Labour market transitions in Australia and Japan: A Panel Data Analysis

Tomoko Kishi[1] Nanzan University, Japan
Shigeki Kano Osaka Prefectural University, Japan

Abstract

We compare labour market transitions between Australia and Japan using longitudinal data, applying dynamic multinomial models controlling for initial values and unobserved heterogeneity. For Australia, casual or fixed-term employment in period t-1 significantly raises the probability of permanent or ongoing employment in period t for both men and women. For Japan, fixed-term employment in period t-1 does not have any significant effect on the probability of permanent or ongoing employment in period t for either sexes. While for Australian women, permanent or ongoing employment in the current period significantly lowers the probability of casual or fixed-term employment in the subsequent period, for Japanese women, there is a corresponding increase in probability. The theoretical probability of labour market transitions from fixed-term employment to permanent employment is the lowest for Japanese women among the four country-gender groups.

Keywords: fixed-term employment, permanent or ongoing employment, unobserved heterogeneity, dynamic multinomial logit model, labour market transitions
JEL Classification Codes: C23, J21, J64

1 The first author is affiliated with Nanzan University and the second author with Osaka Prefectural University. Address for correspondence: Tomoko Kishi, Department of Economics, Nanzan University, 18 Yamazato-cho, Nagoya 466-8673 Japan, Email: kisi@nanzan-u.ac.jp

Acknowledgements
This work was supported by the Japan Society for the Promotion of Science under Grant Nos. 17K03780 and 26380273. The authors wish to express their gratitude to the Melbourne Institute of Applied Economic and Social Research and Keio University Panel Data Research Centre for releasing the Household, Income, and Labour Dynamics in Australia Survey and the Keio Household Panel Survey, respectively. The authors are also grateful for the useful comments received from Professors Daiji Kawaguchi, Michio Naoi, Lixin Cai, and the anonymous referees. All remaining errors are ours.

1. Introduction

In most countries, labour markets have several submarkets or segments, distinguished by different characteristics and behavioural rules. The dual market theory hypothesises that a dichotomy has developed between a high-wage primary segment and a low-wage secondary segment. Working conditions in the primary segment are generally favourable; there is steady employment and job security, and the rules that govern the organisation of employment are well defined and equitable. The characteristics of secondary employment, on the other hand, are less favourable. Work here has little job security and staff turnover rates are high.

Whether labour market segmentation has a significant effect on wages or the income distribution depends on the allocation of labour. In countries with high degrees of labour market transitions, employees in the secondary labour market have ample opportunities to access the primary labour market and labour market segmentation does not directly lead to dualism in income distribution. On the other hand, in countries with low degrees of labour market transitions, employees in the secondary market have limited access to the primary market and the dualistic structure of labour markets tends to be fixed and lead to persistent wage differentials.

This study compares the labour market dynamics in Australia and Japan, with a special focus on the transitions out of the secondary market. Australia and Japan share the issue of labour market dualism but for different backgrounds and with different outcomes. In Australia, labour market dualism has been observed since the 1980s, due to various factors, such as increased competition in the international market, technological changes, and labour market deregulation. This trend occurred in Japan from the 1990s, due to economic recession (whose effects have persisted for more than 20 years) and consequent increases in unemployment rates, increased competition, and technological changes. The speed of labour market casualization in Japan was higher and accordingly, the effects on income distribution were more serious than in Australia (Corbett *et al*., 2009). Having undergone substantial labour market changes, Australia has a huge longitudinal data resource and a rich literature in labour market analysis. We expect that a comparative analysis on the common and alternative aspects of labour market dualism and its dynamics will contribute to a deeper understanding of the problems inherent to labour markets in this era of change.

Empirical research on the dual labour market in Australia in the 1980s has been presented by Gregory and Duncan (1981), Zagórsky (1989), and others. Since the end of the 1990s, researchers have focused on the labour market segmentation accompanied by labour market casualisation (Burgess and Campbell, 1998; Mitchell et al., 2005). Since the development of longitudinal data, extensive research on labour market dynamics has found a lock-in effect of the lower tier of the labour market (Bill, Mitchel, and Welters, 2006; Welters and Mitchell, 2009; Watson, 2013; and McVicar, Wooden, and Fok, 2017). Such 21st century studies could be interpreted as a new type of dual labour market analysis.

In Japan, empirical research of the dualistic labour market also traces back to the 1980s, although the main focus was on the wage differentials between large, and small or medium sized enterprises (Odaka, 1984). Ishikawa and Dejima (1994) first identified two distinct wage functions corresponding to the two tiers of labour markets. Teruyama and Toda (2017) and Teruyama (2018) followed Ishikawa and Dejima's research, and identified different wage-tenure and wage-experience profile patterns between regular and non-regular employment. Significant wage differences between the two segments have been analysed by a number of studies including Ohta (2006), Takahashi (2016), and Morikawa (2017).

While researchers in Australia try to analyse the dynamism of the labour market that brings about dualistic structures, researchers in Japan tend to assume that the dualistic structure of the labour market is a given condition. Accordingly, few empirical analyses have hitherto attempted to examine the labour mobility between the two segments. Consequently, this paper measures the probability of changing employment status in the Japanese labour market and compares this with Australia. We use comparable longitudinal data/periods for each country, and apply similar econometric methods. The econometric model considers individual unobserved heterogeneity, endogeneity, and initial conditions of employment status.

The remainder of this paper is organised as follows. Section 2 takes a general view of changes in labour markets of both countries and Section 3 reviews previous research, introducing initial analyses for both countries. Section 4 explains the data, sets up the model, and presents the hypotheses. Section 5 presents the empirical analysis and discusses results. Section 6 concludes the paper.

2. Changes in labour markets in Australia and Japan

One of the most striking changes in Australia's labour market in the past 30 years is the rise in the proportion of casual and part-time employees as a proportion of total employment. Part-time employees are defined as employed persons who usually worked less than 35 hours a week (in all jobs) and either did so during the reference week or not at work in the reference week (Australian Bureau of Statistics, 2018). Casual employees are defined as those who were not entitled to paid holiday leave or paid sick leave.

In Japan, on the other hand, employees in the secondary labour market are referred to as 'non-regular employees' as opposed to 'regular employees'. The past 30 years of the Japanese labour market have also been characterised by a rise in the proportion of non-regular employees. However, the distinction between regular and non-regular employees depends on three factors: the specific employment contract, the workplace title, and the number of hours worked (Kambayashi, 2013).

The distinction based on the workplace title cannot be used for the comparative analysis, as there are not any equivalent titles in Australia. The distinction based on hours worked is not useful for international comparison, either, as there is no set division in hours worked between part-time and full-time employees in Japan. We adopt the distinction based on the labour contract, as it has a consistency with that of Australia, as discussed later.

3. Literature review

Numerous studies have focused on the persistency of underemployment, low wage employment, or changes in employment status in specific careers in both Australia and Japan. However, the study objectives have differed between the two countries.

For Australia, researchers have been devoted to studies on labour market transitions, in particular transitions out of the secondary segment of the labour market. Chalmers and Kalb (2001) performed a hazard function analysis, using data from the 'Survey on Unemployment and Unemployment Patterns from 1994 to 1997', to find that casual jobs shorten the time to move from unemployment to permanent employment. Buddelmeyer and Wooden (2008) (2011) used the Household, Income and Labour Dynamics in Australia (or HILDA) Survey to examine the rates of transition from casual employment to non-casual employment, based on a dynamic multinomial model, and found that for men, casual employment was a bridge to permanent employment while for women, this was not necessarily true. Cai (2014), using the first 12 waves of the HILDA Survey, showed that both state dependence and stepping-stone effects of low pay were present among Australian workers, after observed and unobserved individual heterogeneity are controlled for. Mavromaras, Sloane, and Wei (2015) applied a random-effect dynamic probit model to the first 10 waves of the HILDA Survey, and found that, compared with those with skill-matched jobs, those with skill-underutilised jobs are more likely to be unemployed in the subsequent period.

For Japan, researchers have been less interested in labour market transitions than in the persistent effects of the initial employment status to employment status in later career (Okamura and Islam 2011, Diamond 2018). A few studies have been devoted to the labour market transitions from non-regular to regular employment, as in Genda (2011) and Sano (2012).

4. Data, model, and hypotheses

Data

As longitudinal data covering similar periods are available for both Australia and Japan, we use the Household, Income and Labour Dynamics in Australia Survey (hereinafter referred to as the HILDA), developed by the Melbourne Institute of Applied Economic and Social Research, and Keio Household Panel Survey (hereinafter referred to as the KHPS) developed by Keio University. The first year for the HILDA Survey was 2001, whereas the KHPS began in 2004. We used waves 1–14 (2001–2014) for the HILDA Survey and waves 1–12 (2004–2015) for the KHPS.

The HILDA Survey is a nationally representative longitudinal study of Australian households. The study is funded by the Australian Government Department of Social Services (DSS). It annually collects information on a wide range of aspects of life in Australia, including household and family relationships, child care, employment, education, income, expenditure, health and well-being, attitudes and values on a variety of subjects, and various life experiences. The first wave consisted of 13,969 respondents.

The KHPS, on the other hand, is the first comprehensive longitudinal survey of households in Japan, conducted annually by Keio University, Tokyo. The survey questionnaire covers topics such as the respondents' education/employment status, academic background, household structure, time allocation, consumption, savings, financial assets, matters related with family, and views and behaviour.[2] The number of respondents for the first wave, in 2004, was 4,005 men and women aged 20–69. The comparison between the two longitudinal datasets is as shown in Appendix Table A1.

We combined waves 1–14 of the HILDA Survey and waves 1–12 of the KHPS, and selected samples from the wave 1 survey. That is, top-up samples are not used, as our analysis used the employment status information from wave 1.

Variables pertaining to employment status

Most of the preceding studies based on the HILDA Survey classifies employment status into six categories: 'employed on a permanent or ongoing basis', 'employed on a fixed-term contract', 'employed on a casual basis', 'self-employed', 'unemployed' and 'not in the labour force'. Although it is ideal to classify the employment status in the KHPS in the same manner, it is impossible, as the category 'casual employees' does not exist in Japan and the samples for 'unemployed' are too small to be an independent category.

In the KHPS, there are questions pertaining to employment status based on both workplace title and labour contracts. As the labour force classification based on the workplace title is not consistent with that in the HILDA Survey, we use the classification based on the labour contract. That is, for the KHPS, we classify employees into those with fixed-term contracts and those with permanent contracts according to the question; 'Do you have a fixed-term or an ongoing labour contract?' The social security system, which includes employee pensions, employment insurance, and parental leave, is less likely to cover fixed-term employees compared to those with permanent contracts in Japan (JILPT, 2010). In addition, they have less job stability, higher turnover rates and lower incomes than those with permanent contracts. That is, fixed-term employees in Japan share the characteristics of both casual employees and employees with fixed-term contracts in Australia (Swami, 2017; Gilfillan, 2018). For this reason, we classified employment status for both data as shown in Table 1. We group casual employees and fixed-term employees in the HILDA Survey into the same category termed FC in this paper[3].

2 The questionnaire for the KHPS is downloadable from the website: https://www.pdrc.keio.ac.jp/en/paneldata/datasets/jhpskhps/

3 We also included respondents who answered the question pertaining to the current contract of employment as 'others' in this category.

Table 1: Employment status for the HILDA Survey and the KHPS

	HILDA Survey		*KHPS*
N	Not in the labour force, Unemployed	N	Not in the labour force, Unemployed
S	Self-employed, Employer Employed in family business Unpaid family worker	S	Self-employed, Employer Employed in family business Unpaid family worker
FC	Employed on a casual basis[4] or Employed on a fixed term	F	Employed on a fixed term[5]
P	Employed on a permanent or ongoing basis	P	Employed on a permanent basis

The model

We employ a dynamic multinomial logit model as in Buddelmeyer and Wooden (2011), Prowse (2012), and Cai (2014). Consider four mutually exclusive states of employment for an individual, namely, (1) self-employment, (2) fixed term employment, (3) permanent employment, and (4) not working. (For the HILDA Survey, the fixed term includes casual employment.) We define categorical variable S_{it} such that $S_{it} = 1,2,3$ suggests that individual i is self-employed, employed for a fixed term (or on a casual basis), and permanently employed, treating non-working as a reference state. Further, let Y_{jit} be a dummy variable taking on unity, if $S_{it} = j$.

We assume that the net utility of choosing state*j*(where $j = 1,2,3$) is given by

$$Y_{jit}^{*} = X_{it}'\beta_j + \gamma_{j1}Y_{1i,t-1} + \gamma_{j2}Y_{2i,t-1} + \gamma_{j3}Y_{3i,t-1} + \alpha_{ji} + \epsilon_{jit}, \quad (1)$$

depending on the employment status of the last period, control variable X_{it}, and time invariant, individual-specific unobserved heterogeneity α_{ji}. The last term, ϵ_{jit}, denotes an identically independently distributed error. In this paper, ϵ_{jit} is assumed to follow type I extreme value distribution.

As in the case of univariate dynamic binary choice models with unobserved heterogeneity, ignoring the initial states, S_{i0}, from the model can cause biases on the parameter estimation. Thus, following Wooldridge (2005), we assume the structure of α_{ji} as

$$\alpha_{ji} = \phi_{j1}Y_{1i1} + \phi_{j2}Y_{2i1} + \phi_{j3}Y_{3i1} + \mu_{ji}, \quad j = 1,2,3. \quad (2)$$

4 In this paper, casual employment (for the HILDA Survey) is based on self-identification.
5 Among the KHPS respondents classified as 'F (fixed term employment contract), the proportion of 'non-regular employees' classified based on workplace title is 85.4 per cent for men and 96.2 per cent for women.

Here μ_{ji} casts tri-variate normal random effects:

$$\begin{bmatrix}\mu_{1i}\\ \mu_{2i}\\ \mu_{3i}\end{bmatrix} \sim N(0,\Sigma), \quad \Sigma = \begin{bmatrix}\sigma_1^2 & \sigma_{12} & \sigma_{13}\\ \sigma_{12} & \sigma_2^2 & \sigma_{23}\\ \sigma_{13} & \sigma_{23} & \sigma_3^2\end{bmatrix} \tag{3}$$

Note that the current model allows free correlations among random effects within individuals, and we can estimate them.

It follows from the above assumptions and rational choices of individuals,that the probability of $S_{it} = j$ conditional on the relevant variables, including random effects, is given by

$$Pr\left(S_{it} = j \middle| S_{i1}, S_{i,t-1}, X_i, \mu_{1i}, \mu_{2i}, \mu_{3i}\right) = \frac{exp\left(m_{jit}\right)}{\sum_{k=1}^{3} exp(m_{kit})}, \tag{4}$$

where,

$$m_{jit} = X_{it}'\beta_j + \gamma_{j1}Y_{1i,t-1} + \gamma_{j2}Y_{2i,t-1} + \gamma_{j3}Y_{3i,t-1} + \phi_{j1}Y_{1i1} + \phi_{j2}Y_{2i1} + \phi_{j3}Y_{3i1} + \mu_{ji}. \tag{5}$$

To construct the joint likelihood function of the sequence of outcomes $S_{i2}, S_{i3}, ..., S_{iT}$ conditional on S_{i1} and other controls, we need to integrate $\mu_{1i}, \mu_{2i}, \mu_{3i}$ out from the model. Specifically, a Gauss-Hermite quadrature is used for this purpose, the normal distribution in equation (3) being postulated.

(iv) Variable definitions

The independent variables are as follows: lagged latent variables for employment status: Y_{it-1}, latent variable for employment in the first period[6]: Y_{i1} dummy variables for age classes: *Age30_39, Age40_49 and Age50+*, dummy variable for marital status: *Married*, number of dependent children: C*hildren0_3* and C*hildren4_6,* dummy variables for highest education: *Degree, Diploma*, and *Certificate III/IV* (only for the HILDA Survey), and regional unemployment rate: *Region UR*.[7] The explanatory variable *Region_UR* represents the unemployment rate for each gender in each state or region. For the HILDA Survey, the unemployment rate in June of each year (original series) from the *Labour Force, Australia* is used, and for the KHPS, the unemployment rate in the first quarter of each year (original

6 We take the initial condition of employment status as suggested in Wooldridge (2005).

7 For the HILDA survey, respondents with diplomas or advanced diplomas are set as Diploma = 1. For the KHPS, respondents whose highest educational attainments are technical or junior colleges are set as Diploma = 1 as well. In Japan, there are not any qualifications corresponding to advanced diploma, certificate III, and certificate IV.

series) from the *Labour Force Survey* is used.[8,9] The independent variables are listed in Table 2.

Table 2: Explanatory variables

Variable	*Definition for the HILDA Survey*	*Definition for the KHPS*
Age30_39	Dummy = 1 if the respondent's age is from 30 to 39	
Age40_49	Dummy = 1 if the respondent's age is from 40 to 49	
Age50+	Dummy = 1 if the respondent's age is 50 or more	
Married	Dummy = 1 if the respondent is married or has a partner	Dummy = 1 if the respondent is married
Children0_3	Dummy =1 if the respondent has at least one resident children aged from 0 to 3	
Children4_6	Dummy =1 if the respondent has at least one resident children aged from 4 to 6	
Degree	Dummy = 1 if the respondent's highest education is university or higher	
Diploma	Dummy = 1 if the respondent's highest education is advanced diploma or diploma	Dummy = 1 if the respondent's highest education is graduation from technical or junior college
Certificate III/IV	Dummy = 1 if the respondent's highest education is Certificate III or IV	As there are no education levels equivalent to Certificate III or IV in Japan, this dummy is not used for KHPS
Region_UR	Unemployment rate in the state where the respondent lives. Unemployment rates by gender (as of June each year) are applied	Unemployment rate in the region where the respondent lives. Unemployment rates by gender (as of the first quarter each year) are applied

We removed observations for respondents either below 20 years of age or those above 60 years of age, as the former is mainly composed of students and the latter is composed of those either retired or about to retire. We also removed observations with missing values for any dependent or independent variables. Appendix Tables A2 and A3 provide the descriptive statistics for the samples segregated by gender.

8 ABS Statistics, catalogue no. 6202.0 - Labour Force, Australia, May 2017 is used. The unemployment rate for each state (or territory) is used.
9 Statistics Bureau, Labour Force Survey, Historical data table 8 is used. The unemployment rate is for each of the 10 regions (the 47 prefectures are classified into 10 regions in this table).

5 Results

(i) Econometric results

Firstly, we applied the dynamic multinomial logit model as in Section 3. Tables 3-1 and 3-2 report the results for the HILDA Survey for the labour market transitions of the male and female respondents, respectively. Tables 4-1 and 4-2 show results from the KHPS for the labour market transitions for the male and female respondents, respectively. The left-hand side of the tables are obtained from the multinomial logit estimation without random effects, while the right-hand side of the tables are obtained from the multinomial logit estimation with correlated random effects. Results shown in Tables 3-1, 3-2, 4-1 and 4-2 are all marginal effects, with standard deviations in parentheses.

For all estimated results, the variances and covariance of random effects are statistically significant. This suggests that the unobserved heterogeneity plays an important role in determining the employment status of individuals.

Secondly, we estimated probabilities of transitions in employment status from period *t-1* to *t* using the multinomial logit estimation with correlated random effects, as shown in Tables 5-1 and 5-2.

Table 3-1: Mean marginal effects, HILDA 2001-2014, men

HILDA, Men	*Model I without random effects*			*Model II with random effects*		
	P	*FC*	*S*	*P*	*FC*	*S*
Employment status, wave t-1						
Self-employed	-0.056*	-0.102*	0.670*	0.013	-0.069*	0.214*
	(0.008)	(0.008)	(0.009)	(0.014)	(0.012)	(0.013)
Fixed-term or casual	0.208*	0.281*	-0.017*	0.140*	0.065*	-0.033*
	(0.009)	(0.009)	(0.006)	(0.011)	(0.010)	(0.008)
Permanent	0.664*	-0.085*	-0.048*	0.387*	-0.120*	-0.056*
	(0.007)	(0.007)	(0.005)	(0.012)	(0.009)	(0.008)
Employment status, wave 1						
Self-employed	-0.013	-0.012	0.098*	-0.095*	-0.047*	0.408*
	(0.010)	(0.008)	(0.006)	(0.017)	(0.011)	(0.017)
Fixed-term or casual	0.042*	0.014*	0.009	0.136*	0.073*	0.015
	(0.007)	(0.006)	(0.005)	(0.014)	(0.010)	(0.009)
Permanent	0.100*	-0.029*	0.010*	0.284*	-0.025*	0.002
	(0.007)	(0.006)	(0.005)	(0.014)	(0.009)	(0.008)
Age (Reference: 20-29)						
30-39	0.010	-0.028*	0.007*	0.016*	-0.040*	0.015*
	(0.005)	(0.005)	(0.004)	(0.007)	(0.006)	(0.005)
40-49	0.006	-0.044*	0.014*	0.007	-0.057*	0.022*
	(0.005)	(0.005)	(0.003)	(0.007)	(0.006)	(0.005)
50-59	-0.024*	-0.052*	0.011*	-0.033*	-0.069*	0.017*
	(0.005)	(0.005)	(0.004)	(0.008)	(0.007)	(0.006)
Married	0.029*	-0.010*	0.012*	0.036*	-0.013*	0.163*
	(0.004)	(0.003)	(0.003)	(0.006)	(0.005)	(0.004)
Children 0-3	-0.004	-0.014*	0.005	-0.006	-0.015*	0.004
	(0.005)	(0.005)	(0.003)	(0.007)	(0.006)	(0.004)
Children 4-6	-0.007	-0.006	0.008*	-0.011	-0.006	0.007
	(0.006)	(0.006)	(0.003)	(0.007)	(0.006)	(0.004)
Degree	0.030*	-0.002	0.006*	0.063*	-0.019*	0.008
	(0.004)	(0.004)	(0.003)	(0.007)	(0.006)	(0.006)
Diploma	0.021*	-0.013*	0.008*	0.030*	-0.020*	0.016*
	(0.006)	(0.006)	(0.004)	(0.010)	(0.008)	(0.007)
Certificate	0.014*	-0.007*	0.007*	0.019*	-0.013*	0.016*
	(0.004)	(0.004)	(0.003)	(0.007)	(0.005)	(0.005)
Region_UR	-0.007*	0.003*	-0.0003	-0.009*	0.003*	0.0003
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
σ_S^2				4.724*		
				(0.384)		
σ_{FC}^2				2.401*		
				(0.176)		
σ_P^2				2.958*		
				(0.214)		
$\sigma_{S,FC}$				1.634*		
				(0.202)		
$\sigma_{S,P}$				1.722*		
				(0.218)		
$\sigma_{FC,P}$				2.058*		
				(0.174)		
Number of observations	47,261			47,261		
Log likelihood	-30,895.620			-29,758.793		

*denotes significance at the 5 per cent (or 1 per cent) significance level.

Table 3-2: Mean marginal effects, HILDA 2001-2014, women

HILDA, women	*Model I without random effects*			*Model II with random effects*		
	P	*FC*	*S*	*P*	*FC*	*S*
Employment status, wave t-1						
Self-employed	-0.015*	-0.044*	0.601*	0.043*	0.007	0.170*
	(0.007)	(0.007)	(0.010)	(0.013)	(0.012)	(0.010)
Fixed-term or casual	0.161*	0.383*	-0.006	0.102*	0.184*	-0.006
	(0.006)	(0.006)	(0.003)	(0.008)	(0.008)	(0.004)
Permanent	0.660*	-0.038*	-0.026*	0.370*	-0.055*	-0.024*
	(0.005)	(0.005)	(0.003)	(0.009)	(0.007)	(0.004)
Employment status, wave 1						
Self-employed	0.004	0.012	0.061*	-0.037*	-0.022	0.291*
	(0.009)	(0.008)	(0.004)	(0.015)	(0.012)	(0.017)
Fixed-term or casual	0.047*	0.034*	0.005	0.130*	0.093*	0.002
	(0.005)	(0.005)	(0.003)	(0.010)	(0.008)	(0.005)
Permanent	0.106*	-0.015*	0.008*	0.286*	-0.016*	0.001
	(0.005)	(0.005)	(0.003)	(0.010)	(0.007)	(0.004)
Age (Reference: 20-29)						
30-39	0.011*	-0.024*	0.012*	0.014*	-0.029*	0.013*
	(0.005)	(0.005)	(0.003)	(0.006)	(0.006)	(0.004)
40-49	0.004	-0.028*	0.013*	0.010	-0.035*	0.016*
	(0.005)	(0.005)	(0.003)	(0.007)	(0.006)	(0.004)
50-59	-0.021*	-0.057*	0.008*	-0.017*	-0.076*	0.007
	(0.005)	(0.005)	(0.003)	(0.007)	(0.007)	(0.004)
Married	-0.001	-0.010*	0.020*	-0.002	-0.022*	0.028*
	(0.003)	(0.003)	(0.002)	(0.005)	(0.005)	(0.003)
Children 0-3	-0.072*	-0.035*	0.003	-0.117*	-0.043*	0.007*
	(0.005)	(0.005)	(0.003)	(0.007)	(0.006)	(0.003)
Children4-6	-0.010	-0.0004	0.003	-0.035*	-0.001	0.008*
	(0.005)	(0.005)	(0.002)	(0.006)	(0.006)	(0.003)
Degree	0.051*	-0.001	0.012*	0.102*	-0.012	0.014*
	(0.004)	(0.004)	(0.002)	(0.007)	(0.006)	(0.004)
Diploma	0.028*	0.004	0.015*	0.057*	-0.011	0.024*
	(0.005)	(0.004)	(0.003)	(0.010)	(0.008)	(0.005)
Certificate	0.017*	0.001	0.006*	0.047	-0.002	0.007
	(0.004)	(0.004)	(0.002)	(0.007)	(0.006)	(0.004)
Regional_UR	-0.007*	0.003	-0.0002	-0.013*	0.001	0.002
	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)
σ_S^2				3.663*		
				(0.288)		
σ_F^2				1.648*		
				(0.102)		
σ_P^2				2.909*		
				(0.157)		
$\sigma_{S,F}$				0.812*		
				(0.129)		
$\sigma_{S,P}$				0.976*		
				(0.159)		
$\sigma_{F,P}$				1.654*		
				(0.110)		
Number of observations	53,281			53,281		
Log likelihood	-38,939.016			-37,490.312		

*denotes significance at the 5 per cent (or 1 per cent) significance level.

Table 4-1: Mean marginal effects, KHPS 2004-2015, men

KHPS, men	*Model I without random effects*			*Model II with random effects*		
	P	*F*	*S*	*P*	*F*	*S*
Employment status, wave t-1						
Self-employed	-0.216*	-0.034	0.607*	-0.039	-0.021	0.094
	(0.063)	(0.022)	(0.060)	(0.085)	(0.023)	(0.079)
Fixed-term	0.085	0.440*	-0.178*	0.142	0.200*	-0.280*
	(0.069)	(0.041)	(0.060)	(0.084)	(0.051)	(0.080)
Permanent	0.621*	-0.023	-0.229*	0.392*	-0.004	-0.295*
	(0.062)	(0.022)	(0.057)	(0.087)	(0.025)	(0.079)
Employment status, wave 1						
Self-employed	-0.064*	-0.006	0.090*	-0.307*	0.010	0.416*
	(0.031)	(0.023)	(0.025)	(0.081)	(0.043)	(0.080)
Fixed-term	0.004	-0.005	0.020	0.008	0.062	0.034
	(0.028)	(0.021)	(0.024)	(0.064)	(0.041)	(0.045)
Permanent	0.032	-0.035	0.020	0.141*	-0.044	0.004
	(0.026)	(0.020)	(0.021)	(0.058)	(0.032)	(0.037)
Age (Reference: 20-29)						
30-39	-0.017	0.007	0.010	-0.017	0.002	0.023
	(0.009)	(0.006)	(0.008)	(0.013)	(0.008)	(0.012)
40-49	-0.015	0.008	0.008	-0.017	0.001	0.021
	(0.010)	(0.006)	(0.008)	(0.014)	(0.008)	(0.013)
50-59	-0.038*	0.018*	0.015	-0.049*	0.015	0.031*
	(0.010)	(0.006)	(0.008)	(0.015)	(0.009)	(0.013)
Married	0.018*	-0.013*	0.004	0.025*	-0.016*	0.002
	(0.006)	(0.005)	(0.005)	(0.011)	(0.006)	(0.009)
Children 0-3	0.005	-0.015	0.012	-0.004	-0.019	0.022*
	(0.010)	(0.008)	(0.007)	(0.013)	(0.010)	(0.010)
Children 4-6	0.002	0.006	0.002	0.007	0.003	-0.004
	(0.010)	(0.008)	(0.007)	(0.014)	(0.009)	(0.010)
Degree	0.003	-0.0005	-0.005	0.006	-0.002	-0.011
	(0.005)	(0.004)	(0.004)	(0.009)	(0.006)	(0.009)
Diploma	0.015	0.003	-0.015*	0.024	0.003	-0.029*
	(0.009)	(0.007)	(0.007)	(0.016)	(0.009)	(0.014)
Regional_UR	-0.006*	0.004*	0.004	-0.008*	0.003	0.005
	(0.003)	(0.002)	(0.002)	(0.004)	(0.003)	(0.003)
σ_S^2				11.128*		
				(3.333)		
σ_F^2				6.669*		
				(2.440)		
σ_P^2				3.521*		
				(1.604)		
$\sigma_{S,F}$				7.807*		
				(2.565)		
$\sigma_{S,P}$				4.930*		
				(2.000)		
$\sigma_{F,P}$				3.950*		
				(1.712)		
Number of observations	7,198			7,198		
Log likelihood	-1,610.035			-1,563.372		

*denotes significance at the 5 per cent (or 1 per cent) significance level.

Table 4-2: Mean marginal effects, KHPS 2004-2015, women

KHPS, women	*Model I without random effects*			*Model II with random effects*		
	P	*F*	*S*	*P*	*F*	*S*
Employment status, wave t-1						
Self-employed	-0.035*	0.003	0.667*	0.042	0.046	0.198*
	(0.017)	(0.011)	(0.023)	(0.035)	(0.025)	(0.036)
Fixed-term	0.030	0.731*	-0.064*	0.047	0.495*	-0.100*
	(0.017)	(0.015)	(0.011)	(0.031)	(0.037)	(0.022)
Permanent	0.684*	0.061*	-0.063*	0.381*	0.114*	-0.088*
	(0.016)	(0.010)	(0.011)	(0.035)	(0.021)	(0.020)
Employment status, wave 1						
Self-employed	0.025	-0.024	0.064*	-0.019	-0.064*	0.321*
	(0.017)	(0.015)	(0.011)	(0.035)	(0.030)	(0.040)
Fixed-term	0.015	0.028*	0.013	0.036	0.127*	0.008
	(0.015)	(0.013)	(0.013)	(0.032)	(0.033)	(0.022)
Permanent	0.089*	-0.032*	0.018	0.289*	-0.077*	0.004
	(0.013)	(0.011)	(0.010)	(0.032)	(0.022)	(0.017)
Age (Reference: 20-29)						
30-39	-0.015	0.029*	-0.008	-0.012	0.037*	-0.012
	(0.015)	(0.013)	(0.012)	(0.020)	(0.016)	(0.016)
40-49	-0.024	0.041*	0.001	-0.029	0.065*	-0.003
	(0.015)	(0.013)	(0.012)	(0.022)	(0.017)	(0.169)
50-59	-0.059*	0.042*	0.011	-0.087*	0.069*	0.007
	(0.015)	(0.013)	(0.012)	(0.023)	(0.018)	(0.018)
Married	-0.048*	-0.0004	-0.017*	-0.077*	-0.009	-0.021
	(0.009)	(0.008)	(0.007)	(0.016)	(0.013)	(0.012)
Children 0-3	-0.006	-0.020	-0.008	-0.022	0.030	-0.011
	(0.013)	(0.012)	(0.008)	(0.018)	(0.018)	(0.012)
Children 4-6	0.025	-0.008	0.006	0.016	-0.007	0.012
	(0.013)	(0.012)	(0.008)	(0.017)	(0.016)	(0.011)
Degree	0.004	0.002	-0.016*	-0.006	0.014	-0.023
	(0.010)	(0.009)	(-0.007)	(0.020)	(0.016)	(0.015)
Diploma	0.015	-0.008	-0.013*	0.027	-0.011	-0.028*
	(0.008)	(0.007)	(0.006)	(0.016)	(0.013)	(0.012)
Region_UR	-0.006	-0.002	0.001	-0.011	-0.004	0.003
	(0.005)	(0.004)	(0.003)	(0.007)	(0.006)	(0.005)
σ_S^2				4.490*		
				(0.903)		
σ_F^2				1.794*		
				(0.521)		
σ_P^2				2.576*		
				(0.559)		
$\sigma_{S,F}$				1.179*		
				(0.543)		
$\sigma_{S,P}$				0.919		
				(0.529)		
$\sigma_{F,P}$				1.031		
				(0.410)		
Number of observations	7,570			7,570		
Log likelihood	-4,124.4681			-3,996.134		

*denotes significance at the 5 per cent (or 1 per cent) significance level.

Table 5-1: Predicted probabilities of labour market transitions based on the model with random effects, men

HILDA, Men	*Wave t*			
Wave t-1	*Not working*	*Self-employed*	*Fixed-term or casual*	*Permanent*
Not working	0.741 (0.227)	0.037 (0.080)	0.133 (0.130)	0.090 (0.108)
Self-employed	0.027 (0.057)	0.886 (0.143)	0.036 (0.054)	0.051 (0.075)
Fixed-term or casual	0.079 (0.101)	0.038 (0.074)	0.533 (0.171)	0.349 (0.176)
Permanent	0.021 (0.039)	0.018 (0.043)	0.073 (0.061)	0.889 (0.094)
KHPS, men	*Wave t*			
Wave t-1	*Not working*	*Self-employed*	*Fixed-term*	*Permanent*
Not working	0.710 (0.250)	0.081 (0.162)	0.043 (0.069)	0.166 (0.155)
Self-employed	0.005 (0.049)	0.967 (0.085)	0.006 (0.009)	0.022 (0.057)
Fixed-term	0.016 (0.050)	0.033 (0.051)	0.656 (0.213)	0.295 (0.207)
Permanent	0.001 (0.004)	0.006 (0.021)	0.011 (0.023)	0.983 (0.037)

Standard deviations are in parentheses.

Table 5-2: Predicted probabilities of labour market transitions based on the model with random effects, women

HILDA, women	*Wave t*			
Wave t-1	*Not working*	*Self-employed*	*Fixed-term or casual*	*Permanent*
Not working	0.812 (0.169)	0.021 (0.052)	0.104 (0.094)	0.063 (0.085)
Self-employed	0.081 (0.106)	0.798 (0.189)	0.065 (0.074)	0.057 (0.073)
Fixed-term or casual	0.110 (0.112)	0.023 (0.054)	0.597 (0.148)	0.270 (0.155)
Permanent	0.046 (0.068)	0.009 (0.028)	0.094 (0.068)	0.851 (0.119)
KHPS, women	*Wave t*			
Wave t-1	*Not working*	*Self-employed*	*Fixed-term*	*Permanent*
Not working	0.886 (0.119)	0.033 (0.073)	0.024 (0.025)	0.056 (0.079)
Self-employed	0.055 (0.099)	0.884 (0.165)	0.021 (0.035)	0.040 (0.079)
Fixed-term	0.025 (0.029)	0.007 (0.017)	0.855 (0.124)	0.113 (0.118)
Permanent	0.028 (0.044)	0.008 (0.025)	0.068 (0.080)	0.897 (0.111)

Standard deviations are in parentheses.

Key findings

Tables 3-1, 3-2, 4-1, and 4-2 indicate that the results based on the multinomial logit model with random effects are quite different from those without random effects. Moreover, they show that the variances and covariances of the random effects are statistically significant. This suggests that unobserved heterogeneity has a major role in labour market transitions in both countries. The key findings are summarised below.

Firstly, the results of the dynamic multinomial model indicate that for the HILDA respondents, casual or fixed-term employment in period *t-1* raises the probability of permanent or ongoing employment in period *t* by 14 per cent for men and 10 per cent for women, as compared with not working (either unemployed or not in the labour force) in period *t-1*, respectively. On the other hand, for the KHPS men and women, fixed-term employment in period *t-1* does not have any significant effects with respect to the probability of employment on a permanent basis in period *t*. That is, in Australia, fixed-term or casual employment could provide a stepping stone to permanent employment, but in Japan, this is apparently not true.

Secondly, for female respondents of the HILDA Survey, permanent or ongoing employment in period *t-1* lowers the probability of casual or fixed-term employment by 5.5 per cent. On the other hand, for female respondents of the KHPS, permanent or ongoing employment in period *t-1* raises the probability of fixed term employment by 11 per cent.

Thirdly, for female respondent of the HILDA Survey, self-employment in period *t-1* raises the probability of permanent or ongoing employment in period *t*, while this is not true for female respondents of the KHPS.

As presented in the table, the estimates of variances and co-variances of random effects are all statistically significant, proving the importance of handling unobserved heterogeneity when identifying state dependencies in both the Australian and Japanese labour markets. This finding suggests the strong possibility of biases in the estimated key marginal effects for the models without random effects. We therefore prefer the estimation results from the model with random effects.

Tables 5-1 and 5-2 list the predicted probabilities of labour market transitions from period *t-1* to period *t*. We find firstly, the theoretical probability of labour market transitions from fixed-term or casual employment to permanent or ongoing employment is approximately 35 per cent for HILDA men, 30 per cent for HILDA women, 27 per cent for KHPS men, and 11 per cent for KHPS women, if we make predictions from the multinomial logit model with correlated random effects.

Secondly, the probability that one stays in fixed-term employment for two consecutive years is highest for the KHPS women.

6. Conclusions

This study compared labour market transitions, or changes in employment status, between Japan and Australia. Using dynamic multinomial logit estimation we found that, for the HILDA respondents, either casual or fixed-term employment significantly raises the probability of permanent or ongoing employment in the subsequent period, while this is not true of the KHPS respondents, regardless of gender. For female respondents of the KHPS, employment on a permanent basis at present period has a significant positive, instead of negative, effect to the probability of employment on a fixed term basis in the subsequent period. We also estimated the probability of labour market transitions from period *t-1* to period *t* based on the dynamic multinomial logit estimation. The probability of transition from fixed-term or casual employment to permanent or ongoing employment was found to be the lowest for the female respondents of the KHPS among the four country-gender groups. On the other hand, the theoretical probability of continuing fixed-term employment for the two subsequent periods was highest for the female respondents of the KHPS. This suggests that Japanese women can become trapped in the secondary labour market. Overall, gender-based differences in labour market transitions are more significant in the KHPS than in the HILDA Survey.

These results could reflect the effects of Japanese style management in which most positions in the primary labour market are allocated to employees with permanent contracts, and rarely to employees with fixed-term contracts. The result pertaining to the transition from permanent to fixed-term employment could reflect the difficulty of balancing family life and employment on a permanent basis, for married women in Japan. However, we need to conduct another study to check if these hypotheses are supported or not.

As discussed in Section 1, while researchers in Australia try to analyse the dynamism of the labour market that could bring about dualistic structures, researchers in Japan tend to regard the dualistic structure as a given condition. Our research indicates that the duality of the labour market is deeper and more serious in Japan than in Australia, and that the different views of researchers in both countries could reflect the different degrees of dualism. However, it is possible that the characteristics of the Japanese labour market will undergo certain changes in the future.

In April 2018, the government of Japan amended the Labour Contract Act so that Japanese employees on fixed-term employment contracts will be entitled to request permanent contracts after five years of continuous employment. Future research should address the effects of this amendment in Japan from 2018 on. The experience and rich literature around labour conditions in Australia would be helpful in understanding the possible changes in the labour market dynamism, and assist with adjusting to new issues that might emerge due to future changes.

Appendices

A1: The HILDA Survey and the KHPS

	KHPS	*HILDA Survey*
Starting year	2004	2001
Gender	Both men and women	Both men and women
Age group for the first year	20 to 69	14 to 92
Number of respondents in the first wave	4,005	13,969
Interviews	Not conducted	Conducted
Continuity	Respondents are followed every year	Respondents are followed every year
Topping of the data	1,400 and 1,000 new individuals were added in wave 4 and wave 9, respectively	5,477 individuals were added in wave 11
Information	It collects information about household structure, individual attributes, academic background, employment/ education status, distribution of living hours, matters related to cohabitation with parents, etc.	It collects information about economic and subjective well-being, labour market dynamics and family dynamics. Special questionnaire modules are included with each wave and covered topics such as wealth, retirement, and fertility intentions

A2: Descriptive statistics, HILDA Survey

	Men				*Women*			
Variable			*Per cent*				*Per cent*	
Employment status at t	Not employed, unemployed		12.82		Not employed, unemployed		27.12	
	Self-employed		18.06		Self-employed		8.91	
	Fixed-term or casual employment		15.21		Fixed-term or casual employment		21.07	
	Permanent or ongoing employment		53.91		Permanent or ongoing employment		42.90	
Employment status at t-1	Not employed, unemployed		12.71		Not employed, unemployed		27.03	
	Self-employed		17.71		Self-employed		9.03	
	Fixed-term or casual employment		15.88		Fixed-term of casual employment		20.24	
	Permanent or ongoing employment		53.70		Permanent or ongoing employment		43.70	
Employment status at 1	Not employed, unemployed		14.02		Not employed, unemployed		29.58	
	Self-employed		15.64		Self-employed		7.97	
	Fixed-term or casual employment		19.57		Fixed-term of casual employment		25.07	
	Permanent or ongoing employment		50.77		Permanent or ongoing employment		37.37	
	Mean	*Standard Deviation*	*Minimum*	*Maximum*	*Mean*	*Standard Deviation*	*Minimum*	*Maximum*
Age30_39	0.233	0.423	0	1	0.243	0.429	0	1
Age40_49	0.295	0.456	0	1	0.296	0.457	0	1
Age50_59	0.263	0.440	0	1	0.263	0.440	0	1
Married	0.680	0.467	0	1	0.679	0.467	0	1
Children0_3	0.131	0.338	0	1	0.139	0.346	0	1
Children4_6	0.110	0.313	0	1	0.129	0.336	0	1
Degree	0.246	0.431	0	1	0.285	0.451	0	1
Diploma	0.093	0.291	0	1	0.102	0.303	0	1
Certificate	0.294	0.456	0	1	0.164	0.371	0	1
Regional unemployment rate	5.199	1.114	2.3	9.4	5.338	0.804	2.1	8.6
Number of observations	47,261				53,281			

A2: Descriptive statistics, KHPS

	Men				*Women*			
Variable				*Per cent*				*Per cent*
Employment status at t	Not employed, unemployed			1.92	Not employed, unemployed			26.17
	Self-employed			21.58	Self-employed			15.69
	Fixed-term or casual employment			4.03	Fixed-term or casual employment			20.15
	Permanent or ongoing employment			72.48	Permanent or ongoing employment			37.99
Employment status at t-1	Not employed, unemployed			2.06	Not employed, unemployed			27.21
	Self-employed			21.42	Self-employed			15.88
	Fixed-term or casual employment			3.95	Fixed-term or casual employment			19.05
	Permanent or ongoing employment			72.58	Permanent or ongoing employment			37.86
Employment status at 1	Not employed, unemployed			2.27	Not employed, unemployed			31.06
	Self-employed			20.84	Self-employed			16.84
	Fixed-term or casual employment			4.78	Fixed-term or casual employment			15.2
	Permanent or ongoing employment			72.11	Permanent or ongoing employment			36.89
	Mean	*Standard Deviation*	*Minimum*	*Maximum*	*Mean*	*Standard Deviation*	*Minimum*	*Maximum*
Age30_39	0.246	0.431	0	1	0.266	0.442	0	1
Age40_49	0.325	0.468	0	1	0.335	0.472	0	1
Age50_59	0.356	0.479	0	1	0.312	0.463	0	1
Married	0.788	0.409	0	1	0.769	0.422	0	1
Children0_3	0.131	0.337	0	1	0.121	0.326	0	1
Children4_6	0.120	0.325	0	1	0.113	0.316	0	1
Degree	0.389	0.488	0	1	0.156	0.363	0	1
Diploma	0.076	0.265	0	1	0.262	0.440	0	1
Regional unemployment rate	4.518	0.881	2.9	6.6	4.019	0.739	2.4	5.8
Number of observations	7,198				7,570			

References

Australian Bureau of Statistics (2017), Catalogue 6202.0 *Labour Force, Australia*, May 2017. Australian Bureau of Statistics (2018), Catalogue 6102.0.55.001 *Labour Statistics: Concepts, Sources and Methods*, February 2018.

Bill, A., Mitchell, B. and Welters R. (2006), 'Job mobility and segmentation in Australian city labour markets', Working Paper No. 06-11, Centre of Full Employment and Equity.

Burgess, J. and Campbell J. (1998), 'The nature and dimensions of precarious employment in Australia', *Labour & Industry*, 8(3) 5-21.

Buddelmeyer, H. and Wooden M. (2008), 'Transitions from casual employment in Australia', Melbourne Institute Working Paper Series, Working Paper no. 7/08, Melbourne Institute of Applied Economics and Social Sciences.

Buddelmeyer, H. and Wooden M. (2011), 'Transitions out of casual employment: The Australian experience', *Industrial Relations,* 50(1), 109-131.

Cai, L. (2014), 'State-dependence and stepping-stone effects of low-pay employment in Australia', *Economic Record*, 90 (291), 486-506.

Chalmers, J. and Kalb G. (2001), 'Moving from unemployment to permanent employment: Could a casual job accelerate the transition?', *Australian Economic Review*, 34, 415-36.

Corbett, J., Daly, A., Matushige. H. and Taylor D. (eds.) (2009), *Laggards and Leaders in Labour Market*, Routledge.

Diamond, J. (2018), 'Employment status persistency in Japan's labour market', *Japanese Economic Review*, 69(1), 69-100.

Genda, Y. (2011), 'Non-permanent employees who have become permanent employees; What awaits them after crossing status or firm borders to become permanent', *Japan Labor Review*, 8(3), 28-55.

Gilfillan, G. (2018), 'Characteristics and use of casual employees in Australia', Parliamentary Library, Research paper series 2017-18, Parliament of Australia (http://parlinfo.aph.gov.au/parlInfo/download/library/prspub/5742396/upload_binary/5742396.pdf, accessed on 3 May, 2018).

Gregory, R. and Duncan R. (1981), 'Segmented labor market theories and the Australian experience of equal pay for women', *Journal of Post Keynesian Economics*, 3(3), 403-428

Ishikawa, T. and Dejima T. (1994), '(Dual structure in the labour market)', in T. Ishikawa (ed.) *Nihon No Shotoku To Tomi No Bunpai* (Income and Wealth Distribution in Japan), Ch.6, 169-209, The University of Tokyo Press (in Japanese).

Japan Institute for Labour Policy and Training (2010), 'Labor policy on fixed-term employment contracts', JILPT Report No. 9, *Japan Institute for Labour Policy and Training.*

Kambayashi, T. (2013), Differences in definitions of non-regular employees in government statistics', *Japan Labor Review*, 10(4), 55-66.

Mavromaras, K., Sloane, P., and Wei Z. (2015), 'The scarring effects of unemployment, low pay and skills under-utilisation in Australia compared', *Applied Economics*, 47(23), 2413-2429.

McVicar, D., Wooden, M. and Fok Y. K. (2017) 'Contingent employment and labour market pathways: bridge or trap?', IZA Discussion Paper, No.10768, Institute for the Study of Labour.

Mitchell, W., Muysken, J. and Welters R. (2005), 'Search behaviour and the casualties of the (dual) labour market', Working Paper No. 05-15, Centre of Full Employment and Equity.

Morikawa, M. (2017), 'Are part-time employees underpaid or overpaid?', RIETI Discussion Paper Series 17-E-007, Research Institute of Economy, Trade and Industry, Tokyo.

Odaka, K. (1981), *Rodo Sijo Bunseki—Niju Kozo no Nihonteki Tenkai* (An analysis of labour market—The Japanese style development of the dual structure), Iwanami Shoten (in Japanese).

Ohta, K. (2006). 'Non-regular employment and differentials in wage incomes', *Nihon Rodo Kenkyu Zasshi* (*The Japanese Journal of Labour Studies),* 557, 41-52 (in Japanese).

Okamura, K. and Islam N. (2011), 'Inter-temporal labour force participation among married women in Japan', *Japanese Economic Review,* 62, 562-580.

Prowse, V. (2012), 'Modelling employment dynamics with state dependence and unobserved heterogeneity', *Journal of Business and Economic Statistics*, 30, 411-431.

Sano, Y. (2012), 'Conversion of non-regular employees into regular employees and working experiences and skills development of non-regular employees at Japanese companies', *Japan Labor Review*, 9(3), 99-126.

Swami, N. (2017), 'The effect of non-permanent contractual employment on financial hardship', Melbourne Institute Working Paper Series, Working Paper no. 20/17, Melbourne Institute of Applied Economics and Social Sciences.

Statistics Bureau, Ministry of Internal Affairs and Communications (2017), *Labour Force Survey*, Historical Data 8 (in Japanese) (http://www.stat.go.jp/data/roudou/longtime/03roudou.htm, accessed on April 5, 2018).

Takahashi, K. (2016), 'Two components of wage gaps induced by individual-level variables: Intra-firm or inter-firm?' *International Journal of Japanese Sociology*, 25(1), 117-130.

Teruyama, H. (2018), 'Testing the dual structure of the Japanese labor market,' in Kitagawa, A. Ohta, S., and H. Teruyama *The Changing Japanese Labor Market, Advances in Japanese Business and Economics 12*, Ch.4, 119-167, Springer.

Teruyama, H. and Toda H. (2017), 'Polarization and Persistence in the Japanese labor market', KIER Discussion Paper No.957, Institute of Economic Research, Kyoto University.

Welters, R. and Mitchell W. (2009), 'Locked-in casual employment', Working Paper No. 09-03, Centre of Full Employment and Equity

Watson, I. (2013), 'Bridges or traps? Casualisation and labour market transitions in Australia,' *Journal of Industrial Relations,* 55(1), 1-21.

Wooldridge, J. (2005), 'Simple solutions to the initial conditions problem in dynamic, nonlinear panel data models with unobserved heterogeneity', *Journal of Applied Econometric*s, 20, 39-54.

Zagórski, K. (1988), 'Work rewards and labour segmentation: The Australian case,' *Work, Employment and Society*, 2(2), 229-246.