Is Japan a Rigid Society to Preserve Inequality?
Social Mobility along with Life Course, 1918-2005

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It has been indicated that inequality of intergenerational mobility in Japan was within the conventional range of those of other industrialized countries but showed distinct stability. The purpose of this paper is to test whether the net effect of origins (father's occupation) on destinations (respondent's occupation) in Japan is stable or not, controlling the effects of respondent's education and career mobility (*i.e.*, the effect of first occupation on current occupation), by the approach of *life course mobility*. This approach assumes that the effects of origins, education and career mobility may vary according to entry year, work experience years and survey points. The results proved that not only the effect of origins but also the effects of education and first occupation have changed significantly. Japan is never a rigid society to preserve inequality of social mobility. The changes of disparities caused by origins and education suggested that the trend of social mobility toward increasing openness had advanced at entry into the labor market through merit selection. On the other hand, the decreasing effect of origins along with work experience in older cohorts has disappeared in younger cohorts. But this disappearance has not offset greatly the trend to increasing openness, since this trend at entry has been lasting. However, career mobility had a far stronger effect on current occupation than origins and education. Career mobility regime in Japan seems potent to guard advantaged positions which are allocated by increasing merit selection at entry. The results suggest the necessity to reexamine social mobility in other countries and measure temporal changes accurately from the standpoint of life course mobility. For, even in Japan where intergenerational mobility has been assessed as exceptionally stable, significant temporal changes according to the assumptions of life course mobility were detected.

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1. Intergenerational Mobility in Japan

It has been reported that inequality of intergenerational mobility in Japan was within the conventional range of those of other industrialized countries but displayed distinct stability. Relative mobility rate of Japan did not show a great difference from those of European nations (Ishida, Erikson and Goldthorpe 1991, Erikson and Goldthorpe 1992) and "Japan does not show any exceptional degree of openness" (Erikson and Goldthorpe 1992: 364). But its trend over time was assessed as being stable exceptionally (Ganzeboom, Luijkx and Treiman 1989; Jones, Kojima and Marks 1994; Wong 1994). In their comparative study on 35 nations, Ganzeboom, Luijkx and Treiman (1989: 51, note 23) did not find any significant trend of mobility toward increasing openness, while many other countries exhibited this trend. Wong (1994: 137) mentioned temporal invariance of mobility chance in Japan as "the complete lack of change", comparing with United States and England and Wales which showed gradual but significant trends toward increasing openness. Although Japanese data employed in these studies had been collected until 1975 or 1985, the recent studies which utilized the data collected from 1955 to 1995 came again to the same conclusion that inequality of intergenerational mobility in Japan was fundamentally stable (Ishida 2001; Hara and Seiyama 2005; Miwa 2006). Ishida (2001:599) which is one of them reported that "the pattern of relative mobility does not show any noticeable trend and thus is fairly stable in postwar Japan."

These studies give an impression that Japan is an extremely rigid society to preserve inequality of mobility persistently. Is the structure of stratification in Japan too rigid to yield any change? Postwar Japan has become one of the most affluent societies through economic growth, improvement in standard of living, urbanization and expansion of education. It might be able to assert that pursuit of efficiency in industrialism had not any effect on mobility regime and more priority of achievement to ascription had not developed in Japan.

However, it may be able to suppose some reasons why no trend was detected in prior studies. First, the prior findings might be derived from the method insensitive to temporal changes. Almost all findings about Japan relied on the method which compares mobility tables of origins and destinations between surveyed years. This method is likely to force us to attribute all differences between surveyed years to the changes by period effect and to neglect other effects such as of cohort and age.

Second, the unique employment practices and career mobility in the labor market of Japan might make a trend of relative mobility blurred. Wong (1994) analyzed mobility tables by a quasi Row and Column model II and found the differences of Japanese mobility regime from other countries: (i) mobility barriers between routine nonmanual and other occupations except higher nonmanual were weak and immobility of higher nonmanual was extremely low in mobility to first occupation, (ii) routine nonmanual exhibited a stronger barrier than higher nonmanual in mobility to current occupation against conventional findings[1]. The latter point was reported also by Sørensen (1992) who compared mobility tables of 23 nations[2]. That is, Japan showed large discrepancies of immobility and mobility barriers, particularly in higher and routine nonmanual, between mobility to first occupation and mobility to current occupation, though United States and England and Wales did not exhibit such a large discrepancy. Wong explained these discrepancies as results of unique employment practices and career mobility in Japan, while his findings suggest that relative mobility may change after the time point of entry into the labor market. It might be supposed that this change was influenced by career mobility which occurred during work experience. Therefore, in order to confirm that relative mobility is constant in Japan, we should investigate temporal changes of relative mobility not only across survey points but also along with work experience years from entry and control the effect of career mobility on destinations.

Furthermore, we should examine the net effect of origins (father's occupation) on destinations (respondent's occupation) by controlling not only the effect of career mobility (*i.e.*, the effect of first occupation on current occupation at the interview) but also the effect of respondent's education. Almost all of the studies which indicated the stability of relative mobility in Japan did not control the effect of education on destinations. In order to verify the temporal stability of intergenerational relative mobility, we should compare the effect of origins on destination with those of first occupation and education, starting from the assumptions that allow these effects to change.

This paper aims at testing the temporal stability of relative mobility in Japan by the approach of *life course mobility*. In the next two sections, this approach will be presented in terms of premises and theoretical expectations concerning changes along with life course and the data to be analyzed will be explained. Data analysis will be conducted in two steps. First, focusing on mobility from father's occupation to current occupation, the models which assume changes according to life course will be compared with the models which postulate changes between survey points, in order to test whether the approach of life course mobility is valid. Thereafter the models which are extended to predict simultaneously destinations at entry year and at surveyed time point (*i.e.*, first occupation and current occupation) will be examined in terms of temporal changes of intergenerational mobility, career mobility and education's effect according to entry year, work experience years and survey time point.

2. The Approach of Life-Course Mobility

The approach of life course mobility traces social mobility along with life course and has the following premises about change of intergenerational relative mobility which implies the effect of origins on destinations, under using repeated cross-sectional data.

1) Relative mobility from origins to destinations at entry into the labor market can vary according to entry year.
2) Relative mobility can vary according to work experience years after entry with the same pattern at any survey point.
3) The patterns in which relative mobility varies according to work experience years can be different between survey time points.

As a general pattern of work career of Japanese male employee, they used to get a first job simultaneously with graduating from a school and thereafter many of them experience job rotation, promotion and job turnover. We can regard entry year as the starting point of life course mobility for each person. Intergenerational relative mobility at entry as the starting point may vary with entry year. For example, the later the entry year is, the stronger or the weaker a propensity to immobility may become. Intergenerational relative mobility may also show a constant pattern of change along with work experience years. For example, immobility may show the same pattern of increase or decrease with work experience years across survey points. Furthermore, some changes of labor supply and demand and/or of employment policy may bring about a period effect on relative mobility. For example, workers whose entry year and work experience years are different one another might share an experience of increase or decrease of immobility at a certain survey point. If immobility changes not only with work experience years but also with survey point, the pattern in which immobility changes along with work experience years may be transformed by a period effect.

In short, it is assumed that intergenerational relative mobility may vary according to entry year, work experience years and survey point. As well as intergenerational mobility, the effect of education and career mobility can vary with life course. The effect of education on destinations which contain first occupation and current occupation might vary with entry year, work experience years and survey point. However, career mobility in terms of relative mobility chance, that is, the effect of first occupation on current occupation as destination in career mobility, can vary only with work experience years and survey point. These are assumed for enabling detection of temporal change, but any change could not be found as a result of data analysis.

Hendrickx and Ganzeboom (1998: 390) who examined the temporal changes of effects of father's occupation and respondent's education on respondent's occupation at the interview presented the hypothetical expectations from the standpoint of modernization and human capital acquired through OJT: (a) the effects of father's occupation will decrease with entry year and with work experience years; (b) the effects of education will increase with entry year, but will decrease with work experience years. Their results of analysis on the Netherlands by Multinomial Conditional Logit model showed that the weakening effect of father's occupation with entry year and work experience years is found in immobility but not in flows between occupations and that only the decreasing effect of education with work experience years is significant.

Their perspective is similar to the approach of life course mobility, but their model predicted only current occupation and did not control the effect of career mobility. This paper presents a model of life course mobility, which predicts simultaneously first occupation and current occupation as respondent's destinations at entry and at survey point and investigates the changes of effects of father's occupation, respondent's education and career mobility regime. By this model, it would be able to test properly whether the hypotheses presented by Hendrickx and Ganzeboom were sustained with regard to Japan.

If Japan is a society which preserves inequality in social mobility as has been pointed out, Hendrickx and Ganzeboom's hypotheses will be rejected. But it may be difficult to assert that pursuit of efficiency in industrialism and priority of achievement rather than ascription had not appeared and these pressures had not any effect on structure of stratification and social mobility in Japan at all. For example, some status attainment researches on Japan reported that the effect of ascription seemed to become weak than the dominant effect of education on occupational attainment (Tominaga *ed*. 1979; Kanomata 1998). It is expected that the processes shown in their hypotheses would have developed quite gradually and no period effect would have transformed the changing pattern of the effect of origins and education along with work experience years, if we consider that the prior studies comparing between survey points have found no trend.

As for career mobility, considering unique employment practices in Japan, it is expected that immobility from first to current occupation will be strong and stable because of life-long employment, while mobility into advantaged occupations will increase along with work experience on account of promotion by seniority. However, these expectations will conform to nonmanual workers, particularly in large firms, rather than manual workers. For, life-long employment and promotion by seniority have been more established practices in nonmanual rather than manual and in large firms rather than small firms within dual labor market (Seiyama *et al*. 1990; Ojima 1994; Hara and Seiyama 1999; Watanabe and Sato 1999). It has been argued by many labor economists that dual labor market in Japan was largely segmented by size of organizations (Ujihara 1966; Odaka 1984).

3. Data

The repeated cross-sectional data of Social Stratification and Mobility Survey in Japan will be analyzed. This data has been collected nationwide every 10 years from 1955 to 2005. However, I will not use the data of the first survey in 1955, because the lack of questions about supervisory position within company in this survey may cause inconsistencies in occupational classification. Considering that retirement at the age of 60 is generally established in Japanese firms, respondents are restricted to men aged 20 to 59, whose intergenerational mobility occurred from 1918 to 2005. As a result, the number of respondents without missing values of variables which are father's main occupation, respondent's education, first and current occupation, entry year and work experience years is 8752.

The occupational classification which not only is based on EGP class schema (Erikson, Goldthorpe and Portocarero 1979; Erikson and Goldthorpe 1992) but also adopts the distinctions between upper and lower professionals and administrators, between supervisor and subordinate and between large firm (300 workers or more) and small firm (less than 300 workers) includes the twelve categories. To construct this classification, at first SSM occupational classification which contains 288 (1975 version) or 188 titles (1995 version) of occupation was transformed into International Standard Classification of Occupations (ISCO) and the 6 categories of EGP class schema were made from ISCO according to Ganzeboom and Treiman's (1996) procedure, and then 4 of 6 categories are ramified; service class was divided into upper professionals [I(P)], lower professionals [II(P)] and administrators [I+II(A)]; routine nonmanual was separated into workers in large firm [III(L)] and small firm [III(S)]; manual worker with supervisory position was classified into manual foreman [V]; skilled manual was divided into large firm [VI(L)] and small firm [VI(S)]; semi-skilled and unskilled manual was separated into workers in large firm [VIIa(L)] and small firm [VIIa(S)]. Self-employed [IVab] and farmers and farming workers [IVc+VIIb] are not modified, but the former is restricted to proprietor with less than 30 workers. The purpose of these ramifications is to detect difference between professionals and administrators, advantage of supervisory position and disparity by firm size; these differences and disparities have not been found in past studies which applied 6 categories of EGP schema to SSM data (Ishida 1995, 2001; Miwa 2006). Table 1 shows the distribution of twelve occupations by survey point.

Table 1

Figure 1-3

Figure 1 depicts, for each survey point, the average year of education by current occupation for male aged 20 to 69. As a result of expansion of education, the average year became higher in each occupation along with survey point, while disparities by firm size were found in occupations which are aggregated into routine nonmanual, skilled manual, or semi- and unskilled manual in EGP 6 classes. Figure 2 and Figure 3 respectively show the percentage of low income and high income by current occupation. The lines exhibit the percentage of respondents whose annual income is under the first quartile and over the third quartile of each survey year, by occupation. These percentages of each occupation are very similar across survey points and large disparities by firm size are again found in routine nonmanual and manual; particularly large disparities of low income are found in manual. These figures exhibit heterogeneities within several classes of EGP schema.

Hereafter the data will be analyzed by Multinomial Conditional Logit (MCL) model which employs individual level data[3)]. This model has recently come to be used for analysis of social mobility (Logan 1983; Breen 1994; Hendrickx and Ganzeboom 1998; Breen and Goldthorpe 1999, 2001; Titma, Tuma and Roosma 2003; Breen *ed*. 2004).

4. Changes between Survey Points *vs.* Changes with Life Course

In this section, in order to test whether the premises of life course mobility are appropriate, the models which postulate life course changes will be compared with the models which assume changes between survey points, focusing only on mobility from father's occupation to current occupation.

$$\ln \frac{\pi_j}{\pi_r} = \alpha_j + \beta_{jt} Z_t + (1 + \delta_t Z_t)\,\tau_{ij} \qquad (1)$$

Unidiff model (Erikson and Goldthorpe 1992; Xie 1992) is expressed as MCL in Equation (1) for father’s occupation i=1, 2, …, 12; respondent’s occupation j=1, 2, …, 12; survey year t=1, 2, …, 5. The π_j denotes the probability that the respondent’s occupation will be a category j and r specifies the reference category which is fixed to upper professionals (r=1) in this paper. The α_j parameter expresses the intercept term and the parameter β_{jt} is the main effect of survey point Z_t which is a dummy variable that equals 1 for survey year t and 0 otherwise except the 1965 survey as the reference (t=1). The τ_{ij} denotes relative mobility for the 1965 survey, while the δ_t measures the different strength of this pattern τ_{ij} for other survey point t. This model, the model in which the constraint of linear trend on δ_t is imposed, and the model which omits Unidiff constraint and assumes constant relative mobility (*i.e.*, δ_t =0 for all t) are examined as Model 1, 2 and 3 in Table 2 respectively.

$$\ln\frac{\pi_j}{\pi_r} = \alpha_j + \beta_{jt}Z_t + \gamma_i + \gamma_{0t}Z_t + \sigma_i\varphi_j\left(\mu_0 + \mu_t Z_t\right) \quad (2)$$

Equation (2) exhibits a quasi Row and Column model II which was developed by Goodman (1979a, 1979b, 1984). The parameter γ_j denotes the propensity to intergenerational immobility of each occupation j, while the term $\gamma_{0t}Z_t$ measures how overall immobility changes according to survey point. Scaling metrics for father's and current occupation are measured by the σ_i and φ_j. These form the pattern of origin-destination association and are normalized by $\Sigma\sigma_i = \Sigma\varphi_j = 0$ and $\Sigma\sigma_i^2 = \Sigma\varphi_j^2 = 1$. The μ_0 measures the strength of overall origin-destination association and the term $\mu_1 Z_t$ assesses how this overall association changes with survey point. Model with equality constraint on scaling metrics of father's and respondent's occupation ($\sigma_i = \varphi_i$) is distinguished from model without this constraint. Hereafter, the former is denoted as EQRCII, the latter as RCII. The three models which have different assumptions about change of relative mobility, that is, (1) changes between survey points, (2) linear trend along with survey point and (3) constancy without Unidiff parameter, are referred respectively as Model 4 through 6 for RCII and Model 7 through 9 for EQRCII.

The model presented by Hendrickx and Ganzeboom (1998) is consistent with the approach of life course mobility, because this model postulates the trends of immobility, origin-destination association and educational effect according to entry year and work experience years. Their MCL model (hereafter HG model) has not only the constraint of 'Row and Column model II' but also that of 'Stereotyped Ordered Regression (SOR)' which was developed by Anderson (1984) and DiPrete (1990).

$$\ln\frac{\pi_j}{\pi_r} = \alpha_j + \beta_{1j}X + \gamma_i + \gamma_{01}X + \gamma_{02}Y + \sigma_i\varphi_j\left(\mu_0 + \mu_1 X + \mu_2 Y\right) + \varphi_j(\beta_{2j}Y + \beta_{3j}Y^2) \quad (3)$$

Equation (3) is the model which omits the terms including the variable of education from HG model so as to compare with the above models which do not contain this variable. The time variables of X and Y are 'entry year into the labor market' and 'work experience years after entry' respectively. X is equal to [(entry year - 1918)/10] where 1918 is the oldest year of entry, while Y is equal to [(work experience years) /10]. This model is named as 'HG model without education' which will be examined as Model 10 of RCII and Model 12 of EQRCII.

$$\ln\frac{\pi_j}{\pi_r} = \alpha_j + \beta_{1j}X + \beta_{2j}Y + \beta_{3j}Y^2 + \gamma_i + \gamma_{01}X + \gamma_{02}Y + \sigma_i\varphi_j\left(\mu_0 + \mu_1X + \mu_2Y\right) \quad (4)$$

HG model without education has the SOR constraint on the main effects of work experience years [*i.e.*, $\varphi_j\,(\beta_{2j}Y+\beta_{3j}Y^2)$], while the model of Equation (4) omits this constraint but contains the usual main effects of work experience years. Modified HG model will be referred as Model 11 of RCII and Model 13 of EQRCII.

Table 2

Table 2 exhibits the result of models mentioned above. The BIC statistic (Raftery 1986, 1995) is used to compare each model with Model 1 in this table. This statistics will be employed in this paper to compare more parsimonious model with the model that contains all parameters posited in each analysis[4)]. According to BIC from Models 1 to Model 9, within the same type models, the model which assumes constant relative mobility is preferred to the model which postulates changes or linear trend. Model 9 is best preferred to others.

However, HG model without education (Model 10 and 12) and Modified HG model (Model 11 and 13) are far preferred to Model 1 through 9 and Modified HG models are preferred to HG models. These imply that models which assume changes of social mobility along with entry year and work experience years perform far well rather than models which postulate changes between survey points, in terms of not only goodness-of-fit but also detection of temporal changes of mobility and that modification to HG model is effective.

The results of 'HG model without education' and its modified version support the validity of the approach of life course mobility, but these models are not faultless. First, these models predict the effect of entry year and its interaction effect with origins on current occupation without estimating direct effects of these on first occupation. Second, these models do not control the effects of career mobility and education on destinations. In the next section, in order to overcome these shortcomings, a refined model based on modified HG model will be presented and examined.

5. Analysis of Life Course Mobility

5.1 Model

The model of life course mobility which covers the effects of origins, education and career mobility and assumes changes of these effects along with entry year and work experience years, and between survey points is as follows.

$$
\begin{aligned}
\ln\frac{\pi_j}{\pi_r} &= \alpha_j + \beta_{1j}X + \beta^*_{2j}Y + \beta^*_{3j}Y^2 + \beta^*_{4jt}YZ_t + \gamma_i + \gamma_{01}X + \gamma^*_{02}Y + \gamma^*_{03}Y^2 + \gamma^*_{04t}YZ_t \\
&+ \sigma_i\varphi_j(\mu_0 + \mu_1 X + \mu^*_2 Y + \mu^*_3 Y^2 + \mu^*_{4t}YZ_t) + \theta^*_k + \theta^*_{01}Y + \theta^*_{02}Y^2 + \theta^*_{03t}YZ_t \\
&+ C_{kj}\left(\eta^*_0 + \eta^*_1 Y + \eta^*_2 Y^2 + \eta^*_{3t}YZ_t\right) + \varphi_j\left(\lambda_0 E + \lambda_1 EX + \lambda^*_2 EY + \lambda^*_3 EY^2 + \lambda^*_{4t}EYZ_t\right) \qquad (5)
\end{aligned}
$$

The data for this model is pooled by first occupation and current occupation which are the dependent variable as respondent's destinations at entry point and at survey point. These are identified in the pooled data by the dummy variable D which is equal to 0 for first occupation and 1 for current occupation. The time variables of work experience years Y, Y^2 and survey point Z_t which are multiplied by D are to be applied. We will later examine the model which replaces Z_t in Equation (5) with the metric variable Z which takes the value ranging from 0 to 4 multiplied by D for 1965 to 2005 survey.

The α_j parameter is the intercept term and the parameter β_{1j} is the main effect of entry year X on the logit of *first occupation*. Other variables concerning entry year such as quadratic, cubic and categorical one will not be employed, since the preliminary analysis which predicts the logit of first occupation by the non-pooled data indicated that the model including only X was preferred to others [see Appendix].

The parameters β^*_{2j} and β^*_{3j} measure the effects of work experience years and its square, which cause the *difference* of logit of current occupation j from the logit of first occupation j. The term $\beta^*_{4jt}YZ_t$ measures how the effect of work experience years is different between survey points. Not only β^* but also the other parameters with asterisk such as γ^*, μ^*, θ^*, η^* and λ^* specify the effect to cause the difference of logit of current occupation j from that of first occupation j. That is, the logit of first occupation is predicted by σ_i, φ_j and the terms which do not include the parameter with asterisk, but the logit of current occupation is estimated by σ_i, φ_j, C_{kj} and the terms which contain the parameters with and without asterisk.

The parameter γ_j denotes the propensity to intergenerational immobility of occupation j and the γ_0 measures the overall propensity to intergenerational immobility. The σ_i and φ_j are scaling metrics for father's and respondent's occupation to form the pattern of origin-destination association. The scaling metric φ_j is assumed to be common to first occupation and current occupation as destinations. Both the models with and without equality constraint on scaling of father's and respondent's occupation (σ_j=φ_j) will be examined. The parameter μ_0 measures the strength of overall origin-destination association.

The terms $\gamma_{01}X$ and $\mu_1 X$ assess how the overall immobility and the overall origin-destination association at entry change according to entry year, respectively. The terms $\gamma^*_{02}Y$, $\gamma^*_{03}Y^2$, μ^*_2Y and $\mu^*_3Y^2$ measure how the overall immobility and the overall association vary along with work experience years after entry. The $\gamma^*_{04t}YZ_t$ and $\mu^*_{4t}YZ_t$ assess how the patterns the overall immobility and the overall association change according to work experience years are different between survey years respectively.

The θ^*_k denotes the propensity to career immobility from first occupation to current occupation k and the θ^*_0 shows the overall propensity to career immobility. The measured variable C_{kj} which is exogenous for this model is the product of scaling metric of first occupation and that of current occupation in career mobility. These scaling metrics are obtained from the preliminary analysis, since these may be different from those of intergenerational mobility (As a result, the scaling metrics of career mobility differed from those of intergenerational mobility). The use of exogenous scaling has been sometimes applied such as SAT model (Hout 1984, 1988), while C_{kj} is not completely exogenous but is measured from the same dataset like Breen and Whelan's (1994) AHP model. Using the non-pooled data, the preliminary analysis to measure C_{kj} was conducted by the model which predicts the logit of current occupation. As a result, the C_{kj} is calculated by the metric without equality constraint on first and current occupation, because the results indicate that RCII is preferred to EQRCII[5)]. The parameter η^*_0 measures the strength of overall association between first and current occupation. The terms $\theta^*_{01}Y$ and $\theta^*_{02}Y^2$ and the η^*_1Y and $\eta^*_2Y^2$ assess how the overall career immobility and the overall association change along with work experience years after entry. The $\theta^*_{03t}YZ_t$ and $\eta^*_{3t}Z_t$ measures how the patterns the overall immobility and the overall association change according to work experience are different between survey points respectively.

The variable E denotes the respondent's education defined by years of schooling and the term $\lambda_0 E$ shows the effect of education on respondent's occupation. The term λ_1EX and the λ^*_2EY and $\lambda^*_3EY^2$ assess how the effect of education at entry changes with entry year and varies according to work experience after entry. The $\lambda^*_{4t}EYZ_t$ measures how the patterns the effect of education changes according to work experience years are different between survey points. The proper effect of education is obtained by multiplying these terms by φ_j according to the SOR constraint.

Figure 4-5

The model of Equation (5) is nonhierarchical, since this does not include the terms such as $\beta^*_{jt}Z_t$, $\gamma^*_{0t}Z_t$, $\mu^*_t Z_t$, $\theta^*_t Z_t$, $\eta^*_t Z_t$ and $\lambda^*_t EZ_t$. The model which has the terms containing Z_t without Y in place of the terms including YZ_t brings about contradictory parameter estimate as shown in Figure 4. As an example, this figure exhibits the estimates of overall origin-destination immobility at entry point ($\gamma_{01} X$) and at work experience of every 10-year interval ($\gamma_{01} X + \gamma^*_{02} Y + \gamma^*_{03} Y^2 + \gamma^*_{04t} Z_t$), by entry year of every 10-year interval. These parameter estimates are obtained from the model where the terms including YZ_t of Model D1 in Table 3 are replaced with terms containing Z_t without Y. The gaps between entry point and 0 year of work experience are very large for those who got a first job in 1985, 1995 and 2005, while no large gap is found for those who entered into the labor market until 1975. These contradictions shown in the gaps are caused by the term $\gamma^*_{04t} Z_t$. This term measures the effect of *averaged difference* of immobility to current occupation at each survey point from immobility into first occupation, though changes of these with entry year and work experience years are controlled.

The overall Immobility of Model D1 in Figure 5 does not show such contradictions as Figure 4. Furthermore, this model is consistent with the approach of life course mobility, since the model implies that social mobility can be traced along with life course trajectory which appears with entry point, work experience years and survey point.

5.2 Results

Table 3 exhibits the results of analysis by models which are based on by Equation (5) or its parsimonious ones. Panel *A* displays the RCII models where the dummy variables Z_t are used as survey point. Models A1 is a full model expressed by Equation (5), while Model A2 assumes that the overall origin-destination association is temporally constant. This hypothesis denoted as 'Constant μ' is derived from the finding that parameter estimates of μ_1, μ^*_2, μ^*_3, and μ^*_{4t} in any model is not significant at 5% level [6]. Model A3 has the hypothesis that the effect of education does not differ between survey points (λ^*_{4t}=0), as well as constant μ. Similarly, in Model A4 the assumption that the effect of overall association between first and current occupation does not differ between survey points (η^*_{3t}=0) is added to Model A3; in Model A5 the assumption that the effect of career immobility does not differ between survey points (θ^*_3=0) is added to Model A4; in Model A6 the assumption that the effect of origin-destination immobility does not differ between survey points (γ^*_{4t} =0) is added to Model A5.

Table 3

Panel *B* displays the model which corresponds to each model in panel *A* except that the dummy variables Z_t are replaced with the metric Z. Panel *C* and *D* show the models of EQRCII which corresponds to each RCII model in panel *A* and *B* respectively. Panel *E*, *F*, *G* and *H* exhibit the models of RCII or EQRCII employing Z_t or Z, which omit the effect of career mobility: the assumptions of these models are expressed as full model; constant μ; constant μ and λ^*_{4t}=0; constant μ, λ^*_{4t}= γ^*_{4t} =0.

Models in panel *E*, *F*, *G* and *H* are definitely inferior to models in panel *A*, *B*, *C* and *D* in terms of BIC, because of omitting the effect of career mobility. Models in panel *B* and *D* are preferred to models in panel *A* and *C*. This implies that the metric *Z* of survey point brings more parsimonious model without large loss of goodness-of-fit than the dummy Z_t. In these models, Model D5 is best preferred (BIC=-409.6). The following discussion will be based on this model.

Table 4

Table 4 displays the parameter estimates of Model D5. This model demonstrates the following findings: (a) with regard to the effects of origins on destinations, the overall origin-destination immobility decreased along with entry year and its patterns of change according to work experience differ across survey years, but the origin-destination association showed no temporal change; (b) the effect of education on destinations increased with entry year but decreased with work experience years from entry; (c) the effect of first occupation on current occupation (*i.e.*, the overall career immobility and the overall association between first and current occupation) showed curvilinear change according to work experience years.

Figure 6

Figure 6 displays the scaling metrics of occupation in several models. The line of 'Mobility to First Occ. (Model K2)' shows the metric which is best preferred in the preliminary analysis on mobility to first occupation [see Appendix]. This line almost completely conforms to the metrics of father's and respondents occupations in Model D5. And the parameter estimates of Model K2, which are shown in Table #3 [in Appendix], are quite similar to the corresponding parameter estimates of Model D5 in Table 4. The conformity of scaling metrics and the similarity of parameter estimates provide us positive evidence that the model of life course mobility predicts the logit of destinations accurately.

On the other hand, several gaps are found between the metrics in intergenerational mobility (Model D5 and K2) and those of first and current occupations in career mobility in Model D5 ('First Occ. in Career' and 'Current Occ. in Career'), particularly in lower professionals and routine nonmanual in large firm. These gaps imply that mobility barriers are different between intergenerational mobility and career mobility.

5.3 Comparing Disparities

Figure 7 exhibits the changes of overall origin-destination immobility ($\gamma_{01} X + \gamma^*_{02} Y + \gamma^*_{03} Y^2 + \gamma^*_{04t} YZ_t$) along with work experience years of every 5-year interval, by entry year of every 10-year interval. The overall intergenerational immobility at entry declined with entry year. And this immobility extremely decreased with work experience years from entry in the older entry cohorts, but this decrease became weak gradually in the younger entry cohorts. Particularly, after the cohort of entry in 1975, the decrease of immobility along with work experience almost disappeared.

Figure 7-9

Figure 8 shows the changes of effect per one year of education along life course by entry year, which are calculated as maximum disparity [*i.e.*, (max φ_j – min φ_j) ($\lambda_0 E + \lambda_1 EX + \lambda^*_2 EY + \lambda^*_3 EY^2$)]. The later the entry year is, the higher the effect of education at entry (0 year of work experience) become. And the effect decreases according to work experience years from entry for each entry cohort.

Figure 9 exhibits the estimates of the overall career immobility and the overall association between first and current occupation. The latter is calculated as maximum disparity [*i.e.*, (max C_{kj} – min C_{kj}) ($\eta^*_0 + \eta^*_1 Y + \eta^*_2 Y^2$)]. The overall career immobility (overall FC immobility in Figure 9) decreases until about 33 years of work experience, while the overall association (maximum disparity of FC association) increases until 21 years of work experience and decreases thereafter.

These changes prove that the effects of origins, education and first occupation on destinations change gradually along with entry year, work experience years, and survey point. If focusing on the point of entry, the effect of origins declined and that of education increased as entry year became later. After entry, the decreasing effect of origins according to work experience years became disappeared in the younger entry cohort. These findings demonstrate that inequality of social mobility in Japan has not been stable but has changed gradually. How should we evaluate these transformations of social mobility?

Table 5

Table 5 exhibits the differential chances of intergenerational mobility and the effect of education, for those who got the first job in 1975 when the decrease of immobility with work experience years almost disappeared. The value of differential mobility chance is the sum of the origin-destination association $\sigma_i \varphi_j \mu_0$, the individual immobility γ_i and the overall immobility ($\gamma_{01}X + \gamma^*_{02}Y + \gamma^*_{03}Y^2 + \gamma^*_{04}YZ$ for Y=0) at entry year 1975. The differential mobility chances at entry year (0 year of work experience) are the maximum for this entry cohort, since immobility at entry is its maximum and the origin-destination association is constant. The effects per year of education toward individual occupation at entry year and at 20 years after entry are also displayed. The maximum disparities of this effect at entry and at 20 years after entry are 0.919 [=0.495-(-0.424)] and 0.560 [=0.302-(-0.258)] respectively, while that of intergenerational mobility chance is 2.217 [=2.018-(-0.199)]. The disparity by education is rather larger than that by mobility chance at the stage of entry, considering that the former is the effect per year of education. The disparity by 4 years of education (for university in Japan) at entry and at 20 years after entry is 3.676 [=0.919×4] and 2.240 [=0.560×4] respectively. The latter is close to the maximum disparity of mobility chance which does not change so much from entry for this or later cohort.

The changes of disparities caused by origins and education suggest that merit selection particularly at entry into the labor market has expanded. Regarding the entry point, the origin-destination immobility diminished and the effect of education rose along with entry cohort. After entry, the disparity brought by the effect of education decreased considerably from entry along with work experience years. However, it may be proper to argue that the trend of social mobility toward increasing openness had developed because the origin-destination immobility had decreased with entry year and work experience years and the merit selection had advanced gradually.

On the other hand, it may be appropriate to indicate that a tendency in which relative extent of the disparity by the effect of origins, compared with the disparity caused by the effect of education, expands in the latter half of work career has emerged in the younger cohorts. The disparity brought by the effect of 4 years of education at 20 years of work experience is nearly equivalent to the maximum disparity of intergenerational mobility chances for the 1975 entry cohort. Intergenerational mobility chances have become close to constancy from entry for this or later cohort, while the disparity caused by the effect of education has kept the decreasing pattern with work experience years. The disparity caused by origins has become to surpassing that by the effect of 4 years of education in the latter half of work career, *i.e.*, after 20 years from entry. However, it would be unable to say that the expanding extent of the disparity by the effect of origins has offset greatly the trend to increasing openness at entry, since the latter trend has been lasting.

Table 6

Comparing with these disparities, the differential chances of career mobility from first to current occupation in Table 6 shows larger disparities. They are calculated as the sum of the association between first and current occupation $C_{kj}(\eta*_0+\eta*_1Y+\eta*_2Y^2)$, the individual immobility $\theta*_k$ and the overall immobility $(\theta*_0+\theta*_{01}Y+\theta*_{02}Y^2)$ after 20 years from entry. These absolute values are much larger than those of intergenerational mobility and education in Table 5. Career mobility regime which is shown as differential mobility chances has a stronger effect on current occupation than intergenerational mobility regime. Immobility of nonmanual occupations as well as self-employed, particularly of upper professionals and administrators, is stronger than that of manual, though the overall immobility decreased close to the minimum level during 20 years after entry.

Differential chances in career mobility seem to protect advantaged occupation, since mobility chances among upper and lower professionals and administrators are higher than other mobility chances. Routine nonmanual show higher mobility chances to professionals and administrators than others. However, mobility chances from nonmanual in large firm to these advantaged occupations are higher than from nonmanual in small firm to these. This suggests that employment practices are differentiated by firm size: nonmanual workers in large firm have more chance to move up to advantaged positions within the internal labor markets rather than workers in small firms. But the disparity differentiated by firm size is not clear for mobility among manual workers.

These findings about the changes of the effects of origins and education are largely consistent with the expectations shown above, but a partial modification would be needed. The effect of origins on destinations declined with entry year and decreased with work experience only in the older cohort, though these changes corresponded to immobility but not to flows between occupations. The effect of education expanded with entry year and diminished with work experience. Except that the decreasing effect of origins along with work experience disappeared in the younger cohorts, the findings sustained Hendrickx and Ganzeboom's hypotheses more clearly than their findings. But the disappearance contradicts the expectation that no period effect has transformed the changing pattern of the effect of origins along with work experience years, while the transformation by period effect was not found with regard to the effect of education.

As for career mobility, the expectations were mostly supported. We confirmed that career mobility has a stronger effect on current occupation than intergenerational mobility; nonmanual showed stronger immobility than manual; nonmanual in large firm was more likely to move up to these advantaged occupations. Career mobility regime in Japan is effective to guard advantaged positions which are allocated by increasing merit selection at entry.

6. Conclusions

The prior studies have reported that relative mobility in Japan has been stable distinctively. However, the results of analysis demonstrate that inequality of social mobility in Japan has not been stable, but has changed gradually. In the first analysis which focuses only on mobility from father's to current occupation, models which are consistent with the approach of life course mobility perform far well rather than models which postulate changes between survey points, in terms of not only goodness-of-fit but also detection of temporal changes of mobility.

In the second analysis, the extended models which postulated the changes of the effects of origins, education and first occupation on destinations according to entry year, work experience years, and survey point revealed that merit selection at the time point of entry into the labor market has become more effective and career mobility regime had a stronger effect on current occupation than origins and education. Comparison of changes of disparities caused by origins and education suggested the trend of social mobility toward increasing openness had advanced at entry through merit selection which has become more effective. On the other hand, a tendency in which relative extent of disparity by the effect of origins compared with that by the effect of education expands in the latter half of work career has emerged in the younger cohorts. But this tendency does not seem to be the degree which wipes out the trend of social mobility toward increasing openness through merit selection, since the trend to increasing openness at entry has been lasting.

These results almost sustain the hypotheses presented by Hendrickx and Ganzeboom (1998) from the standpoint of modernization and human capital, but a partial modification would be needed as for the temporal change of immobility. On the one hand, the expectation with regard to the effect of education is proved completely, since this effect has increased with entry year and decreased with work experience years significantly. On the other hand, the expectation as for the effect of father's occupation is partially supported, since this effect in terms of immobility has decreased with entry year but the decreasing effect with work experience years was found only in the older cohorts.

However, differential mobility chances in career mobility had the stronger effect on current occupation than origins and education. Career mobility regime in Japan seems potent to maintain advantaged positions which are allocated by increasing merit selection at entry. This strong effect of career mobility is consistent with the prior studies of status attainment in Japan (Tominaga 1979; Kanomata 1998). These studies which employed path analysis but did not test temporal changes of the effects of origin, education and first occupation reported that first occupation rather than father's occupation and respondent's education has the stronger effect on current occupation. Tominaga (1979) also indicated that the path from respondent's education via first occupation to current occupation was extremely significant for status attainment in Japan, and he named this path as "the main route of social promotion in Japan".

Is career mobility regime that affects extremely current occupation peculiar to Japan? Such peculiarity was not verified in this paper, since comparative analysis with other countries was not conducted. But the result of model applied in this paper suggests the necessity to reexamine social mobility in other countries and measure temporal changes accurately from the standpoint of life course mobility. For, even in Japan where intergenerational mobility has been assessed as exceptionally stable, significant temporal changes according to assumptions of life course mobility were detected.

Notes

1) Wong's (1994) findings were derived from the separated analyses in which mobility to first occupation by entry cohort into the labor market and mobility to current occupation by survey year were examined.

2) Sørensen (1992) reported that Japan, New Zealand, Quebec and Poland showed the similar pattern in which routine nonmanual had a stronger barrier than higher nonmanual.

3) Analysis by Multinomial Conditional Logit model in this paper was conducted by the program provided at http://www.xs4all.nl/~jhckx/mcl/ by John Hendrickx.

4) The BIC is defined as L^2 - df (ln N) where L^2 is the likelihood ratio chi-square statistic, df is the degree of freedom, and N is the sample size. Pseudo R^2 shown in tables is equal to (1 - ll_1 / ll_0) where ll_1 is the log likelihood of each model and ll_0 is the log likelihood of the null model without intercept term and independent variable.

5) The model to measure C_{kj} in the preliminary analysis is as follows,

$$\ln\frac{\pi_j}{\pi_r} = \alpha_j + \beta_{1j}X + \beta_{2j}Y + \beta_{3j}Y^2 + \beta_{4jt}YZ_t + \theta_k + \theta_{01}Y + \theta_{02}Y^2 + \theta_{03t}YZ_t$$
$$+ \omega_k\rho_j(\eta_0 + \eta_1 Y + \eta_2 Y^2 + \eta_{3t}YZ_t) + \rho_j\left(\lambda_0 E + \lambda_1 EX + \lambda_2 EY + \lambda_3 EY^2 + \lambda_{4t}EYZ_t\right)$$

where ω_k and ρ_j are the scaling metrics of first and current occupation in career mobility respectively. As a result, the BIC which contrasts with the null model which has no intercept term and independent variable is -12699.3 for EQRCII and -12695.4 for RCII under using the dummy Z_t, and is -12887.7 for EQRCII and -12913.6 for RCII under using the metric Z. The scaling metric of the last was adopted and the C_{kj} in the following analysis is the product of ω_k and ρ_j ($\omega_j = \rho_j$).

6) The finding that the overall origin-destination association is temporally constant conforms to Hendrickx and Ganzeboom's (1998) finding.

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Appendix: Analysis of mobility from father's to first occupation

With regard to mobility to first occupation, at first the analysis to predict the logit of first occupation was conducted only to confirm the main effects of entry year. Table #1 shows the result where X_f is the entry year variable which is divided into 8 categories with 11-year interval (f=1, 2, …, 8). Because Model I4 is far preferred to others, the full model in the next analysis contains only the linear effect of X as follows,

$$\ln\frac{\pi_k}{\pi_r} = \alpha_j + \beta_k X + \gamma_i + \gamma_{01} X + \sigma_i \varphi_k (\mu_0 + \mu_1 X) + \varphi_k (\lambda_0 E + \lambda_1 EX)$$

Table #2 exhibits the results of full model and its parsimonious versions. This indicates that a model with equality constraint of σ_i and φ_i is preferred to a corresponding model without this constraint and that models omitting education (shown in Model J5-J7 and K5-K7) are far less preferable. Model K2 is best preferred and its parameter estimates are exhibited in Table #3. The effect of immobility from father's occupation decreased and the effect of education increased linearly as entry year became later, while mobility between occupations (the overall origin-destination association) exhibited no trend.

Table #1, #2, #3

Tables

Table 1 The Distribution of Occupations by Survey Year (%)

	Classification	1965	1975	1985	1995	2005
I(P)	Upper professionals	2.1	3.8	5.5	8.6	8.9
II(P)	Lower professionals	9.9	10.7	11.8	18.9	15.2
I+II(A)	Administrators	6.8	9.9	10.6	9.0	10.1
III(L)	Routine nonmanual in large firm (300 workers or more)	7.9	6.9	7.8	6.1	7.3
III(S)	Routine nonmanual in small firm (less than 300 workers)	6.6	7.9	7.9	6.7	7.3
IVab	Self-employed (less than 30 workers)	6.1	4.8	5.6	6.7	5.0
V	Manual foreman	7.0	6.1	7.3	9.4	9.4
VI(L)	Skilled manual in large firm (300 workers or more)	4.2	4.5	3.0	3.9	2.3
VI(S)	Skilled manual in small firm (less than 300 workers)	11.2	12.9	13.9	11.8	12.9
VIIa(L)	Semi- and unskilled manual in large firm (300 workers or more)	6.9	5.5	5.7	4.3	4.5
VIIa(S)	Semi- and unskilled manual in small firm (less than 300 workers)	11.7	13.0	15.0	11.0	13.0
IVc+VIIb	Farmer and farming workers	19.5	14.1	6.0	3.6	4.1
	Total	100.0	100.0	100.0	100.0	100.0
	N	1694	2100	1778	1619	1561

Table 2 Changes between Survey Points and along with Life Course

Model	Log likelihood	*df*	BIC *vs.* Model 1	Pseudo R^2
Changes between Survey Points				
Unidiff model				
1. Change between survey points	-19583.1	180		0.100
2. Linear trend with survey point	-19585.1	177	-23.2	0.099
3. Constancy without Unidiff constraints	-19585.5	176	-31.5	0.099
RCII				
4. Change between survey points	-19653.9	96	-618.6	0.096
5. Linear trend with survey point	-19656.7	90	-667.4	0.096
6. Constancy	-19659.7	88	-679.4	0.096
EQRCII ($\sigma_i=\varphi_i$)				
7. Change between survey points	-19665.5	86	-686.0	0.096
8. Linear trend with survey point	-19668.0	80	-735.3	0.096
9. Constancy	-19671.0	78	**-747.5**	0.096
Changes along with Life Course				
RCII				
10. HG model without Education	-19351.3	61	-1540.7	0.110
11. Modified HG model	-19110.9	81	-1840.4	0.121
EQRCII ($\sigma_i=\varphi_i$)				
12. HG model without Education	-19398.4	51	-1537.0	0.108
13. Modified HG model	-19120.8	71	**-1911.1**	0.121

Table 3 Analysis of Intergenerational and Career Mobility

Model	Log likelihood	df	BIC *vs.* Model A1	Pseudo R^2
A. RCII using dummy Zt				
A1. Full model in Equation (5)	-31327.1	168		0.280
A2. Constant μ	-31329.5	161	-58.4	0.280
A3. Constant μ and $\lambda^*_{4t} = 0$	-31331.5	157	-90.6	0.280
A4. Constant μ and $\lambda^*_{4t} = \eta^*_{3t} = 0$	-31338.1	153	-113.6	0.280
A5. Constant μ and $\lambda^*_{4t} = \eta^*_{3t} = \theta^*_{03t} = 0$	-31348.7	149	-128.6	0.279
A6. Constant μ and $\lambda^*_{4t} = \eta^*_{3t} = \theta^*_{03t} = \gamma^*_{04t} = 0$	-31363.7	145	-134.9	0.279
B. RCII using metric Z				
B1. Full model in Equation (5)	-31407.5	120	-273.5	0.278
B2. Constant μ	-31408.7	116	-307.4	0.278
B3. Constant μ and $\lambda^*_{4t} = 0$	-31410.3	115	-313.1	0.278
B4. Constant μ and $\lambda^*_{4t} = \eta^*_{3t} = 0$	-31410.4	114	-322.2	0.278
B5. Constant μ and $\lambda^*_{4t} = \eta^*_{3t} = \theta^*_{03t} = 0$	-31410.7	113	**-330.5**	0.278
B6. Constant μ and $\lambda^*_{4t} = \eta^*_{3t} = \theta^*_{03t} = \gamma^*_{04t} = 0$	-31421.5	112	-317.9	0.278
C. EQRCII using dummy Zt				
C1. Full model in Equation (5)	-31333.5	158	-77.7	0.280
C2. Constant μ	-31335.4	151	-137.1	0.280
C3. Constant μ and $\lambda^*_{4t} = 0$	-31337.4	147	-169.4	0.280
C4. Constant μ and $\lambda^*_{4t} = \eta^*_{3t} = 0$	-31343.9	143	-192.5	0.279
C5. Constant μ and $\lambda^*_{4t} = \eta^*_{3t} = \theta^*_{03t} = 0$	-31354.5	139	-207.6	0.279
C6. Constant μ and $\lambda^*_{4t} = \eta^*_{3t} = \theta^*_{03t} = \gamma^*_{04t} = 0$	-31369.5	135	-213.8	0.279
D. EQRCII using metric Z				
D1. Full model in Equation (5)	-31413.9	110	-351.2	0.278
D2. Constant μ	-31414.5	106	-386.3	0.278
D3. Constant μ and $\lambda^*_{4t} = 0$	-31416.0	105	-392.2	0.278
D4. Constant μ and $\lambda^*_{4t} = \eta^*_{3t} = 0$	-31416.0	104	-401.3	0.278
D5. Constant μ and $\lambda^*_{4t} = \eta^*_{3t} = \theta^*_{03t} = 0$	-31416.4	103	**-409.6**	0.278
D6. Constant μ and $\lambda^*_{4t} = \eta^*_{3t} = \theta^*_{03t} = \gamma^*_{04t} = 0$	-31427.3	102	-397.0	0.278
E. RCII without career mobility, using dummy Zt				
E1. Equation (5) without career mobility	-34740.7	143	6601.1	0.201
E2. Constant μ	-34743.8	136	6543.9	0.201
E3. Constant μ and $\lambda^*_{4t} = 0$	-34747.6	132	6515.2	0.201
E4. Constant μ and $\lambda^*_{4t} = \gamma^*_{04t} = 0$	-34753.0	128	6489.8	0.201
F. RCII without career mobility, using metric Z				
F1. Equation (5) without career mobility	-34804.7	101	6349.0	0.200
F2. Constant μ	-34807.1	97	6317.5	0.200
F3. Constant μ and $\lambda^*_{4t} = 0$	-34807.7	96	6309.6	0.200
F4. Constant μ and $\lambda^*_{4t} = \gamma^*_{04t} = 0$	-34810.5	95	6306.2	0.200
G. EQRCII without career mobility, using dummy Zt				
G1. Equation (5) without career mobility	-34748.2	133	6525.5	0.201
G2. Constant μ	-34751.6	126	6469.0	0.201
G3. Constant μ and $\lambda^*_{4t} = 0$	-34755.3	122	6440.2	0.201
G4. Constant μ and $\lambda^*_{4t} = \gamma^*_{04t} = 0$	-34760.7	118	6414.7	0.201
H. EQRCII without career mobility, using metric Z				
H1. Equation (5) without career mobility	-34812.7	91	6274.4	0.200
H2. Constant μ	-34814.8	87	6242.4	0.200
H3. Constant μ and $\lambda^*_{4t} = 0$	-34815.4	86	6234.4	0.200
H4. Constant μ and $\lambda^*_{4t} = \gamma^*_{04t} = 0$	-34818.2	85	6231.1	0.200

Table 4 Parameter Estimates of Model D5

Occupation	*OD scaling metric*		*Intergenerational OD immobility*		*Career FC immobility*	
I(P)	0.437		1.485**	(0.177)	5.210**	(0.176)
II(P)	0.314		1.191**	(0.129)	3.416**	(0.147)
I+II(A)	0.450		1.578**	(0.144)	3.881**	(0.404)
III(L)	0.223		0.949**	(0.159)	3.237**	(0.128)
III(S)	0.070		1.194**	(0.151)	2.659**	(0.122)
IVab	0.060		2.655**	(0.137)	4.974**	(0.288)
V	-0.125		1.230**	(0.164)	3.202**	(0.203)
VI(L)	-0.175		1.167**	(0.203)	3.375**	(0.155)
VI(S)	-0.385		1.434**	(0.112)	3.012**	(0.124)
VIIa(L)	-0.237		1.307**	(0.159)	3.153**	(0.143)
VIIa(S)	-0.328		1.171**	(0.113)	2.383**	(0.123)
IVc+VIIb	-0.303		2.446**	(0.106)	3.781**	(0.143)
Overall immobility			*OD immobility*		*FC immobility*	
by entry year			-0.112**	(0.020)		
by worked years			-0.193**	(0.069)	-1.115**	(0.099)
by square of work experience			-0.041*	(0.020)	0.169**	(0.022)
by work experience × survey point			0.059**	(0.013)		
Overall OD association (μ)	1.146**	(0.144)				
Overall FC association (η)	2.802**	(0.827)				
by work experience	1.960**	(0.754)				
by square of work experience	-0.464**	(0.158)				
Education	0.875**	(0.053)				
by entry year	0.040**	(0.010)				
by work experience	-0.296**	(0.041)				
by square of work experience	0.041**	(0.012)				

OD: origin-destination *FC*: first occupation-current occupation

** p<0.01 * p<0.05

Table 5 Differential Chances of Intergenerational Mobility between Origins and Destinations in Entry Year 1975 and the Effect of Education

	Destinations											
Origins	I(P)	II(P)	I+II(A)	III(L)	III(S)	IVab	V	VI(L)	VI(S)	VIIa(L)	VIIa(S)	IVc+VIIb
I(P)	**1.063**	0.157	0.225	0.112	0.035	0.030	-0.063	-0.087	-0.193	-0.119	-0.164	-0.152
II(P)	0.157	**0.663**	0.162	0.080	0.025	0.022	-0.045	-0.063	-0.138	-0.085	-0.118	-0.109
I+II(A)	0.225	0.162	**1.169**	0.115	0.036	0.031	-0.065	-0.090	**-0.199**	-0.122	-0.169	-0.156
III(L)	0.112	0.080	0.115	**0.365**	0.018	0.015	-0.032	-0.045	-0.099	-0.061	-0.084	-0.078
III(S)	0.035	0.025	0.036	0.018	**0.559**	0.005	-0.010	-0.014	-0.031	-0.019	-0.026	-0.024
IVab	0.030	0.022	0.031	0.015	0.005	**2.018**	-0.009	-0.012	-0.026	-0.016	-0.022	-0.021
V	-0.063	-0.045	-0.065	-0.032	-0.010	-0.009	**0.607**	0.025	0.055	0.034	0.047	0.043
VI(L)	-0.087	-0.063	-0.090	-0.045	-0.014	-0.012	0.025	**0.561**	0.077	0.048	0.066	0.061
VI(S)	-0.193	-0.138	**-0.199**	-0.099	-0.031	-0.026	0.055	0.077	**0.963**	0.105	0.145	0.134
VIIa(L)	-0.119	-0.085	-0.122	-0.061	-0.019	-0.016	0.034	0.048	0.105	**0.731**	0.089	0.082
VIIa(S)	-0.164	-0.118	-0.169	-0.084	-0.026	-0.022	0.047	0.066	0.145	0.089	**0.653**	0.114
IVc+VIIb	-0.152	-0.109	-0.156	-0.078	-0.024	-0.021	0.043	0.061	0.134	0.082	0.114	**1.910**
Effect of education												
Entry year	0.481	0.345	**0.495**	0.246	0.077	0.066	-0.138	-0.192	**-0.424**	-0.261	-0.361	-0.333
20 years after entry	0.293	0.210	**0.302**	0.150	0.047	0.040	-0.084	-0.117	**-0.258**	-0.159	-0.220	-0.203

Table 6 Differential Chances of Career Mobility between First and Current Occupation after 20 Years from Entry Year

	Current Occupation											
First Occupation	I(P)	II(P)	I+II(A)	III(L)	III(S)	IVab	V	VI(L)	VI(S)	VIIa(L)	VIIa(S)	IVc+VIIb
I(P)	**4.137**	0.745	0.830	0.233	0.120	0.184	-0.355	-0.366	-0.599	-0.503	-0.542	-0.230
II(P)	0.258	**2.261**	0.444	0.125	0.064	0.099	-0.190	-0.196	-0.320	-0.269	-0.290	-0.123
I+II(A)	0.519	0.804	**3.223**	0.252	0.130	0.199	-0.383	-0.395	-0.646	-0.543	-0.585	-0.248
III(L)	0.716	1.108	**1.235**	**2.030**	0.179	0.274	-0.527	-0.545	**-0.891**	-0.748	-0.806	-0.342
III(S)	0.254	0.393	0.437	0.123	**1.170**	0.097	-0.187	-0.193	-0.316	-0.265	-0.286	-0.121
IVab	-0.066	-0.102	-0.114	-0.032	-0.016	**3.420**	0.049	0.050	0.082	0.069	0.074	0.031
V	-0.390	-0.603	-0.672	-0.189	-0.097	-0.149	**1.648**	0.296	0.485	0.407	0.438	0.186
VI(L)	-0.317	-0.491	-0.547	-0.154	-0.079	-0.121	0.234	**1.821**	0.395	0.331	0.357	0.151
VI(S)	-0.409	-0.633	-0.706	-0.198	-0.102	-0.157	0.301	0.311	**1.458**	0.428	0.461	0.195
VIIa(L)	-0.201	-0.311	-0.346	-0.097	-0.050	-0.077	0.148	0.153	0.250	**1.599**	0.226	0.096
VIIa(S)	-0.368	-0.569	-0.634	-0.178	-0.092	-0.141	0.271	0.280	0.458	0.384	**0.829**	0.176
IVc+VIIb	-0.467	-0.723	-0.805	-0.226	-0.116	-0.179	0.344	0.355	0.581	0.488	0.525	**2.227**

Appendix Table #1 Main Effects of Entry Year: Intergenerational Mobility to First Occupation

Model	Log likelihood	*df*	BIC *vs.* Model I1	Pseudo R^2
I1. $\alpha_k + \beta_k X_f$	-18855.6	88		0.133
I2. $\alpha_k + \beta_k X + \beta_k X^2 + \beta_k X^3$	-18920.8	44	-268.0	0.130
I3. $\alpha_k + \beta_k X + \beta_k X^2$	-18944.2	33	-320.7	0.129
I4. $\alpha_k + \beta_k X$	-18965.4	22	**-377.9**	0.128

Appendix Table #2 Analysis of Intergenerational Mobility to First Occupation

Model	Log likelihood	*df*	BIC *vs.* Model J1	Pseudo R^2
J. RCII				
J1. Full model	-16667.7	59		0.234
J2. Constant μ	-16668.0	58	-8.4	0.234
J3. Constant μ and λ	-16682.2	57	10.9	0.233
J4. Constant γ_i, μ and λ	-16690.3	56	18.0	0.233
J5. $\alpha_k + \beta_k X + \gamma_i + \gamma_{01} X + \sigma_i \varphi_k (\mu_0 + \mu_1 X)$	-17748.9	57	2144.4	0.184
J6. $\alpha_k + \beta_k X + \gamma_i + \gamma_{01} X + \sigma_i \varphi_k \mu_0$	-17750.6	56	2138.6	0.184
J7. $\alpha_k + \beta_k X + \gamma_i + \sigma_i \varphi_k \mu_0$	-17761.2	55	2150.8	0.183
K. EQRCII ($\sigma_i = \varphi_i$)				
K1. Full model	-16672.8	49	-80.4	0.233
K2. Constant μ	-16672.8	48	**-89.4**	0.233
K3. Constant μ and λ	-16687.0	47	-69.9	0.233
K4. Constant γ_i, μ and λ	-16695.2	46	-62.7	0.232
K5. $\alpha_k + \beta_k X + \gamma_i + \gamma_{01} X + \sigma_i \varphi_k (\mu_0 + \mu_1 X)$	-17768.6	47	2093.3	0.183
K6. $\alpha_k + \beta_k X + \gamma_i + \gamma_{01} X + \sigma_i \varphi_k \mu_0$	-17769.4	46	2085.8	0.183
K7. $\alpha_k + \beta_k X + \gamma_i + \sigma_i \varphi_k \mu_0$	-17779.9	45	2097.7	0.183

Appendix Table #3 Parameter Estimates of Model K2

Occupation	*OD* scaling metric ($\sigma_i = \varphi_i$)		*OD* immobility (γ_i)	
I(P)	0.448		1.335**	(0.212)
II(P)	0.295		1.110**	(0.167)
I+II(A)	0.439		1.602**	(0.296)
III(L)	0.233		0.579*	(0.197)
III(S)	0.082		1.111**	(0.180)
IVab	0.057		2.722**	(0.223)
V	-0.128		1.198**	(0.269)
VI(L)	-0.167		0.700*	(0.272)
VI(S)	-0.395		1.376**	(0.133)
VIIa(L)	-0.223		1.276**	(0.194)
VIIa(S)	-0.316		1.172**	(0.133)
IVc+VIIb	-0.326		2.730**	(0.126)
Overall *OD* immobility by entry year (γ_{01})			-0.109**	(0.023)
Overall *OD* association (μ_0)	1.202**	(0.194)		
Education (λ_0)	0.806**	(0.063)		
by entry year (λ_1)	0.057**	(0.013)		

OD: origin-destination ** $p<0.01$ * $p<0.05$

Figures

Figure 1 Average Years of Education by Occupation by Survey Year: Male aged 20 to 69

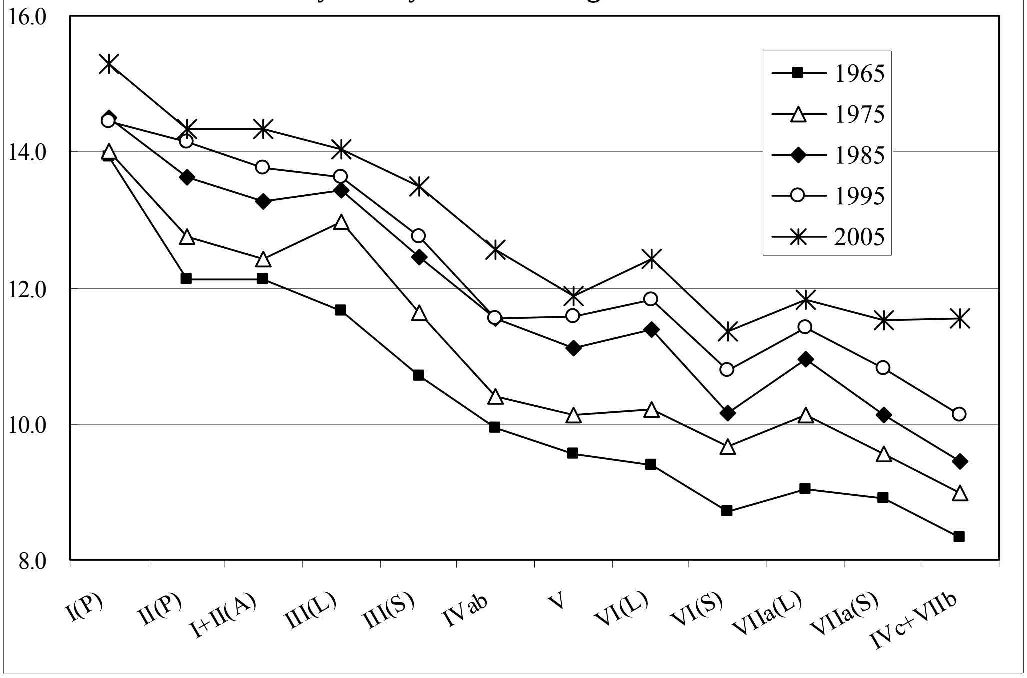

Figure 2 Percentage under the First Quartile of Annual Income at Each Survey Year by Occupation (%): Male aged 20 to 69

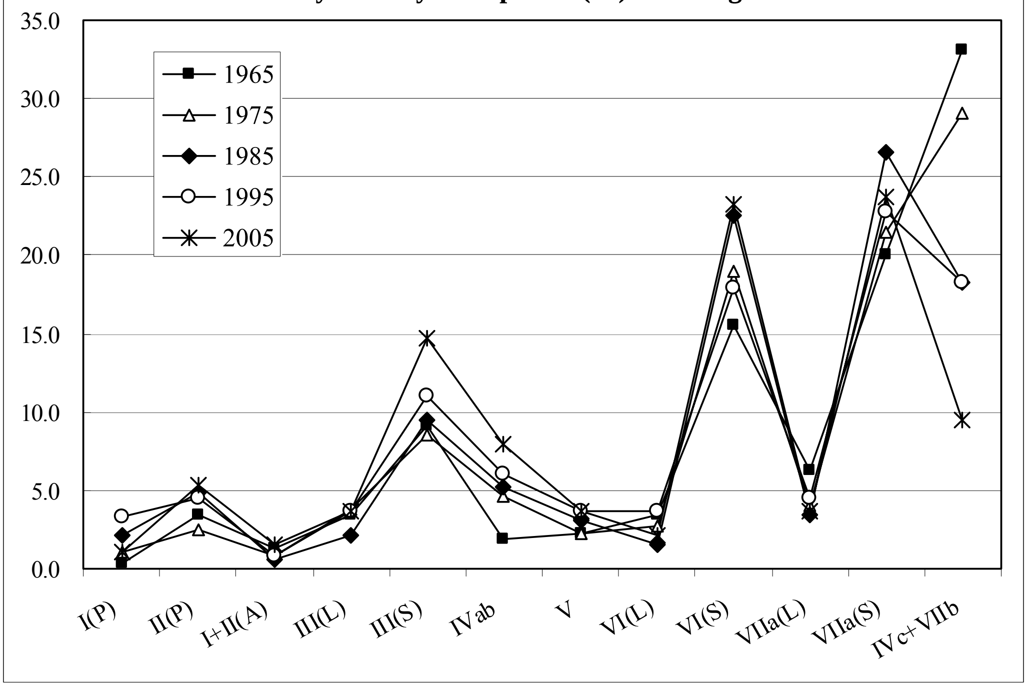

Figure 3 Percentage over the Third Quartile of Annual Income at Each Year by Occupation (%): Male aged 20 to 69

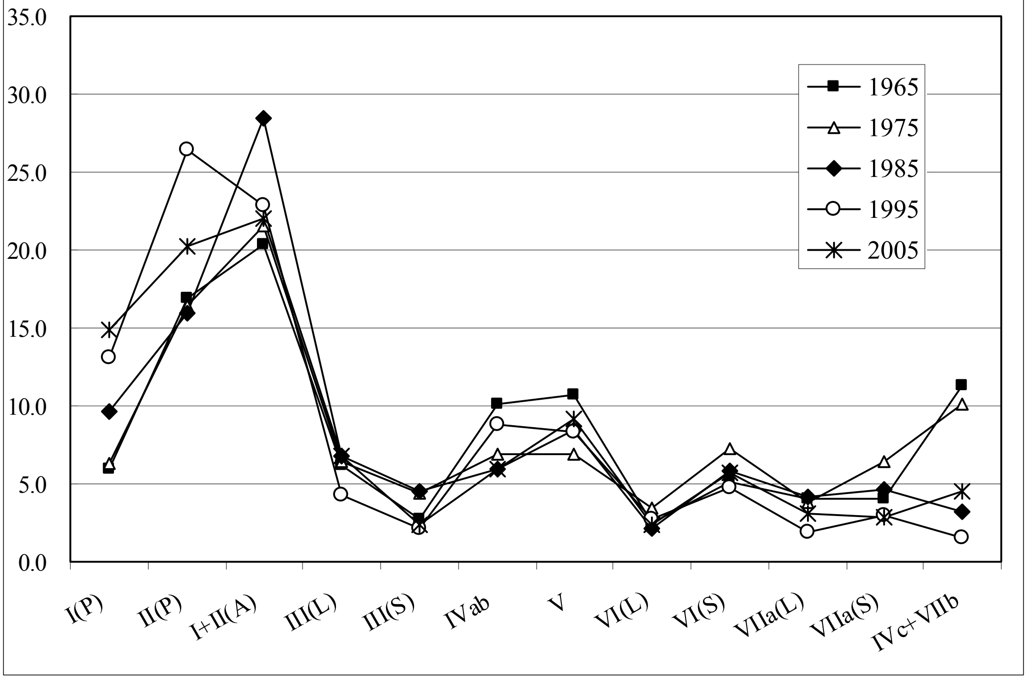

Figure 4 Example of Contradictory Parameter Estimate: Changes of overall origin-destination immobility by entry year

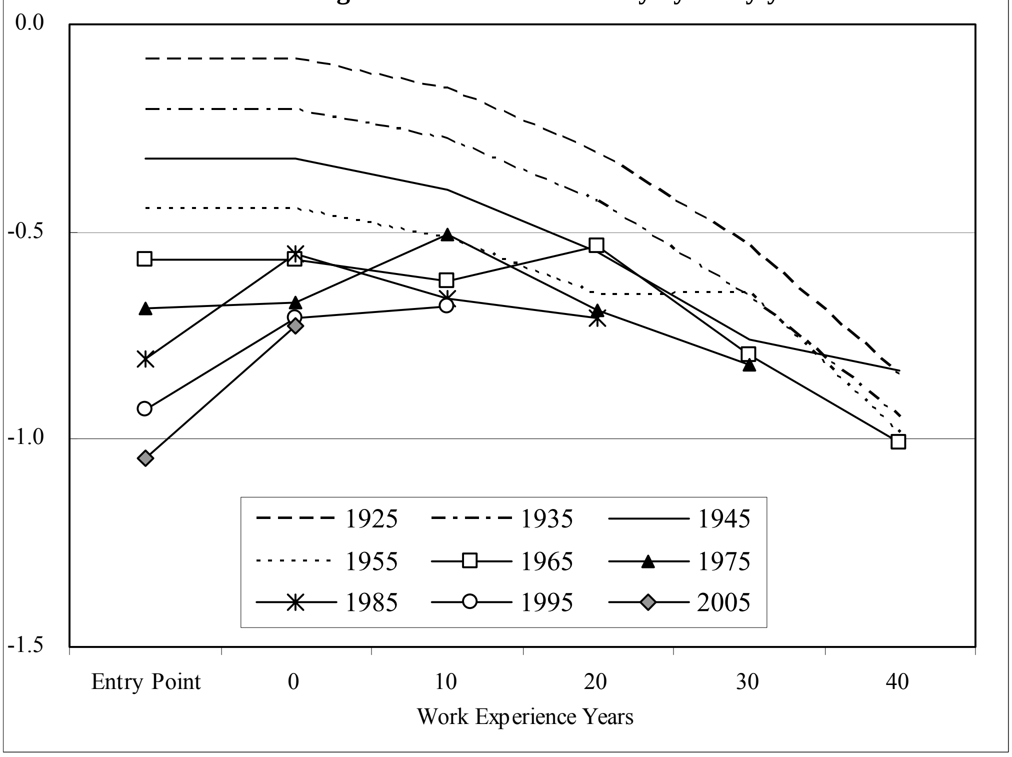

Figure 5 Parameter Estimateof Model E1: Changes of overall origin-destination immobility by entry year

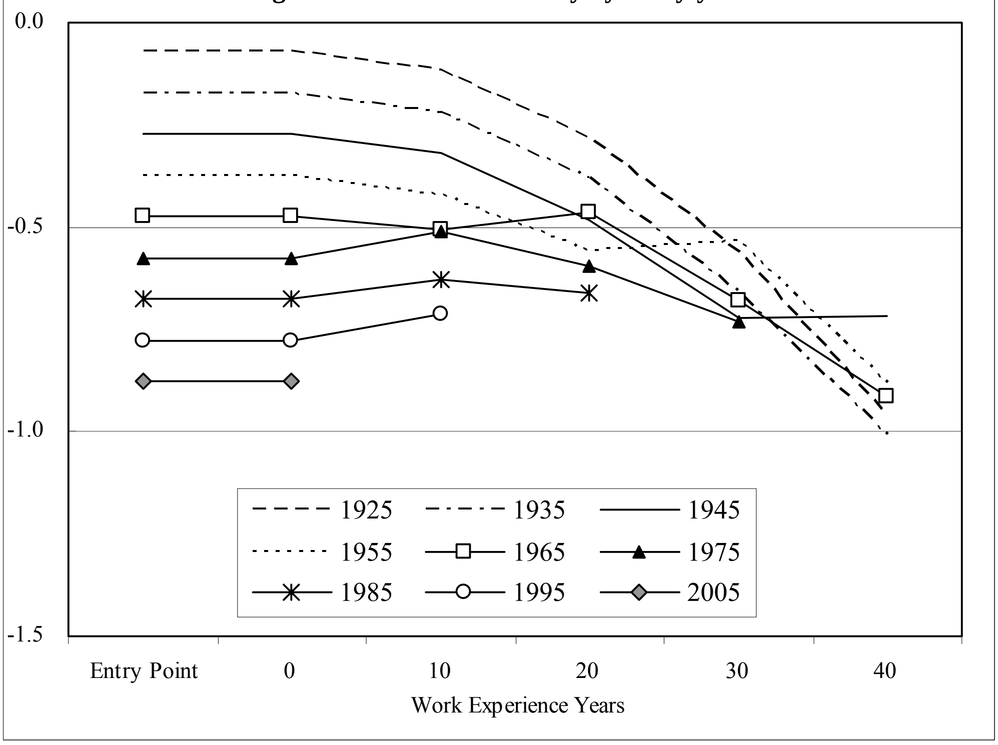

Figure 6 Scaling Metrics of Occupation

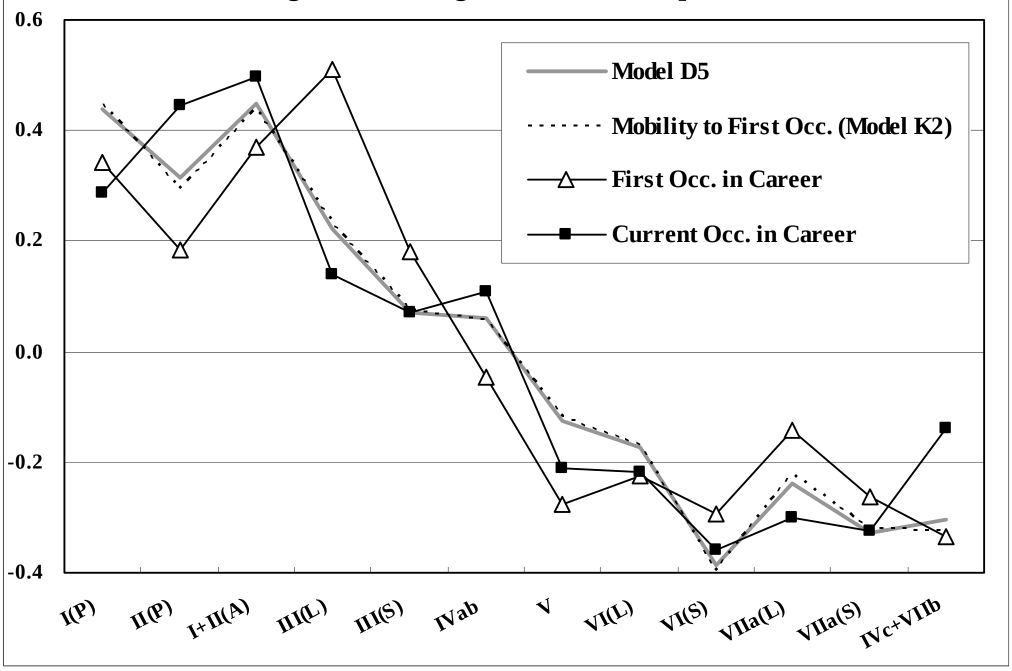

Figure 7 Overall Origin-Destination Immobility: Change with work experience by entry year in Model D5

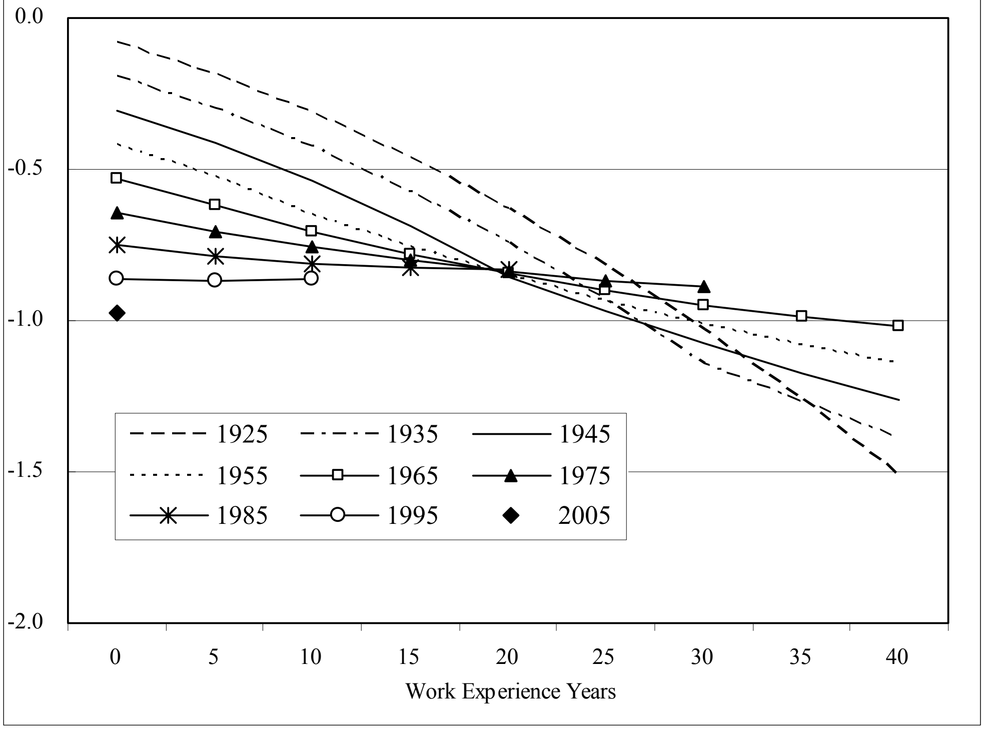

Figure 8 Effect of Education: Changes of maximum disparity with work experience by entry year in Model D5

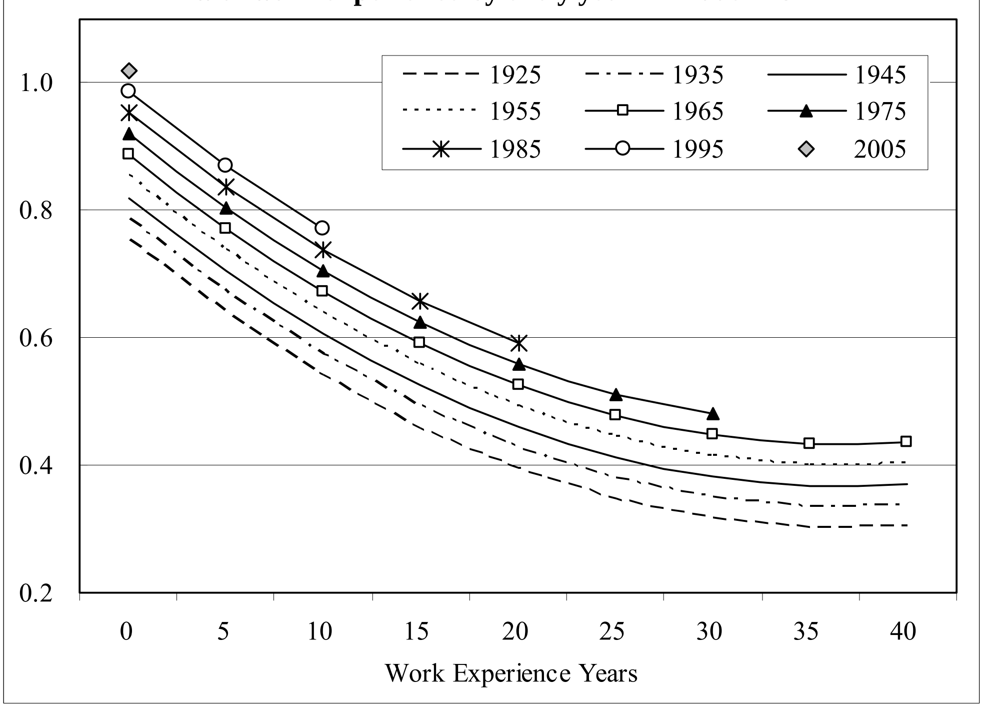

Figure 9 Overall FC Immobility and Maximum Disparity of FC Association: Changes with work experience in Model D5