Long-Term Trends in Intergenerational Class Mobility in Japan *

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Abstract

This paper examines change and stability in the pattern of intergenerational class mobility in Japan in the late 20th century and early 21st century. There is no clear tendency towards greater openness in post-war Japan, contrary to the prediction of the industrialism thesis. Our results are not consistent with the post-industrial rigidity hypothesis either. There was no clear tendency of increasing intergenerational rigidity in the 1990s and 2000s. Japanese society did not seem to become more closed during this recent period. The results of trend analyses are consistent with the stability hypothesis which predicted that the strength and pattern of association between class origin and class destination remain stable in industrial societies. Taking the results of absolute and relative mobility rates altogether, we arrive at the following conclusion: the Japanese postwar mobility experience can be understood as the combination of rapidly changing absolute rates at a time of fast economic growth and remarkably stable relative mobility rates throughout the seventy-year postwar period. Class origin continues to affect class destination to a similar extent, even though there was a rapidly changing context of class structure. This conclusion is not unique to Japan. Recent work analyzing new data from Britain (Bukodi et al. 2015) arrives at a similar conclusion.

Keywords: intergenerational mobility, relative mobility, absolute mobility

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1. Introduction

Beginning in the late 1990s, there has been a resurgence of interest in economic gaps and inequality in Japan. The discourse on inequality emphasized the rising level of inequality in Japanese society. Japanese economists pointed out the trend of increasing income inequality in Japan since the late 1980s (Ohtake 2005; Tachibanaki 1998). The main cause of this increase is ascribed to the aging population (Ohtake 2005; Ohtake and Saito 1999). Since income inequality within the age group is higher among the elderly than among the younger population, as Japanese society ages, there is increased income inequality among the entire nation even though the extent of income inequality remained the same within different age groups. More recently, however, there is a tendency for income inequality to increase among the younger population (Shirahase 2005, 2006, 2014). A similar argument about an increasing rigidity in social mobility was also reported. Sato (2000), for example, claimed that the upper non-manual class became more inter-generationally closed in the 1990s than in earlier decades. In short, there was an abundance of discourse on how Japanese society has become more unequal since the 1990s.

This study focuses on the issue of social mobility. Social mobility has been a major concern in sociological investigations for decades. The study on intergenerational class mobility is often used as an indicator of societal openness. This study takes a long-term perspective in analyzing trends in intergenerational mobility. This study will analyze empirical data on the trends in social mobility in post-war Japan in order to verify the hypotheses regarding long-term trends in mobility among industrial nations.

2. Trends in Intergenerational Mobility

This section presents four hypotheses about the long-term trends in intergenerational mobility in post-war Japan. These hypotheses are drawn from earlier studies on intergeneration mobility (see, Breen 2004; Erikson and Goldthorpe 1992ab; Goldthorpe 1985b; Vallet 2001).

The “threshold hypothesis” is the first one we review. It claims that mobility rates increases dramatically when a society moves from the “pre-industrial” stage to the “industrial” stage (Lipset and Zetterberg 1959; Davis 1962). Migration from rural to

urban area and urbanization are the driving forces of increased mobility. Japan experienced rapid industrialization immediately following the end of World War Two in the 1950s and 1960s (Yasuda 1971; Tominaga 1992). This hypothesis predicts rapid increase in absolute mobility rates, especially total and upward mobility rates during this period of dramatic transformation of economy.

The second hypothesis is called industrialism thesis which argues a "continuous" increase in mobility rates both in absolute and relative mobility rates (Blau and Duncan 1967; Bell 1973; Treiman 1970, 1990; Treiman and Yip 1989). Accompanied with the expansion of educational system, industrialization promotes meritocratic forms of selection by allocating social positions based on educational credentials rather than social background. Based on his analyses of social mobility data in the 1970s, Tominaga (1979) advocates the industrialism thesis by claiming that Japanese society has become increasingly more open during the high economic growth period of the 1960s and 1970s. According to this thesis, all industrial societies converge towards a more fluid and open society as the level of industrialization increases. We expect that Japanese society continues to become more open while she experiences the process of rapid industrialization.

The third hypothesis claims "stability" in trends of intergenerational mobility process. Sorokin (1959) argues that when we observe mobility rates for a short-term, they fluctuate reflecting specific historical events and contingencies. However, when we take a long-term perspective, mobility rates tend to be stable and show "no perpetual trend in the fluctuations" (Sorokin 1959, p. 63). More recently, Featherman, Jones and Hauser (1975) and Erikson and Goldthorpe (1992b) arrive at a similar conclusion. The shape of industrial structure as well as class origin and class destination change by the result of industrialization, but the strength and pattern of association between class origin and destination do not change and remain stable among industrial societies. According to this hypothesis, we expect that relative mobility rates remain stable in post-war Japan despite the rapid industrialization (see also Kojima and Hamana 1984; Kanomata 1987, 1997; Imada 1989, 1997; Seiyama et al 1990; Hara and Seiyama 1999; Ishida 2001; Ishida and Miwa 2009, 2012, 2017).

The fourth hypothesis derives from the work of Japanese economists and sociologists who claim the increased level of inequality and rigidity in Japan following the collapse of the bubble economy in the 1990s. One of the most influential works was Tachibanaki (1998) who claims that income inequality has increased from the late 1980s

and that the level of income inequality has almost reached that of the United States. However, Ohtake (2005; Ohtake and Saito 1999) shows that the increased level of income inequality in Japan was driven primarily by the steady increase in the aging of the population. Toshiki Sato (2000), a sociologist, argues that Japanese society has become increasingly rigid and more closed in the 1990s. The upper non-manual class, or what he called the intellectual elite, was more likely to be recruited inter-generationally from the same class background in the 1990s than in the past, and the barriers to mobility into the upper non-manual class has increased. According to this "increased rigidity" hypothesis, we expect a recent tendency of increasing rigidity and decreasing openness in Japan beginning in the 1990s. In the following sections, we will test these four hypotheses using empirical data.

Table 1 The Class Schema

Original Ten-category version	Seven category	Six category
I Higher grade professionals, administrators and officials; managers in large industrial establishments; large proprietors	I+II	I+II 'professional-managerial'
II Lower-grade professionals, administrators and officials; higher-grade technicians; managers in small industrial establishments; supervisors of nonmanual employees	III	III 'routine nonmanual'
III Routine nonmaual employees in administration and commerce; sales personnel; other rank-and-file service workers	IVa+IVb	IVa+IVb 'petty bourgeoisie'
IVa Small proprietors, artisans etc. with employees	IVc	IVc+VIIb 'farming'
IVb Small proprietors, artisans etc. without employees	V+VI	V+VI 'skilled workers'
IVc Farmers and small holders; other self-employed workers in primary production	VIIa	VIIa 'unskilled workers'
V Lower-grade technicians; supervisors of manual workers	VIIb	
VI Skilled manual workers		
VIIa Semi- and unskilled manual workers (not in agriculture etc.)		
VIIb Agricultural and other workers (including family workers) in primary production		

3. Data, Variables and Methods

The data sets come from the Social Stratification and Social Mobility (SSM) surveys conducted in Japan every ten years since 1955. We restrict our analyses to men who are aged 25 to 64. Female respondents were not included in the SSM surveys prior to 1985. We also restricted to respondents who have completed their educational attainment. We

cross-classify respondents by their class of origin and class of destination. Class origin refers to the class of the respondent's father when the respondent was growing up, and class destination refers to the respondent's class at the time of the survey. We used the following four questions to determine the class position: occupation, employment status, managerial status, and firm size. Table 1 presents our class schema. We use the six-category version of Erikson-Goldthorpe-Portocarero class schema (Erikson, Goldthorpe, and Portocarero 1979): the professional-managerial class or the "service class" (I+II), the routine non-manual class (III), the urban petty bourgeoisie (IVab), the farming class (IVc+VIIb), the skilled manual class (V+VI), and the unskilled manual class (VIIa).

We employ log-linear and log-multiplicative models to examine the trends in relative mobility. The conditional independence model is the baseline model where we assume no association between class origin and class destination. The model is written as the following multiplicative form:

$$F_{ijt} = \eta \, \tau_i^{O} \, \tau_j^{D} \, \tau_t^{Y} \, \tau_{it}^{OY} \, \tau_{jt}^{DY}, \qquad (1)$$

where F_{ijt} refers to the expected frequency in cell (i,j,t) of the origin by destination by survey year table, η is a scale term, τ_i^{O} is the main effect of class origin, τ_j^{D} is the main effect of class destination, τ_t^{Y} is the main effect of survey year, and the two-way terms (τ_{it}^{OY}, τ_{jt}^{DY}) imply the association between origin and year and the association between destination and year, respectively. Given the origin and destination distributions, the model does not allow any association between class origin and class destination (τ_{ij}^{OD}). The model does not fit the data because we know there is significant association between origin and destination, but we use this model to evaluate how much other models improve the fit by computing the reduction in G^2 from the conditional independence model.

The second model is called the constant social fluidity model (CSF model). It sets the pattern of association in the mobility table exactly the same across seven survey years. The CSF model allows the distribution of class origin and of class destination to be different across survey years, but imposes relative mobility rates or the odds ratio patterns to be constant across years. The CSF model is written in the multiplicative form as follows:

$$F_{ijt} = \eta \tau_i^{O} \tau_j^{D} \tau_t^{Y} \tau_{it}^{OY} \tau_{jt}^{DY} \tau_{ij}^{OD}, \quad (2)$$

where the two-way terms (τ_{it}^{OY}, τ_{jt}^{DY}, τ_{ij}^{OD}) imply the association between origin and year, destination and year, and origin and destination, respectively. The CSF model imposes the association between origin and destination to be the same across survey year and does not include the three-way term (τ_{ijt}^{ODT}).

The third model is a log-multiplicative model of uniform difference or the "uni-diff model" (Erikson and Goldthorpe 1992b; Xie 1992). This model estimates the difference in the strength of origin-destination association between a pair of two survey years by a single uniform difference parameter (ϕ_t^{Y}). Formally, the uni-diff model may be written as the following multiplicative form:

$$F_{ijt} = \eta \tau_i^{O} \tau_j^{D} \tau_t^{Y} \tau_{it}^{OY} \tau_{jt}^{DY} \exp(\phi_{ij}^{OD} \phi_t^{Y}), \quad (3)$$

where the two-way association between origin and destination (ϕ_{ij}^{OD}) is multiplied by a uni-diff parameter (ϕ_t^{Y}). The strength of association between class origin and class destination becomes either uniformly stronger or weaker across survey years. If the uniform difference parameter is greater than 1.0, the association is stronger, and if the parameter is smaller than 1.0, the association is weaker.

The fourth model is the linear trend model where the difference between the pattern of association between class origin and class destination is represented by a single trend parameter (ϕ^{Y}). The model is written as the following multiplicative form:

$$F_{ijt} = \eta \tau_i^{O} \tau_j^{D} \tau_t^{Y} \tau_{it}^{OY} \tau_{jt}^{DY} \exp(\phi_{ij}^{OD} \phi^{Y}), \quad (4)$$

where the two-way association between origin and destination (ϕ_{ij}^{OD}) is multiplied by a single uni-diff parameter (ϕ^{Y}). The strength of association between class origin and class destination becomes either linearly stronger or weaker across seven survey years. If the uniform difference parameter is greater than 1.0, the association became stronger, and if the parameter is smaller than 1.0, the association became weaker.

In order to describe the detailed pattern of association between class origin and class destination, we use the idea of "core social fluidity model" proposed by Erikson and Goldthorpe (1992a, 1992b). The core social fluidity model attempts to summarize

the core pattern of association in industrial nations. It is represented by three kinds of effect on the patterning of association: inheritance, hierarchy, and affinity. Figure 1 shows the matrix presentation of the core social fluidity model. Inheritance effect refers

Figure 1. Core Social Fluidity Model (Model of Association between Origin and Destination) Applied to the Japanese Case

Inheritance effect matrix (DIA)						
	I+II	III	IVab	Ivc+Viib	V+VI	VIIa
I+II 'professional-managerial'	**2**	1	1	1	1	1
III 'routine nonmanual'	1	**3**	1	1	1	1
IVa+IVb 'petty bourgeoisie'	1	1	**4**	1	1	1
IVc+VIIb 'farming'	1	1	1	**5**	1	1
V+VI 'skilled workers'	1	1	1	1	**6**	1
VIIa 'unskilled workers'	1	1	1	1	1	**7**
Hiearchy I effect matrix (HI1)						
	I+II	III	IVab	Ivc+Viib	V+VI	VIIa
I+II 'professional-managerial'	1	2	2	2	2	2
III 'routine nonmanual'	2	1	1	1	1	2
IVa+IVb 'petty bourgeoisie'	2	1	1	1	1	2
IVc+VIIb 'farming'	2	2	2	2	2	1
V+VI 'skilled workers'	2	1	1	1	1	2
VIIa 'unskilled workers'	2	2	2	2	2	1
Hiearchy II effect matrix (HI2)						
	I+II	III	IVab	Ivc+Viib	V+VI	VIIa
I+II 'professional-managerial'	1	1	1	1	1	2
III 'routine nonmanual'	1	1	1	1	1	1
IVa+IVb 'petty bourgeoisie'	1	1	1	1	1	1
IVc+VIIb 'farming'	2	1	1	1	1	1
V+VI 'skilled workers'	1	1	1	1	1	1
VIIa 'unskilled workers'	2	1	1	1	1	1
Positive affinity A effect matrix (AF2A)						
	I+II	III	IVab	Ivc+Viib	V+VI	VIIa
I+II 'professional-managerial'	1	2	1	1	1	2
III 'routine nonmanual'	2	1	1	1	1	1
IVa+IVb 'petty bourgeoisie'	1	1	1	1	1	1
IVc+VIIb 'farming'	1	1	1	1	1	1
V+VI 'skilled workers'	1	1	1	1	1	1
VIIa 'unskilled workers'	1	1	1	1	1	1
Positive affinity B effect matrix (AF2B)						
	I+II	III	IVab	Ivc+Viib	V+VI	VIIa
I+II 'professional-managerial'	1	1	2	1	1	1
III 'routine nonmanual'	1	1	1	1	1	1
IVa+IVb 'petty bourgeoisie'	2	1	1	2	1	1
IVc+VIIb 'farming'	1	1	2	1	1	2
V+VI 'skilled workers'	1	1	1	1	1	2
VIIa 'unskilled workers'	1	1	1	1	2	1
Negative affinity effect matrix (AF1)						
	I+II	III	IVab	Ivc+Viib	V+VI	VIIa
I+II 'professional-managerial'	1	1	1	1	2	2
III 'routine nonmanual'	1	1	1	1	1	1
IVa+IVb 'petty bourgeoisie'	1	1	1	1	1	1
IVc+VIIb 'farming'	1	1	1	1	1	1
V+VI 'skilled workers'	1	1	1	1	1	1
VIIa 'unskilled workers'	1	1	1	1	1	1

to the tendency of individuals to be found in the same class as that of their fathers. Since inheritance may be the result of different social processes including the direct inheritance of family business or land and indirect inheritance through educational credentials, we expect the propensity for inheritance to be different from one class to another. The inheritance effect matrix indicates different effect for each diagonal.

Hierarchy effect refers to hierarchical division in the class structure by recognizing the difference between the professional-managerial class which occupies the most desirable position and the rest of the classes and the non-skilled manual class which is the least advantaged and the rest of the classes. Hierarchy effect is thus represented by two matrices (HI1 and HI2) in Figure 1. HI2 effect matrix includes an additional asymmetric assignment involving the farming class (IVc+VIIb). The farming class is classified as the most disadvantaged class (just like the non-skilled manual class) in the father's generation while it is classified as occupying the middle level position in the respondent's generation because the farming occupation largely transformed from the subsistence agriculture in the father's generation to more commercialized and market-oriented in the respondent's generation.

Affinity effect is composed of positive affinity (AF2A and AF2B) and negative affinity (AF1). Positive affinity captures relatively easy exchange of individuals between particular classes. The positive affinity A refers to relatively easy movement between the professional-managerial class and the non-manual class as forming a "white-collar bloc." The positive affinity B is composed of three different kinds of exchanges. First, the movement between the two propertied classes (IVab and IV+VIIb) becomes possible due to relatively easy transfer of capital between these two classes. Second, the exchange between the professional-managerial class and the petty bourgeoisie (IVab) derives from the upscaling or downgrading of the professional practices and business enterprises. Third, the exchange between skilled manual and non-skilled manual is facilitated by the fact that they share manual labor forming a "blue-collar bloc." The relatively easy flow from the farming to the non-skilled manual class is also explained by the similarity in manual labor. Finally, the negative affinity (AF1) pertains to the barriers to mobility from the professional-managerial class to the two manual working classes. The sons of the professional-managerial class in Japan are advantaged in that they have very low propensity to be downwardly mobile into the ranks of manual working class.

The core social fluidity model can be written as a log-linear model. The pattern

of two-way association is represented by a series of effects as follows:

$$F_{ijt} = \eta\ \tau_i^{O}\ \tau_j^{D}\ \tau_t^{Y}\ \tau_{it}^{OY}\ \tau_{jt}^{DY}\tau_{ij}^{OD(DIG)}\tau_{ij}^{OD(HI1)}\tau_{ij}^{OD(HI2)}\tau_{ij}^{OD(AF2A)}\tau_{ij}^{OD(AF2B)}\tau_{ij}^{OD(AF1)}, \qquad (5)$$

where $\tau_{ij}^{OD(DIG)}\tau_{ij}^{OD(HI1)}\tau_{ij}^{OD(HI2)}\tau_{ij}^{OD(AF2A)}\tau_{ij}^{OD(AF2B)}\tau_{ij}^{OD(AF1)}$ represent each effect matrix as shown in Figure 1. This core fluidity model can be run separately for each survey year.

Table 2. Class Distributions and Absolute Mobility Rates in Japan from 1955 to 2015

	Survey Year						
	1955	1965	1975	1985	1995	2005	2015
Class origin							
Professional-managerial	7.2	10.9	13.7	16.5	20.3	20.7	25.5
Routine non-manual	3.9	4.0	5.1	5.8	5.2	8.6	9.6
Petty bourgeoisie	22.8	25.1	25.5	27.0	27.1	26.2	23.7
Farming	58.6	49.8	46.1	35.4	28.8	22.4	13.4
Skilled manual	2.7	6.4	5.2	9.0	10.9	12.6	15.0
Non-skilled manual	4.9	3.7	4.5	6.3	7.6	9.6	12.9
Class destination							
Professional-managerial	10.1	18.8	22.8	29.1	36.7	35.8	39.5
Routine non-manual	12.3	13.3	13.2	12.5	9.9	12.5	12.1
Petty bourgeoisie	20.1	19.4	18.9	19.8	19.8	15.4	11.6
Farming	40.4	21.5	15.4	6.6	4.8	4.7	3.5
Skilled manual	8.2	15.6	17.5	19.2	17.7	18.0	19.1
Non-skilled manual	8.9	11.5	12.1	12.8	11.0	13.5	14.4
Total mobility	48.1	62.6	67.2	69.3	68.8	68.8	68.4
Horizontal mobility	16.0	19.2	19.6	17.9	15.9	15.6	15.6
Vertical mobility	32.1	43.4	47.6	51.4	52.9	53.2	52.8
Upward mobility	25.0	34.1	37.1	39.8	41.1	38.7	35.6
Downward mobility	7.1	9.3	10.4	11.6	11.8	14.5	17.2
(ratio of upward to downward)	*3.53*	*3.68*	*3.56*	*3.45*	*3.47*	*2.66*	*2.07*
Dissimilarity index	20.8	34.0	37.2	36.0	31.3	28.5	22.0
N	1607	1630	2052	1818	1716	1694	1825

4. Trends in Absolute Rates of Intergenerational Class Mobility

Table 2 presents the changing distributions of class origin and class destination from 1955 to 2015 in Japan. We begin with the discussion of class destination which represents the class structure of the Japanese society in each year when the survey was conducted. First, the most fundamental change in the class structure is the shift from farming to urban population reflecting the rapid course of industrialization. The farming class contracted dramatically during the economic growth period: from 40

percent in 1955 to 22 percent in 1965, and further to 15 percent in 1975. Second, the professional-managerial class increased rapidly during the high growth period: from 10 percent in 1955 to 29 percent in 1985 and further to 37 percent in 1995. The share of the professional-managerial class was already the largest in 1975. Third, the skilled manual working class expanded from 8 percent in 1955 to 18 percent in 1975, but thereafter remained about the same until 2015. These changes in the distribution of class destination suggest that the contraction of the farming class was accompanied by the expansion of both the blue-collar sector (the skilled manual class) and the white-collar sector (the professional managerial class) unlike the experience of early industrializing nations where the expansion of blue-collar sector proceeded that of the white-collar sector. Because the process of industrialization in Japan took place in a compressed period of time, the rapid pace of industrialization resulted in simultaneous expansion of white-collar and blue-collar classes. This trajectory has implications for the changes in absolute mobility rates which will be discussed below.

Other features of the trend in class destination include the persistence of the urban petty bourgeoisie class and the stable share of the routine non-manual class and the unskilled manual class. The urban self-employed sector constituted about 20 percent of the class destination distribution consistently from 1955 to 1995, and there was no clear sign of declining importance of this sector in the process of economic development. The decline only began in late-1990s when the value of the assets declined sharply during the recession (Ishida 2004). The share of unskilled working class remained the same at about 12 percent although there is a slight increase in the last two decades. This class never developed into a demographically significant group in the Japanese class structure, in contrast to the early industrializing nations that contained a fairly substantial non-skilled working class at one point in industrial development.

The changes in the distribution of class origin parallel in many ways those of the class destination. Continuous reduction of the farming population was observed throughout the seventy-year period. The professional-managerial class expanded gradually during this period. The urban petty bourgeoisie continued to occupy a fourth of the distribution even in 2015. The changes observed in the class origin distribution are generally in the same direction as those in the class destination distribution, but the pace of changes is slower and the magnitude of change between two surveys is much more modest in the class origin distribution than that of class destination. It should be noted that the distribution of class origin does not represent the class structure of any

given time because fathers were different ages and there is differential fertility by class (Blau and Duncan 1967).

Table 2, third panel, reports absolute mobility rates for the seven survey years. The trend in total mobility rates is characterized by three stages. The first stage is the rapid increase during the high economic growth period: the rate increased dramatically from 48 percent in 1955 to 63 percent in 1965. The second stage is the modest increase in the 1970s and 1980s. The third and final stage is the stagnation period of the 1990s and 2000s when there was a plateau in total mobility rate at about 69 percent. This trend is closely related to the changing shape of the class origin and class destination distributions. In 1955, both the class origin (59 percent) and class destination (40 percent) distributions are characterized by a large share of the farming class (IVc+VIIb), resulting in high intergenerational inheritance in farming. During the fast economic growth period, the farm sector rapidly contracted both in class origin and class destination distributions, and the total mobility rate sharply increased in the late 1950s and 1960s. This finding is consistent with the threshold hypothesis advocated by Lipset and Zetterburg predicting the historic increase in mobility rate when a society enters a mature industrial stage.

The dissimilarity index represents the proportion of cases that must be moved in order to make the two distributions identical. In 1955, 21 percent of cases needed to be moved to make the class origin and destination distributions exactly the same because of a large share of the farming class in both distributions. Just like the total mobility rate, the dissimilarity index increases rapidly from 21 percent in 1955 to 37 percent in 1975, as the share of the farming class rapidly reduced in the class destination. The dissimilarity index stayed about the same from 1975 to 1985. However, the index dropped from 31 percent in 1995 to 22 percent in 2015, indicating that the fathers and sons' class distributions are becoming more similar in recent times. Indeed, the index continued to drop from 37 percent in 1975 suggesting that major structural changes in Japanese class structure took place in previous decades and that the recent period is characterized by an increasing similarity in class distributions between the two generations. In summary, the Japanese class structure as reflected in the class destination distributions appeared to have reached a mature and stable stage in the 2000s.

With regard to upward mobility rates, we find substantial increase in the opportunities of upward mobility from 25 percent in 1955 to 41 percent in 1995. The increase is particularly salient in the early stage of industrialization from 1955 to 1965.

Because of the continuous expansion of the professional-managerial class in the latter half of the 20th century, opportunities for upward mobility continued to climb during this period. However, the increasing trend in upward mobility rates was put on hold in 2005 due to the lack of expansion of the professional-managerial class from 1995 to 2005. The share of the professional-managerial class reached 36 percent in 1995 and remained the same in 2005. It seemed that the share of this class hit a peak in the 1990s, but it increased slightly again in 2015.

Downward mobility rates, in contrast, did not change substantially and remained low at around 10 percent until 1995. However, the rate increased during the last two decades reaching 17 percent in 2015. At the bottom of the class structure, the percentage of unskilled manual working class members increased to 14 percent in 2015 after it had been stable at around 11 percent for several decades between 1965 and 1995.

The ratio of upward mobility to downward mobility changed for the first time during the postwar period in 2005. The ratio was stable at around 3.5 in postwar Japan until 1995, suggesting that the chances of upward mobility were much higher than those of downward mobility during this period. However, the ratio dropped to 2.7 in 2005 and again to 2.1 in 2015. This is due to two important trends: (1) the increasing rate of upward mobility until 1995 that suddenly stopped in 2005 for the first time during the postwar period and (2) the stable rate of downward mobility at about 10 percent since 1975 that suddenly increased in 2005. These changes are only apparent in the 2000s.

Table 3. Fit Statistics of Various Log-linear and Log-multiplicative Models

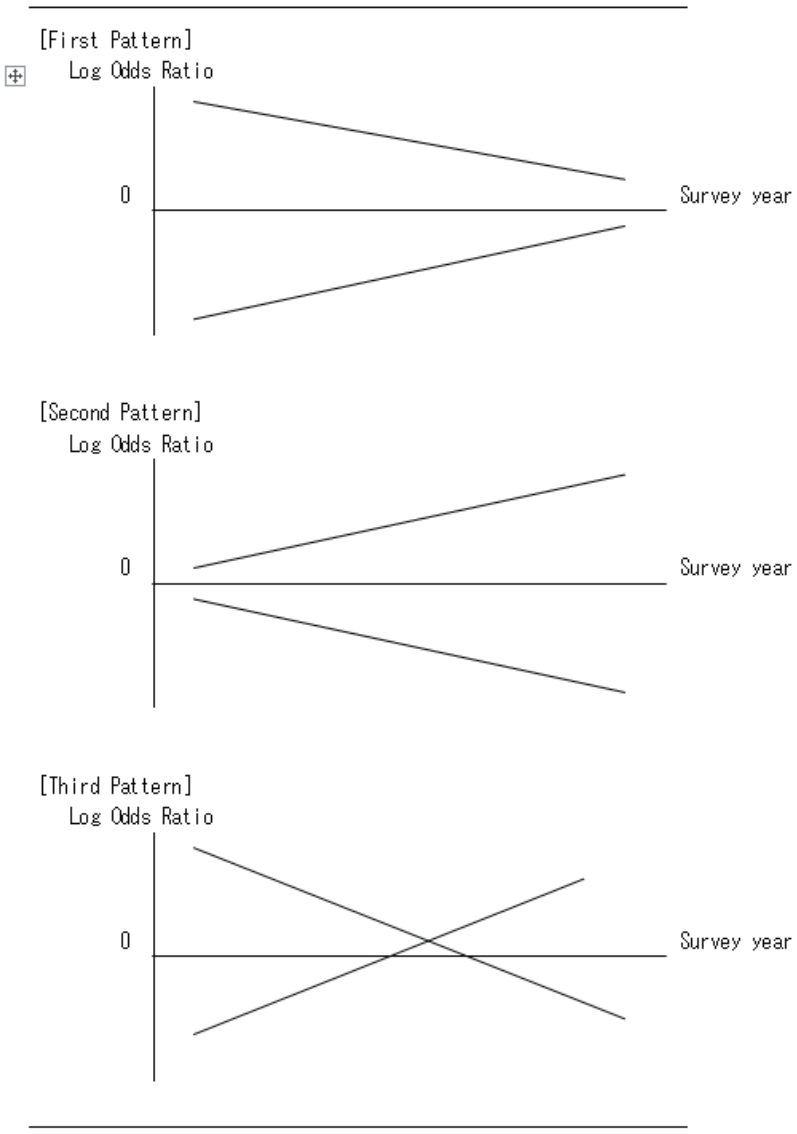
				%	%				
	G-square	df	p	misc.	reduction	bic	diff G^2	df	p (diff)
(1) Conditional Independence Model	3187.8	175	0.000	20.02	----	1539.1			
(2) Constant Social Fluidity Model	191.3	150	0.010	4.15	94.00	−1219.8	----		
(2a) CSF + Linear change	191.2	149	0.009	4.14	94.00	−1210.5	0.0487	1	0.8253
(2b) CSF + Unidiff	185.0	144	0.010	4.05	94.20	−1170.1	6.2828	6	0.3923
(3) Core Social Fluidity Model with Effect Matrices	273.7	164	0.000	5.04	91.41	−1271.3	----		
(3a) DIG1 variable	263.3	158	.000	4.81	91.74	−1225.2	10.3816	6	0.1095
(3b) DIG2 variable	268.1	158	.000	4.90	91.59	−1220.4	5.6399	6	0.4647
(3c) DIG3 variable	264.6	158	.000	4.82	91.70	−1223.9	9.1358	6	0.1661
(3d) DIG4 variable	265.3	158	.000	4.85	91.68	−1223.2	8.453	6	0.2068
(3e) DIG5 variable	258.8	158	.000	4.85	91.88	−1229.7	14.9427	6	0.0207
(3f) DIG6 variable	261.8	158	.000	4.84	91.79	−1226.7	11.9518	6	0.0631
(3g) HI variable	254.6	152	.000	4.81	92.01	−1177.3	19.0882	12	0.0864
(3h) AF2 variable	261.6	152	.000	4.86	91.79	−1170.4	12.1233	12	0.4358
(3i) AF1 variable	263.2	158	.000	4.97	91.74	−1225.2	10.4729	6	0.1061
(4) Variable Effect Matrices Model	181.3	98	.000	3.33	94.31	−741.9	92.3808	66	0.0177
Uni-diff parameters from Model 2b	1955	1965	1975	1985	1995	2005	2015		
	1.000	0.947	0.952	1.062	0.964	1.055	0.915		

5. Trends in Social Fluidity across Survey Years

Table 3 presents the results of testing trends in postwar Japan by fitting log-linear and log-multiplicative models described above to the six by six by seven (origin by destination by survey year) table in Japan. The conditional independence model (model 1) does not fit the data at all, but it is used as the baseline. The constant social fluidity (CSF) model fits the data fairly well (see model 2); the G^2 value is 191.3 and the associated p-value is .010. The CSF model misclassifies only 4.2 percent of cases, and the reduction in G^2 value from the conditional independence model is 94 percent. The linear trend model (model 2a) does not show any significant improvement over the CSF model. The difference in G^2 value is only 0.1 with one degree of freedom. The uniform difference model (model 2b) allows the association between origin and destination to vary across seven survey years (using six degrees of freedom over the CSF model), but it does not significantly improve the fit over the CSF model: the difference in G^2 value is 6.3 with six degrees of freedom (the associated p-value is 0.3923). The Bayesian Information Criteria (bic) statistics can be used to compare the fit of three models. The smaller the bic value, the better the fit. The CSF model shows the smallest bic statistic, and it is our preferred model. Both the methods of the difference in the G^2 value and of the bic statistics arrive at the same conclusion of the constancy in the pattern of association between class origin and class destination in postwar Japan.

The last row in Table 3 presents the uniform difference parameters. The 1955 survey year is used as the base year. The value for 1965 is 0.947, indicating that the association is slightly weaker than in 1955 because it is smaller than 1. The value for 1975 (0.952) is almost the same as that for 1965, implying no change in the strength of association between these two years. The value for 1985 is 1.062, indicating that the strength of association became much stronger than in 1975, but the difference is not statistically significant. The uni-diff value became smaller in 1995 (0.964), implying that the association became weaker than in 1985. The uni-diff value in 2005 (1.055) is larger than that in 1995, implying strengthening of association. This observation is consistent with the post-industrial rigidity hypothesis, which predicts a trend of increasing rigidity and decreasing openness in recent Japan. Although there is a trend of increasing rigidity judging from the values of uni-diff, the difference is not statistically significant. Finally, the uni-diff value in 2015 (0.915) became smaller than that of 2005, but again the difference is not significant at .05 level of significance. Therefore, this trend should not be taken seriously. We observed small trendless fluctuation, but the dominant trend throughout the seventy-year period is basic stability

Figure 2. Three Patterns of the Trend in Log Odds Ratios



and constancy.

We conduct sensitivity analysis by looking at the trend of individual odds ratios. The uniform difference model assumes that the pattern of association between origin and destination is the same across survey years. We could compute 225 log odds ratios from six by six table, and compare these log odds ratios between two adjacent survey years. We do not assume any pattern of association but to treat individual log odds ratios separately and compare them across years, so the method is non-parametric, as opposed to semi-parametric method of the uniform difference model. The log odds ratios can be classified into the following three patterns as shown in Figure 2 (Ishida 2001). The first pattern shows that log odds ratio approaches zero implying increasing

Table 4. Three Patterns of Trends in Log Odds Ratios between Two Adjacent Survey Years

	1955–65	1965–75	1975–85	1985–95	1995–2005	2005–15
First pattern	58%	45%	35%	55%	36%	56%
Second pattern	29%	42%	46%	31%	46%	27%
Third pattern	12%	13%	20%	15%	18%	17%
Difference in uni–diff parameter	−0.054	0.005	0.110	−0.098	0.091	−0.140

fluidity from one survey year to the next. The second pattern is the exact opposite where log odds ratio moves away from zero implying decreasing fluidity. The third pattern indicates that log odds ratio goes through zero implying no clear trend in fluidity.

Table 4 shows the results of classifying trends in 225 log odds ratios between two adjacent survey years into three patterns. From 1955 to 1965, 58 percent of 225 log odds ratios approached zero, 29 percent moved away from zero, and 12 percent crossed zero. More than the majority of log odds ratio moved in the direction of increasing fluidity. The difference between 1955 and 1965 in uniform difference parameters reported in Table 3 is computed and shown in Table 4 for comparative purposes. The difference is negative, implying increasing fluidity from 1955 to 1965. From 1965 to 1975, log odds ratios are allocated almost equally to the first and the second pattern. The difference in uniform difference parameters between 1965 and 1975 is almost zero, implying no change in openness. From 1975 to 1985, the dominant pattern is the second one indicating decreasing fluidity. The change in uniform difference parameter also returns a positive value which is consistent with the result of classification. From 1985 to 1995, the trend is reversed, that is, moving in the direction of greater fluidity since the majority of log odds ratios is classified into the first pattern and the difference in uniform difference parameter is negative. From 1995 to 2005, the trend is yet again reversed in the direction of declining fluidity. Finally, from 2005 to 2015, the opposite trend is found again in the direction of greater openness because the majority of log odds ratios was classified into the first pattern. There is fluctuation in the direction of relative mobility rates or odds ratios across the seventy-year period.

These findings are consistent with the stability hypothesis which predicted trendless fluctuation and overall stability in relative mobility rates in post-war Japan. There was no clear trend of increasing openness and fluidity during the industrialization process, contrary to the prediction of the continuous hypothesis. The result is not consistent with the post-industrial rigidity hypothesis, either. There was no apparent

increase in rigidity in most recent period.

6. Pattern of Social Fluidity in Post-war Japan

We know that the strength of association between class origin and class destination is stable in postwar Japan from the previous analyses. What is then the pattern of association? Is the pattern consistent in post-war Japan? We use the core social fluidity model to represent the pattern of association between class origin and class destination. While the full interaction model (such as the CSF model) uses all odds ratios to determine the pattern, the core social fluidity model takes into account three major effects: inheritance, hierarchy, and affinity. The fit of the constant core social fluidity model using effect matrices shown in Figure 1 is presented as model (3) in Table 3. This model does not fit the data (G^2 = 273.3, df=164, p=0.000). However, according to the bic statistics, the constant core social fluidity model (model 3) is preferred to the CSF model (model 2) because the constant core social fluidity model is more parsimonious than the CSF model.

We then allow the components of the core social fluidity model to vary across survey years. Diagonal effects, hierarchy effects, and positive and negative affinity effects are each allowed to vary across years, and the fit of models with specific effect varied across years is shown in Table 3. For example, model 3a represents the core social fluidity model which allows inheritance of the professional-managerial class (DIG1) to vary across years but all other effects are held constant. The difference between this model and the core social fluidity model with effect matrices in G^2 and degrees of freedom along with the probability associated with the test of difference are shown in Table 3. Judging from the probability associated with the test of difference (the last column of Table 3), the effect of inheritance of the skilled manual working class (DIG5) varies significantly across survey years but no other effects are significantly different (at 5 percent level). Furthermore, the bic statistics prefer the constant core social fluidity model with effect matrices to any other models which allow components to vary across survey years.

Table 5 presents the estimates of the core social fluidity model which is applied to each survey year separately and the estimates of the constant core social fluidity model, that is, the temporary invariant model (model 3 in Table 3). The core social fluidity

Table 5. Estimates of Origin-Destination Effect Matrix Parameters in the Origin by Destination by Year Japanese Mobility Table

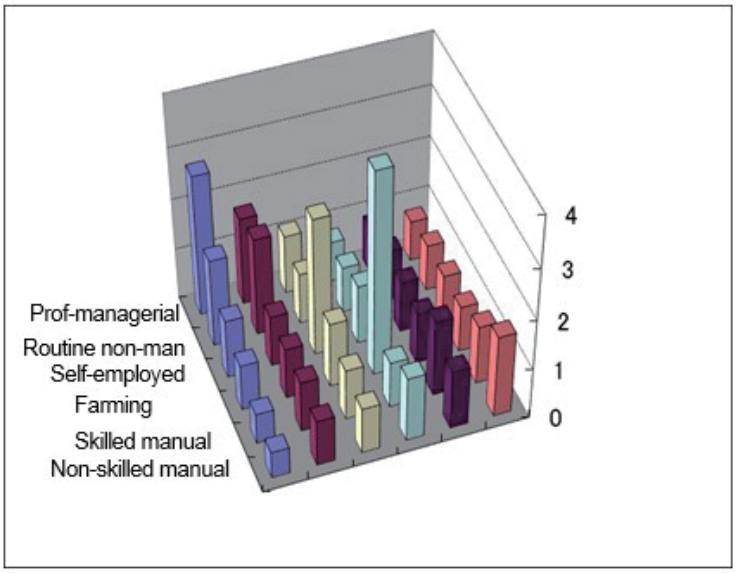
	1955	1965	1975	1985	1995	2005	2015	temporary invariant
Effect Matrix Parameter:								
DIG(I+II)	1.605	1.123	0.342	1.174	1.229	1.182	0.741	1.023
	(0.404)	(0.340)	(0.299)	(0.294)	(0.289)	(0.291)	(0.295)	(0.114)
DIG(III)	1.041	0.879	0.440	0.989	0.594	0.592	0.365	0.656
	(0.303)	(0.308)	(0.270)	(0.271)	(0.321)	(0.268)	(0.255)	(0.106)
DIG(IVab)	0.492	0.904	0.841	1.086	0.962	1.383	1.129	0.999
	(0.197)	(0.179)	(0.162)	(0.156)	(0.157)	(0.166)	(0.169)	(0.062)
DIG(IVc+VIIb)	2.558	2.174	2.403	2.725	3.031	2.804	2.766	2.536
	(0.192)	(0.197)	(0.198)	(0.310)	(0.368)	(0.311)	(0.293)	(0.087)
DIG(V+VI)	1.130	0.586	0.870	0.275	0.266	0.450	0.198	0.407
	(0.337)	(0.227)	(0.213)	(0.190)	(0.189)	(0.175)	(0.162)	(0.075)
DIG(VIIa)	0.933	0.477	0.095	0.978	0.434	0.516	0.207	0.481
	(0.300)	(0.341)	(0.299)	(0.259)	(0.283)	(0.260)	(0.252)	(0.104)
HI1	−0.123	−0.171	−0.279	−0.093	−0.056	0.048	−0.072	−0.097
	(0.120)	(0.100)	(0.090)	(0.089)	(0.096)	(0.095)	(0.104)	(0.036)
HI2	0.069	−0.036	−0.374	−0.126	−0.109	−0.087	−0.219	−0.131
	(0.270)	(0.206)	(0.184)	(0.171)	(0.167)	(0.167)	(0.161)	(0.067)
AF2A	0.763	0.727	0.381	0.838	0.479	0.776	0.478	0.645
	(0.236)	(0.212)	(0.171)	(0.182)	(0.191)	(0.169)	(0.157)	(0.068)
AF2B	0.151	0.130	0.123	0.266	0.301	0.367	0.136	0.242
	(0.140)	(0.123)	(0.111)	(0.103)	(0.099)	(0.094)	(0.087)	(0.039)
AF1	−0.899	−0.485	−0.730	−0.309	−0.135	−0.518	−0.451	−0.413
	(0.413)	(0.277)	(0.221)	(0.223)	(0.218)	(0.222)	(0.198)	(0.086)
L-square	30.408	31.111	22.370	30.818	25.076	21.473	20.068	273.705
df	14	14	14	14	14	14	14	164
p	0.0067	0.0053	0.0713	0.0059	0.0338	0.0901	0.128	0.000
ID (% misc)	0.0326	0.0374	0.0281	0.0353	0.0349	0.0318	0.0338	0.0504
bic	−72.942	−72.438	−84.402	−74.259	−79.193	−82.615	−85.063	−1271.300

model fits better in some survey years (in 1975, 1995, 2005 and 2015) than others (in 1955, 1965 and 1985). Although there are small fluctuations in parameter estimates across different survey years, the estimates are generally consistent across years. Moreover, fluctuations are not of systematic kind. We therefore use the parameters from the constant core social fluidity model to represent the pattern of association between class origin and class destination.

Figure 3 shows the pattern of association of the constant core social fluidity model as depicted by cell density (see Ishida and Miwa 2012, 2017). These cell densities represent the propensities of association between class origin and class destination, after controlling for the distributions of class origin and class destination. The pattern of

association is characterized by the following features. First, there is a propensity of class inheritance. The main diagonals are generally higher: the farming class (IVc+VIIa) and the professional-managerial class (I+II) show a particularly high propensity of inheritance, followed by the petty bourgeoisie (IVab), the skilled manual working class (V+VI), and the unskilled manual working class (VIIa). Second, there is a white-collar block. Relatively easy exchanges between the professional-managerial class and the routine non-manual class are found. Movements are facilitated by sharing non-manual nature of work. Third, there is a manual working class block. There seem to be intergenerational exchanges between the skilled and the unskilled manual classes, especially in the direction from the unskilled to the skilled manual class. Fourth, there is movement out of the farming class. Sons of the farming class have the propensity to move into the petty bourgeoisie and the unskilled manual working class.

Figure 3. Density Matrix Display of the Pattern of Association between Class Origin and Class Destination in Japan



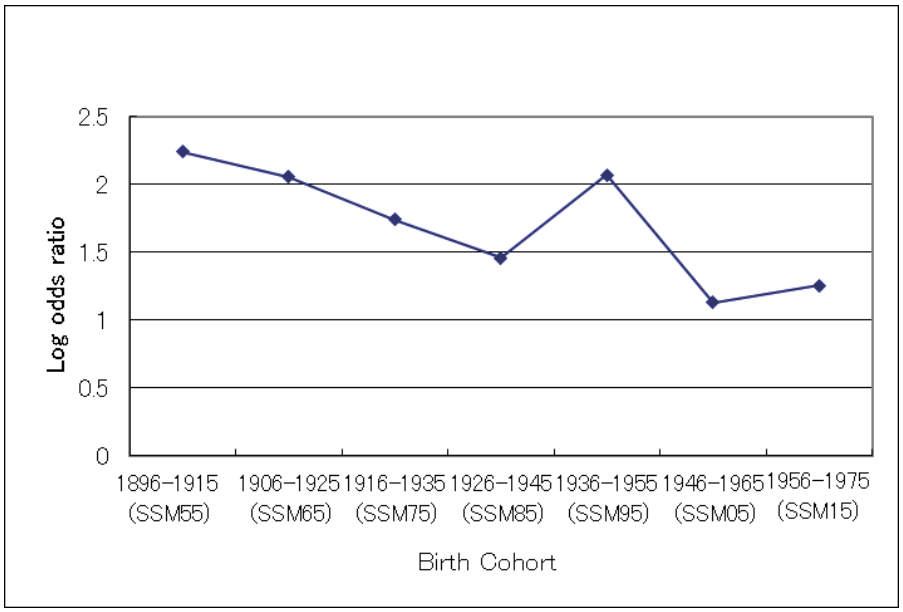
7. Trends in the Inheritance of the Professional-managerial Class

Toshiki Sato (2000) claimed in his best-seller book *Japan as an Unequal Society* that the professional-managerial class became more closed and the society became more rigid in the 1990s. The evidence he represented was the increased rigidity in the intergenerational inheritance of the professional-managerial class. We will evaluate this claim by trying to replicate Sato's analysis using the 2015 SSM data. Sato's class

classification is not identical to ours, but our class scheme is sufficiently similar to empirically test the claim. For the class destination, Sato used the class position of the respondents when they were age 40, rather the current class position at the time of the survey. By using the employment history data available in 2015 SSM, we determined the class position at age 40. Sato restricted his analyses to men aged 40 to 59, so we will also focus on this age-range.

Figure 4 shows the trends in the effect of inheritance of the professional-managerial class by birth cohort. The log odds ratio for the oldest cohort (born between 1896 and 1915) calculated based on the 1955 SSM data is 2.2, and the odds ratio is 9.4. The odds ratio implies that the sons of the professional-managerial class are 9 times more likely to end up in the professional-managerial class when they are 40 years old than the sons of other classes. The log of odds ratio or the inheritance rate continued to decline until the birth cohort of 1926-1945 calculated based on the 1985 SSM data, but the rate increased sharply for the birth cohort 1936-1955 calculated based on the 1995 SSM data. This increase was the empirical evidence to support the claim of increasing rigidity. However, the rate based on the 2005 SSM data reported by Ishida and Miwa (2011) is much smaller than the rate based on the 1995 SSM data. Figure 4 reports the rate which is calculated using the 2015 SSM data. The log odds ratio is about the same as that of the 2005 SSM data, so there seems to be very little change in the 2000s.

Figure 4. Trends in Inheritance of the Professional-managerial Class by Birth Cohort



These results do not support the claim of increasing rigidity in class structure in recent times. If anything, the long-term trend in the rigidity of the professional-managerial class is that of declining rigidity, rather than increasing rigidity. The figure from the 1995 SSM data appears to be the exception. One should be cautious in deriving conclusion about the trend based solely on the 1995 SSM data.

8. Summary and Conclusion

This paper examined change and stability in the pattern of intergenerational class mobility in Japan in the late 20th and the early 21st century. Japan experienced rapid economic development in the 1960s and early 1970s, followed by a recession and sustained economic growth until the early 1990s when the nation was hit by serious recession. In the 2000s, the country was on the path of moving out of the phase of recession. These changes had direct implications for the changing class structure in postwar Japan. The path of late but rapid industrialization caused a massive shift in population out of the farming sector that was accompanied by the expansion of both the blue-collar sector and the white-collar sector at almost the same time. Total mobility rates increased rapidly during the high economic growth period of the late 1950s and 1960s, and continued to increase modestly until 1985. Upward mobility rates also climbed sharply during the initial phase of industrial development in the 1950s and 1960s. These findings are consistent with the threshold hypothesis advocated by Lipset and Zetterburg (1959), predicting the historic increase in mobility rates when a society enters a mature industrial stage.

With regard to relative mobility rates, we observed a very different picture. Even though Japan experienced a process of late but rapid industrialization and stagnation of its economy, the relative mobility rates or social fluidity patterns were remarkably stable throughout the postwar period. No systematic trend was observed. There was no clear sign of continuous societal openness in postwar Japan, contrary to the prediction of the industrialism thesis. Our results are not consistent with the post-industrial rigidity hypothesis, either. There was no clear tendency of increasing intergenerational rigidity in the 1990s and 2000s. Japanese society did not seem to become more closed during this recent period. The results of trend analyses are consistent with the stability hypothesis which predicted that the strength and pattern of association between class origin and class destination remain stable in industrial

societies.

Taking the results of absolute and relative mobility rates altogether, we arrive at the following conclusion: the Japanese postwar mobility experience can be understood as the combination of rapidly changing absolute rates at a time of fast economic growth and remarkably stable relative mobility rates throughout the seventy-year postwar period. Class origin continues to affect class destination to a similar extent, even though there was a rapidly changing context of class structure. This conclusion is not unique to Japan. Recent work analyzing new data from Britain (Bukodi et al. 2015) arrives at a similar conclusion.

In closing this paper, we would like to speculate on why there was a resurgence of interest in economic gaps and the discourse on inequality recently in Japan despite there being little evidence of declining openness in intergenerational mobility. We claim that relative mobility rates are very difficult to observe because they involve a comparison of mobility chances for people from different class origins. In contrast, absolute mobility rates, especially upward and downward mobility rates, are relatively more discernible because they are related to the changing size at the top and the bottom of the class structure. We have already pointed out that the expansion of the professional-managerial class was put on hold in the 2000s for the first time in the postwar period. Similarly, the share of the unskilled manual working class increased modestly but steadily in the 2000s after being stable for several decades. These changes are easier to observe. It is possible that the people's perceptions and discourse are more likely to be driven by these changes in absolute rates. However, underlying mobility regime represented by relative rates remained stable within the context of changing absolute rates.

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