Determinants of Women's Employment Exit and Return in Indonesia

Diahhadi Setyonaluri (Ruri)

Lembaga Demografi Faculty of Economics and Business Universitas Indonesia

Email: diahhadi.s@ui.ac.id

Marriage and childbearing are associated with lower female LFP in Indonesia

- Female LFPR in Indonesia remains stagnant at around 50% between 2000-2019

- There is an increasing trend of delayed marriage due to expansion of education, increasing uncertainty in the labour market and work pressures. (Devasahayam 2009)

- Being married and presence of young children are associated with lower female LFP or women work in jobs that are 'compatible' to maternal role.

- Most studies use cross-section data that limit the mechanism on how transition to marriage and childbearing affect women to leave the LF and whether women returning to work at later stage of childbearing.

- To what extent changing family status affect women's employment exit and return?

Figure 1. Age-specific Female Labour Force Participation Rate (LFPR) in Urban & Rural Indonesia, 2018
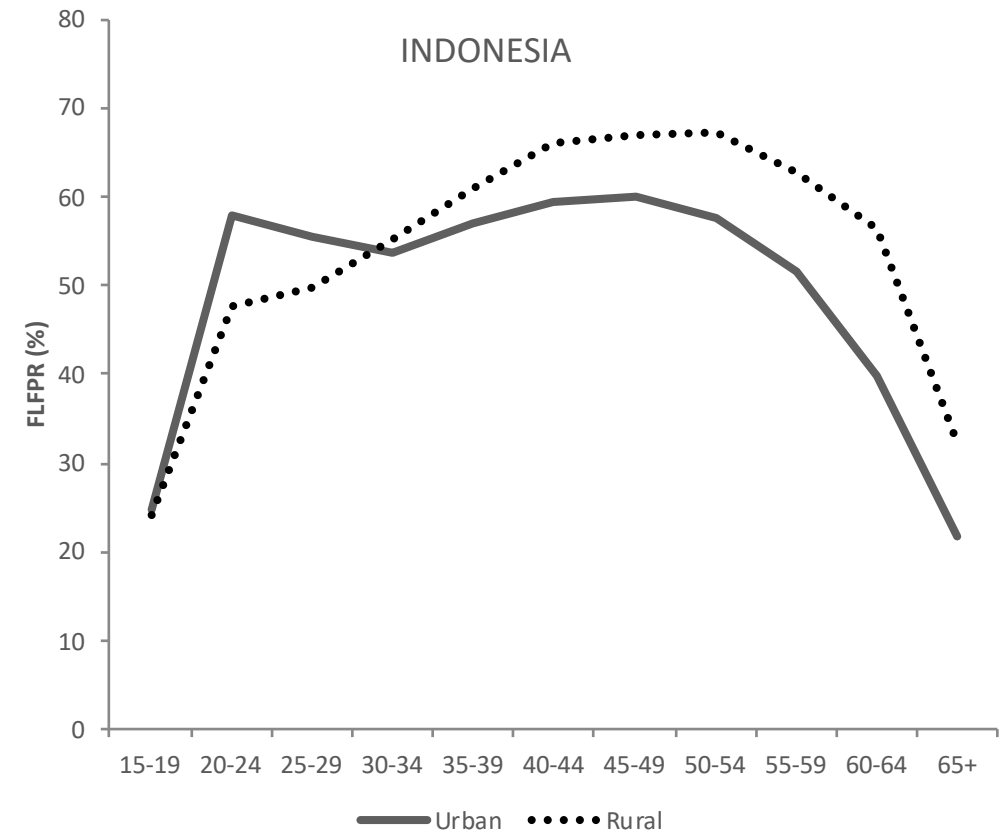
Data: Indonesian Family Life Survey (IFLS) 2000 & 2007

- Multilevel longitudinal survey (individual, household, community) fielded in 1993, 1997, 2000 & 2007 in 13 provinces*.

- Baseline sample (1993) was 7,224 households & 22,000 individuals, with 95% re-contact rate of original households (Strauss, 2004)

- IFLS documents:
  - Yearly retrospective work history 5 to 9 years prior to the survey year
  - Marriage, birth, migration, education histories.

- This study:
  - Select panel respondents of IFLS 2000 and 2007
  - Combine all of the histories into a long format event-history data structure (1996-2007)
  - Sample: women who have ever worked, aged 15-38 years at the beginning of work spell found throughout 1996-2007

Source: RAND (2010)

Note: *IFLS was also fielded in 1998, with a selected sample from previous wave

Method: Discrete Time Event History Analysis

	Employment Exit	Employment Return	Competing Risk (formal-informal)
Dependent variable	conditional probability of leaving the employment, given that a woman had been working from the beginning of spell.	conditional probability of re-entering the employment, given that a woman had left the workforce	likelihood of return to the same or different employment sector (stay in the same sector, formal-informal, informal-formal)

Main independent variable (time variant)	• Transition to first marriage
	• Transition to first child birth
		• Family life stage:
		  • Single
		  • Married- Childless
		  • Married - have young children (0-4)
		  • Married - have older children
		• Number of young children (0-4)
			• Family life stage:
			  • Single
			  • Married- Childless
			  • Married - have young children (0-4)
			  • Married - have older children
			• Number of young children (0-4)

Sample	Single and married with no children women who were working between 1996-2007	Women who had left the employment	Women who had returned to work

- Employment exit and return are estimated with random-effects logit regression, while 'competing risks' to move between formal-informal sector is estimated using MNL regression (Steele 2005)
- Control variables include time-variant variables of women's age. education, migration, urbanicity; and time-invariant variables of employment characteristics of the last job, presence of adult household member, household asset.

Entering family life stage are associated with women exiting from employment

- Transition to marriage and first child birth are strongly associated with the risks of women leaving employment.
- Education and employment characteristics are associated with risk of employment exit.
- The risk of exiting from work due to marriage is varied across employment characteristics and education.

Figure 2(a,b,c). Predicted probabilities of employment exit by occupation, employment sector, and education
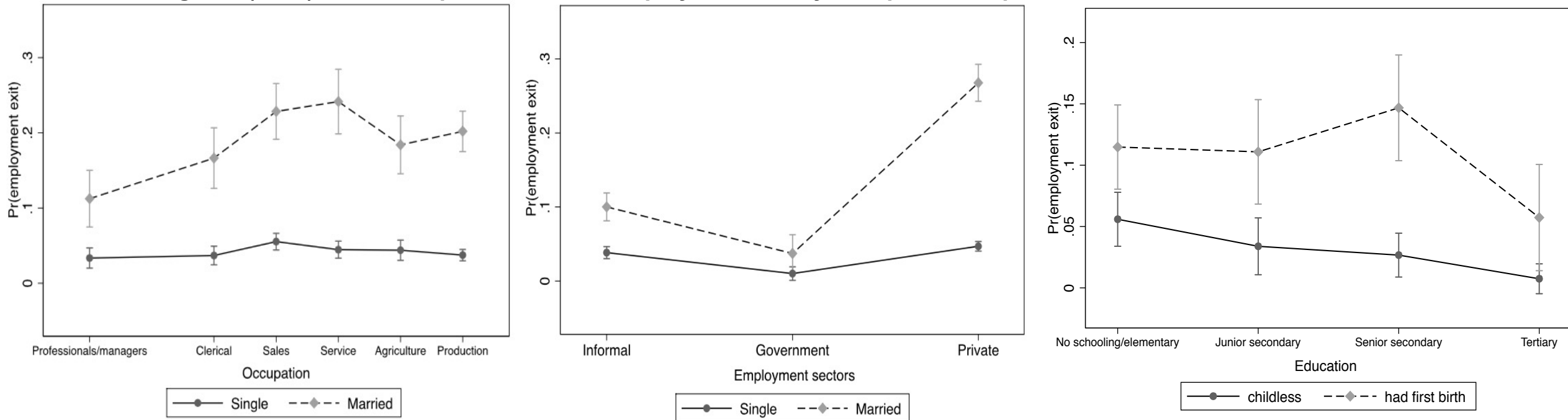

Note: Predicted probability with 95% confidence interval.
Source: Sample 1 (women who were single at the beginning of work spell), IFLS 2000 and IFLS 2007, author's calculation based on an estimation of complete model (Model 3)

Women return to labour market when children are older and they switch sectors

- Being married and having childcare responsibility reduces the risk to return to work
- Having young children is associated with moving from formal to informal sector after an employment break

Figure3 (a&b) Predicted probabilities of employment exit by occupation, employment sector, and education
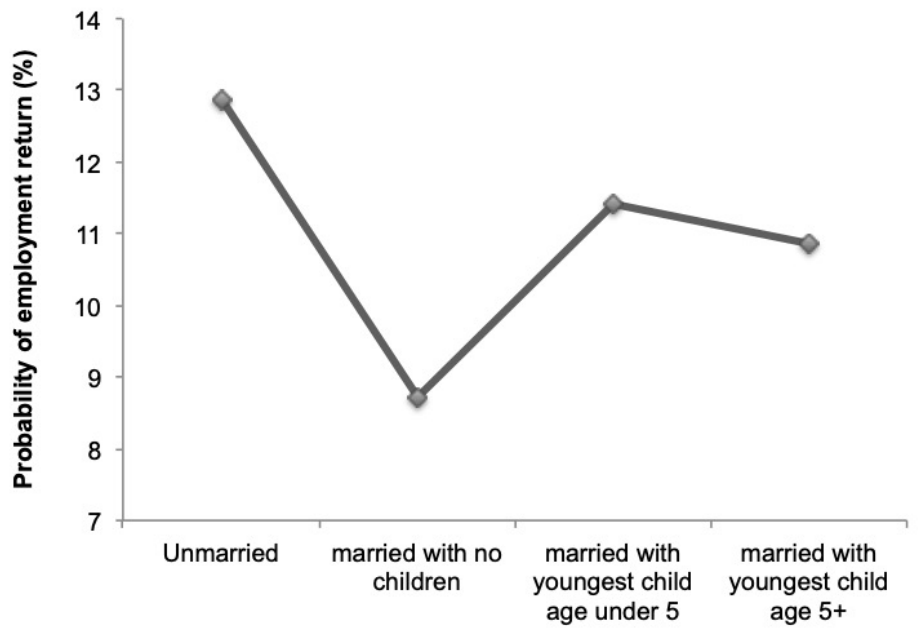
Caveats in using retrospective work history for event history analysis

- IFLS collected retrospective work history for 5 or 9 years prior to a survey, not from the start of the first job.
    - In this study, start year of work in the work history might not be the start year of the first job.
    - Each respondent has a different "start" year/age, making a cohort comparison is difficult.
- Joining work histories from two waves generate problem of seam effects. In this study, work information for 1999 & 2000 is taken from IFLS 2000.

IFLS Work History Structure

Survey Year	Year observed in work history											
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
2000												
2007												

This study →

Work History Period											
1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
IFLS 2000					IFLS 2007						

Seam effects in IFLS work history

- Seam is the temporal overlap where two waves of data are linked.

- Seam effect refers to the tendency for estimates of change measured across the 'seam' between two successive survey to far exceed change estimates measured within a single interview. (Callegaro, 2008)

- Causes of seam effect: respondents and/or interviewer and coder errors

- Seam effect creates biased estimates of gross flows and length of spell durations.

- Inconsistent response in IFLS 2000 and 2007's seamed work history is 33%

Figure 3 Employment rates of women in the sample throughout work history period in IFLS 2000 & 2007
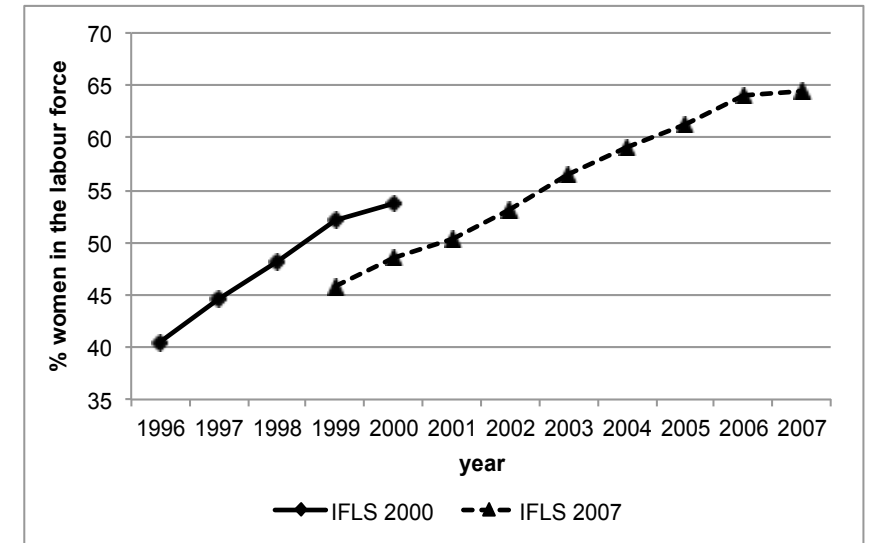
Note: I use labour force status of 1999 and 2000 from IFLS 2000 for Figure 2b.
source: IFLS 2000 and 2007, calculated from female panel respondents aged 11-38 years old in 1996

"Treatment'" to seam effect slightly change the magnitude of coefficients and standard errors

Figure 4. Mean age of employment exit and duration of work
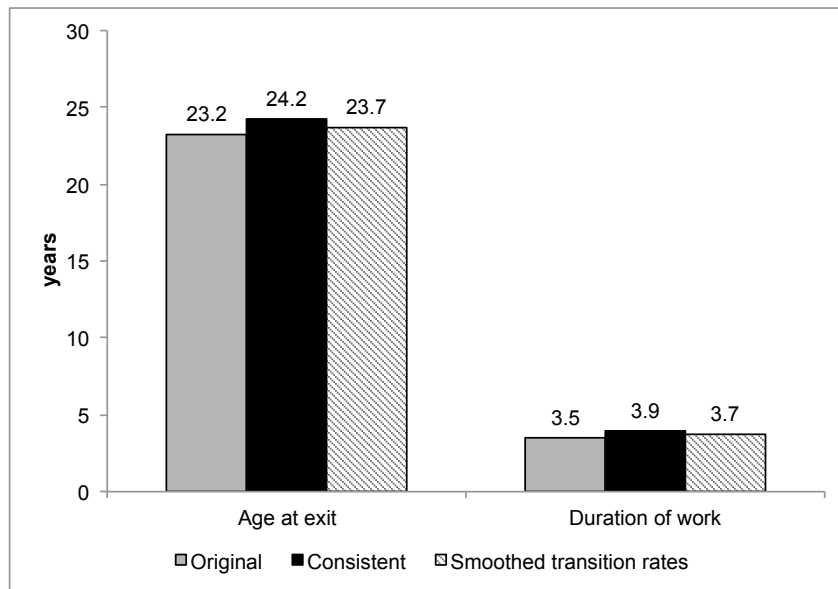
Source: IFLS 2000 and IFLS 2007, calculated from women who were single at the beginning of a work spell (n=2,047)

Estimated coefficients of the effect of transition to first marriage on employment exit based on original and edited samples

Treatment	β	se
Original Sample	1.815***	0.099
Smoothed Rate	1.943***	0.14
Consistent	2.348***	0.168
Using seam indicator	1.999***	0.108

*** p<0.01; ** p<0.05; *p<0.

Note: 1) These models are estimated using logit regression; 2) Estimations of all models are based on the sample consist of women who were single at the beginning of first work spell. 3) Models are controlled by education, employment characteristics, migration, urban rural, island of residency, household asset.
Source: IFLS 2000 and IFLS 2007

Summary of findings

- Family life cycle plays an important role in influencing women's employment exit and return.

  - Entering first marriage and motherhood are associated with a higher risk of leaving employment for women.

  - The effect of marital status is larger among women who have worked in low-level occupations or in the private sector.

  - The effect of marriage on employment exit is minor among women with tertiary education, but effect of first birth is relatively stronger.

  - Married women who were childless have the lowest risk of returning to work, while married women with children have a higher probability of returning to work and working in the informal employment.

  - The risk of employment re-entry is lower if a woman have an additional number of pre- schoolers

Updating the study…

- Analyse larger group of samples, e.g. include women with different stages of life-cycle.

- Use all waves of IFLS (1993, 1997, 2000, 2007, 2014)

- Analysis based on multiple spells

- Analysis to address endogeneity of marriage, childbirths, education, migration, and occupations.

Terima kasih!

Link to the study:
- https://openresearch-repository.anu.edu.au/handle/1885/150650

Source: http://www.antarafoto.com/bisnis/v1299825605/peran-ganda-perempuan

Foto Ayahbunda/Dok.

Annex

Definition of the first work and non-work spells

- Work spell/episode is the time span a woman spends in a working state.

- "non-work" spell/episode is the time span a woman spends not in a working state, given she had worked before.

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
N	N	N	W	W	W	W	N	N	W	W	W

1st work spell

1st non-work spell

Start 1st spell
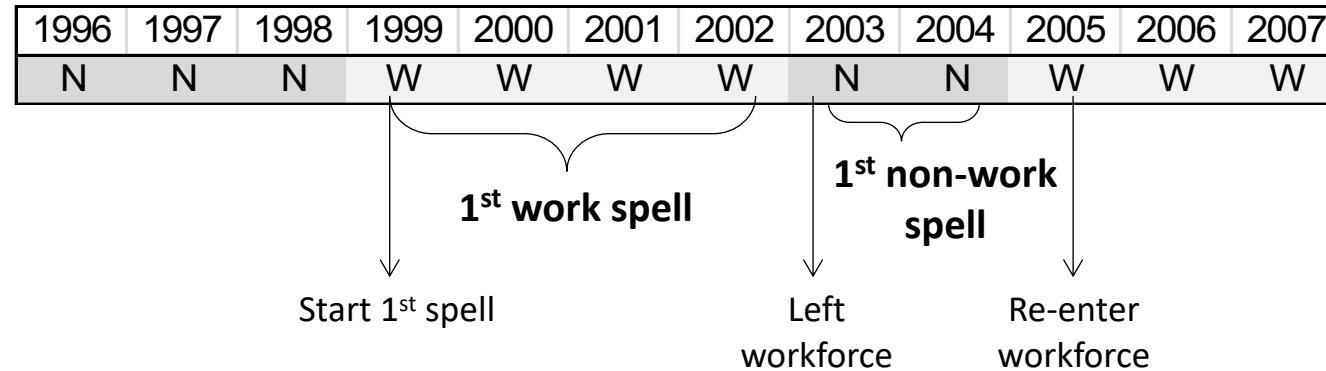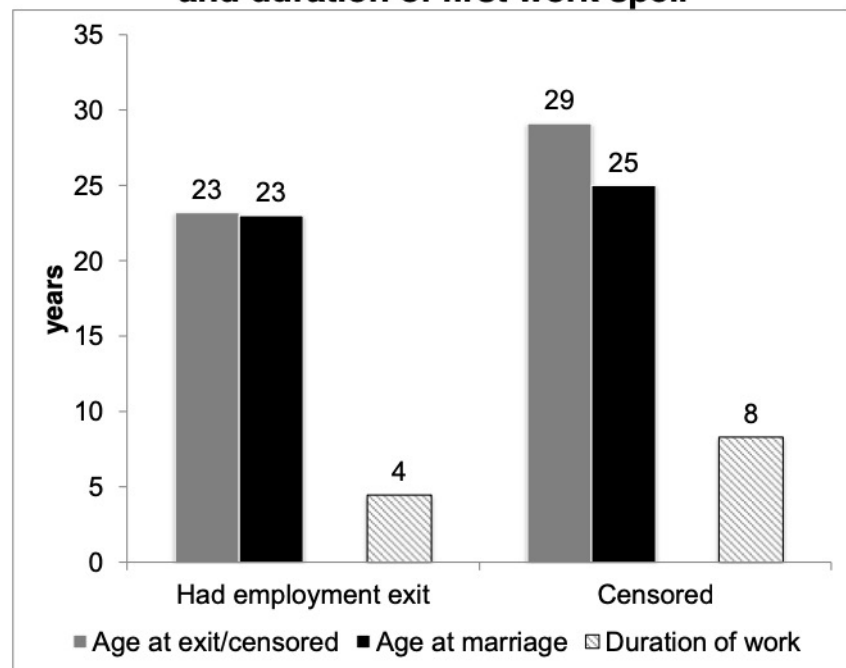
Left workforce

Re-enter workforce

Figure 6-1.   Mean age of employment exit, age at marriage, and duration of first work spell

Source: Sample 1 (women who were single at the beginning of work spell), IFLS 2000 and IFLS 2007

Table 6-1.   Characteristics of women who had employment exit

	Had employment exit (%)	n total
Age at the beginning of work spell		
15-19	66.8	921
20-24	49.3	816
25-29	40.1	222
30+	25.0	88
Marital status at the end of work spell		
Single	50.6	850
Married	58.3	1,197
Education level at the end of work spell		
No schooling/elementary	59.7	409
Junior secondary	69.2	441
Senior secondary	57.4	794
Tertiary	30.4	401
Last job's employment sector		
Informal	47.2	530
Government	10.6	132
Private	62.4	1,384
Last job's occupation		
Professionals/managers	29.7	219
Clerical workers	48.6	218
Sales workers	60.0	423
Service workers	56.4	323
Agriculture workers	58.2	268
Production workers/labourers	61.1	588

Note: Descriptive table of women who had employment exit by all variables is presented in Appendix 6-4.
Source: Sample 1 (women who were single at the beginning of work spell), IFLS 2000 and IFLS 2007
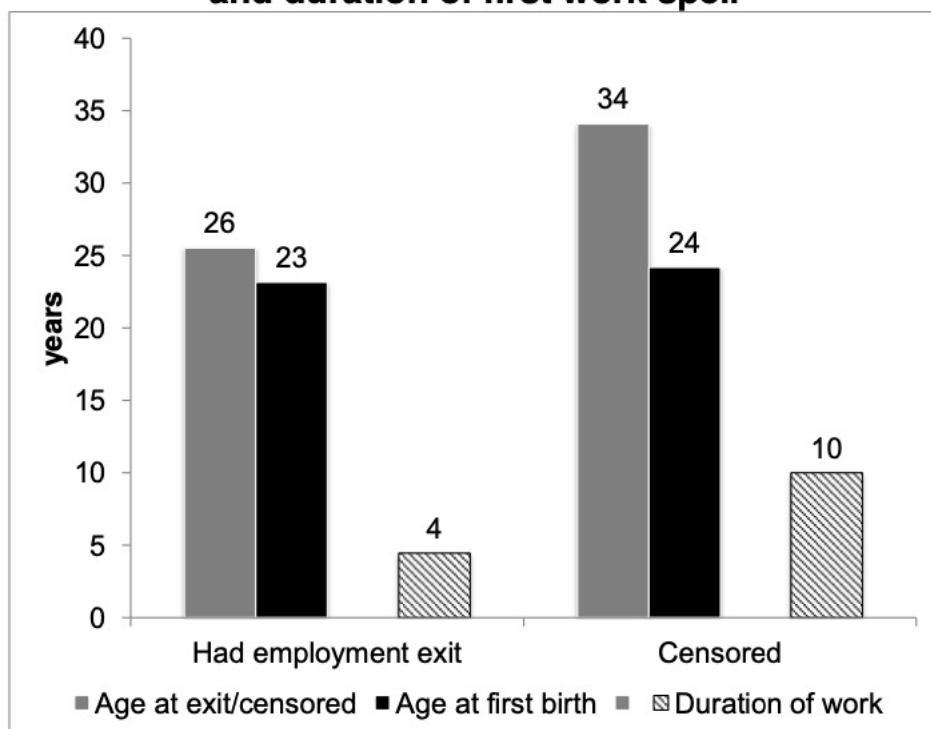
Table 6-2.   Discrete time hazard regression results of the transitions out of employment (effect of transition to marriage on employment exit)

Variable	Model 1			Model 2		
	β	se	Odds Ratio	β	se	Odds Ratio
Had first marriage during the spell	2.034	0.110	7.647***	1.999	0.108	7.379***
Education level (ref: no schooling/elementary)						
Junior secondary				0.248	0.118	1.282**
Senior secondary				0.258	0.115	1.295**
Tertiary				0.168	0.168	1.183
Employment sector (ref: informal sectors)						
Government				-1.332	0.324	0.264***
Private				0.947	0.107	2.578***
Occupation (ref: professional/managers)						
Clerical workers				0.374	0.205	1.454*
Sales workers				0.874	0.19	2.396***
Service workers				0.807	0.2	2.240***
Agriculture workers				0.504	0.217	1.656**
Production workers/labourers				0.535	0.187	1.708***
Migrate in previous year				0.721	0.127	2.058***
Live in urban areas				-0.062	0.087	0.94
Live in Java island				-0.394	0.088	0.674***
One or more adult females live in the household				-0.004	0.082	0.996
Household assets (in million Rp)				-0.002	0.002	0.998
Completed school				-0.577	0.185	0.562***
Age	-0.089	0.009	0.915***	-0.062	0.01	0.940***
Seam dummy	1.598	0.092	4.943***	1.64	0.093	5.154***
Constant	-1.461	0.230	0.232***	-2.659	0.359	0.070***
Number of person-years		12,641			12,541	
Number of women		2,047			2,038	
Log likelihood		-3,335			-3,187	
Sigma u		0.777			0.576	
Rho		0.155			0.092	
df		2			17	
chi2		428.217			545.421	

*** p<0.01; ** p<0.05; *p<0.1

Source: Sample 1 (women who were single at the beginning of work spell), IFLS 2000 and IFLS 2007

Figure 6-7. **Mean age of employment exit, age at first birth, and duration of first work spell**

Chart (years):

	Had employment exit	Censored
Age at exit/censored	26	34
Age at first birth	23	24
Duration of work	4	10

Source: Sample 2 (married women who were childless at the beginning of work spell), IFLS 2000 & IFLS 2007

Table 6-3. **Characteristics of women who had an employment exit**

	Had employment exit (%)	n total
Age at the beginning of work spell		
15-19	65.0	120
20-24	58.9	180
25-29	51.4	111
30+	33.3	75
Had first birth during the work spell		
Childless	52.2	138
Had first birth	55.7	348
Had second birth during the work spell		
Had only first birth	60.9	363
Had second birth	36.6	123
Education level at the end of work spell		
No schooling/elementary	52.4	225
Junior secondary	56.2	89
Senior secondary	67.2	122
Tertiary	32.7	49
Last job's employment sector		
Informal	43.5	248
Government	33.3	30
Private	71.2	208
Last job's occupation		
Professionals/managers	37.8	37
Clerical workers	45.5	22
Sales workers	49.5	95
Service workers	40.2	83
Agriculture workers	46.2	143
Production workers/labourers	74.0	104

Note: Descriptive table of women who had employment exit by all variables is presented in Appendix 6-7. Source: Sample 2 (married women who were childless at the beginning of work spell), IFLS 2000 and IFLS 2007.

Table 6-4.   Discrete time hazard regression results for the transitions out of employment (effect of transition to first birth on employment exit)

Variable	Model 1			Model 2		
	β	se	Odds Ratio	β	se	Odds Ratio
Had first birth	1.584	0.277	4.873***	1.751	0.314	5.758***
Had second birth	0.32	0.277	1.377	0.446	0.31	1.562
Education level (ref: no schooling/elementary)						
Junior secondary				-0.379	0.334	0.685
Senior secondary				-0.125	0.333	0.883
Tertiary				-1.675	0.612	0.187***
Husband's education level (ref: no schooling/elementary)						
Junior secondary				-0.592	0.355	0.553*
Senior secondary				-0.026	0.317	0.974
Tertiary				-0.177	0.525	0.838
Employment sector (ref: informal sectors)						
Government				0.071	0.6	1.074
Private				1.507	0.288	4.512***
Occupation (ref: professional/managers)						
Clerical workers				-0.234	0.698	0.792
Sales workers				0.094	0.556	1.099
Service workers				0.689	0.545	1.991
Agriculture workers				0.04	0.573	1.041
Production workers/labourers				0.446	0.552	1.562
Migrate in previous year				0.89	0.277	2.435***
Live in urban areas				0.168	0.245	1.183
Live in Java island				0.216	0.242	1.241
One or more adult females live in the household				0.13	0.228	1.139
Household assets (in million Rp)				0.009	0.008	1.009
Seam dummy	2.359	0.199	10.584***	2.566	0.215	13.011***
Age	-0.082	0.017	0.922***	-0.07	0.02	0.932***
Constant	-1.898	0.547	0.150***	-3.26	0.947	0.038***
Number of person-years		3,246			2,899	
Number of women		486			482	
Log likelihood		-779.21			-647.723	
Sigma u		1.514			1.338	
Rho		0.411			0.352	
df		4			22	
chi2		176.098			196.171	

*** p<0.01; ** p<0.05; *p<0.1

Source: Sample 2 (married women who were childless at the beginning of work spell), IFLS 2000 & IFLS 2007

Figure 7-1. Mean age of employment exit and re-entry and duration of non-employment
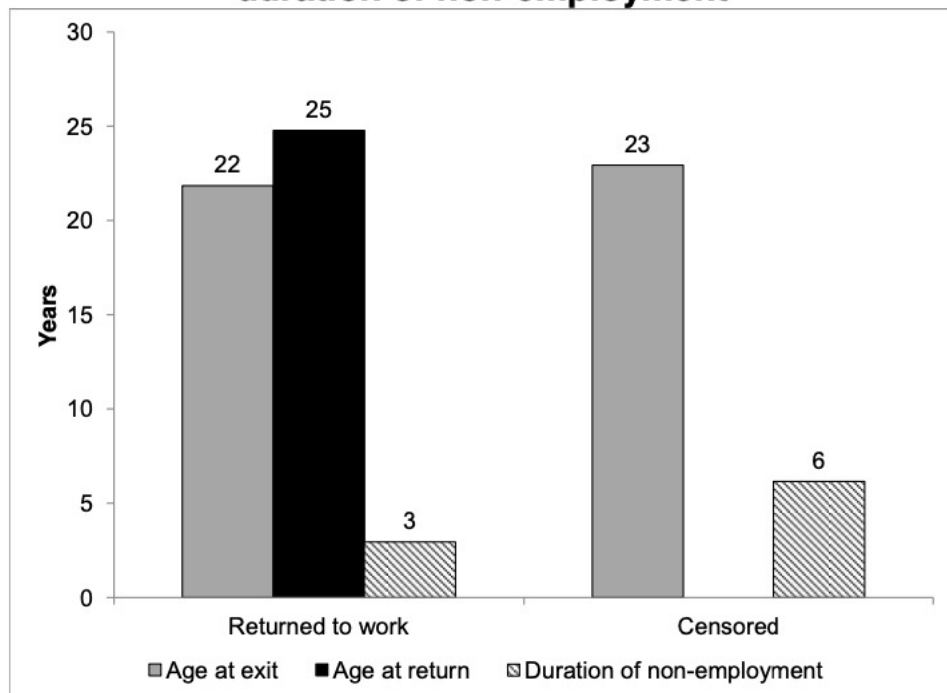
Source: IFLS 2000 & IFLS 2007

Table 7-1. Characteristics of women who had returned to employment

	sector at employment return		Total
	Informal	Formal	
Age at labour force exit			
15-19	27.1	38.9	347
20-24	25.6	28.6	625
25-29	30.6	22.8	281
30+	28.8	19.2	125
Family status at labour force exit			
Unmarried	18.3	64.4	284
Married - no children	34.7	31.1	167
Married with young child	31.3	18.2	721
Married with older child	19.4	17.5	206
Education level at labour force exit			
No schooling/elementary	31.3	26.6	387
Junior secondary	30.9	25.1	327
Senior secondary	24.7	27.9	502
Tertiary	18.6	47.8	161
Employment sector before LF exit			
Informal	36.8	21.1	456
Formal	22.6	33.2	921
Occupation before LF exit			
Professionals/managers	25.0	37.5	72
Clerical workers	17.5	28.9	97
Sales workers	24.6	32.9	301
Service workers	25.4	28.2	248
Agriculture workers	42.7	12.9	232
Production workers/labourers	24.2	35.0	409
Total	376	402	1,378

Source: IFLS 2000 & IFLS 2007

Table 7-3. Discrete time hazard regression results for the transitions to employment (employment return)

| Variable	Model 1			Model 2		
	β	se	Odds Ratio	β	se	Odds Ratio
Family status (ref: unmarried)						
married with no children	-0.543	0.126	0.581***	-0.442	0.131	0.643***
married with youngest child age under 5	-0.197	0.215	0.822	-0.139	0.218	0.87
married with youngest child age 5+	-0.293	0.203	0.746	-0.195	0.21	0.823
Number of children age 0-4	-0.417	0.176	0.659**	-0.396	0.176	0.673**
Number of children age 5+	0.052	0.127	1.054	0.049	0.131	1.05
Education level (ref: no schooling/elementary)						
Junior secondary				-0.016	0.109	0.984
Senior secondary				0.051	0.107	1.052
Tertiary				0.729	0.15	2.072***
Work in formal sector				0.087	0.094	1.09
Occupation (ref: professional/managers)						
Clerical workers				-0.236	0.229	0.79
Sales workers				0.031	0.189	1.032
Service workers				-0.089	0.197	0.914
Agriculture workers				-0.023	0.21	0.977
Production workers/labourers				0.1	0.187	1.105
Migrate in previous year				-0.214	0.198	0.808
Live in urban areas				-0.12	0.084	0.886
Live in Java island				-0.035	0.085	0.966
One or more adult females live in the household				0.003	0.079	1.003
Duration of previous work				0.003	0.023	1.003
Household assets (in million Rp)				-0.004	0.003	0.995*
Seam dummy	0.126	0.112	1.134	0.161	0.114	1.175
Age	0.013	0.008	1.013	0.007	0.008	1.007
Constant	-1.969	0.195	0.140***	-1.945	0.354	0.143***
Number of person-years		6,944			6,816	
Number of women		1,125			1,111	
Log likelihood		-2,406.02			-2,350.53	
McFadden's R2		0.012			0.020	

*** p<0.01; ** p<0.05; *p<0.1
Source: IFLS 2000 & IFLS 2007

Table 7-5. **Multinomial logistic regression results for the employment change before an employment break and at the time of employment return**

| Variable	Formal-informal over formal-formal			Informal-formal over informal-informal		
	β	se	Odds Ratio	β	se	Odds Ratio
Family status (ref: unmarried)						
married with no children	0.943	0.35	2.567***	-2.343	0.659	0.096***
married with youngest child age under 5	1.761	0.279	5.817***	-1.991	0.394	0.137***
married with youngest child age 5+	1.069	0.399	2.913***	-1.959	0.73	0.141***
Education level (ref: no schooling/elementary)						
Junior secondary	0.068	0.271	1.071	-0.509	0.489	0.601
Senior secondary	0.203	0.271	1.225	0.507	0.432	1.66
Tertiary	-0.043	0.395	0.958	1.387	0.564	4.004**
Live in urban areas	-0.115	0.204	0.891	0.362	0.367	1.436
Live in Java island	-0.652	0.215	0.521***	0.58	0.344	1.786*
One or more adult females live in the household	-0.274	0.197	0.761	0.03	0.34	1.031
Household assets (in million Rp)	-0.015	0.009	0.985*	-0.017	0.015	0.983
Duration of previous work	-0.064	0.059	0.938	-0.129	0.098	0.879
Age	0.057	0.024	1.058**	-0.031	0.041	0.969
Constant	-1.716	0.736	0.180**	2.04	1.275	7.694
Number of women	514			264		
Log-likelihood	-306.719			-121.268		
McFadden adjusted R2	0.064			0.195		

*** $p<0.01$; ** $p<0.05$; *$p<0.1$

source: IFLS 2000 & 2007

Figure 8-5. Employment rates 1996-2007 of all women in the overall and 'consistent' samples
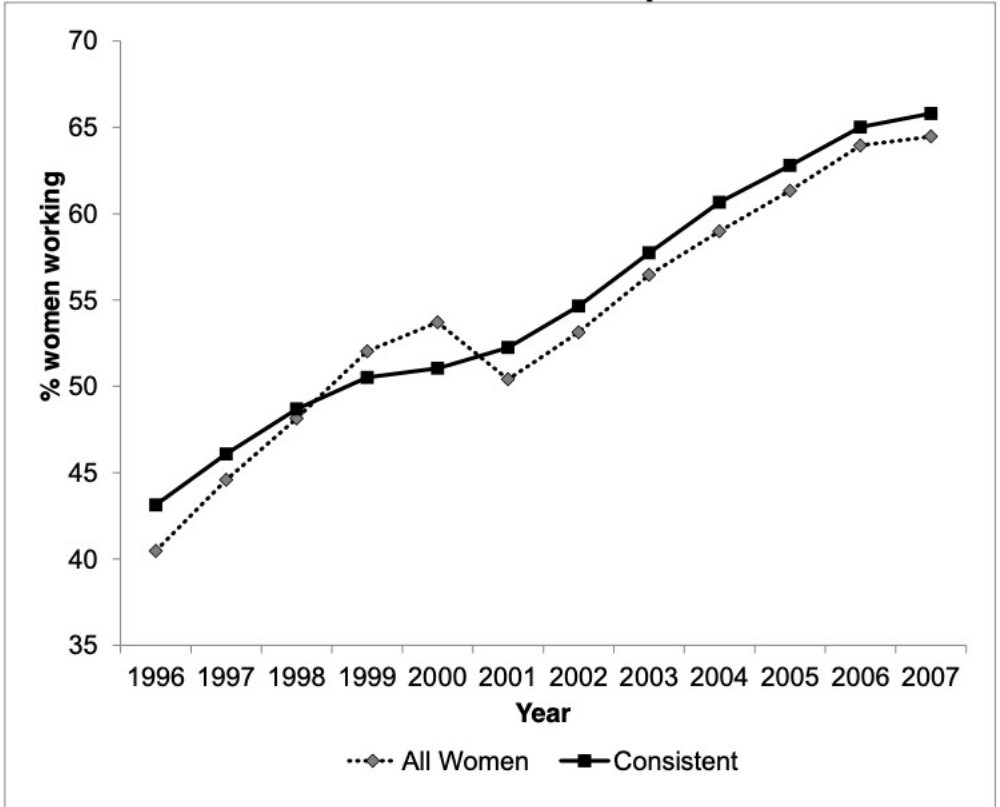
Note: Employment rates are calculated based on the sample consist of ever-working and never-working female panel respondents aged 10-38 years in 1996.
Source: IFLS 2000 and IFLS 2007.

Figure 8-6. Rates of transition out of employment 1996-2007 of ever-working women in the overall and 'consistent' sample
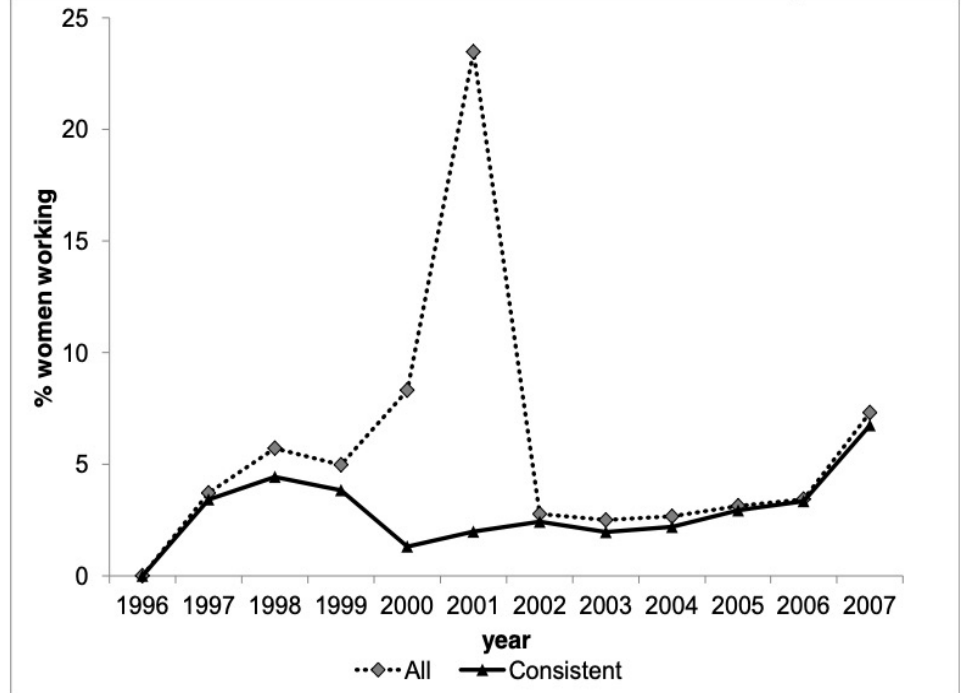
Note: the percentage of women working is calculated from ever-working female panel respondents aged 10-38 years in 1996.
Source: IFLS 2000 and IFLS 2007.