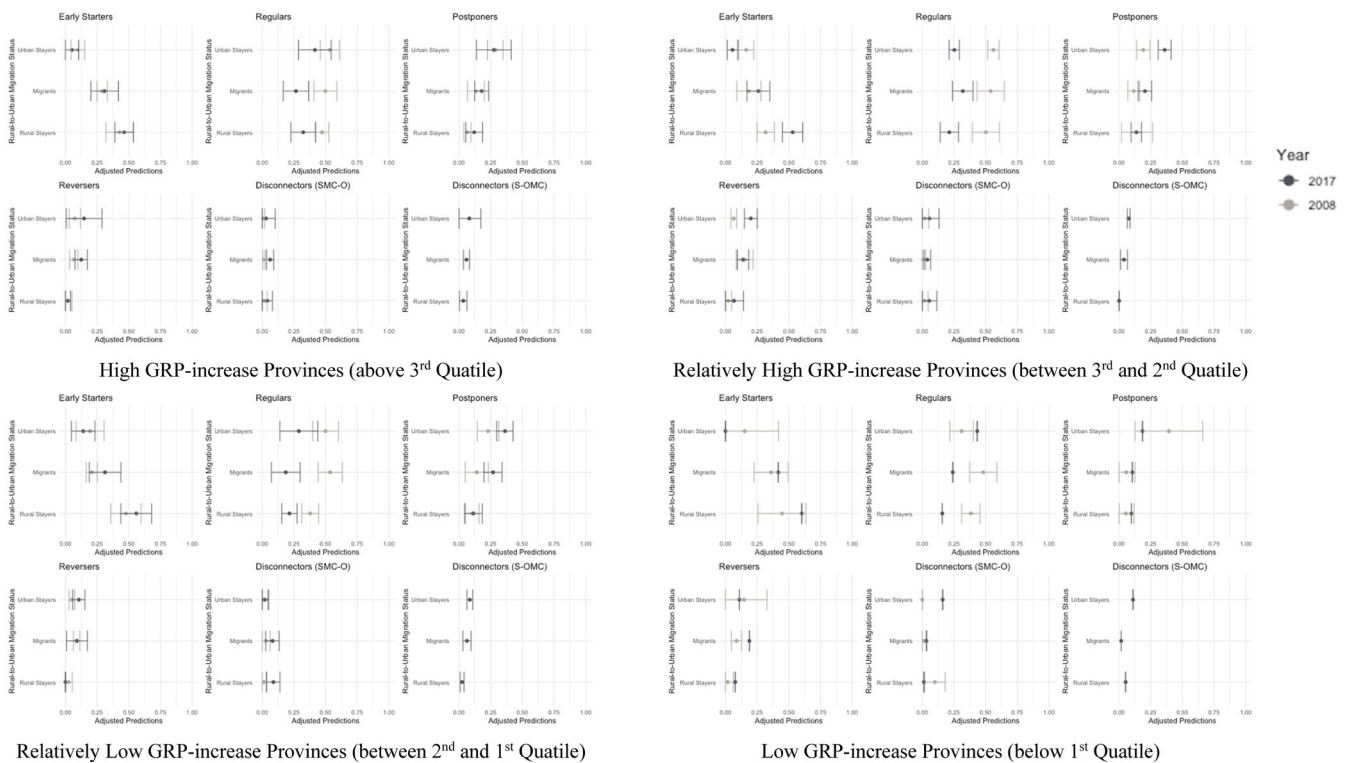
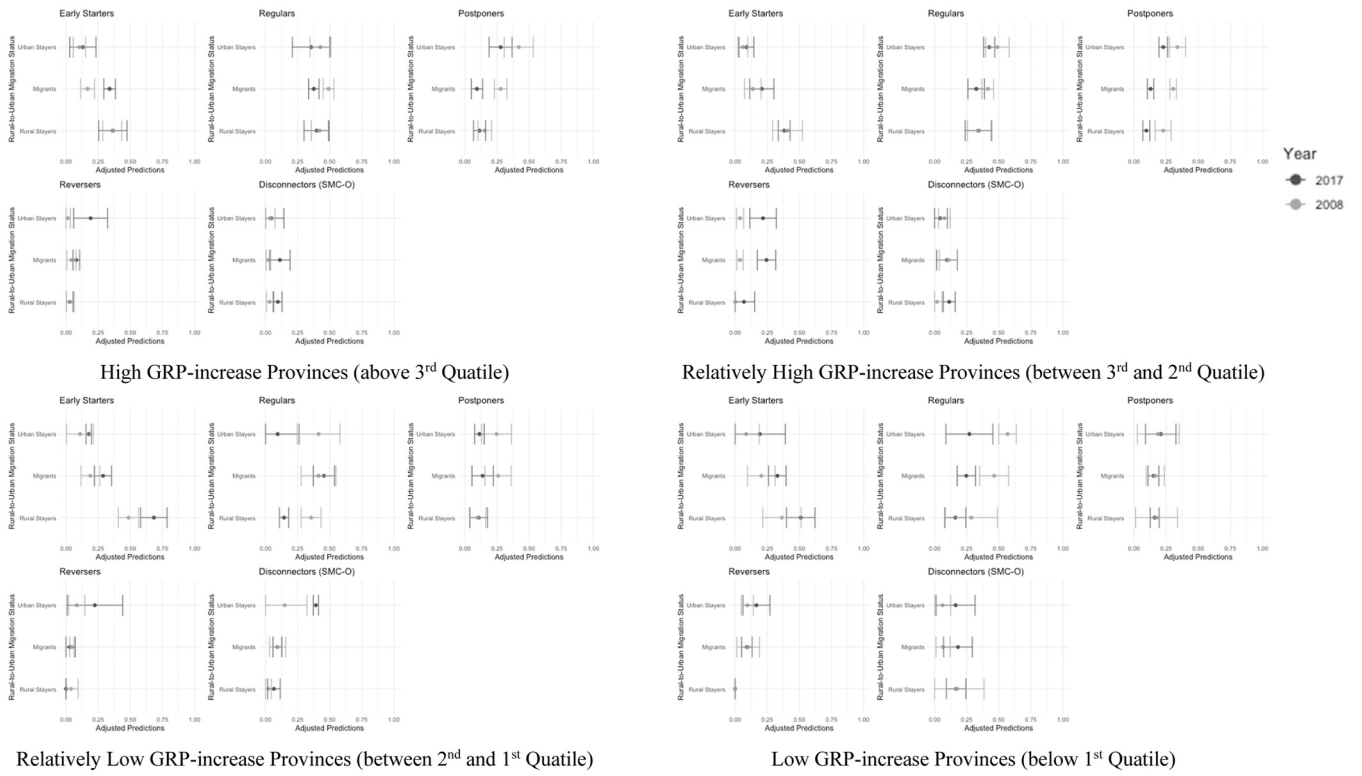


Fig. A6. . The AP of Migration Status on Transition Classes (Subsamples by GDP in 2016). Note: The points are the predicted probability by the multinomial logistic regressions of the latent classes in certain migration status in 2008 and 2017, and the bars are the 95% confidential intervals of the predicted probability.

A. Female



B. Male

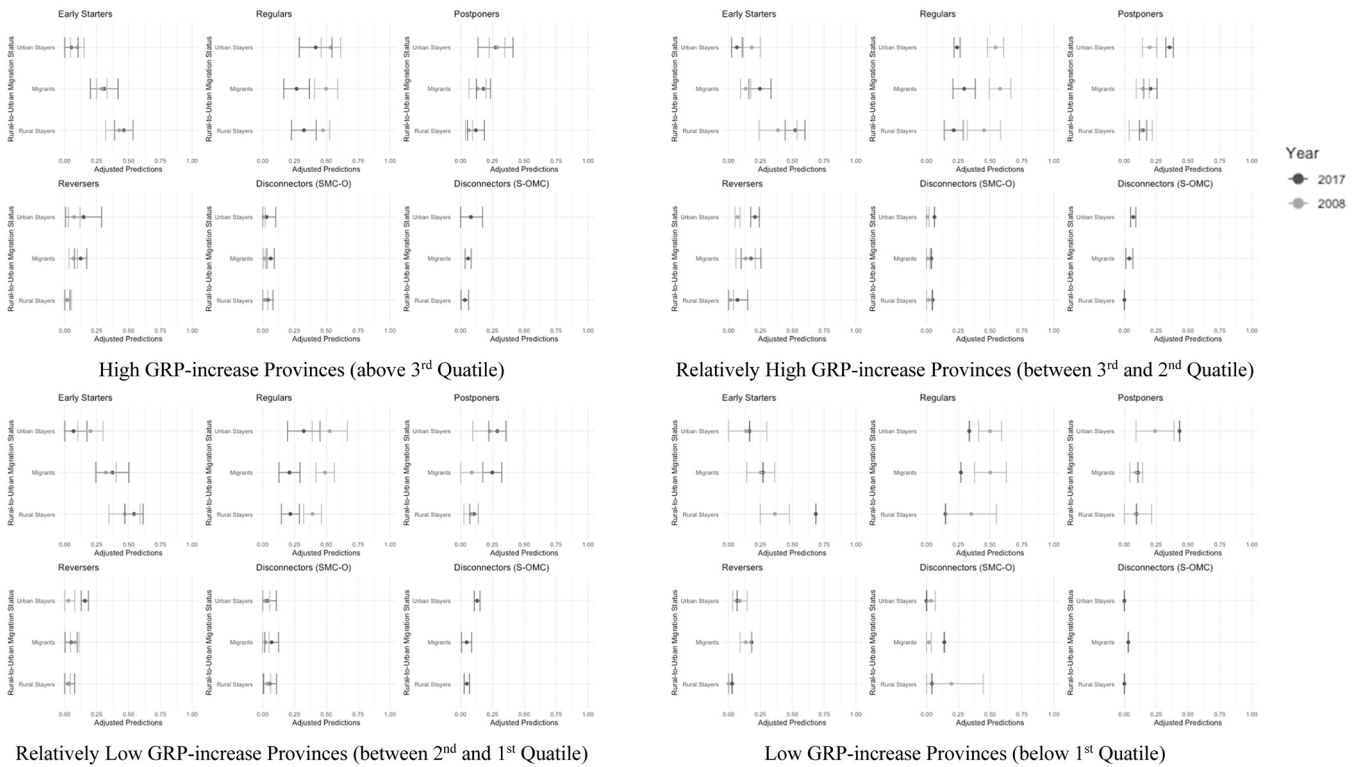
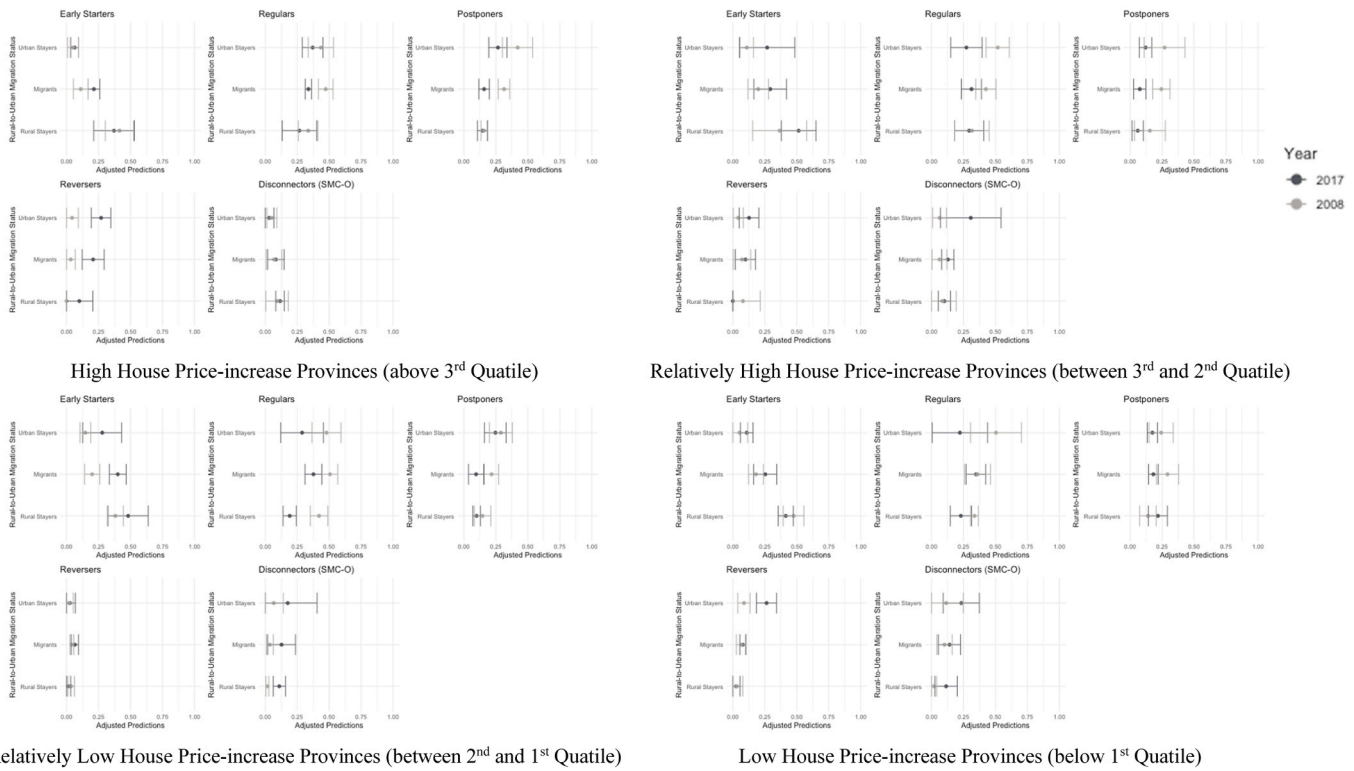


Fig. A7. . The AP of Migration Status on Transition Classes (Subsamples by GDP-increase from 2007 to 2016). Note: The points are the predicted probability by the multinomial logistic regressions of the latent classes in certain migration status in 2008 and 2017, and the bars are the 95% confidential intervals of the predicted probability.

A. Female



B. Male

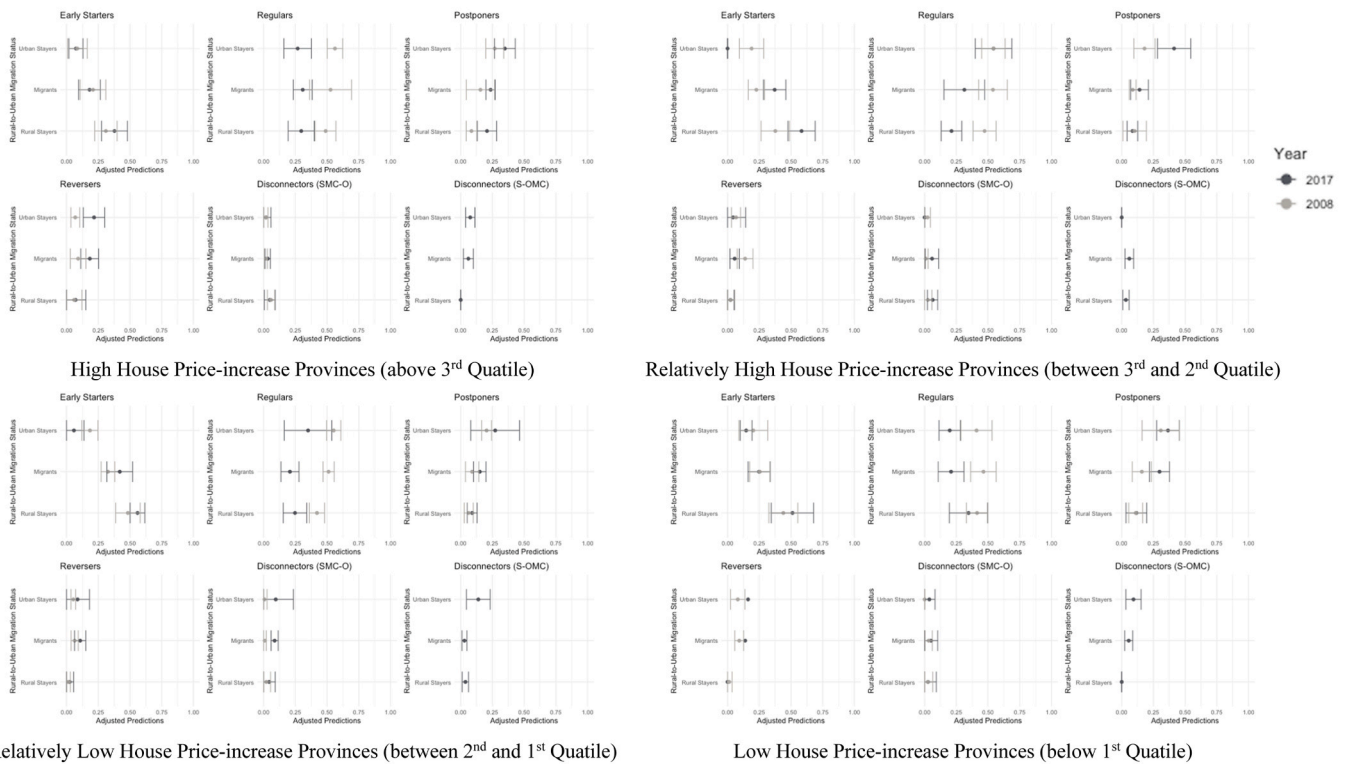


Fig. A8. . The AP of Migration Status on Transition Classes, 2017 (Subsamples by House Price-increase from 2007 to 2016). Note: The points are the predicted probability by the multinomial logistic regressions of the latent classes in certain migration status in 2008 and 2017, and the bars are the 95% confidential intervals of the predicted probability.

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