**Women Interrupted:
Determinants of Women's
Employment Exit and Return in Indonesia**

Diahhadi Setyonaluri

A thesis submitted for
the degree of Doctor of Philosophy of
The Australian National University
February 2013

DECLARATION

My own graduate work
will be the result of
my own efforts and
not the work of
any other person.

Except where indicated in the text, the analysis in this thesis is my own original work.

A handwritten signature in black ink, appearing to read 'Setyonaluri', with a long horizontal flourish extending to the right.

Diahhadi Setyonaluri

February 2013

ACKNOWLEDGEMENT

My deep gratitude goes to the Chair of my supervisory panel, Professor Peter McDonald for his useful comments, ideas and chapter reading. I owe a great debt to Dr. Ann Evans for her supervision, on-going encouragement and personal support. Deepest gratitude goes to Dr. Ariane Utomo for her role as PhD advisor and an inspiration for my life. I thank Dr. Jeromey Temple who provided useful comments at the beginning of my study.

I thank all the staff at ADSRI and ANU. I am indebted Anna Reimondos for her help during the data analysis process. I thank Dr. Edith Gray for her useful suggestions for my study. I also thank Dr. Iwu Utomo for her ideas that have enriched my work and her endless support. I thank Maria Lezuo, Selina Riley, Jenny White, Sue Trevenar, Gemo Virobo, and Christel Cools for providing administrative supports and Emeritus Professor Terry Hull for writing letters of recommendation for obtaining the scholarship. I thank Dr. Sue Holzknecht for editing the thesis. I thank Dr. Evi Nurvidya Arifin from ISEAS for her useful feedback during my presentation at the University of Canberra.

I would like to thank AusAID for awarding me a scholarship to carry out this study. I deeply thank Professor Sri Moertiningsih Adioetomo and the Graduate Program of Population and Labour Studies at the University of Indonesia for encouraging me to undertake postgraduate study. I thank the Demographic Institute and Faculty of Economics of the University of Indonesia for providing supports before and during my leave to pursue my study.

I would like to convey my deepest gratitude for being surrounded by loving friends. I thank Liz Allen who always lends me her shoulder to cry on. I thank Neil Scott for the friendship and support. Thanks to my colleagues Pungkas, Safrina 'Evi', Henri, and Nani for their support. I deeply thank Imma, Kasah and Lejla, Suharti and Fauzi, Fadlia, Uti and Titik for their warmest friendship. Thanks for the big family of "*Orkes Ukulele Indonesia*" for keeping my sanity with its music and friendship.

My love and deepest gratitude goes to my parents, Endang Setyaningsih and Hadi Soedjanmo for their love and support that made my dream to pursue higher education come true. Thank you to my parents in law, Agung Nurdhani and Sapta Dharma for their endless support. I thank my husband and my best friend, Dewa Wisana, for his love, patience and encouragement throughout. I dedicate my work to my son, Arvind. I may never have had a 'work interruption' after he was born, but I love him continuously and endlessly.

ABSTRACT

In Western countries, marriage and childbearing have consistently been shown to be major stages in the life cycle that affect women's employment continuity. Women in these countries generally withdraw from the workforce at marriage or at the onset of motherhood. However, in Indonesia, the characteristics and effects of such an interrupting feature in women's working patterns still remain unclear. Existing studies fail to explore the dynamic nature of employment behavior, particularly employment interruption which is a strong feature of women's labour market behavior.

This thesis examines the factors that contribute to interruptions in women's employment in Indonesia. It adopts a discrete-time event history analysis to explore the determinants of female's transition out from and back into employment. It pays specific attention to the effect of the family life cycle on women's decision to leave and return to employment. Using a longitudinal data collection called the Indonesia Family Life Survey (IFLS), this thesis seeks to answer four questions: (1) To what extent and when do women experience work interruption?; (2) To what extent do marriage and childbearing influence women to leave employment?; (3) To what extent does being in the later stages of childrearing influence women to return to employment?; (4) What are the roles of education and employment characteristics in determining women's decisions to leave and return to work?

The results of the analyses conducted in this study show that work interruption is common among women in Indonesia. Marriage and the onset of motherhood have been found to have a positive association with the risk of leaving employment. In particular, the effect of entering marriage on employment exit is stronger for women working in low-level occupations and for women with junior and senior secondary levels of education. This study also finds that having tertiary education and working in the public sector reduces the risk of experiencing an employment interruption.

Meanwhile, the later stages of childrearing, measured by the age of the youngest child, have been found to have no significant effect on women's employment return. However, the presence of children does have a strong effect on the risk of returning to work in the informal rather than in the formal sector. The risk of reentering employment after a work interruption is also positively associated with the number of young children,

indicating that women would return to work more quickly when the economic burden in the family increases. This study also finds that formal workers tend to be employed in the same sector when they decide to return to work.

Table of Contents

DECLARATION.....	iii
ACKNOWLEDGEMENT.....	v
ABSTRACT.....	vii
Table of Contents	ix
List of Tables	xii
List of Figures.....	xiii
List of Appendices.....	xiv
Glossary	xv
1 Introduction.....	1
1.1. Importance of study.....	2
1.2. Contribution of study	5
1.3. Defining women's work in Indonesia	6
1.4. Overview of the thesis	7
2 Literature Review: Factors contributing to women's decisions to leave and return to the labour market	10
2.1. Theory of female labour supply	11
2.2. Micro level determinants: Individual characteristics	12
2.2.1. Role of marriage and children	12
2.2.2. Women's education	14
2.2.3. Employment characteristics	15
2.2.4. Partner and family income	16
2.3. Macro level determinants: The role of norms, state and labour market structure	17
2.3.1. Norms related to the gendered role of women	17
2.3.2. Family policies	19
2.3.3. Labour market structure and gender discrimination.....	22
2.4. Conclusion	26
3 Women's employment exit and return in Indonesia: What do we know?	27
3.1. Patterns of female labour force participation in Indonesia	27
3.1.1. Trends in labour force participation rates (LFPR)	28
3.1.2. Trends in age-specific female LFPR	31
3.1.3. Women's working patterns over the life cycle in Indonesia.....	34
3.2. Factors contributing to women's decisions to leave and return to the labour market in Indonesia	39
3.2.1. Determinants of women's labour force participation in Indonesia	39
3.2.2. Role of contextual factors.....	44
3.3. Proposed analytical framework: Determinants of female employment exit and return in Indonesia	51
4 Data and methods.....	56
4.1. Data: Indonesia Family Life Survey	57
4.1.1. IFLS sampling scheme.....	57
4.1.2. IFLS re-contact protocols	58

4.2. IFLS instruments	60
4.2.1. Employment section	60
4.2.2. Marriage history for ever-married women aged 15-49	63
4.2.3. Pregnancy history for ever-married women aged 15-49	64
4.2.4. Migration history	64
4.2.5. Education history	65
4.2.6. Household roster information	65
4.2.7. Household assets	66
4.2.8. A note on respondent fatigue	66
4.3. Measures of work, marriage and childbearing	66
4.3.1. Employment/work measures	66
4.3.2. Family life cycle measures	69
4.4. Method: Discrete-time event history analysis	69
4.5. Methodological limitations	75
4.5.1. Endogeneity bias	75
4.5.2. Censoring	77
4.6. Women at risk of employment exit and re-entry: defining work spell and sample selection	78
4.7. Summary	80
 5 Transition to marriage and first birth.....	88
5.1. Trends of first marriage and first birth in Indonesia	89
5.2. Findings from previous studies on determinants of transition to marriage and first birth	91
5.2.1. Timing of marriage	91
5.2.2. Timing of first birth	93
5.2.3. Link between age at marriage and age at first birth	94
5.3. Data, variables and method	95
5.4. Results: Transition to first marriage	98
5.4.1. Characteristics of women who had a first marriage	98
5.4.2. Discrete-time hazard analysis	99
5.5. Results: Transition to first birth	100
5.5.1. Characteristics of women who had a first birth	100
5.5.2. Discrete-time hazard analysis	102
5.6. Discussion and conclusion	104
 6 Opting out: Determinants of women's employment exit.....	110
6.1. Findings from previous studies on determinants of women's employment exit	111
6.2. Analytic sample, variables and method	113
6.2.1. Sample	113
6.2.2. Variables	114
6.2.3. Method	117
6.3. Effect of transition into marriage on women's employment exit	118
6.3.1. Descriptive analysis	118
6.3.2. Results of discrete-time hazard analysis	120
6.3.3. Does the impact of marriage on employment exit differ across occupation, employment sector and education?	123
6.4. Effect of transition to first birth on women's employment exit	128
6.4.1. Descriptive analysis	129

6.4.2. Results of discrete-time hazard analysis	130
6.5. Reasons for job termination among formal workers.....	133
6.6. Discussion and conclusion	135
7 Opting in: Determinants of women's employment return.....	147
7.1. Findings from previous studies on determinants of women's employment return	148
7.2. Analytic sample variables and method	151
7.2.1. Sample	151
7.2.2. Variables.....	152
7.2.3. Methods	153
7.3. Descriptive analysis	154
7.4. Results of discrete-time hazard analysis	156
7.4.1. Discrete-time hazard analysis of employment return.....	156
7.4.2. Competing risks analysis: Transition into formal versus informal employment	158
7.4.3. Employment change	160
7.5. Discussion and conclusions	163
8 Estimating employment transitions in the presence of a seam effect	167
8.1. Definition, cause and consequences of seam effects	168
8.1.1 Causes of seam effects.....	168
8.1.2 Consequences of seam effect.....	171
8.2. Seam Effects in IFLS 2000 and IFLS 2007	172
8.2.1. Magnitude of seam effects in IFLS 2000 and IFLS 2007	173
8.2.2. Possible causes of inconsistent responses in IFLS 2000 and IFLS 2007.....	179
8.3. Treating seam bias in the analysis of employment transitions	182
8.3.1. Data editing 1: Removing respondents with inconsistent responses ..	183
8.3.2. Data Editing 2: Smoothing	186
8.3.3. Estimating the transition out of employment: comparisons across edited samples.....	190
8.3.4. Inclusion of seam indicator in analysis	193
8.4. Conclusion	197
9 Conclusion	200
9.1. Summary of Findings	200
9.2. Contribution to current knowledge about women's labour market attachment in Indonesia	204
9.3. Contribution of the study and future research.....	206

List of Tables

Table 4-1.	IFLS original households re-contact rates	59
Table 4-2.	Analytical Sample in Chapter 5, 6 and 7	80
Table 5-1.	Characteristics of women who had a first marriage.....	98
Table 5-2.	Discrete time hazard regression coefficients for the transitions to first marriage	100
Table 5-3.	Characteristics of women who had a first birth	101
Table 5-4.	Discrete time hazard regression coefficients for the transitions to first birth	103
Table 6-1.	Characteristics of women who had employment exit.....	119
Table 6-2.	Discrete time hazard regression results of the transitions out of employment (effect of transition to marriage on employment exit)	121
Table 6-3.	Characteristics of women who had an employment exit.....	130
Table 6-4.	Discrete time hazard regression results for the transitions out of employment (effect of transition to first birth on employment exit).....	132
Table 6-5.	Reasons of job termination among women formal workers	134
Table 7-1.	Characteristics of women who had returned to employment	155
Table 7-2.	Distribution of women by employment sector before employment exit and at employment return, among women had returned to work (%)	156
Table 7-3.	Discrete time hazard regression results for the transitions to employment (employment return)	157
Table 7-4.	Discrete time hazard regression results for the competing risks at re-entering employment (multinomial logistic regression)	159
Table 7-5.	Multinomial logistic regression results for the employment change before an employment break and at the time of employment return.....	162
Table 8-1.	Inconsistent pattern in the overlapping years of the work history in IFLS 2000 and IFLS 2007	177
Table 8-2.	Distribution of respondents by consistency work status reports in the overlapping years	178
Table 8-3.	Logistic regression coefficients – parameter estimates of inconsistent reporting in the overlapping years.....	179
Table 8-4.	Working pattern, end of first work spell and number of working spells throughout work history by consistency of work status reports.....	186
Table 8-5.	Employment rates based on original and ‘consistent’ samples.....	187
Table 8-6.	Rates of transition out of employment from original and smoothed samples	188
Table 8-7.	Number and rates of transition out of employment from original and smoothed samples.....	189
Table 8-8.	Number and rates of transition out of employment from original and smoothed samples.....	190
Table 8-9.	Characteristics of women who had an employment exit, original and edited samples	192
Table 8-10.	Estimated coefficients of employment exit based on original and edited samples	193
Table 8-11.	Discrete time hazard regression results for the transitions out of employment models with and without control for seam effects.....	196
Table 8-12.	Predicted probabilities of employment exit from models with and without control for seam effects	197

List of Figures

Figure 3-1.	Female and male LFPR by age group, Indonesia, 1976, 1996, 2007	32
Figure 3-2.	Female LFPR by age group, Indonesia, Thailand, and Singapore, 1996 and 2007	33
Figure 3-3.	Female LFPR by age group and urban rural area, Indonesia 1996 and 2007	34
Figure 3-4.	Labour market attachments at each stage of the life cycle	37
Figure 3-5.	Framework of analysis of determinants of women's employment exit and return in Indonesia	52
Figure 4-1.	IFLS Main Provinces	57
Figure 4-2.	Years of observed work history in each wave of IFLS	62
Figure 4-3.	Definition of job spell and dates of employment events	79
Figure 5-1.	Proportion of women who had a first birth by duration of marriage	102
Figure 6-1.	Mean age of employment exit, age at marriage, and duration of first work spell	119
Figure 6-2.	Predicted probabilities of employment exit by occupation	122
Figure 6-3.	Predicted probabilities of employment exit by employment sector	123
Figure 6-4.	Predicted probabilities of employment exit by marital status and occupations	125
Figure 6-5.	Predicted probabilities of employment exit by marital status and employment sector	126
Figure 6-6.	Predicted probabilities of employment exit by marital status and education level	127
Figure 6-7.	Mean age of employment exit, age at first birth, and duration of first work spell	129
Figure 6-8.	Predicted probabilities of employment exit by childbearing status and education	133
Figure 7-1.	Mean age of employment exit and re-entry and duration of non-employment	155
Figure 7-2.	Predicted probabilities of women's employment return by family life stage	158
Figure 7-3.	Predicted probabilities of employment change before an employment exit and at the time of employment return	162
Figure 8-1.	Overlapping and seam years in the work history of IFLS 2000 and 2007	173
Figure 8-2.	Employment rates 1996-2007 from individual work history of IFLS 2000 and IFLS 2007	175
Figure 8-3.	Employment rates 1996-2007 from adjoined work history of IFLS 2000 and IFLS 2007	175
Figure 8-4.	Rates of transition out of employment 1996-2007	176
Figure 8-5.	Employment rates 1996-2007 of all women in the overall and 'consistent' samples	184
Figure 8-6.	Rates of transition out of employment 1996-2007 of ever-working women in the overall and 'consistent' sample	185
Figure 8-7.	Mean age of employment exit and duration of work	191

List of Appendices

Appendix 3-1. Articles related to female workers' rights in Indonesia <i>Labour Law No. 13/2000</i>	54
Appendix 4-1. Characteristics of females aged 15-49 in the IFLS and SUSENAS.....	82
Appendix 4-2. IFLS household survey questionnaire	83
Appendix 4-3. Occupation codes used in the IFLS.....	85
Appendix 4-4. Characteristics of women in the panel, attrition, and original sample of IFLS 2000	87
Appendix 5-1. Descriptive statistics for the transitions to first marriage analysis	107
Appendix 5-2. Descriptive statistics for the transitions to first birth analysis.....	107
Appendix 5-3. Discrete time hazard regression results for the transitions to first marriage (coefficients, standard errors, and odds ratios).....	108
Appendix 5-4. Discrete time hazard regression results for the transitions to first birth (coefficients, standard errors, and odds ratios).....	109
Appendix 6-1. Distribution of women in the sample by their last occupation (two digits code).....	138
Appendix 6-2. Descriptive statistics for the transitions out of employment analysis (effect of transition to marriage on employment exit)	140
Appendix 6-3. Descriptive statistics for the transitions out of employment analysis (effect of transition to first birth on employment exit)	141
Appendix 6-4. Characteristics of women who had an employment exit (Sample 1)...	142
Appendix 6-5. Discrete-time hazard regression results for the transition out of employment (effect of husband's education and duration of marriage on employment exit).....	143
Appendix 6-6. Discrete-time hazard regression results for the transitions out of employment (interaction effects between marital status and occupation, marital status and employment sector, and marital status and education)	144
Appendix 6-7. Characteristics of women who had an employment exit (Sample 2)...	145
Appendix 6-8. Discrete-time hazard regression results for the transitions out of employment (interaction effects between first birth and occupation, first birth and employment sector, and first birth and education).....	146
Appendix 7-1. Descriptive statistics for the transitions to employment analysis.....	166
Appendix 8-1. Discrete time hazard regression results of the transitions out of employment by previous job sectors, with and without control for seam effects.....	199

Glossary

BHPS	British Household Panel Survey
BPS	<i>Badan Pusat Statistik</i> (Statistics Indonesia)
GBHN	<i>Garis-Garis Besar Haluan Negara</i> (Broad National Guidelines on State Policy)
<i>ibu</i>	mother
HILDA	Household, Income and Labour Dynamics in Australia
IDHS	Indonesia Demographic Health Survey
IFLS	Indonesia Family Life Survey
ILO	International Labour Organization
<i>kodrat</i>	an Arabic derived word refers to God's will or God's omnipotence related to one's nature or character or one's inherent.
LFPR	Labour Force Participation Rate
New Order	Regime of President Soeharto, 1966-1998
NGO	Non-Government Organization
<i>peran ganda</i>	dual roles of women
PKK	<i>Pemberdayaan Kesejahteraan Keluarga</i> (Family Welfare Empowerment Movement)
SAKERNAS	<i>Survei Keadaan Angkatan Kerja</i> (National Labour Force Survey)
SIPP	Survey of Income and Program Participation (USA)
SLID	Survey of Labour and Income Dynamics (Canada)
SMAM	Singulate Mean Age at Marriage
SUSENAS	<i>Survei Sosial Ekonomi Nasional</i> (National Socioeconomic Survey)
TFR	Total Fertility Rate
<i>wanita</i>	women
<i>warung</i>	small food or grocery stall

1 Introduction

In countries in Asia, female labour force participation has increased significantly over recent decades. Women's contributions to this demographic trend and to economic development as well as factors that contribute to a female's decision to work have been extensively examined in the literature. However, little attention has been given to the linkage between female employment and the family life cycle in any of these countries.

In Western countries, marriage and childbearing have consistently been shown to be major stages in the life cycle that affect women's employment continuity (Waite 1980, Sorensen 1983, Felmlee 1984, Drobic et al. 1999, Grimm and Bonneuil 2001, Taniguchi and Rosenfeld 2002, Solera 2009). Women who experience premarital labour force participation typically withdraw from the labour market at marriage or childbirth and later re-enter the labour market when children reach school-age. In some Asian countries including Indonesia, the characteristics and effects of such an interrupting feature in women's working patterns still remain unclear. Although there is a relatively strong norm toward the traditional role of women that may force women to quit jobs after marriage, the availability of childcare by family or domestic helpers that has become a specific characteristic of Indonesia, has been argued to help women to continue their work in the formal labour market, particularly after childbearing (Benjamin 1996). Moreover, the large informal sector assists married women with children who face a stern barrier to entry into the formal labour market to return quickly to work as informal workers (Grijns et al. 1994, Indraswari 2006).

Previous studies on female labour force participation in Indonesia provide evidence that marital status and young children have negative associations with women's labour force participation (Manning 1998, Widarti 1998, Feridhanusetyawan and Aswicahyono 2001, Ogawa and Akter 2007). However, the static approach used in previous research disregards the notion that employment behaviour of women changes over their life course. Women experience different states of labour market attachment throughout their lives, from recently graduated or left school to entering the labour force for the first time, followed by the events of leaving and re-entering employment. Despite each employment event occurring at different stages of a woman's life cycle, the

determinants of being in each state of employment are necessarily different. For example, marital status and the presence of children have different effects on a woman's entry into her first employment, her exit from employment and subsequent re-entry after an employment break. The use of cross-sectional data commonly used in previous studies, limits the exploration of this dynamic aspect of female employment. Therefore, at this stage, the nature of the dynamic interaction between family life cycle and women's employment interruption remains a question.

This thesis examines the factors contributing to interruptions in women's employment in Indonesia. It mainly investigates the relationship between family life cycle and women's decisions to leave and return to employment. This study focuses on the early stages of family formation rather than the overall stages of a female's life cycle. The approach in this thesis goes beyond the conventional method by applying an event history analysis technique, by exploring the dynamic interactions between family life cycle and women's transitions out of and back to work. Using a longitudinal dataset, called the Indonesia Family Life Survey (IFLS) 2000 and 2007, the thesis seeks to answer four main research questions:

1. To what extent and when do women experience work interruption?
2. To what extent do marriage and childbearing influence women to leave employment?
3. To what extent does being in the later stages of childrearing influence women to return to employment?
4. What are the roles of education and employment characteristics on women's decisions to leave and return to work?

1.1. Importance of study

Understanding women's employment dynamics is important in explaining the gap in labour force participation between men and women. Beside their labour force participation rate still being lower, it is known that compared to men, women have a fluctuating working pattern during their life course. Childbearing and childrearing responsibilities that continue to fall primarily upon women lead women to make more frequent transitions in and out of the labour market compared to men.

Such an interrupted working pattern has been argued to be disadvantageous for women. Economists have claimed that women's interrupted working pattern is the main cause of the persistent wage gap between men and women (Van Velsor and O'Rand 1984, Mincer and Ofek 1982). Human capital theory postulates that discontinued employment causes diminished human capital for an individual (Mincer and Ofek 1982). When women are out of the labour market, they are missing out on opportunities to gain skills from job training and experience. The skills gained from previous education are also diminished since they are idle and not used for increasing productivity in the labour market. As a result, women who have a temporary break from employment generally return to work in occupations that offer lower wages (Polachek 1981).

Despite the heavy consequences on wages, women often deliberately choose to leave employment. In developed countries, studies show that women voluntarily leave employment during the early years of childbearing (Hynes and Clarkberg 2005, Drobnic et al. 1999, Grimm and Bonneuil 2001, Buchman et al. 2001, Theodossiou and Zangelis 2009, Vlasblom and Schippers 2006, Van Velsor and O'Rand 1984). Other than individual characteristics such as education and personal preference, women's decision to leave employment depends on the institutional setting, including government family policies and labour market structure (Drobnic et al. 1999, Solera 2008, Stier and Yaish 2008). In OECD countries, research indicates that "motherhood's effect" on women's employment is dampened by the introduction of family-friendly policies, including extended paid maternal leave, affordable childcare, and flexible working arrangements (Del Boca and Locatelli 2006)

Developing countries have been shown to have strong socio-cultural values on women's domestic roles that potentially inhibit women's participation in the labour market (Ghosh 2004). However, in these settings, women's labour market attachment has been found to be less influenced by motherhood as compared to developed countries. The thin line between market and non-market work as well as the close proximity to family for childcare has been argued to contribute to the weak relationship between motherhood and income earning activity (Mason and Palan 1981). Women in developing countries also face greater economic demand to meet the needs of the family, leaving them with no option than continue to work even during the high demand of the caring role in the early years of childbearing. Given the barrier to entry into the

formal labour market, many women with young children work in the informal sector so that they can simultaneously combine motherhood and income earning (Chen et al. 2005).

On the other hand, studies have also shown that there is persistent gender discrimination in the labour market in developing countries. The statistical discrimination hypothesis suggests that such discrimination exists due to the bias in information about women's labour market attachment. Employers are reluctant to hire women because past information indicates women lack long term commitment to work and have low productivity (Anker and Hein 1985). Glick and Sahn (2005) argue that given the assumption that women would have more frequent work interruptions than men, employers' reluctance to hire women results in women reducing their work experience in the formal sector, or avoiding formal employment and moving to the informal sector where work interruptions are less costly relative to the formal sector. In some cases, women who had premarital employment in the formal sector moved to informal employment when they married or had children because of the existing employers' discrimination which limits women's continuity of work in the formal sector.

An analysis of the dynamics of female employment over the life cycle in Indonesia becomes important with the increased trends of females participating in the labour market and delayed marriage. Expansion in the formal labour market due to the growing industrial and service sectors as well as the increasing level of women's education that results from government's expansion of education have been reported to absorb many young, single women into the workforce (Robinson 2009). The literature also indicates that working in formal employment has been giving young single women more autonomy to make decisions about their own life, particularly in deciding whom and when to marry (Jones 2009).

However, many young women still perceive their employment as transitory (Blackburn 2004). They expect and anticipate leaving the labour market. For most women, including the highly-educated, this expectation toward future labour market attachment is still strongly influenced by the traditional norm that views men as the main breadwinner (Utomo 2008). Because marriage is a universal practice and determines women's status in Indonesia (Blackburn 2001), women are assumed to be out of work, or to work in less demanding employment once they are married (Nilan and Utari 2008,

p.143). This traditional norm regarding a woman's role also affects employers' behaviour in recruiting women into their workforce. Manning (1998) hypothesizes that since employer bias against married women workers exists, labour force participation of young single women who were absorbed on a large scale into the labour force during the industrialization period might decline when these women enter marriage and childbearing.

Therefore, for Indonesia, understanding the factors that contribute to women's decision to withdraw from and return to employment is important in providing further explanation of the continuity of work among young, single women who were absorbed into the labour market after the period of industrialization, particularly after they entered the marriage and childbearing stages.

The thesis also explores the transitions to marriage and first birth among women in Indonesia. In Indonesia, the accepted norm is that marriage is closely associated with childbearing. Once a woman enters marriage, she is expected to have a child soon. This norm is reflected in the Indonesian Demographic Health Survey (IDHS) 2007 report, which indicates that childbearing occurs shortly after marriage among women in Indonesia. The analysis in Chapter 5 explores the issue of whether women's decision to marry and have children is jointly determined. When these life events are jointly decided, marriage and motherhood are expected to have the same effects on women's decision to leave employment.

1.2. Contribution of study

The main contribution of this study lies in the use of its methodology. This thesis uses dynamic analysis of longitudinal data in explaining the determinants of the female labour market behaviour in the context of developing countries. To date, most studies of female employment in Indonesia have used a static approach, which measures the effects of the determinants on women's probability of participating in the labour force at one point in time or at a particular stage of the life cycle. In reality, women's labour force participation varies across the life cycle and is closely related to the demands of childrearing (Oppenheimer 1982, p.244). To capture this variation, a longitudinal or retrospective approach is needed.

From a broader perspective, the contribution of this thesis to the existing literature lies in identifying the dominant factors that contribute to women's decision to leave and return to employment in developing countries. It also provides further explanation of the mechanisms of how marriage and childbearing influence women's labour market attachment in this context. Findings from this study can also inform policy in dealing with such factors to promote women's employment and prevent human capital depreciation as an impact of women's interrupted employment.

1.3. *Defining women's work in Indonesia*

An underestimation of women's work in the official labour force statistics has been acknowledged in many studies. Defining employment and labour force participation for women is a delicate issue, given that women tend to undervalue their income-earning activities. Ford and Parker (2008, p.8) argue that a sharp distinction between women's reproductive and productive tasks indicated in the economic theory of female labour supply cannot be applied in developing countries. In this context, work to earn income and household work are often conducted simultaneously, particularly for women who work in the agriculture and informal sectors. For example, working in the rice fields for women farmers in Minangkabau cannot be separated from household tasks since women use the produce for household needs (Blackwood 2008, p.22). Another example is women who own small grocery or food stalls in Bandung but could serve customers while minding her children (Indraswari 2006).

Women in Indonesia have also been criticized as being too focused on their identity as wives and mothers than as workers (Ford and Parker 2008, p.9). Married women in Indonesia consider themselves as 'not working' even when they are involved in income-generating activities¹. Women in the informal sector often regard their work as a 'sideline activity' or just 'helping' husbands even though they contribute significantly to the family's income (Robinson 2009). In Blackwood's study (2008, p.33), women rice farmers in Minangkabau said that they are 'just a farmer' and not working since they perceive work as related to employment with a regular salary, either in an office or as civil servants. Given that they disregard their economic activities, women are undercounted in labour statistics (Ford and Parker 2008, p.9; Manning 1988, p.235).

¹ See Singarimbun (1999) page 63-64 for a summary of studies that found working women perceived themselves as 'not working'.

Although the rate is increasing, female labour force participation has always been lower than that of men, given this undercounting issue (Surbakti 2002, p.210).

Similarly, the issue of underrepresentation of women in the workforce might also be found in the Indonesia Family Life Survey (IFLS). Particularly in the retrospective history, IFLS only collects information about whether women were working or not in a particular year. Female respondents in this survey might consider they are not working when they did not earn a direct income or worked in the formal sector, especially following marriage and childbirth.

This study uses the term 'employment' or 'work' to refer to women's participation in the labour market. This study uses the IFLS definition that includes a broad spectrum of economic activity either in formal or informal work, full-time and part-time, and seasonal and year-round labour (Frankenberg and Karoly 1995, Strauss et al. 2004b, Strauss et al. 2009, Frankenberg and Thomas 2000).

This study focuses on two transitions in female employment: transition out of and transition back into employment. This study defines the transition out of employment or employment exit as the transition from being employed to being out of work, either to be unemployed or to become homemakers. Transition back into employment or employment re-entry is defined as the return of women who previously had an employment break into the labour market, to work in either formal or informal employment².

1.4. Overview of the thesis

The aim of this research is to examine the determinants of women's employment interruption in Indonesia. It focuses mainly on the role of the family life cycle on women's exit from and re-entry into employment.

Chapter 2 outlines the framework used for analysis, gathered from theories and the existing literature on women's employment dynamics. The elaboration in this Chapter focuses on the factors that have been identified as influencing women's decision to leave from and return to employment in both developed and developing countries.

² Further definition is given in Chapter 4.

To provide the setting for the analyses in this thesis, Chapter 3 explores previous studies of the trends in female labour force participation in Indonesia. It also addresses the conjectures about women's tendency towards experiencing employment interruptions as well as the possible factors that contribute to this.

Chapter 4 presents a detailed overview of the Indonesia Family Life Survey (IFLS). It also discusses the event history method used for analysis and analytic sample derivations. This chapter also defines the measures used in the analysis, particularly the definition of women's employment. Problems in the data are also discussed in this chapter, particularly the problem of seam bias which is further discussed in Chapter 8.

Although the thesis focuses mainly on the effect of early stages in the family life cycle on employment exit and re-entry, the determinants of the transitions to marriage and first birth are also examined in Chapter 5. Besides exploring the association between female labour market attachment and transition to marriage and first birth, the analysis in this chapter addresses the question whether marriage and childbearing are jointly decided in Indonesia. Findings from this analysis are expected to provide a context for the analysis in Chapter 6.

Using the method of discrete-time event history analysis, Chapter 6 examines the determinants of women's employment exit. The main research question addressed is to what extent changing marital status from single to being married, as well as transitioning into motherhood are associated with exit from employment

Chapter 7 deals with a subsequent aspect of women's employment dynamics, which is returning to work after having an employment break. Using the discrete-time event history method, this chapter analyses the determinants of women employment's return. This chapter examines the relationship between the changing familial responsibilities and women's likelihood to return to work.

Chapter 8 focuses on a problem identified in the data that has been known to influence analyses of employment transition that use longitudinal data, called seam bias. The causes and consequences of seam effects are discussed, based on the literature. The magnitude of seam bias in IFLS and alternative approaches that address the issue of seam bias in the analysis of employment transitions are presented in this chapter.

Chapter 9 summarizes the findings from this study, discusses the implications of this study on the existing knowledge and policy related to women's participation in the labour market. The contribution of the study concludes the chapter.

2 Literature Review: Factors contributing to women's decisions to leave and return to the labour market

Although a substantial body of research focuses on the determinants of female labour force participation, little attention has been given to the factors contributing to women's employment dynamics in developing countries. The available work in the developed world shows the close link between the female life cycle and the dynamics of their labour market attachment (Rosenfeld 1996, Moen 1985, Blau et al. 1998, Cook and Beaujot 1996). These studies point out that women face a more intermittent employment experience than men because work and women's caring responsibilities are incompatible. However, it is unclear why some women work continuously while others do not (Matras 1989, p.156).

The theoretical framework of this thesis is underpinned by the premise that women's employment trajectory is closely related to their role within the family. This thesis assumes that women's decision to continue with or leave employment is a complex process as it is affected not just by women's individual circumstances, but also by broader contextual factors, including socio-cultural norms and institutions.

This chapter sets up the framework for analysing the determinants of female employment exit and return. The literature review starts with the economic theory of female labour supply that becomes the basic framework for analysing women's employment decisions in this thesis. The discussion is broadened to address the literature that identifies the factors that determine women's decision to work, from cross-disciplinary theoretical and empirical work. Although there has been little research conducted in developing countries, the discussion in this chapter refers to the experience of both developed and developing countries since the contextual settings of the two groups are often contradictory.

2.1. *Theory of female labour supply*

In explaining women's employment pattern, the literature mostly refers to the neo-classical economics theory of labour supply (for example, see Long and Jones 1980, Drobic et al. 1999, Taniguchi and Rosenfeld 2002). The theory postulates an individual's labour supply is decided based on the allocation of time between leisure and market production in order to maximize his/her utility (Ehrenberg and Smith 2009, p.170). The theory further assumes that an individual is rationally making a choice based on the level of the wage, which is referred to as the opportunity cost of non-market activities and a function of human capital (that is education and work experience). The theory assumes two different effects of wage increase on labour supply. First, an individual allocates more time for market work relative to their leisure time to increase their level of utility as an effect of wage increase. Alternatively, an increase in wage would shift an individual's utility level because his/her income becomes higher. Higher income increases individual demand for non-market work and therefore reduces the time allocated for market work. The theory postulates that an individual would have a 'backward bending labour supply' where he/she initially increases the number of working hours as a response to a wage increase, but later reduces their labour supply after a certain level of wage increase (Ehrenberg and Smith 2009, p.175).

For married women, women's labour supply also depends on the division of labour within the household. In addition to a decision between leisure and paid work, the theory assumes women's choices are broadened to include household work. The division of labour assumes that women's participation in market work is decided relative to their higher level of productivity in household work. This theory argues that women traditionally have higher productivity in household work because they have a biological comparative advantage associated with childbearing (Becker 1981). This comparative advantage increases the value of women's time at home more than market work. As long as their productivity at home is higher than their wage rate, women are assumed to specialize completely in household work and allocate less or no time to market work (Becker 1981).

Beyond the economic framework, the decision to work for women is a complex process involving numerous factors. In the sociology field, women's value of non-market time is

also determined by women's attitude to work, which is affected by sex-role norms within the culture or society (Oppenheimer 1982, p.82). Moreover, the role of contextual factors, including structural, institutional and cultural aspects, have also been highlighted particularly in the sociology literature as factors that create opportunities as well as constraints for the continuity of women's employment (van der Lippe and van Dijk 2002, Solera 2008).

The next sections discuss the factors that influence women's decision to work. Following van der Lippe and van Dijk (2002), I use the term 'micro' to refer to the individual characteristics, while 'macro' refers to broader contextual factors that influence women's labour market attachment.

2.2. Micro level determinants: Individual characteristics

The economic and sociology literature both acknowledge the importance of individual and household characteristics in defining women's labour market attachment. This literature agrees that women's role in the family is the main factor in determining their decision to work. The effect of marital and childbearing status on women's decision to interrupt employment depends on how their education, employment choice, and the family's socioeconomic status determine the level of opportunity cost of being out of the labour market.

2.2.1. Role of marriage and children

Marriage and childbearing are known to be important determinants of women's employment. For women, the timing of marriage and childbearing marks the transition into the responsibility of childcare and domestic work. The economic theory of time allocation suggests that women would prefer to reduce their labour supply since domestic work is effort intensive (Becker 1965). However, the hours allocated for paid work depend on how partners or the family's income compensate the loss of potential earnings due to reduced working hours of women. When family income is high, women's opportunity cost is compensated and therefore they can reduce the hours of work or leaving employment but still maintain the same level of utility.

The literature on women's employment dynamics shows the mechanism of how marital status and childbearing reduce women's labour force participation. Being married, experiencing childbirth, and the presence of preschool-age children all reduce women's labour force participation by accelerating their employment exit and decelerating the employment rate of return (see for example, Felmler 1984, 1993, Drobic et al. 1999, Grimm and Bonneau 2001, Budig 2003, Taniguchi and Rosenfeld 2002)³. However, the effect of children on women's employment interruption is weakened throughout women's life cycle. The constraining effect of children on women's employment continuity declines as children grow up and become less time consuming for women (see for example, Felmler 1984, 1993, Drobic et al. 1999, Grimm and Bonneau 2001)⁴.

However, some studies find the effect of marital status in particular has less significance in determining women's employment pattern. With the increase of marriage instability, the importance of marriage on women's decision to work is declining (Becker 1991). In some cases, marriage even increases the likelihood to return to the labour market (Light and Ureta 1992, Taniguchi and Rosenfeld 2002). Studies indicate that the weakening effect of marital status on women's employment is affected by contextual factors within a country, such as norms on gendered roles (Yi and Chien 2002), the structure of the labour market (Drobic et al. 1999) and access to welfare benefits for married women (Taniguchi and Rosenfeld 2002). Elaboration of the role of contextual factors on the relationship between marital status and women's employment pattern is presented in section 2.3.

In developing countries, the effects of marital status and the presence of children on women's continuity to work depend on the sector in which women are employed as well as the resources available to the woman particularly their family income. Using the 1990 and 1991 Conakry Household Welfare Survey in New Guinea, Africa, Glick and Sahn (2005) explored the influence of demographic covariates on the multiple

³ Other than the presence of children, some of these studies use the events of pregnancy and childbirth (Felmler 1984, 1993, Taniguchi and Rosenfeld 2002, Budig 2003) and find that the later stages of pregnancy as well as the event of childbirth significantly increase the rates of transition to employment exits, after controlling for job and employment characteristics of the women. The significant effects of pregnancy and childbirth suppress the effect of young children. Taniguchi and Rosenfeld (2002) and Stier and Yaish (2008) found that the effect of the number of young children becomes insignificant when they control the model with pregnancy and childbirth.

⁴ The presence of older children does not always significantly increase the employment return rate of women (Solera 2008, Jeon 2008).

outcomes in women's employment: entry into either self-employment or wage-employment, and the movement from non-employment to self-employment or non-employment to wage-employment. They found that both marital status and the presence of children under age five significantly increase women's likelihood to work in self-employment. This study also found that women with young children are more likely to leave wage employment than those with no young children (Glick and Sahn 2005).

Glick and Sahn (2005) argue that women's participation in self-employment is supported by their spouse's capital, expertise and connections which make it easier for them to open small businesses. Moreover, the sample in Glick and Sahn (2005) consists of women from poor households who were living under pressure to continue generating income to meet family subsistence. These women choose self-employment because they can directly supervise children while working (Glick and Sahn 2005).

2.2.2. Women's education

In human capital theory, education represents an investment linked to an individual's productivity in market work. Highly-educated individuals are assumed to have higher potential earnings and thus higher opportunity cost of being out of the labour market. It is assumed that individuals, including married women, would remain in the labour market when they have a higher opportunity cost of not working. The theory also suggests that married women with high education choose to stay in the labour market when their potential earnings are higher than the value of time at home (Becker 1991). In the theory of demand for children, Becker (1981) argues that women who have high wage level can compensate for their time at home with market goods and services, including childcare.

In addition to the human capital argument, high education for women represents high expectation towards the quality of children's human capital. Standing (1978) argues that women with higher education tend to have higher expectations of their children's development. High-educated women interrupt employment to allocate more time to caring for young children. Their preference toward having an interruption in employment is also augmented by their ability to access better and more secure jobs (Standing 1978). Taniguchi and Rosenfeld (2002, p. 445) argue that education provides women with resources to find a job, even after an employment break. Even

though highly educated women choose to leave employment to attend to their young children, they would return to employment more quickly compared to women with lower education.

Studies on women's employment dynamics confirm the human capital hypothesis that points to the positive effect of education on women's labour supply. High education is found to reduce the risk of employment exit, and increases the risks of employment re-entry (Cook and Beaujot 1996, Drobic et al. 1999, Taniguchi and Rosenfeld 2002, Jeon 2008, Solera 2009)⁵. This finding suggests education works as a resource to withhold women from leaving the labour market and help women who have left employment to obtain a job faster when returning to the labour market.

2.2.3. Employment characteristics

Employment characteristics are important in resolving the conflict between work and family for women. Employment attributes such as job rewards, including fringe benefits, job security and flexible working arrangements as well as social status influence women's decision to continue their employment (Taniguchi and Rosenfeld 2002, p.440, Ngo 1992, p.479). Killingsworth and Heckman (1986) argue that women are willing to substitute wages to obtain more of these employment attributes. For example, women who seek to combine their caring responsibilities with market work will choose a job that has flexible working hours such as part-time employment with the consequence of receiving lower level of wage than working in full-time employment (Ngo 1992). Thus, working in jobs that offer greater employment attributes reduces women's opportunity cost of leaving employment and therefore decreases their likelihood to have a work interruption.

Research shows that working in high-ranking occupations reduces women's risks of leaving employment (Cook and Beaujot 1996, Buchman et al. 2001, Taniguchi and Rosenfeld 2002, Stier and Yaish 2008, Solera 2009). Buchman et al. (2001) argue that professional and managerial jobs offer not just greater salary but also higher prestige, responsibility and authority which most likely enhance women's commitment to work as compared to other types of occupations. Those who leave such occupations have a

⁵ Some of previous studies found a positive effect of education on women's employment exit, but the effect is weak (Felmlee 1984, Grimm and Bonneuil 2001, Taniguchi and Rosenfeld 2002) or not significant (Budig 2003).

strong preference toward non-employment or have a specific condition that does not allow an individual to work, for example due to sickness (Yu 2006). High commitment to work is also indicated by the higher rate of employment return among women who previously worked in high-ranking occupations (Buchman et al. 2001, Stier and Yaish 2008). Besides high-ranking occupations, jobs in the public sector and in female-dominated occupations are also considered to provide a favourable environment for married women with children because these jobs are generally associated with family-friendly policies and flexible working arrangements (Stier and Yaish 2008, Taniguchi and Rosenfeld 2002).

Besides occupation, previous studies in developed countries have found that the dichotomy of full-time and part-time employment also influences women's decisions to leave and return to employment (Drobnic et al. 1999, Taniguchi and Rosenfeld 2002, Budig 2003). Because of the greater flexibility of work arrangements, many women choose part-time work particularly after childbearing (O'Reilly and Fagan 1998, p.6). However, in some countries such as the United States, part-time jobs are low-level occupations with low wages and benefits (Drobnic et al. 1999, p.144). In these settings, female part-time workers have a greater risk of having intermittent employment than full-time workers.

2.2.4. Partner and family income

In a coupled household, the added worker effect hypothesis assumes that female labour supply depends on the level of productivity of their partners (Ehrenberg and Smith 2009, p.219). It also assumes that an increase in a partner's or overall family income would reduce women's labour force participation. Higher partners or family income compensates for women's opportunity cost of being inactive from the labour market.

Some research has explored the relationship between partner's and family income on women's employment exit and re-entry. In general, the findings from these studies confirm the relationship between family income and women's labour supply postulated in the added-worker effect hypothesis. A study by Cook and Beaujot (1991) in Canada found that total family earnings had a negative relationship to the likelihood for women

experiencing employment interruptions⁶. Taniguchi and Rosenfeld (2002) found that family income reduces the hazard to leave employment as well as the hazard to return to employment, particularly among white women in the US. Contrary to the added-worker effect hypothesis, Felmlee (1984) found that husband's income has a negative relationship with the hazard of employment exit. Felmlee (1984) argued that women with low income husbands need to find a job that offers better income; therefore they require a certain period of non-employment for job searching.

2.3. Macro level determinants: The role of norms, state and labour market structure

Structural factors such as institutions and norms are important in explaining differences in women's working patterns (van der Lippe and van Dijk 2002). Besides the social norms that shape the gendered roles of men and women, family policies and the structure of the labour market also influence women's preference toward market work (Yu 2006). The following discussion focuses on how institutions and norms related to gendered roles are affecting women's employment behavior.

2.3.1. Norms related to the gendered role of women

From a sociological perspective, women's decision to work is affected by their gender role attitudes. Eagly (1987) defines gender role attitudes as the views about what behaviour, responsibilities and activities are appropriate or not for women and men, which is also a proxy for the dominant social norm (Yi and Chien 2002). Women who hold traditional views believe that women's main responsibility is as homemaker while men are the ones who earn the income; egalitarian women consider that housework and income-earning responsibilities should be shared between men and women. Such differences in gender role attitudes are influenced by the cultural and religious norms related to the division of responsibilities and the patriarchal ordering of society.

A significant association between women's gender role attitudes and their employment has been established in research (Waite and Stolzenberg 1976, Smith-Lovin and

⁶ Cook and Beaujot (1991) estimate the influence of demographic and socio-economic characteristics on the likelihood for men and women to have work interruption in Canada. They find total family earnings to have a negative relationship with both men and women's work interruption.

Tickamyer 1978, Waite 1980). Females who take a modern view of gender roles tend to place a higher value on market work and therefore have a higher likelihood of having continuous employment (Desai and Waite 1991, Moen and Smith 1986).

The literature also shows that gender role attitudes evolve with changes in family status of women and men. In the earlier stage, women are being rational by considering job attributes in deciding their labour market participation (Konrad 2003). When a couple has their first child, they tend to have a more traditional view toward household division of labour (Corrigal and Konrad 2007). Particularly in dual earner households, women are the ones who have to adjust their attitudes and to allocate more time to focus on childcare and domestic work at the onset of motherhood (Becker and Moen 1999).

However, some studies have found an inconsistent relationship between women's gendered role attitudes and their labour market behaviour. Crompton and Lyonnette (2005) observed contradictory behaviour where women with traditional attitudes allocate a large share of their time to market work, while egalitarian women choose to have a long employment break after childbirth. Such inconsistencies are argued to be the result of constrained choices due to economic necessities and a lack of childcare (Steiber and Haas 2012).

In non-western countries, there are contextual factors that create inconsistencies between women's attitudes and choices over paid work. For example, in the city of Singapore, women who are mostly educated are exposed to attitudes that support non-traditional values of marriage and work, but they are still strongly influenced by traditional values. Women in Singapore face a dual role ideology that emphasises women being responsible for both domestic and paid job (Quah 2009). As a result, Singaporean women are dropping out of employment as soon as they enter marriage or motherhood or, alternatively, many are not marrying or having children.

In developing countries where the agricultural and informal sectors dominate the economy, the norms of the gendered roles of women affect women's ability to combine work with motherhood. In agricultural countries, women are engaged in 'joint production', that is, to work simultaneously with rearing children. These women are doing so given that they hold strong traditional values about women as the main carers

of the family but also have the economic pressure to provide the necessities of the family (Younger 2006, p.3)

2.3.2. Family policies

Some research has found that family policies are important in determining the differences in women's employment patterns across countries. Countries that provide parental leave and childcare policies that are 'women friendly' are more likely to exhibit higher female labour force participation compared to countries that do not provide support for women's labour market attachment (van der Lippe and van Dijk 2002, Gornick and Hegewisch 2010). More importantly, the friendliness of the policies or so-called de-familialization policies to ease the caring burden of the families have been found to have a strong association with the continuity of women's employment (Solera 2008).

The characteristics of family policies and implications of women's employment continuity in Western countries are grouped by Esping-Andersen's into three welfare regimes (1999): social democratic, liberal, and conservative.

Social democratic countries, such as the Scandinavian countries, generally provide 'generous' maternal leave, child benefits, and publicly supported childcare. These countries have strong views toward improving women's position in the labour market. They have successfully maintained high labour force participation of women with children through their family benefits policies (Gupta et al. 2006)

Liberal countries, such as the United States and the United Kingdom, adopt a view of equal rights between men and women. These countries generally have a relative lack of support to maintain women in the labour market, maintaining that such support can be provided through demand and supply in the free market (Stier et al. 2001)

Conservative countries generally have strong norms of traditional gendered roles between men and women. Countries within this regime, such as Italy, consider that resolving conflict between work and family is an individual's responsibility (van der Lippe and van Dijk 2002). These countries have benefit schemes and tax regimes that support women staying at home and therefore provide few childcare facilities.

Within these three regimes, employment interruptions are expected to be quite common in liberal countries. Under this regime, part-time work which is generally limited to occupations with low wages, does not provide solutions to keeping women in the labour force (Stier et al. 2001). Moreover, given that part-time work is viewed as an alternative to interrupted employment rather than marginal employment, women in social democratic countries are expected to have a more continuous employment pattern compared to other regimes (Stier et al. 2001).

Within any regime, there are huge variations in family policies that have different outcomes for women's decision to work. Following Gornick and Hegewisch (2010), it is important to elaborate the characteristics of family policies, particularly maternal or parental leave and childcare, in explaining variations in women's employment behaviour across countries including developing countries.

Paid maternal/parental leave

Maternity leave has been the central policy in tackling the conflict in balancing work-family in many developed countries. From the economic perspective, paid parental leave that guarantees workers will return to their previous job after the end of the leave entitlement has been viewed as providing incentives for women to work before childbearing and returning as soon as their entitlement ends (Gornick and Hegewisch 2010). However, research shows that the effects of leave on women's labour market attachment depend on how family policies are regulated: the duration of leave, monetary compensation during the leave, whether it is funded by government or mandated through employers, time flexibility to take leave, and the entitlement of fathers to take the leave (Gornick and Hegewisch 2010).

Among these factors, low access to paid leave, shorter or longer duration of leave, as well as the implementation of 'homecare' leave are associated with lower rates of women returning to employment (Gornick and Hegewisch 2010, Boushey 2008). Meanwhile, countries that have greater flexibility in the time taken as leave are associated with higher return rates of women to the workforce, such as in Sweden which has been claimed as having the most flexible parental leave schemes (Ronsen and Sundstrom 2002).

In developed countries, paid leave is generally provided by the state through taxes and social insurance, while in developing countries, the responsibility for providing paid leave generally falls to the employers. In addition to the direct cost of leave, employers have to bear the indirect costs arising from the absence of workers, including administration, finding a replacement and the productivity of the replacement (Gornick and Hegewisch 2010). Since women are the ones who generally take paid leave, employers in developing countries hold a perception that hiring female workers is costly and risky in terms of the loss of productivity during the leave (World Bank 2004)⁷. Moreover, studies have reported the underutilization of leave entitlement because of workers' lack of awareness of their rights at work (for example in Malaysia, see Bernasek and Gallaway 1997). The perception of women being expensive workers and the lack of enforcement of maternity leave are expected to hinder the continuity of women's employment in developing countries.

Childcare

Under the economic labour supply framework, childcare availability and price have different effects on women's decision to work. Childcare availability reduces women's value of time at home and increases women's probability of being employed (Gornick et al. 1996). In contrast, the price of childcare is a constraint for women. The childcare fee is a deduction from women's wage rather than family income (Heckman 1974). Therefore, when childcare is expensive, women's value of market work is lower and so is their labour supply.

Meanwhile, public childcare provision and policies are underdeveloped in developing countries. Non-maternal childcare is generally provided by extended families, such as grandparents or older siblings, or by domestic workers. In cases where women cannot afford servants or have no access to their families, they tend to move into informal work so that they can bring their children to work (Hein 2005, p.17). The lack of formal childcare is also related to the view of women as 'expensive' employees. For example, in Chile, mandatory childcare provision by employers became a disincentive to hire female employees and led to stronger gender discrimination (Inter-American

⁷ However, some studies have shown otherwise. In Latin America, maternity leave only accounts for less than two per cent of women's wage and salary costs, or less than one per cent of overall production costs, while men's exclusive family payable accounts for 10 per cent of wage cost (Abramo and Todaro 2002 cited in Gornick and Hegewisch 2010, p.20).

Commissions on Human Rights Report 2009 cited in Gornick and Hegewisch 2010, p.41).

2.3.3. Labour market structure and gender discrimination

Labour market structure

Although it is still underdeveloped, literature in developed countries has started to acknowledge the importance of labour market structure on women's decisions to work. Labour market structure, whether it is segregated by sex, segmented based on occupations, or dichotomized into full-time and part-time employment, create opportunities and constraints for women continuing their employment particularly following marriage and childbearing.

The majority of studies on women's employment exit and return in developed countries incorporate the dichotomy of full-time and part-time employment to explore the differences in women's employment behaviour (Drobnic et al. 1999; Taniguchi and Rosenfeld 2002). With the increasing trends of women working part-time in these countries, Buchman et al. (2001) suggest an urgency to include different employment structures in the analysis of women's employment decisions rather than focusing only on the dichotomy of full-time versus part-time employment. Using the Swiss Labour Force Survey, Buchman et al. (2001) found that occupation-based segmentation in Switzerland's labour market influences women's employment decisions. They found that women who worked in high-rank occupations were exposed to a higher risk of employment interruptions when they entered motherhood compared to women who worked in low-skill level occupations. They argue that high-skill level jobs demand workers to work full-time and commit to work continuously, while low-skill level jobs are associated with more flexible working arrangements and allow workers to work part-time. Workers who continue to work in low-skill level employment are motivated to work continuously to fulfil economic necessities (Buchman et al. 2001).

In developing countries, the labour market is generally dichotomized into the formal and informal sectors. The informal sector has been considered as the primary source of employment for women in this context (Cassirer and Addati 2008). The informal sector is viewed as both inferior and positive (Gallaway and Bernasek 2002). The

inferiority of this sector arises from the fact that the informal sector absorbs the poor and marginalized labours who are unable to access the formal labour market due to low education and skills. The positive perspective sees the informal sector as an important 'survival' strategy for women and family. This argument is centered on the idea that the informal sector provides flexibility, autonomy and proximity to home and allows women to combine paid work and family responsibilities (Cassirer and Addati 2008, p.1).

However, in the absence of childcare, informal work is not solving the conflict between family and work. Bringing children to work may be one solution, but the presence of children is argued to reduce mothers' time and investment in improving this already-low productivity and wages (Cassirer and Addati 2008, p.4)⁸. Given this condition, women in the informal sector may experience a continuous pattern of employment. However, such continuity reflects the fact that women informal workers are marginalized in terms of low wage, productivity, and the burden of combining paid work and childcare at the same time.

Similar to the primary labour market in developed countries, the formal sector in developing countries offers higher salary, fringe benefits, and job security. Formal jobs are also generally characterised by standard, fixed work schedule, located outside the home and stable employment. Such characteristics signal that work in the formal sector and family demands cannot be attached (Ngo 1992), making formal employment becomes incompatible for women with children. Following Buchman et al.'s argument (2001), women who are employed in formal employment may face greater risks of interruption when they have children because the nature of jobs in this sector requires workers to work continuously.

Glick and Sahn (2005) provide evidence that exhibits the difficulty of combining wage work with childcare. Their study shows that the presence of young children increases the likelihood of leaving formal wage employment in Conakry, Guinea. Glick and Sahn (2005) argue that besides the difficulty of combining wage work and childcare, the lack of part-time working arrangements in the formal employment sector also contributes to

⁸ Not to mention the hazardous working environments that affect children's health and possibilities of children being employed in the workplace.

the negative association between the presence of young children and women's employment in the formal sector found among Conakry's women.

Moreover, literature has noted that employers in the formal sector enforce higher turnover of female workers because of the higher cost associated with hiring them (see for example: Gornick and Hegewisch 2010; Caraway 2005). Such practice mostly occurs in low-skill, wage employment in the private sector (Glick and Sahn 2005, p.44) and influences women to leave their jobs involuntarily. The dismissal of women workers from the formal labour market is rooted in the problem of gender discrimination in the labour market, which is discussed in the following sub-section.

Gender discrimination in the labour market

Theories of gender discrimination in the labour market examine the bias among employers that affects women's decision to leave the labour market. Such discrimination is deeply rooted in the persistent stereotypes that women have low productivity and work commitment due to their caring responsibilities (Hein 2005). Given to such views, employers expect women workers to be costly due to their higher turnover rate (Viscusi 1980) and create disincentives for women to enter the workforce.

In addressing employer bias, the statistical discrimination hypothesis provides an argument about how employers develop obstacles to hiring female workers. The theory assumes that employers make decisions based on average statistical differences between the cost of turnover and productivity between men and women. Employers use information about productivity, commitment and the turnover risks of a group of past workers. Employers discriminate against women when the past experience indicates that a group of women workers on average have lower productivity than men (DeGraff and Anker 1999). Even if women have equal or higher skills, employers still discriminate against women due to past low productivity:

Even if women are as skilled, clever and talented as men, competitively placed employers will rationally prefer male to female workers if they expect that women, and not men, experience a productivity decline due to childbirth. (Esping-Andersen 2002)

Becker's (1957) 'taste-based' discrimination theory provides an elaboration of the further impacts of employer bias. The theory assumes that employers have already developed a particular aversion toward women workers. Employers maximise their utility when profit increases and production cost is minimum. Given this bias, hiring an additional female worker reduces an employer utility. Employers would hire women only if the cost of their labour is compensated with an increase in profit. Consequently, women are hired at low wages with marginal productivity.

Despite the theory indicating that employers dislike female workers, the low average wages of women become an attractive factor for industry to recruit female workers. Beside women being stereotyped as docile, and willing to do menial jobs which men do not want to do, women are also willing to work for low wages. For example, during the period of industrialization in Asia, women became an important source of cheap labour for export-manufacturing industries, in both the formal and informal sectors (Gills 2002, p.110).

However, although many are recruited, women workers have become vulnerable subjects of discrimination causing them to leave their employment. Besides the sex-based discrimination, employers also exercise discrimination in terms of the marital status of women. In Indonesia, discrimination against married women is mainly motivated by employers trying to avoid the high cost of labour due to the obligatory paid maternity leave and the high turnover risks of female workers (see for example: Caraway 2005). Other than that, women suffer many forms of discrimination that discourage them from continuing to work. A report from an NGO in Hong Kong which conducted a survey with the title "Development for Whom? Women in the Export Processing Zones in Asia" in 1995 summarizes the discrimination toward women workers in industrial processing zones and the consequences (cited in Matsui 1996, p.175):

The average age of women workers is from 16 to 25 years...their wages are low, around US\$1 a day in Vietnam, China and Indonesia. They perform late-night work, and the ventilation and lighting are poor in their working environment... Their dormitories are crowded. They undergo sexual harassment and sexual violence both while commuting to work and on the work site. They are limited in the number of times they can take toilet breaks. Only single women are employed and those who marry must retire... Most factories prohibit the organizing of trade unions. Nevertheless, workers have engaged in strikes and protest actions, pressing for wage increases and improved working

conditions in the Philippines, Indonesia, Malaysia, China and Korea. Some workers have been arrested.

Discrimination within the labour market in Indonesia is discussed further in section 3.2.2.

2.4. Conclusion

The neo-classical economic theory of female labour supply provides a framework for an analysis of women's employment exit and return. The theory suggests that an individual makes a choice to allocate more time for paid work relative to home or leisure based on the wage level. Within the household, married female labour supply is decided jointly with other members based on the productivity of market or non-market work. Women are assumed to make decisions based on the cost-benefits of choosing non-market work relative to market work.

The economic theory assumes that a woman's decision to be out of work is based on the level of wage rate offered in the market. However, there are exogenous factors that affect the level of wage as well as the preference of women to stay at home after marriage and childbearing, such as marital status, the presence of young children, education, and partner/family income. These factors are argued to be indirectly influenced by the norms related to the gendered role of women, the government's provision of family policies, as well as how the labour market is structured within a country.

The next chapter provides an elaboration over the relevance of factors discussed in Chapter 2 in the Indonesian context.

3 Women's employment exit and return in Indonesia: What do we know?

In Indonesia, little is known about the relationship between women's life cycle and the dynamics of their labour market attachment. The majority of studies on Indonesia which focus on the static analysis of the determinants of female labour force participation show a strong and negative relationship between women's marital and childbearing status and female labour force participation. However, the mechanism by which marriage and having children reduces women's labour market activity remains unclear: whether marriage and having children induce women to quit work; whether women return to work as soon as the caring demand in the family is reduced; and how micro and macro determinants influence transitions in women's employment decision.

This chapter examines the possible factors that influence women in Indonesia to engage in intermittent employment from the existing literature. It also builds the contextual settings of the Indonesian situations that affect the dynamics of women's labour market attachment. This chapter is divided into three main sections: first section discusses the trends in female labour force participation in Indonesia, including a review of some qualitative studies that examine women's work-life trajectories in Indonesia; second section elaborates socio-economic and contextual factors that contribute to women's decision to participate in the labour force drawn from existing studies; third section closes chapter 3 by presenting the framework for analysing the determinants of women's employment exit and return in Indonesia.

3.1. Patterns of female labour force participation in Indonesia

In Indonesia, there are increasing numbers of women are involved in economic activity. This section examines the statistical trends in female labour force participation rates in Indonesia. It starts with a discussion of the overall trend and its determinants at macro level to provide the context for why there has been an increase in economic activity of women. Trends in the age-specific female labour force participation rate are explored to reveal the patterns of work typically associated with Indonesian women over their life

course. The elaboration closes with a review of the available studies that examine women's labour market attachment over the life course in Indonesia.

3.1.1. Trends in labour force participation rates (LFPR)

Although the absolute figure is still lower compared to males, the female LFPR in Indonesia has grown relatively faster than that of males. The female LFPR increased from 37 per cent in 1971 to 44.6 in 1990 while males experienced a slower growth in LFPR, from 82.4 to 82.7 per cent within the same period (ILO 2011a)⁹¹⁰. In recent years, the trend in the growth of LFPR has slowed down for both males and females. The ILO (2011b) recorded that the female and male LFPR have remained almost unchanged from 51.3 per cent to 51.1 per cent and from 84.8 per cent to 83.5 per cent respectively between 1996 and 2008¹¹. With the slower growth in the rate of females in the labour force in recent years, their share showed a stagnant pattern of around 38 per cent from 1990 to 2010 (World Bank 2012). However, it is important to note that slow and stagnant growth of female labour force participation rates may have been the result of the underestimation of female economic activity in the statistics, which has previously discussed in section 1.3.

Although the trend shows that the growth of female labour force participation seems to remain unchanged for the last decade, experts have noted that Indonesia has experienced a feminization of the labour market (Robinson 2009, p.90) as more women are working outside the home after Indonesia independence, particularly during the industrialization period between 1980 and 1990. This phenomenon has been influenced by the combination of the dynamics of Indonesia's development: the structural transformation in the economy, demographic changes, and the expansion of education.

The period of rapid globalization in the late 1980s changed the labour market structure in Indonesia dramatically. This structural transformation in Indonesia was characterized by a remarkable movement of labour from agriculture to non-agriculture sectors. The

⁹ LFPR is defined based on ILO's activity rate which is defined as the ratio of the total economically active population to the total population of women age 15 and older (ILO 2011a).

¹⁰ LFPR from 1971 and 1990 is based on ILO's reported activity rate calculated from the 1971 and 1990 Population Census produced by BPS-Statistics Indonesia (ILO 2011a).

¹¹ The LFPR 1996 and 2008 are taken from ILO's activity rates which are calculated based on 1996 and 2008 National Labour Force Survey by BPS-Statistics Indonesia (ILO 2011a)

manufacturing sector has been growing, from an annual average growth rate of 3.3 per cent in 1980-1986 to 9.1 per cent in 1986-97, while the share of the agriculture sector fell from 37.6 million in 1986 to 35.9 million in 1997 (Feridhanusetyawan and Aswicahyono 2001, p.6).

The growth in the manufacturing sector itself was influenced by the expansion of the labour-intensive export-oriented industries in the 1980s, such as textiles, footwear, clothing, wood products and furniture. With more factories being built and absorbing labour, urban employment grew at a rate of more than 10 per cent whereas rural employment only grew by 0.5 per cent during the export boom period; at the same time, growing urban employment expanded formal employment from 26 per cent in 1986 to 35 per cent in 1997 (Feridhanusetyawan and Aswicahyono 2001, p.7)¹². Like most countries in Southeast Asia, in Indonesia, young women benefited from the expansion of export-manufacturing industries as well as the urbanization of employment (Singarimbun 1999, Feridhanusetyawan and Aswicahyono 2001, Van Klaveren et al. 2010). Elementary and junior secondary-educated women in their 20s living in urban areas gained the most from the increase in the female labour force participation rates during the industrial expansion (Manning 1998, p.234).

On the supply side, the increasing female labour force participation rate, particularly between 1970-1990, has been influenced by the demographic change, which has also affected the expansion of the overall labour force. The rise in the labour force rates in the 1970-1990 can be attributed by the entry of the last post-war cohorts born in the 1950s and 1960s into the working age population (Irawan et al. 2000, p.14). With the Total Fertility Rate (TFR) being halved in the period 1960 to 1990, the number of children in the population has declined, the growth of the youngest segment of the labour force has almost ceased, while the older segments continue to grow (Irawan et al. 2000, p.14). Particularly for women, the lower fertility level means women in the current generation could allocate more time to the labour market compared to four decades ago when the fertility rate was still around 5 children per woman.

In addition to these economic and demographic dynamics, the increased share of females in the labour force has also been the result of the expansion of education

¹²Informal employment growth rate declined from 6.2 per cent during 1980-86 to 1.1 per cent during the same period.

during the New Order era. Following the windfall from the oil boom in the 1970s, the Indonesian government implemented compulsory elementary education as well as the building of elementary schools in villages at the end of 1970s. Studies have shown that the implementation of such a policy provides a greater benefit for girls than boys (see for example, Oey-Gardiner 1993). Together with the expansion of the industrial sector, the improved educational level of women further encouraged them to enter into paid employment¹³.

Despite the growing participation of females in Indonesia's labour market, their welfare improvement is questionable. Women's income earning activities are generally concentrated in low-paid, low job-security work. Female employment is dominated by informal work as unpaid family workers, with the proportion of women working in such occupations more than double that of men (Irawan et al. 2000, p.17).

Similarly, the concentration of women in low-paid jobs is also occurring in the formal sector. Women are overrepresented in employment such as teachers, nurses, and midwives which have been considered lower level professional occupations. Manning (1998, p.232) states even though their participation in the formal labour market is growing, women workers tend to be "bypassed" in economic development. Industrialization discriminates against women in terms of technological changes and arrangements in wage-contracts. Women tend to choose jobs which are valued as "appropriate" for their stereotypes, but which undervalue their educational achievements and provide little room to improve their skills and careers (Manning 1998, Standing 1976, Hein 2005).

In addition, the continuity of labour force participation of young women absorbed into the labour market, particularly in the manufacturing sector, also remains a question. The Economic and Social Commission (2002 cited in Martin (2004)) reported that given the traditional views about women in the family, factory jobs are considered as temporary for female workers:

The export-oriented industrialization driven by foreign direct investment has created massive employment opportunities for young women in the textile and

¹³ Even though it is still much lower compared to men, women's share of wage employment increased substantially from 20.2% in 1986 to 29% in 1997, while men's share in wage employment rose from 30.5% to 39.4% during the same period (Irawan et al. 2000).

garments, electric appliances and electronics industries. The women, usually unmarried, migrate to find employment in the urban industrial sector, often with the explicit goal of supporting their parents in the village, as dutiful and respectful daughters...Most see their migration as temporary and expect to return to the village to get married; in the meantime, they will save or send home most of their earnings. (Economic and Social Commission 2002 cited in Martin 2004, p.14)

Moreover, the persistent patriarchal values, held by employers and the state, contributes to the temporariness of jobs in the formal sector for young women (Wolf 1992, Robinson 2009, Caraway 2009). Manning (1998) speculated that the participation of the current young and single women in the labour force would fall as they grow older since there is a tendency for the manufacturing sector to employ mainly young females.

In order to see how the female labour force participation rate is changing over the life cycle, particularly before and after marriage and childbearing, the trends in female labour force participation rates by age group are examined in the next section. A detailed discussion of employers' discrimination against married women with children is presented further in section 3.2.2.

3.1.2. Trends in age-specific female LFPR

Figure 3-1 shows the age-specific LFPR of females and males in Indonesia in the years 1976, 1996 and 2007. Besides exhibiting lower rates, the pattern of female LFPR by age has shown a relatively fluctuating pattern compared to males throughout the life cycle. Moreover, the pattern of age-specific female LFPR has shown a trend toward an M-curve in recent years that indicated women experiencing an intermittent pattern of participation. In 1996 and 2007, female LFPR had reached double peaks at age 20-24 and 45-49 years old.

An interruption in the working life of women is indicated in the slight drop (0.3 per cent) in LFPR between the ages of 20-24 and 25-29 in 1996. Meanwhile, in 2007, although the LFPR of women at age 25-29 was higher than age 20-24, the difference was small (0.2 per cent). The small gap in LFPR around these age groups suggests that the proportion of women who have interrupted labour force participation around childbearing age might not be substantial. However, this would not be the case when

exits from the labour force were balancing entries into the labour force, a situation that cannot be examined using only static data.

Figure 3-1. Female and male LFPR by age group, Indonesia, 1976, 1996, 2007

Source: BPS-Statistics Indonesia (1976, 1996, 2007a)

Low participation in the labour force among younger women in Indonesia is more evident compared to the neighbouring countries in Southeast Asia, such as Thailand and Singapore (Figure 3-2). The pattern of age-specific female LFPR in Thailand indicates Thai women have stable labour force participation rates that are similar to the male pattern. Meanwhile, Singapore exhibits a contradictory pattern of female LFPR by age to that of Indonesia. Singaporean women have high labour force participation at younger ages but it declines after reaching a peak at age 25-29 years old.

The differences of the female LFPR by age in the three countries might reflect the different responses of women in these three countries to their roles in the family after marriage and childbearing. In her thesis which compares the female LFPR in Southeast Asian mega cities in the years 1980 and 1990 Singarimbun (1999, p.31) found that Jakarta’s female LFPR seemed to reach a peak earlier, at age 20 to 24 years old, before it tapers off. She found that the pattern of age-specific female LFPR in Bangkok and Singapore were similar to that of Jakarta, although the decline after age 25-29 in Jakarta and Bangkok was not as sharp as in Singapore. The trend in Singapore showed a tendency for women to leave the labour market following marriage and childbearing. Such a trend is confirmed in Quah (2009, p.124) who suggested that Singaporeans leave after marriage or having their first child in their late twenties and thirties to focus on their families.

Singarimbun (1999, p.32) also argues that variation in age-specific female LFPR among the three cities depends on the types of occupation dominated by women. In Singapore, there are more job opportunities for the better educated. Such jobs are characterized by higher incompatibility with women's childcare role and therefore cause women to drop out of the labour market. Meanwhile, the majority of women in Jakarta and Bangkok work in domestic service, production and trade. Given that these types of occupations are more compatible with women's childrearing role, women working in these sectors were less likely to reduce their labour force participation during the childbearing years.

Figure 3-2. Female LFPR by age group, Indonesia, Thailand, and Singapore, 1996 and 2007

Source: BPS-Statistics Indonesia (1996, 2007a) (Indonesia), ILO (2011a) (Thailand and Singapore).

The trend of age-specific female LFPR also points to differences between urban and rural areas. Figure 3-3 shows that either in 1996 or 2007, a slower growth of LFPR at a younger age occurred particularly among women in the rural areas. This pattern suggests that rural women might not enter the labour force until they have completed the childbearing period as is shown by relatively lower LFPR up to age 35-39. The pattern of age-specific female LFPR also suggests that rural women might be working continuously around the period of childbearing given that the rates continue to increase up to age 45-49.

Meanwhile, the pattern in age-specific LFPR of urban women fluctuates throughout their life cycle (Figure 3-3). In 1996, urban women's pattern of female LFPR by age reached a peak at age 20-24 before it declined and became stagnant among older age groups. In 2007, the trend changed and an M-curve pattern became more evident compared to the trend in 1996. The LFPR dropped by 2 per cent from age 20-24 to 25-29, and continued to drop by 4 per cent from age 25-29 to 30-34 years old. This pattern suggests that urban women may be more vulnerable to an interrupted working pattern compared to rural women.

Figure 3-3. Female LFPR by age group and urban rural area, Indonesia 1996 and 2007

Source: BPS-Statistics Indonesia (1996, 2007a)

3.1.3. Women’s working patterns over the life cycle in Indonesia

To date, there have been no studies in Indonesia that specifically focus on how women adjust their labour market attachment before and after marriage and childbearing. A few studies, mainly in the field of anthropology, have examined the work-life trajectories of women in Indonesia, for example Wolf (1992), Grijns et al. (1994), Indraswari (2006), Sitepu (2000). These studies provide beneficial description of women’s labour market attachment around marriage and childbearing.

However, it is hard to make generalizations about women’s employment pattern following childbearing from these studies as they focus on specific locations,

occupations, or are based on small samples. Despite their differences in approach, the available studies show similar findings that women in Indonesia seem to have an interrupted working pattern, particularly after marriage and childbearing.

Wolf's study (1992) examined factory daughters in rural Java. Her research focused on the decision-making processes among factory workers in rural Java households, including the decision to marry. Wolf (1992) found that a large proportion of factory workers in her study were unmarried daughters or married women without children. Married women with young children were the ones who were reluctant to work in the factory because of several factors: they had no access to maternity leave, their husbands forbade women to work, or they did not have childcare support. Wolf (1992) concluded that motherhood rather than marriage is more significant in influencing women's decision to enter factory work:

Even though most factory workers are single, marital status is much less significant than expected in affecting the decision to work; rather, childbearing not marriage, keeps women out of the industrial work force. A large number of poor women with children have never sought factory employment because it is impossible to work in a factory without childcare. (Wolf 1992, p.168).

However, the effect of motherhood on working interruption was found to fade with time. Wolf's (1992) subsequent fieldwork in the same research site has shown that more women with children remained as factory workers and more of these groups who were non-factory workers entered this job. Women workers seemed to have gained some rights over maternity leave and they had more access to child care options since the factories were built closer to the villages (Wolf 1992, p.232)

The second study is a study of women's employment in rural West Java by Grijns et al. (1994). Their study described women's work and life trajectories at different stages of the life cycle and across different occupations. This study indicates that most women in rural West Java had a short work interruption following childbearing to take up housework and childcare. There were exceptions where some women did not quit work, particularly those who worked in well-paid employment and had childcare provided by relatives or husbands. Grijns et al. (1994) also found that some women resumed work when their children were still young. These women were mainly working in self-employment, family businesses, or sub-contract workers. These jobs were

chosen since they could be done at or closer to home and suited their domestic schedules.

Grijns et al.'s study (1994) also indicates that women had made several employment changes throughout their life cycle¹⁴. Women typically worked as formal wage-workers when single, and moved into self-employment when married and had a young child. When children were older, some women resumed wage-work and some continued their informal employment. When a marriage was dissolved, women had no option but to work and choose wage-work or sub-contract employment. Changing employment was observed to be a strategy among women who initially worked in low-level occupations which offered low job security (Grijns et al. 1994). The different labour market characteristics at each stage of the life cycle from Grijns et al. (1994) are summarized in Figure 3-4.¹⁵

¹⁴ Similarly, Wolf (1992) indicated that some of the women in her study continued their labour force participation and worked as agriculture workers or petty traders when they had young children.

¹⁵ However, Grijns et al.'s findings (1994) cannot be generalized. Their conclusion is based on the proportion of women at each life stage in each occupation of interest to them, entrepreneurs, wage workers, and family workers, and it is not based on a longitudinal observation.

Figure 3-4. Labour market attachments at each stage of the life cycle

Life Cycle Stages	Labour Market Attachment Characteristics
Young – single women	<ul style="list-style-type: none"> • Start at early age • As family workers or wage workers • Doing housework as a substitute for their mothers • Rarely found in the agricultural sector due to the recruitment system relying on long standing family relationship, reduced demand for agricultural labour, and young women are discouraged from working in this sector since it affects negatively their personal appearance as asset for marriage • In the industrial sector, the wages are too low (subsistence) and become dependent on their parents
Married – mothers of young children	<ul style="list-style-type: none"> • Mostly do housework and childcare • Some exceptions: women continue in well-enumerated jobs and men take over the domestic work. • Working women rely on relatives for childcare • Work on small scale trade, food processing, sub-contract work which can be done close to the house and at times that suit her other activities
Divorced/widow (with young family) & Women in a polygamous marriage	<ul style="list-style-type: none"> • These women become main income earners to fulfill daily subsistence needs • Rely heavily on relatives for child care • Work as wage workers or under sub-contract • Try to earn daily cash, and willing to leave well-paid jobs with monthly wages
Women with grown up children	<ul style="list-style-type: none"> • More time and income to be allocated for work • Mostly work as entrepreneurs in small scale businesses or self employed workers – hard to get wage work since they are mostly low educated • Taking care of grandchildren (unpaid work)
Aging women	<ul style="list-style-type: none"> • No old age insurance/pensions • Work as small scale traders • Some continue wage work

Source: Adapted from Grijns et al. (1994)

A change in employment from formal to informal work at the time of marriage and childbearing is also indicated in a study of women *warung* (small food or grocery stall) owners in Cicadas, West Java, by Indraswari (2006). She reported that women in her study previously worked in formal employment, as a high school teacher, a shop attendant and factory workers. They took a break from formal work after marriage and opened *warung* businesses a few years later. This study suggests that women *warung* owners had expected to open their own business after marriage. Indraswari (2006) reported that during their singlehood period, women in her study saved their salaries as the capital for opening a business because they had anticipated not working in formal

employment after marriage. These women chose to open small businesses because they could attend to customers while supervising their children (Indraswari 2006).

The literature discussed so far focuses on women who come from lower socioeconomic classes. Work-life trajectories among middle class women are rarely discussed in the literature. The available studies, for example Nilan and Utari (2008) and Bennet (2008) that examine women who worked in media and tourism, suggest that middle-class women who worked as permanent employees expected to continue to work after marriage and childbearing. They relied on their parents or hiring nannies and domestic workers to take care of their children while they continued to work (Nilan and Utari 2008).

A study by Sitepu (2000) shows a different behaviour among middle-class women. Three women from high-income households interviewed by her were reported to choose to leave work after marriage. One of her respondents was a 40-year-old woman with a master's degree who used to work as a university lecturer but gave up her career after her marriage to a businessman. She voluntarily quit her job because her husband was too occupied with his company and nobody would stay at home unless she did. She indicated that being a housewife is a luxury and she was happy with her decision (Sitepu 2000).

To sum up, the available literature on the work-life trajectories of women in Indonesia suggests that there are variations in women's employment decisions following marriage and childbearing. Women who worked in low-level occupations that offer less job security such as factory work were leaving their employment in the absence of childcare support from the family. Some of these women resumed work quickly but moved to more informal types of work. Meanwhile, middle-class women who worked in high-paid and more secure occupations had a continuous working pattern with the help of parents and domestic workers providing childcare. There have been some exceptions, when middle-class educated women chose to quit their jobs, which indeed shows that becoming a housewife is a luxury that can only be afforded by women from high-income families.

3.2. Factors contributing to women's decisions to leave and return to the labour market in Indonesia

Since the literature on women's employment patterns in Indonesia is still underdeveloped, this study gathers and reviews the available studies on women's labour force participation to draw factors that may contribute to women's decision to leave and return to the labour market in Indonesia. The factors identified are later used to build a framework for analysing the determinants of women's employment exit and return in section 3.3.

3.2.1. Determinants of women's labour force participation in Indonesia

There has been a substantial body of research, particularly in the economics area that has focused on the determinants of female labour force participation in Indonesia (Widarti 1998, Manning 1998, Feridhanusetyawan and Aswicahyono 2001, Ogawa and Akter 2007). These studies focus mainly on the effects of demographic and human capital variables on the probability of a woman participating in the labour force. Although these studies do not look at the dynamic aspects of women's employment, their findings are advantageous in exploring the possible factors that contribute to women's decisions to have work interruption.

Marital status

Marital status has been found to have a negative effect on female labour force participation. The traditional household division of labour by which women are responsible for domestic work and men allocate more time for market work, has been concluded as the main reason for the negative association between being married and the labour force participation of women in a study by Feridhanusetyawan and Aswicahyono (2001). The result of a probit regression using data from the National Socioeconomic Survey (SUSENAS) 1997 in their study shows that a negative impact of marital status was only found among women, while among men, being married increased the probability of participating in the labour force. Similarly, a study by Manning (1998) confirms a negative association between marital status and women's participation in the labour force. He argues that the household division of labour and

the traditional view of women working outside the home contributed to the negative effect of marriage on women's participation in the labour market (Manning 1998).

The timing of marriage is also found to have an impact on female labour force participation. Using age at first marriage as the measurement of marriage timing in her study focusing on married women in Jakarta, Widarti (1998) found that marrying before age 19 years old only had an effect on reducing the probability of participating in the labour force among uneducated married women. The negative impact of early marriage on women's labour force participation was also only evident among women aged 15-24 years because these women might still be in the early years of childbearing.

The negative impact of marriage on women's labour force participation has also been found to differ across other characteristics. Feridhanusetyawan and Aswicahyono (2001) found that the negative impact of being married on women's labour force participation is greater in urban than rural areas. The negative impact of marriage was different, depending on the employment sector in which women were participating. A finding from a study that used the IFLS 2000 shows that married women were less likely to participate in private employment, but more likely to participate in self-employment (Ogawa and Akter 2007).

When searching for an explanation of the negative impact of marital status on the labour force participation of women, one should also consider the underreporting of economic activity of married women in the statistics. Singarimbun (1999, p.63-64) noted that the issue of how women perceive 'work' in the statistical surveys may influence the apparent low labour force participation of married women. She argued that the declining participation after marriage is partly due to misconceptions of work among women, and the rigidity of the definition of work in surveys. Women tend to define themselves as housewives even though they are involved in market activities, and therefore they have been excluded from surveys and this leads to the recording of lower labour force participation rates.

Presence of children

The presence of children has been found to have a significant effect on female labour force participation. A study by Feridhanusetyawan and Aswicahyono (2001) shows that

additional numbers of children reduce the probability of women participating in the labour market, and conversely increase men's participation in the labour market. However, Feridhanusetyawan and AswicaHYono (2001) found that, unlike marital status, the effect of the number of children is stronger in rural than urban areas. They argued that urban women can afford housemaids and servants in their households and therefore the presence of young children had a lower impact on their labour force participation.

When the presence of children under age five is measured in the model, the effect of children on female labour force participation is still negative. The presence of young children reduces the probability of urban women participating in the labour market (Manning 1998). Widarti (1998) found a negative effect of young children across educational level of married women in Jakarta. Feridhanusetyawan and AswicaHYono (2001), Widarti (1998) and Manning (1998) conclude that, despite of the availability of extended families and housemaids, the presence of young children was clearly reducing women's chances of entering the labour market.

Women's education

Some studies have shown that education plays a significant role in influencing women's decision to participate in the labour market. The relationship between education and female labour force participation exhibits a J-curve pattern, where women with primary and junior secondary education tend to have lower participation rates compared to uneducated and higher educated women (Widarti 1998, Ogawa and Akter 2007, Manning 1998, Feridhanusetyawan and AswicaHYono 2001, Situmorang 2007).

Explanation of the J-curve relationship is focused on the cost of being out of the labour force. Uneducated women generally come from households with low socioeconomic status. For them, the cost of being unemployed is high, given that they need to earn an income for family subsistence. The more highly educated have a high opportunity cost of being economically inactive given the higher cost of education investment.

Meanwhile, the middle group, women with secondary education, generally has a lower opportunity cost of being out of the labour market than women with other educational

levels. These women generally are in a condition where husbands have sufficient income to cover the family's basic needs but insufficient to afford maids for child care (Widarti 1998). Another explanation is that moderately educated women are reluctant to work in formal employment or jobs with low status. In a study of a poor community in Jakarta, Jellinek (1991) confirms that women with secondary education cannot obtain jobs in the formal sectors since they are unable to compete with the more highly educated.

When labour force participation is decomposed by employment sector, the relationship between education and labour force participation looks slightly different. Ogawa and Akter (2007) found that highly educated women are more likely to participate in formal employment. They showed that women with junior secondary or a lower level of education are more likely to participate in self-employment. When women with secondary education are participating in the labour force, they are more likely to work in the government sector, while tertiary educated women are more likely to work in private employment.

Husband and family's socioeconomic status

A husband's socioeconomic status is found to play a significant role in determining wives' employment status. Widarti (1998) finds that in Jakarta, women who were married to men with senior secondary or higher education had a lower probability of participating in the labour force. The negative effect of husband's economic status reflects a stronger effect of social values about women doing paid work than an income effect on women's labour force participation (Widarti 1998).

Other studies measure family socioeconomic status by incorporating the characteristics of the household head. High education and income of household heads, which are proxies for fixed income, were found to have negative effects on women's probability of entering the labour market (Feridhanusetyawan and Aswicahyono 2001, Ogawa and Akter 2007). However, when women become household heads they have no other option than to become the main breadwinner. This is confirmed in Feridhanusetyawan and Aswicahyono's study (2001): they find a higher probability of labour force participation among female household heads compared to non-household heads.

Other Determinants

Some of the studies also include factors other than education and income that represent women's socioeconomic status. For example, Widarti (1998) includes variables of family expenditure and housing index¹⁶ in measuring the effect of family socioeconomic status on women's probability of participating in the labour force. Her analysis shows that having a low family income increased the labour market participation of educated women, particularly among the older age group. The housing index is also found to exhibit a strong impact on married women's labour force participation in Jakarta. Renting poor to fair quality houses had a negative association with married women's labour force participation, while partially owning or owning a house with poor quality had a positive association (Widarti 1998).

Migration, particularly rural-urban migration, is an important determinant of labour force participation, particularly in developing countries. This type of migration is commonly found to be related to seeking better economic opportunities and/or following family members who have moved into urban areas. For women, migration is closely related to their life course. Marriage sometimes marks the time for women to return to their areas of origin and leave their jobs in the city. A study of female employment in Asia by the Economic and Social Commission for Asia and the Pacific and UN Population Fund in 2002 (cited in Martin 2004) shows that young and single women migrated to urban areas to work in the booming export-oriented industries, but they would return to the village if they got married.

The timing of migration is also important in determining women's labour force participation. Widarti (1998) finds that young and recent female migrants in Jakarta were less likely to be participating in the labour force. Recent migrants would need a certain period of non-employment to find a job that suits their preference and therefore were more likely to be out of the labour force.

Regional variations are also contributing to female's labour force participation. Ogawa and Akter (2007) identify that women living in urban areas had a lower probability of participating in the labour market as compared to those living in rural areas. Furthermore, urban women are more likely to participate in private employment and

¹⁶ Housing index is measured based on house ownership of the household where women resided.

less likely to be involved in unpaid work. Ogawa and Akter (2007) also find that residing in provinces other than West Java and South Sulawesi increases the likelihood of women participating in the labour force. Women residing in Yogyakarta had the highest probability of entering the labour force (81 per cent), while those residing in South Sulawesi had the lowest probability (51 per cent) (Ogawa and Akter 2007, p.95).

To sum up, previous studies have identified that marital status, the presence of young children, education, and family's socioeconomic status play important roles in determining female labour force participation. These studies provide empirical evidence that women's familial responsibilities are associated with a lower probability of participating in the labour force. Although they used a static method of analysis, these studies provide a useful framework that shows how individual characteristics affect women's decision to quit and resume their labour market activity.

3.2.2. Role of contextual factors

In Chapter 2, factors associated with women's decision to continue to work following childbearing were discussed. Besides individual characteristics, social norms related to the gendered role of women, labour market institutions, family policies related to maternity benefits and childcare provisions are contributing to women's decision to work. Discussion of these factors in Indonesia is rarely found. The existing literature that depicts women's work-life trajectories suggests that the norms of women's role in the family, labour market institution, and availability of childcare can be inferred as underlying factors that influence women's choice to leave or stay in the labour market.

Norms of women's role in the family

In general, women's roles are still mainly structured around marriage and the family. The society assumes women's main responsibility will be centred on their capacity as mothers and housewives. With an increased number of females in the labour force, the idealized role of women creates a double burden for women as both income earners and caregivers in the family. The norms of the male as the main breadwinner, particularly in many Asian societies, leaves women to juggle their time to balance work and family (Brooks and Devasahayam 2011, p.5).

The idealized role of a woman as a housewife is rooted in most religious teachings. In Islam for example, the roles of women and men within marriage are separated based on their reproductive natures, where a woman's main role is to be a devoted mother and wife, while men's main role is to protect the family (Utomo 2008, p.187). Islamic teachings view childrearing and domestic work as the female's domain which requires time and devotion, and therefore women are freed from the obligation of earning the livelihood (Nugroho 2007). With such a strict separation of roles between men and women, Muslim girls have been conditioned to regard motherhood as their main goal in life (Woodcroft-Lee 1983, p.183; see also Utomo 2008).

The idealized role of women as mother and wife was also propagated by the state during the New-Order era. Through the massive program of Family Welfare Empowerment Movement (*Pemberdayaan Kesejahteraan Keluarga* or PKK) implemented during the New Order era, the state asserted the philosophy of '*kodrat*' that differentiates the role of men and women in both domestic and public areas. The '*kodrat*' concept emphasises caring for children becoming a woman's main obligation because women are biologically destined to bear and nurture a child. This concept held that becoming mother and housewife is a noble role for women. The concept of '*kodrat*' is argued as being God-given and therefore morally unquestionable (Indraswari 2006, p.148).

With the growing female labour force participation, the concept of '*kodrat*' was reinvented and incorporated into the propaganda of '*peran ganda wanita*' or dual-roles of women. *Peran ganda* emphasises that women are allowed to participate in the labour market and public spheres, but are required to always prioritize their responsibilities as mothers and wives above everything. Utomo (1997, p.204) states that under the *peran ganda* concept, although women are earning income, they are expected to be "subservient, obedient and pleasing" for their husband and family. This propaganda was set out in the National Guidelines (*Garis-garis Besar Haluan Negara* or GBHN) in 1993, which positioned women as men's colleagues, working side by side with husbands (Utomo 1997, p.214). The propaganda, famous under the term '*state ibuism*' (Suryakusuma 2011), has been argued to be embedded in the norms of Indonesia society even after the fall of Soeharto (Ford and Parker 2008, p.10).

The strong norms behind women prioritizing their noble role as mother and housewife may seem to limit women's participation in the labour market. Such a norm is embedded in the minds of young women in Indonesia, including the highly-educated. A study by Utomo (2008) that focused on the attitudes and expectations toward family and career among university students in Jakarta and Makassar, found that single female university students expected to adjust their working pattern with marriage and children in the future. These young women were anticipating discontinued employment after childbearing. Utomo (2008) reported that these young women expected to have a short premarital career; and they foresaw less labour force participation in the future, and were willing to take up to 24 months of maternity leave after having children.

Although there has been a change in perspective toward gender equality, many Indonesian men still hold the traditional view about their wives' ideal role at home. Studies have reported that husbands with patriarchal values forbid their wives to work outside the home (Wolf 1992, Raharto 1992, Dawson 2008). Even though they allow wives to work, men generally still hold the traditional values that demand wives staying at home:

Even though Indonesian husbands appreciate and acknowledge their wives' economic contribution to the household, it's very difficult for men, especially husbands, to avoid their patriarchal values related to the roles of wife, mother, and woman. (Utomo 1997, p.205)

Despite the strong norms of women's domestic role limiting women's labour force participation through expectations and the husbands' attitudes, the literature indicates that women actually are juggling their time between work and family rather than staying completely out of the labour market. Only middle-class women who have income supports from their husbands and family could be free from income earning activities (see Sitepu 2000). Moreover, the growing demand for female workers seems to be strengthening career aspirations among women in Indonesia. Recent studies show that women across occupations expect to continue to work after marriage and having children (Warouw 2008, Bennet 2008, Nilan and Utari 2008).

However, the continuity of work aspirations does not imply that the idealized role of women in the family has weakened. This can be seen from the fact that women are dominating the professions which fit their stereotypes (Manning 1998), including

informal employment. Indonesian women seem to prefer to continue to work, but in employment that enables them to become a 'good woman' according to the 'kodrat' ideology (Nilan and Utari 2008, p.138). Working in employment that requires women to leave the family behind is viewed as being against the norm of a good mother and housewife (Dawson 2008).

Gender discrimination in Indonesia labour market

Two agents play important roles in labour market institutions: the state and employers. The discussion in section 2.2.6 pointed out the important role of the state in influencing women's decision to work in developed countries. Government provides regulations as well as welfare support that reduce the conflict between work and family borne mostly by women. Meanwhile, employers impose contract and rules that may be disadvantageous for women's employment continuity.

In Indonesia, the state protects women's rights at work under the labour laws. Indonesian labour laws have been generous in providing mandatory leave for women compared to other countries (Agrawal 1995, p.31). From the years after independence and up to the latest law released in 2003¹⁷, Indonesian labour law has consistently mandated three months paid maternity leave, two days special leave for menstruation, and the right to breastfeeding breaks (Lahiri-Dutt and Robinson 2008, p.121).

Although the labour law provides protection of women's rights, in practice, there have been many cases where women could not access their leave in addition to other forms of discrimination exercised by employers against women workers (Agrawal 1995, p.31). Studies have documented employers' practices that violate these laws and discriminate against women, particularly married women with young children. However, most of these studies focus on discrimination occurring in the manufacturing sectors, and less attention has been given to other industries.

Section 3.1.1 has examined the immense impact of the growing manufacturing sector in changing the structure of labour force in Indonesia. The expansion of export-oriented industries has absorbed large number of women workers. Females, particularly those

¹⁷ Articles in the last labour law (Law No.13/2003) that stipulate the mandatory special leave for women workers can be seen in Appendix 3-1.

in their 20s, are more favourable to these industries for their stereotypical characteristics of being more obedient and docile compared to their fellow male workers (Wolf 1992, Robinson 2009, Blackburn 2004).

Some studies have shown that women manufacturing workers are frequently becoming the victims of discrimination, either by employers or their male fellow workers (see for example: Wolf 1992, Caraway 2005, Warouw 2008). Most studies point out women are discriminated against because of their stereotyped and associated gendered roles at home¹⁸. Employers in particular, dislike married women with children since they are stereotyped as having lower attendance and productivity (Caraway 2005).

Some studies have observed that both private and state companies have put in place direct or indirect discriminatory policies toward women in order to avoid the cost of implementing legal rights for women workers. The discrimination begins at recruitment when employers put 'unmarried' status as a criterion for applying for jobs (Caraway 2005). Once women are hired, employers provide family-planning services in factory clinics and encourage rapid turnover through a regime of forced overtime (Caraway 2005). Married women are still hired, but many of them work on a daily basis or are out-workers (Robinson 2009). When they are hired, women sometimes have to sign an unofficial agreement to waive their maternity leave (Wolf 1992, p.120). Dismissing female factory workers when they become pregnant was also commonly found in the 1990s in a study of women in West Java (Hutagalung et al. 1994:158). These discriminatory practices are argued to influence many young women to resign from work after marriage (Caraway 2005).

In other sectors, discrimination against married women with children also exists. A study by Nilan and Utari (2008) shows such discrimination is explicit in the media sector. In one radio station in Central Java, only unmarried women were allowed to be a live broadcaster. If female broadcasters married, they were shifted to positions away from broadcasting and replaced, in addition to losing performance bonuses (Nilan and Utari 2008). Nilan and Utari (2008) found that the radio station managers enforced such practice because they felt sympathetic to women's demanding caring role at

¹⁸ Other than the types of discrimination mentioned before, women factory workers in Indonesia have also been exposed to abusive working hours in work places with poor sanitation and sexual harassment by male workers or higher authorities. (Sayogyo and Wahyuni 1994, Robinson 2009, Hutagalung et al. 1994).

home. The thought that they were “the moral guardians of their female workers and protectors of the institutions of the family” had motivated employers to exercise a discriminatory practice against married women (Nilan and Utari 2008, p.143). However, although discrimination is explicitly imposed, female media workers in this study seemed to be determined to continue their careers after marriage and childbearing. One reporter stated she was committed to work despite the family being against her aspiration and she would ask her parents to care for her children when she is on duty (Nilan and Utari 2008).

Besides the presence of discrimination against women in the labour market, there are conditions implicated by the 2003 Labour Law that affect vulnerability of female workers continuing their employment. The 2003 Labour Law has been criticized for allowing outsourcing work schemes that increase the vulnerability of Indonesian workers being unemployed. Under this scheme, companies can hire workers on a contractual basis through a provider. The schemes allow outsourcing providers to hire workers on short-term contracts, pay a daily wage, and providing no fringe benefits such as health insurance. Companies are allowed to outsource peripheral occupations which mainly fall under the service occupation category: cleaning services, security, driving, catering and work relating to support of mining.

There have been massive workers rallies, mainly in big cities in Indonesia, against the implementation of outsourcing. The labourers demand that government abolish the outsourcing scheme since it does not provide job security for the employees. However, experts argue that outsourcing provides benefits for reducing labour costs, and therefore, attracting multinational companies to invest in Indonesia (see Evani et al. 2012). Abolishing outsourcing is argued to cut the jobs of millions workers in the labour force. From Evani et al.’s report (2012), there are 16 million outsourced workers in Indonesia, which is equal to roughly 40 per cent of Indonesia’s formal labour force.

The outsourcing work scheme potentially results in higher vulnerability for female workers particularly in the service sector. Outsourcing providers are not obliged to provide female workers with mandatory maternity leave in addition to the absence of job benefits. Therefore, it is possible that female workers in this sector would have a higher likelihood of experiencing a work interruption compared to female workers in more secured sectors.

The presence of extended family and domestic workers

Due to the lack of childcare facilities, women in Indonesia and indeed most Southeast Asian countries have to organize childcare by themselves. With a relatively short maternal leave, women in the formal sector have been relying heavily on the extended family and domestic helpers for childcare. When childcare support is absent, women have no option than to quit their jobs. The 2010 Greater Jakarta Transition to Adulthood Survey has found that around 48 per cent of non-employed mothers in Jakarta, Tangerang and Bekasi stated that they were not working because they had no one to look after their children (McDonald 2011)¹⁹.

In Asian countries, grandparents are generally the main resources who are providing childcare for the middle generation (Jones 2007, p.26). The high dependence on grandparent support for childcare has been found among females in both rural and urban areas. Grijns et al. (1994) indicate that older women in rural West Java had the responsibility for taking care of grandchildren. Similarly, The 2010 Greater Jakarta Transition to Adulthood Survey shows that more than 50 per cent of women who returned to work after childbirth used grandparents for childcare (see McDonald 2011)²⁰.

Meanwhile the role of domestic workers in providing childcare has long been recognized as helping to maintain harmony in Indonesian households. With the growing female labour force participation in the formal sector, domestic workers or servants have been particularly substituting the domestic role of middle class' women (Elmhirst 1999, ILO 2006). However, there have been no reliable statistics to show the importance of domestic workers as childcare providers for working women in Indonesia. The 2010 Greater Jakarta Transition to Adulthood Survey shows a relatively low percentage, where only 14 per cent of childcare among women who returned to work after a child birth was provided by housemaids or baby sitters (McDonald 2011). Despite the small percentage of mothers employing a maid or nanny, anecdotal evidence suggests a heavy reliance on domestic workers and baby sitters, particularly among urban married women in Indonesia. In Jakarta, having housemaids or nannies

¹⁹ For detailed percentages of non-working mothers based on reasons for not working, see McDonald 2011, p.3.

²⁰ The survey also reported that other than grandparents, women who returned to work after childbearing used the service of servants or trained baby sitters, other relatives, or by friends or neighbours. For more detail, see McDonald 2011, p.3

to take care of children appears to be a logical solution as well as a life style for working couples despite the presence of grandparents (Thee 2012).

The ILO estimates that there are 2.5 million domestic workers in Indonesia, of whom 92 per cent are female (ILO Factsheet n.d.) Female domestic workers are generally characterised as young women aged 13 to 30 years, from low socioeconomic families in rural areas, and dropouts from schools (ILO Factsheet n.d.). Many young women in rural areas choose to move to cities to work as housemaids rather than stay in the village to avoid parents setting up arranged marriage for them if they are not working (Christensen 2012). Paid domestic work is viewed as an entry point for women with low education and lacking the skills to work in more formal occupations, such as factory workers or opening a small-scale business (Elmhirst 1999, Christensen 2012). Christensen (2012) expects that domestic workers have a higher rate of intermittent employment, although she believes that marriage is not an important determinant of decision to work for these women (Christensen 2012).

3.3. Proposed analytical framework: Determinants of female employment exit and return in Indonesia

Previous studies of female labour force participation in Indonesia suggest there are strong consequences of entering into marriage and motherhood for women's labour force participation. Economic studies suggest that women's probability of participating in the labour force seems to decline when they are married and have young children. Previous studies also indicate that women's decision to work is not only influenced by their familial roles, but also by the resources they have available, particularly education and family income. Meanwhile, non-economic studies provide in-depth analyses of why familial roles are disadvantageous for the continuity of women's labour force participation. These studies suggest that the decision to work for women in Indonesia is still bounded by norms related to the idealized role of women as mother and wife, as well as the discrimination against women in the labour market, and the accessibility of childcare.

Based on a synthesis of previous studies, I develop a framework for analysing the determinants of women's decision to leave and return to work (Figure 3-5). I argue that individual characteristics directly influence women's decision to have an employment

interruption, while contextual factors shape the attitude of women and the outcome varies according to the different characteristics.

Figure 3-5. Framework of analysis of determinants of women’s employment exit and return in Indonesia

I argue that changing marital status and the onset of motherhood are the two main factors that determine women’s employment interruption given that previous studies consistently exhibit strong effects of these factors on the probability of female participating in the labour force. Transitions to marriage and the birth of the first child are the times when the norms of *kodrat* and *peran ganda wanita* become strongly imposed in women’s lives. Since these norms have been historically enforced in Indonesia, I expect that entering marriage and childbearing is strongly associated with women exiting from employment. However, the way the norms affect women’s decision to exit from work may be influenced by the women’s education, husbands’ and families’ socioeconomic status, the employment choice of women, the availability of childcare, and other factors.

Women's education reflects attitudes toward gendered roles as well as the value of being in the labour market. Educated women tend to take a more liberal view toward their role at home. Moreover, following the human capital hypothesis, educated women have higher opportunity cost of being out of the labour market given the amount that has been invested for their education. Therefore, even when they enter marriage and childbearing, educated women will be less likely to leave their employment.

Previous studies such as Widarti (1998) indicate the important role of husband's socioeconomic status in influencing women's decision to work. Under the added worker effect hypothesis (see Ehrenberg and Smith 2009, p.219), husbands' income is an important factor that determines women's labour supply. It postulates that when a husband or family's income declines, women would enter the labour market to maintain the family's utility level. Given this theory, it is likely that educated women, who tend to marry educated men, would leave the labour market because their husbands' income is sufficient for the family's needs.

Meanwhile, studies in developed countries indicate that employment characteristics of a woman play an important role in influencing women's employment exit and return. Although its effect on women's labour market attachment has been understudied in the Indonesian context, I hypothesize that employment characteristics have significant effects on women's decision to leave and return to work. I argue that the labour market does not only exercise discrimination based on sex, but also based on the marital and motherhood status of women. Lower level jobs in formal employment would be particularly more disadvantageous for married women with young children compared to single women given the employers' bias against this group.

Lastly, women's decision to quit work is critically affected by whether or not the women can obtain childcare. When relatives or domestic workers are available in the household, it is expected that women would continue to work.

The next chapter presents an elaboration of data and methods used in this study. Using the framework outlined in this section, this study use longitudinal dataset, namely the Indonesia Family Life Survey (IFLS) and employs the discrete-time hazard method to explore the determinants of women's employment exit and return in Indonesia.

Appendix 3-1. Articles related to female workers' rights in Indonesia
Labour Law No.13/2000

1. ARTICLE 76

- (1) It is prohibited to employ female workers/ labourers aged less than 18 (eighteen) years of age between 11 p.m. and 7 a.m.
- (2) Entrepreneurs are prohibited from employing pregnant female workers/ labourers who, according to a doctor's certificate, are at risk of damaging their health or harming their own safety and the safety of the baby that are in their wombs if they work between 11 p.m. and 7 a.m.
- (3) Entrepreneurs who employ female workers/ labourers to work between 11 p.m. until 7 a.m. are under an obligation:
 - a. To provide them with nutritious food and drinks; and
 - b. To maintain decency/ morality and security in the workplace.
- (4) Entrepreneurs are under an obligation to provide return/roundtrip transport for female workers/ labourers who work between 11 p.m. and 5 a.m.
- (5) Provisions as mentioned under subsection (3) and subsection (4) shall be regulated with a Ministerial Decision.

2. ARTICLE 81

- (1) Female workers/labourers who feel pain during their menstruation period and notify the entrepreneur about this are not obliged to come to work on the first and second day of menstruation.
- (2) The implementation of what is stipulated under subsection (1) shall be regulated in work agreements, the company regulations or collective labour agreements.

3. ARTICLE 82

- (1) Female workers/ labourers are entitled to a 1.5 (one-and a-half) month period of rest before the time on which they are estimated by an obstetrician or a midwife to give birth to a baby and another 1.5 (one-and-a-half) month period of rest thereafter.
- (2) A female worker/ labourer who has a miscarriage is entitled to a period of rest of 1.5 (one-and-a-half) months or a period of rest as stated in the medical statement issued by the obstetrician or midwife.

4. ARTICLE 83

Entrepreneurs are under an obligation to provide proper opportunities to female workers/ labourers whose babies still need breastfeeding to breast-feed their babies if that must be performed during working hours.

5. ARTICLE 93

- (1) No wages will be paid if workers/labourers do not perform work.
- (2) However, the provision as mentioned under subsection (1) shall not apply and the entrepreneur shall be obliged to pay the worker/labourer's wages if the worker/labourer does not perform work because of the following reasons:
 - a. The workers/labourers are ill so that they cannot perform their work;

- b. The female workers/labourers are ill on the first and second day of their menstruation period so that they cannot perform their work;
- c. The workers/labourers have to be absent from work because they get married, their children get married, have their sons circumcised, have their children baptized, or because the worker/ labourer's wife gives birth or suffers from a miscarriage, or because the wife or husband or children or children-in-law(s) or parent(s) or parent-in-law(s) of the worker/labourer or a member of the worker/labourer's household die.

4 Data and methods

As discussed in Chapter 3, little research has been conducted on female employment dynamics in Indonesia. Most studies focus on an exploration of the determinants of female labour force participation at one or several points of time using cross-sectional survey data. The use of such cross-sectional data can be advantageous since this data generally has abundant variables useful for exploratory analysis. However, the use of this type of data disregards the fact that the effects of the determinants change over time (Drobnic et al. 1999). It also limits causal analysis in which cause must precede effect in time in order to capture the processes of entering and leaving employment.

This study takes a dynamic approach in analysing women's work in Indonesia. It investigates whether and when women are leaving from and returning to employment, and whether the events of leaving and returning to employment are influenced by changes in women's familial responsibilities. For this purpose, longitudinal data that collects information about the timing of marriage, childbirth and employment exit and re-entry are needed. The benefit of using longitudinal data to study female employment dynamics lies in the capability of longitudinal data to portray changes at unit-level of analysis, measuring females' working pattern stability and time-related characteristics of events (Lynn 2009, p.5).

For Indonesia, dynamic studies including this thesis benefit from the availability of longitudinal dataset called the Indonesian Family Life Survey (IFLS). IFLS is a household panel survey that collects data in a variety of household social and economic aspects. This data is the first large-scale continuing longitudinal data collected in 1993, 1997, 2000 and 2007²¹. IFLS collects life histories of the individuals, including employment, marriage, and the births of children. This feature is particularly useful given this study seeks to examine the relationship between family life cycle and employment transitions, which requires a dataset that follows women's life cycle. This study uses IFLS 2000 and IFLS 2007 and mainly uses the life histories information from both surveys.

²¹ IFLS was also collected in 1998 but it only covered 25% of the original sample of IFLS 1997. This wave was done to capture the effect of the 1997 economic crisis.

This chapter presents a description of the data, the measures and methods used in the study. The first section provides a brief description of the IFLS sampling scheme and questionnaires. The second section defines the measures of labour force participation as well as marriage and childbearing based on the definitions used in IFLS 2000 and IFLS 2007. The method used, discrete-time event history analysis, and an exploration of why this method is chosen to analyse the data is provided in the third section. This section closes with a discussion about methodological limitations. The last section elaborates on how the analytical sample was derived and the characteristics of the women in the panel and the attrition level of IFLS 2000 and 2007 are described.

4.1. *Data: Indonesia Family Life Survey*

4.1.1. IFLS sampling scheme

IFLS used a stratified sampling scheme at the province level for its first survey in 1993. The sample frame was taken from the 1993 National Socio Economic Survey (SUSENAS) designed by the Indonesian Central Bureau of Statistics. Thirteen provinces were selected in order to optimize the representation of the population. Those were: North Sumatra, West Sumatra, South Sumatra, Lampung, DKI Jakarta, West Java, Central Java, Jogjakarta, East Java, Bali, West Nusa Tenggara, South Kalimantan, and South Sulawesi (Figure 4-1).

Figure 4-1. IFLS Main Provinces

Source: RAND (2010)

Using the 1993 SUSENAS sampling frame, IFLS randomly selected 321 enumeration areas in the 13 provinces. The selected areas were dominated by residents of Java, with more than 50 per cent comprising these populations. Households²² were randomly selected within each EA by field teams based on the SUSENAS listings. IFLS chose 20 households from each urban EA and 30 households from each rural EA in order to reduce the travel cost between rural EAs and to reduce intra-cluster correlation across urban households (Serrato and Melnick 1995). The total number of households in IFLS1 final sample after interview was 7,225 households.

Among the category of respondents, household members aged 50 and older, who were mostly household heads or their spouses, had the largest proportion in the IFLS' sample. Female household members also had a relatively high proportion, particularly ever-married women across all age groups. The proportion of never-married women is quite small, ranging from 11 per cent for women aged 20-29 to 37.5 per cent for women aged 40-49. The total number of households with ever-married women aged 15-49 is higher (5,542 households) than households without this category of women (1,799 households).

4.1.2. IFLS re-contact protocols

In each re-survey, the goal of the IFLS is to relocate and re-interview all original IFLS 1993 households. It also attempts to relocate respondents who have split off from the original households. Once the original household is found, IFLS applies different strategies of interviewing original and split-off households. For the original households, IFLS interviews all of their members. In the split-off households, IFLS interviews only the target respondents; those are IFLS 1993 main respondents and household members born before 1968, their spouses, and any biological children living in the households.

IFLS 2000 and IFLS 2007 applied a specific strategy to re-contact respondents from the previous surveys. The criteria of the target respondents in IFLS 2000 is slightly changed compared to IFLS 1997 in order to keep the sample size closely

²² IFLS used the standard definition of household provided by BPS, that is a group of people whose members reside in the same dwelling and share food from the same cooking pot (Frankenberg and Karoly 1995, p.7). (Frankenberg and Thomas 2000).

representative of the original IFLS 1993 population (Strauss et al. 2009:6)²³. With these strategies, IFLS has quite high re-contact rates; more than 90 per cent of original households of IFLS 1993 were successfully tracked in each subsequent wave. The total number of original households, the split-offs, and the numbers successfully re-contacted or interviewed in each subsequent wave are presented in Table 4-1 (For detailed recontact protocols, see Strauss et al. 2004a, Strauss et al. 2004b, Strauss et al. 2009, Frankenberg and Karoly 1995, Frankenberg and Thomas 2000).

Table 4-1. IFLS original households re-contact rates

Wave	% IFLS1993 HH	Number of targeted HH	Split-off	Total	Interviewed
IFLS 1993		7,224			
IFLS 1997	94.4	6,820	878	7,689	7,619
IFLS 2000	95.2	6,799	3,775	10,754	10,435
IFLS 2007	91.3	6,596	7,399	13,995	13,535

Source: Strauss et al. 2009, Table 2.1b.

The profile of female respondents age 15-49 in each of IFLS samples are presented in Appendix 4-1, along with the characteristics of respondents in SUSENAS. Since the IFLS used the SUSENAS sampling frame, it is expected that the distribution of respondents in both surveys are similar. However, the IFLS seems to have oversampled women in the urban areas compared to the SUSENAS. This suggests that the female sample derived from IFLS in this study will also suffer from the over-representation of urban women. One possible consequences of this is that this study will underestimate the behaviour of agricultural workers that dominates rural areas as well as the Indonesia's labour market structure.

²³ In re-contacting respondents from the original households, IFLS targets those who were IFLS1 main respondents, their household members born before 1968, individuals born since 1993 in original IFLS1 households, individuals born after 1988 if they were resident in an original household in IFLS1, 1993 household members who were born between 1968 and 1988 if they were interviewed in a previous wave, and 20 per cent random sample of IFLS1 household members who were born between 1968 and 1988 if they were not interviewed in a previous wave.

4.2. IFLS instruments

IFLS has collected a wide-range of characteristics and social economic indicators at individual, household and community level. At the household and individual level, IFLS structures its questionnaires into six main books. Each book focuses on a specific topic for an individual or household. The questions in each book are also further divided into several sections to probe particular situations or attitudes (The theme for each book in the IFLS questionnaire is provided in Appendix 4.2).

This study mainly uses three books in IFLS that specifically provide information about employment, education, migration, marriage and childbirth histories of women aged 15 to 49 years at the time of the survey. Those are: book K or household roster, book 3 that has information about education, employment and migration histories, and book 4 covering the marriage and child birth histories of ever-married women age 15-49.

4.2.1. Employment section

IFLS collects information about respondents' labour force participation and employment at the time of the survey as well as their past employment for the last several years. This study uses the information about current and retrospective employment of respondents²⁴.

Current employment

This section collects information about economic activities of selected household members aged 15 years old and older at the survey time. It has standard questions taken from the National Labour Force Survey (SAKERNAS) to probe the labour force participation of each respondent. IFLS collects information about the respondents' current employment status by asking the following questions: whether the respondent is working for pay, looking for a job, helping to earn family income at least one hour a week prior to interview, currently attending school, currently doing housekeeping,

²⁴ IFLS gathers information about the first full-time job from respondents who have ever worked. Unfortunately, in the subsequent waves after 1993, IFLS only gathered first job information from the new respondents. Panel respondents' first job information is not updated in the subsequent surveys. Because of this, a change in working status of the panel respondents is not captured in IFLS.

retired, currently on vacation or recently graduated. A further set of questions is asked to find out whether a respondent is currently economically active or not: whether a respondent is currently working or trying to work or helping to earn income, has been doing work for pay for at least one hour during the past week prior to the survey, has a job or business but was temporarily not working during the past week prior to the survey, and/or is working on a family-owned farm or in a non-farm business during the past week prior to the survey.

Detailed information about timing of leaving the workforce is also collected. IFLS chose a particular cut-off year, which is the same as the start year in their work history period. IFLS also gathers information on main and side jobs' sector, occupation, employment status, hours of work, and income of the respondents. Information about the last job is also collected for respondents, whose last work ended before the cut-off year, including their reason for not working anymore, work status and monthly income of the last job.

IFLS collects employment information of both main and side jobs of respondents. This study focuses on the employment transitions based on the main jobs of respondents to avoid complicating the analyses.

Retrospective employment history

The employment history in the IFLS collects information about the employment experience of respondents who have ever worked in the last five or nine years. It gathers annual employment details for industry, occupation, type of employer, job status and hours of work for both primary and side jobs. Information about salary and other income from employment was only asked for IFLS in 1993 and 1997. Respondents aged 15 and older at the time of the survey completed this section.

IFLS defined work as broadly including formal and informal, full-time and part-time, and seasonal and year-round labour (Frankenberg and Karoly 1995, Strauss et al. 2004b, Strauss et al. 2009, Frankenberg and Thomas 2000). In the current employment section, there are several questions which probe labour force participation and employment status of the respondents. However, in the work history section, IFLS only asks questions about whether a respondent worked each year in the five or nine years

prior to the survey. The possible consequences of using these definitions are discussed in section 4.3.1.

When the work histories from all waves of IFLS are combined, the longest period of work history that can be captured is 14 years, within the period 1988 to 2007. Details of years of work history captured in each survey are provided in Figure 4-2. Specifically, IFLS 1997 gathers panel respondents' work history since the year 1988 and gathers the work history of new respondents since the year 1992.

Figure 4-2 reveals an issue of overlapping working information when researchers combine the work history of some or all waves of IFLS. Combining work history data for IFLS 2000 and IFLS 2007 means that a respondent has two reports of work in the years 1999 and 2000. This overlap should not raise problems if the information on work in the overlapping years is consistent. However, this study finds that there are inconsistencies of work status reported in the overlap years between waves, particularly between IFLS 2000 and 2007. Some respondents reported that they were working in 1999 when they were interviewed in IFLS 2000, but they reported that they were not working in 1999 when they were interviewed in IFLS 2007.

Figure 4-2. Years of observed work history in each wave of IFLS

Survey Year	Year Observed in Work History																			
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
1993																				
1997*																				
2000																				
2007																				

Note: *in 1997, IFLS asked work status in 1988-1997 only for panel respondents, while new respondents were asked about the status in the year 1992-1997.

Such inconsistencies could possibly create a problem in the analysis when a researcher chooses to use information on work in the overlap years from either the previous or a subsequent wave. The problem can be explicitly seen when one plots the annual rate of women employed using the seamed data. The rate pattern would be kinked around the 'seam years' (in this case, the years 2000 and 2001) and shows a drop or a hike in the proportion of women working around those years. The estimation results from the discrete-time hazard models of transition out of or into employment could also be biased when the time-dependent work status suffers from this 'seam'

problem. The result would indicate that employment exit and re-entry are more likely to occur during the overlapping years than other years.

One possible solution to reduce the seam problem is to eliminate the respondents who had inconsistent reporting of work statuses in the overlapped years. Eliminating these respondents would result in a smoother pattern of the proportion of women working over time. However, removing respondents has a consequence in a smaller sample size and variations of women's employment behaviour. Therefore, this study continues to analyse female respondents who reported both consistent and inconsistent work status in 1999 and 2000 from IFLS 2000 and IFLS 2007.

This study uses the information on work in the overlap years from the recent wave. It also uses the information of work in years 1999 and 2000 from IFLS 2000 instead of IFLS 2007. This approach is taken to avoid having a smaller number of samples compared to the result when the inconsistent responses are eliminated. This study uses age rather than year to measure the change in time. By taking this approach, I assume that the bias will be small since the pattern of the proportion of women working across age fluctuates less as compared to the pattern across years. Further elaboration on magnitude of inconsistent responses that creates the seam problems as well as the consequences of using seamed data in analysing women employment transitions is provided in chapter 8.

Besides the information about current work and retrospective work history, detailed information about respondents' job terminations for the last five years is also collected in IFLS 2007. The questions are targeted to those working in the formal sector (government and private businesses). The information collected includes the year of job termination, characteristics of the last job including sector, type of company, occupation and salary, work experience before quitting, severance payments, and the reason for job termination.

4.2.2. Marriage history for ever-married women aged 15-49

IFLS collects marriage histories from ever-married women aged 15-49 years at the time of the survey. The information gathered includes start and end dates of each union, education level of the spouse(s), dowries and marriage arrangements for the

first marriage. Panel respondents were required to update their marriage history if their age at the time of survey did not exceed 58 years old. Marriage history in IFLS 2000 and IFLS 2007 collected dates and other information related to recent marriages, that is, marriages that occurred after 1997 (for IFLS 2000). In order to construct a complete marriage history, information about previous marriages, including first marriage for the older cohorts are extracted from marriage histories from previous surveys (IFLS 1993 and IFLS 1997).

4.2.3. Pregnancy history for ever-married women aged 15-49

This module gathers information about all pregnancy events, including the pregnancy outcome and date from ever-married women aged 15-49. For pregnancies with an outcome of live births, this module gathers detailed information on the child's gender, whether the child is still alive and the date of the death if he/she died and the length of breastfeeding if the child was breastfed. Similar to marriage history, panel respondents were asked to report on their recent pregnancies since the last survey. For panel respondents, information about the birth of the first child or births that occur before the survey date of IFLS 2000 are obtained from IFLS 1993 and IFLS 1997 since pregnancy history collected in IFLS 2000 and 2007 only provide information about recent childbirths after the last survey²⁵.

4.2.4. Migration history

This module records information on the mobility of respondents, their motivations and the consequences of their movements. It gathers respondents' geographical location at birth, at 12 years of age, and details of each destination to which the respondent had moved. This module defines migration as movement to outside the village boundary for at least six months. For each movement, IFLS collects data on dates, locations, motivation for moving, and distance moved. Panel respondents are required to update all of their movements since the last survey.

²⁵ Marriage and childbearing histories of women aged 50 years old and older at the time of the survey are also collected in sections KW and BA (Children). The KW collects the marriage history of these older women, while BA collected the information on children who were non-resident of the households at the time of the survey. Information on children who were co-residing was already provided in the household roster. This thesis is not using this information since it focuses on the life cycle of women during reproductive age.

This study uses information on the dates and destination of each movement for all new and panel female respondents.

4.2.5. Education history

IFLS collects information on the highest level and grade of education ever attained for all respondents. For those who were under age 50 at the time of the survey as well as panel respondents who were under age 30 and had filled in an education history in the children's module in previous surveys (both still at and already left school), detailed retrospective information including start and stop dates, grades completed or currently attended, failure to progress to the next grade, and final examination scores. Respondents who had completed this module in the previous survey were asked to update the information again with a set of abridged questions about their situation in the previous survey.

This study takes the information on the dates of completion or leaving school and the highest level and grade of education ever attended for female respondents.

4.2.6. Household roster information

The household roster in IFLS provides basic demographic and socio-economic information for all household members. The information includes date of birth, age, last education level and grade attained, economic activity, and individual income. Since it lists the basic information on all household members, this section also provides information for other adult females living in the household, which can be used as a proxy for childcare provider available to women. This information is mainly used in Chapter 6 and Chapter 7, where the role of other adult household member on women's employment transitions is examined.

This study also uses information about the highest education level and grade for women, their husbands, their mothers and fathers from the household rosters. The education variables for the respondents taken from this household roster are used specifically to replace the missing education level and grade in the education history section.

4.2.7. Household assets

In the Household Asset section, IFLS collects information about value of assets owned by household members which are not used for either farm or non-farm businesses. The assets include house and land occupied by household member, land that is not used for businesses, poultry, livestock, hard stem plants that are not traded, vehicles, household appliances, savings, receivables, jewellery, house furniture and utensils, and other type of assets. Chapter 6 and Chapter 7 examine the total value of assets belonging to a woman's household as a proxy for their family's socioeconomic status.

4.2.8. A note on respondent fatigue

Given the large amount of information collected as well as the complex structure of the questionnaires, the IFLS potentially suffers a problem of respondent fatigue. This problem can affect the quality of the data as well as cause a higher attrition rate (see Watson 2010). In the IFLS, respondent fatigue results in several consequences: first, recall problem, particularly for the information reported in retrospective life histories; second, skipping or leaving the questions blank; and finally, attrition in some questions or modules, especially the last questions or last modules. However, the IFLS field reports include a claim that the survey has a low level of respondent fatigue. For details, see Strauss et.al (2004b, 2009), Frankenberg and Karoly (1995), and Frankenberg and Thomas (2000).

4.3. Measures of work, marriage and childbearing

4.3.1. Employment/work measures

As pointed out in Chapter 1, the study focuses on employment transitions. It adopts the definition of work used in IFLS (see section 4.2.1). It focuses on two events through women's working life: leaving employment (or employment exit), and returning to employment (or employment re-entry). These employment transitions are defined based on the reported work status in the work history of IFLS 2000 and IFLS 2007.

Defining the events of employment exit and re-entry is not straightforward in this context given that that IFLS work history does not cover all jobs ever held since the first time women were employed. Employment exit and re-entry in this study are not necessarily indicating the in and out process from a particular work spell since the event is defined based on the reported work status observed during the available periods of their working history, or between 1996 and 2007.

In this thesis, a woman is defined as experiencing a transition out of employment if she was not working in a particular year after she had been working for more than a year. A woman experiences transition back into employment when she reported herself to be working again after not working for more than a year and the non-working spells are preceded by several years of employment. Further, the period of being in the state of working is referred to as a 'work spell', while the period of being in the state of not working is referred to as a 'non-employment' or 'employment break spell'.

There are three limitations to the work history data in IFLS that have been identified: first, the broad definition of work might create multiple interpretations by the respondents, especially female respondents. As previously discussed in section 1.3, married women who have children and make a contribution to their household economy as informal workers, are more likely to underestimate their economic activity as they relate 'work' to jobs with regular salary or in the formal sector. This issue might potentially influence female respondents to interpret 'work' as formal work in the employment module. Since the work history section in the IFLS simply asks whether respondents did work in a particular year or not, there is a possibility that a female respondent might perceive herself as not working, even though she was involved in economic activity.

Second, the analysis is unable to differentiate involuntary from voluntary employment exit since there are no further questions about the reason for not working in a particular year in the IFLS' work history. It is very important to differentiate the cause of non-employment, especially during the economic shock when employment exit is generated involuntarily. Given this limitation, this study is unable to identify whether women have left work to become homemakers, or have become unemployed and are still actively looking for work.

The third limitation is related to the annual structure of the work history. There are several consequences that potentially affect the results of the analyses. First, the annual structure assumes that the work status in a particular year is invariable. It cannot capture seasonal work typically carried out by agricultural or informal workers. However, given that the definition of work is based on any work for pay for at least one hour a week prior to the survey, the overall definition of work in IFLS does not cover seasonal work. Second, a transition in employment and family can occur simultaneously in the one year. This creates a difficulty in measuring the causal effects of childbearing and women's employment. Third, this analysis cannot capture an event of employment exit that occurred on a monthly or daily basis. This means a very short break for maternity leave will not be accounted for in this analysis.

In the analysis, employment sector and occupation are included. In the IFLS, employment sector refers to the formal and informal sectors based on eight categories of job status of respondents: self-employed without workers, self-employed with unpaid family or temporary workers, self-employed with permanent workers, government employees, private employees, unpaid family workers, casual workers in agriculture, and casual workers in non-agriculture. This study defines informal employment or sector to include all types of self-employment and unpaid family workers, while formal employment is used to refer to government, private and casual workers. Based on the National Labour Force Survey's categorization of formal and informal employment by BPS-Statistics Indonesia (BPS-Statistics Indonesia 2007a) self-employed with permanent workers is included in the formal sector. Since the proportion of this group is small, I grouped self-employed with permanent workers into the category of private-formal sector.

IFLS categorizes occupation into seven groups: professionals, managers, clerical workers, sales workers, service workers, agriculture workers, and manual workers including operators and assemblers. This study slightly modifies this categorization by grouping professionals and managers into one category since the proportion of women in these occupations is small. It is important to note that IFLS occupation codes are different to the current standard of codes used internationally or by BPS-Statistics Indonesia. IFLS recoded open-ended answers into 2-digit ISTC and 1-digit sector

codes. They use occupation codes in IFLS1 as the standard to recode occupations in subsequent waves²⁶. Details of occupation codes in IFLS are provided in Appendix 4-3.

4.3.2. Family life cycle measures

Measures of family life cycle are taken from the information provided in the marriage and childbearing histories. This study takes into account only the live births to a woman since miscarriages and infant deaths presumably do not cause women to have an extended voluntary employment break. This study focuses on the event of first marriage and the birth of first child, except in chapters that require time-variant measures of marital status and childbearing. Detailed description of the measurement of childbearing variables is explained in each analytical chapter.

Given that most of the analyses in this thesis are using retrospective information rather than information measured at the survey time, this study has a limited number of variables that can be explored. For example, the analysis of employment exit would require a socio-economic portrait of women's households at the year when she starts the non-employment spell. Such information is limited. However, this limitation is particularly common in studies with longitudinal data since retrospective data is designed to capture the changes of some variables over time (Lynn 2009).

4.4. Method: Discrete-time event history analysis

This study uses the event history model for the analysis. The event history model is useful for analysing change or transitions over the life course, such as the event of first marriage, first birth, employment entry and exit. This type of analysis allows exploration of patterns and correlates of the occurrence of one or more events in an individual's history from a longitudinal record (Yamaguchi 1991; Steele 2005).

The technique of analysing event history models depends on the measurement of the event time, continuous-time or discrete time. Continuous-time is measured in a continuous variable that can take on any non-negative value while discrete time can take on a finite set of values (Tekle and Vermunt 2012).

²⁶ See Strauss et al. 2009.

According to Singer and Willet (2003, p.313) most events occur in discrete-time rather than continuous time. Events such as graduating from school or retiring occur at a discrete point or within a particular duration of time. Measuring events in a continuous time metric is meticulous. Particularly in retrospective surveys, respondents are unable to memorize the exact date of an event and tend to report the time in a rounded unit (e.g. age or year).

Moreover, continuous-time event history models contain a strong assumption about 'ties'. Continuous time event history models assume that the difference in time needs to be very small so that the probability of event occurrence for two or more individuals (or so called ties) is also very small or zero (Singer and Willet 2003, p.314). When ties are persistent, running a continuous-time model will create a bias in the parameter estimates²⁷. In discrete models, the assumption about ties is relaxed to allow two or more individuals sharing the same probability of event occurrence at a given time (Singer and Willet 2003, p.315).

This study uses the discrete-time event history model because IFLS collects retrospective work history on a yearly basis. Moreover, a discrete time approach has the advantage that the continuous time method cannot accommodate in handling pervasive ties of events. Singer and Willet (2003, p.315) argue that although the use of the discrete-time approach limits the survival analysis exploration, it provides simpler and more comprehensive parameter definition, model structure, statistical analysis and interpretation of results as well as a more intuitive understanding of the models, its assumptions and its implementation.

Moreover, discrete-time models can also be used to approximate a continuous time model. Yamaguchi (1991) argues that the bias coefficients of parameters produced from estimating continuous-time data with discrete-time models can be neglected. He argues that "the conditional probabilities of having the event at discrete time points, given that the event does not occur before each time point, become small" (Yamaguchi 1991, p.15-16).

²⁷ There are methodological solutions to reduce the issue of ties (see Singer and Willet, 2003), however these solutions become less effective when the number of ties increase and become inappropriate when events occur at a specific time (Allison 1982)

Discrete-time models essentially estimate the hazard rates or hazard function, $h(t)$. Singer and Willet (2003, p.330) define discrete-time hazard as the “conditional probability that individual i will experience the event in time period j , given that he or she did not experience it in any earlier time period.” Suppose T_i is time period j when an individual i experiences the target event, discrete-time hazard function is represented as:

$$h(t_{ij}) = \Pr[T_i = j | T_i \geq j] \quad (1)$$

where $\Pr[T_i=j]$ is the conditional probability that individual i will experience the event at time j , given that he or she did not experience it at any time before time j . According to Singer and Willet (2003), when there are n number of individuals experiencing an event in interval time j ($n \text{ events}_j$) and there are n number of individuals at risk during time period j ($n \text{ at risk}_j$), the value of discrete-time hazard in time j period can be estimated by the following equation:

$$\hat{h}(t_j) = \frac{n \text{ events}_j}{n \text{ at risk}_j} \quad (2)$$

Discrete-time event history models are estimated by applying logit regression (Allison 1982, Yamaguchi 1991, Singer and Willet 2003, Steele 2005). Since the hazard rate represents a conditional probability, their values can be transformed into the odds and log-odds or logit. Taking the natural logarithm of odds or logit transformation is more favourable given the problems in the odds metric (for a detailed explanation, see Singer and Willet, 2003: p.364-365). The population discrete-time hazard model which estimates the effect of covariates on the hazard rate at a time j for a person with covariates X is represented as follows:

$$\text{logit}[h_x(t_j)] = \log_e \left[\frac{h_x(t_j)}{1-h_x(t_j)} \right] = \alpha_1 D_1 + \beta X_t \quad (3)$$

where $\text{Log}_e[c]$ is the natural logarithm of c , $h_x(t_j)$ is the hazard rate or conditional event probability at time t_j for a person with covariates X , D_1 is a dummy variable indicating the time period, α is the intercept parameter at time point $T=t_j$ and it has the same value

of logit hazard when $X=0$, and β is the slope parameter that indicates the effect of covariate X on the logit hazard rate.

The advantage of using the logit hazard model is that it can be estimated with the maximum likelihood function (see Tekle and Vermunt, 2012). Thus, the usual logistic regression in statistical packages can be used to estimate the logit hazard rate model. However, unlike the ordinary logistic regression, estimating logit hazard model with the logistic regression option in the statistical package requires a different structure of data. The data needs to be reconstructed into a person-period format, in which each individual has a different number of time records depending on the length or duration in the risk set²⁸.

The logit hazard model explained in this section is a single-level hazard model which assumes that all individuals in the datasets have the same risk of experiencing an event. However, in reality, some individuals have a higher risk of experiencing an event than others. The use of single-level hazard model limits the ability to compare individuals with different characteristics since the coefficient estimated in this model reflects only the marginal differences of individuals with a variety of characteristics (Barber et al. 2000). For example, the regression coefficient of time-varying marital status from a single-level model cannot be used to differentiate the risk of being married between higher and low educated women. The absence of individual-specific risk factors in the model leads to the problem of unobserved heterogeneity in the hazard estimation.

The presence of unobserved heterogeneity, sometimes referred to as frailty, creates a difference in hazard function between individual and aggregate level. Tekle and Vermunt (2012) provide an example: if the hazards of all individuals in the population are constant over time, the aggregate population hazard will decrease over time due to selection effect (Tekle and Vermunt, 2012). Those who are at higher risk will experience the event first, leaving individuals with lower risk in the population. When unobserved heterogeneity is ignored in the hazard model estimation, the duration to an event and the estimated coefficient will be biased (Barber et al. 2000)

²⁸ Examples of person-period data set construction can be seen in Singer and Willet (2003) page 380.

The unobserved heterogeneity can be modelled by including a random-effect that reflects the individual-specific unobservable variables and which therefore, measures the individual-specific effects. Random-effects or random-intercept models assume that the variation across individuals is random and uncorrelated with the explanatory variables in the model. The equation for the logit hazard model that includes random effects is modified from equation 3:

$$\text{logit}[h_x(t_j)]_i = \alpha_1 D_1 + \beta X_{ti} + u_i \quad (4)$$

where u_i represents the random effect or unobserved heterogeneity for individual i . The distribution of random-effects is normal when it has zero mean and variance (σ^2_{ui}). The variance of random-effects measures the degree of heterogeneity across individuals due to unobserved time-invariant characteristics (Steele 2005)

One important indicator is used to define whether one should use a single-level or multi-level hazard that includes random-effects in the model. A multi-level hazard model is used when the value of rho (ρ) or the proportion of the total variance contributed by the panel-level variance component is not zero. The value of ρ is calculated from the variance of random effects (σ^2_u) and variance of error (σ^2_e).

$$\rho = \frac{\sigma_u^2}{\sigma_u^2 + \sigma_e^2} \quad (5)$$

If ρ is equal to zero, the estimated coefficient from the panel or multilevel model are the same as the estimated coefficients from the pooled estimators since the component of panel-level variance is unimportant (StataCorp 2009, p.227).

The advantage of using a random-effects model rather than a fixed-effects model is that the random-effects model can estimate the effect of time-invariant variables. When the individual differences are not measured in discrete-time hazard analysis, one cannot differentiate the transitions across individuals. For example, differences in parental education, which are measured as an endowment or a stock and therefore are time-independent, cannot be explained if it is estimated in the fixed-effect model.

Two events of interest in which the logit hazards are estimated: transition out of employment and transition into employment. The first event is assumed to occur, given that women are at risk of leaving employment or they had been working and never leaving the workforce prior to time j where they experience the event. The second event is assumed to occur, given that women had left work and not returned to work before time j .

The main covariates in which the relationship with the hazard of leaving and re-entering employment is estimated are time-varying variables that measure marital status and childbearing status. Other time-varying and constant covariates, particularly human capital and employment characteristics, are also estimated in the models. The model specifications and methods to estimate the transition out of work are presented in Chapter 6, and transition back to work is presented in Chapter 7.

The logit hazard models in this thesis are mainly analysed using multilevel logit regression with inclusion of random-effects. This method is chosen since the models of employment transitions in the analyses include time-variant variables, whose effects would be eliminated when the models are predicted using fixed-effects models.

However, in Chapter 7, the result of random-effects logit hazard estimation of employment re-entry shows that ρ is close to zero. This means that the estimated coefficients from panel logit regression are not different to ordinary or pooled logit regression. Therefore, the transition back into employment is estimated using pooled-logit regression.

In Chapter 7, a competing risks hazard model is also used to analyse the multiple outcomes of women's employment return. When returning to work, women are at risk of working in either the formal or the informal sector. The competing risks model is estimated using multinomial logit (MNL) regression. In discrete-time hazard analysis, estimating the MNL model is basically the same as estimating logit models, with multiple outcomes measured in its dependent variable:

The MNL model is essentially the discrete-time analog to situations in which units are at risk for different types of events i.e. the dependent variable is coded 0,1,2,3,4, etc., where the numbers indicate different types of events. (Golder 2008, p.5).

Moreover, the basic idea of MNL model estimation is also similar to the estimation of separate logit models. The MNL model estimation is argued to be more efficient and to produce smaller standard errors, given that the MNL model employs all the observations while separate logit models drop those cases which are not relevant to their comparison (Golder 2008, p.5).

In each of the analytic chapters, the dataset for analysis is re-structured into a person-period dataset, in which each woman has several years when she is at risk of an event. Instead of using year, this study uses age as the time unit variable. As argued in the previous section, this approach is taken to avoid the jumps in transition to the event of interest due to the 'seam' effect.

4.5. *Methodological limitations*

4.5.1. Endogeneity bias

One consequence of modelling female employment and marriage is the presence of endogeneity. This problem exists since the covariates of marriage, first birth, education, and migration are potentially correlated with the error. The endogeneity issue arises because there is an issue of omitted variable bias or unobserved heterogeneity. These problems occur since explanatory variables can be determined by covariates that are either included or not included in the model. For example, the decision to marry can be explained by women's education, which is included in the model. Endogeneity can also arise because there is simultaneity between explained and explanatory variables. For example, the causal relationship between marriage and women's employment is reciprocal as both variables can be jointly determined.

A substantial amount of literature provides approaches to address the issue of endogeneity. The economic literature focuses on the issue of endogeneity when analysing the causality of fertility and women's employment in general (Angrist and Evans 1996, Cáceres-Delpiano 2012, Cruces and Galiani 2007, Agüero and Marks 2008). They deal with the endogeneity issue by including an instrumental variable that explains an explanatory variable in cases where endogeneity is caused by omitted variables. Some studies model family status variables jointly with female labour force

participation to address the issue of reciprocity between the two variables (for example, see Francesconi 2002)

Meanwhile, studies in social science that investigate the relationship between fertility and female employment are less explicit in addressing the issue of endogeneity. Some studies model the simultaneity between fertility and female employment by estimating two models that measure the effect of fertility on a female's employment and the effect of a female's employment on fertility (for example, Felmlee 1993, Budig 2003), although their objective was to have more focus on testing the interdependency between the two factors. Some studies introduce another covariate in their model to reduce the issue of unobserved heterogeneity, for example Taniguchi and Rosenfeld (2002) include the total number of jobs in the model. Most studies that use the event history method to analyse employment exit do not address the issue of endogeneity (For example, Felmlee 1984, Drobic et al. 1999, Stier and Yaish 2008). Solera (2008, p.17) even took what she called "a radical approach" by not controlling endogeneity in her analyses:

I instead did not control for endogeneity, although more than one explanatory variable may have suffered from it, including education and child and family status. However, I took what economists would consider a radical stand but which is common practice among sociologists: namely I did not explicitly model or control for it. The main reason is that modelling endogeneity in event history analysis is a very complex undertaking that would have taken me beyond the scope of my inquiry. An additional reason is that the risk of bias on account of endogeneity can be considerably reduced by including among the covariates most of the factors that may drive the correlation between endogenous covariates and the error term. My 'insurance policy' in this respect was that ILFI and BHPS data offer a very rich set of relevant covariates. (Solera 2008, p.16-17)

Similar to Solera (2008), the study does not specifically address the issue of endogeneity bias. However, unlike Solera (2008) who was able to explore a rich set of covariates from her data, the study is not addressing the endogeneity issue due to the limited number of retrospective variables in the data. This limitation further restricts the ability to include more variables to deal with the issue of unobserved heterogeneity. However, in Chapter 5, the joint determination of marriage and childbearing is investigated, which takes female's working status as one of the explanatory variables. Hence the estimation results of these models can also provide an indication of the

reciprocal relationship between family status variables and female employment among women in the IFLS sample.

4.5.2. Censoring

Given the structure of working history in the IFLS, this data suffers from a censoring issue. Two types of censoring are present in the data: left and right censoring. Left censoring occurs when an event time is unknown since the beginning of the time is not observed, while right censoring occurs when an event time is unknown since event occurrence is not observed (Singer and Willet 2003, p.319). Right censoring is more common since this issue is inevitable in all event history data sets. This problem affects the summary of the event duration, especially among those who are censored. For further elaboration of the consequences of right censoring on statistical analysis, see Singer and Willet (2003, p.321-324).

A left-censoring problem in this analysis arises due to IFLS collecting work history from several years prior to the survey and therefore the start year of a woman's participation in the workforce is unknown. One possible way to reduce the left-censoring problem is to link the retrospective work history with the year of a woman starting the first full-time employment in the IFLS. However, linking this information generates a gap of several years in the work history of some women in the sample.

This study follows the "common advice" to address the issue of left censoring, that is to set the left-censored spells aside from the analysis (Singer and Willet 2003, p.324) and defines a certain point of time as the beginning. In this analysis, the beginning of a work spell is defined as the year in which a woman in the sample declares to be working after she has reported to be not working previously since her work history started to be observed. The data sets therefore include women of different age groups when the work spell begins, including the "late entrants".

4.6. *Women at risk of employment exit and re-entry: defining work spell and sample selection*

This study selected as its sample female panel respondents aged 15 and older in 2000 who had been interviewed in the employment section in both IFLS 2000 and 2007 as its sample. From the 13,413 women who were interviewed in IFLS 2000, there are around 78 per cent who were followed up in IFLS 2007 (Appendix 4-4). The percentage of attrition for this particular group of women is 22 per cent, which is higher than the reported average household attrition rate in the survey²⁹.

Given this study is interested in exploring the employment transitions of women who were at risk of entering marriage and experiencing first birth during the period of work history from 1996 to 2007, a smaller sample size is further derived from the 10,421 panel women. This sample consists of 7,403 women (71 per cent of total panel women) who were aged 15 to 38 years at the beginning of the work history period or in 1996³⁰ or were still in the reproductive age throughout the period of work history (1996-2007).

For the analysis of employment exit and return, women who had never worked throughout the period of work history, and those who had a work spell of only one year are excluded from the sample. Further women who were single (n=2,047) and married but had not yet had children (n=486) at the beginning of work spell are selected for the analysis of employment exit.

Given that Chapter 6 focuses on the impact of transition to marriage and first birth on the decision to have an employment exit, two sub-samples are analysed: first, women who were single at the beginning of a work spell found throughout 1996 to 2007; second, women who were married but childless at the beginning of a work spell found between 1996 and 2007.

The time to start the first work spell is defined as the year in which a respondent reported herself to be working, after she was reported to be not working since the

²⁹ The distribution of female respondents of IFLS 2000 in Appendix 4-4 shows that overall characteristics of attritors are slightly different to the panel respondents. The attrition group has a higher percentage of women aged 15-24 and 55+, single and separated/divorced/widowed, with no education, who lived in urban areas and are not working compared the panel respondents.

³⁰ There are 21 women who had inconsistent report of their own and children's date of birth. These women are excluded from the analytic sample.

beginning of the work history observation or the year 1996. The first job spell, therefore, does not reflect the actual first job episode that a respondent experiences when they enter the labour force for the first time. The event of employment exit is defined as the year in which a woman declared herself to be not working for the first time after she has been continuously working since the start of her job spell. The event of employment return among women who ever worked is defined as the year in which a woman is reported to be working, given that she has been out of work for at least one year.

Figure 4-3 provides an example of the extraction of the jobs spells as well as the dates for each event.

Note: N = not working; W=working

Although some women have multiple work spells as well as multiple transitions out from and into employment, this study focuses on the first work spell recorded since 1996, and the first employment exit and return after the start of the first work spell, to simplify the analysis. The consequence of modelling only a single spell for repeatable events is that the analysis may not be capturing variations in the subsequent spells.

For example, there are some women who had first marriage and first birth in the second or third work spell. In this case, the effect of marriage on employment exit for these women cannot be captured in an analysis that focuses only on the first spell. However, out of 2,893 women in total of the analytical sample of employment exit, less than 20 per cent have two or more work spells throughout 1996-2007. Thus, it is expected that the results of the single job spell analysis may have few dissimilarities with the results of an analysis that includes multiple spells of job.

In Chapter 7, the study focuses on the association of later stage of childbearing and the likelihood of employment return. The sample for this analysis is all women who experienced an employment exit, or those who exited from the first work spell measured in Chapter 6 (n=1,378).

In addition to the analysis of employment exit and re-entry, this study also investigates factors that determine transition to first marriage and transition to first birth (Chapter 5). The samples for both analyses include women who both have ever worked and never worked throughout the period of work history in IFLS 2000 and IFLS 2007, and who were aged less than 50 years in 2007. The total number of women in the analytic sample for transition into first marriage is 3,411 individuals, and transition into first birth is 2,269 individuals. Detailed sample selection is explained in each analytic chapter. Table 4.2 summarizes the criteria and number of analytic sample in each chapter.

Table 4-2. Analytical Sample in Chapter 5, 6 and 7

Chapter	Analysis	Criteria	Number of women
5	Transition into first marriage	Women aged less than 50 in 2007, who were never married when they were aged 15	3,411
	Transition into first birth	Women aged less than 50 in 2007, who were married in 1996-2007	2,269
6	Employment exit – marriage effect	Women aged 15-38, who were single at the beginning of a work spell	2,047
	Employment exit – first birth effect	Married women aged 15-38, who were childless at the beginning of a work spell.	486
7	Employment re-entry	Women who had left work (from analytic sample of Chapter 6)	1,378

4.7. Summary

This chapter has outlined the data and methods used in the thesis. This study uses longitudinal data called IFLS 2000 and IFLS 2007 to explore the determinants of women’s employment exit and return in Indonesia. Exploration using IFLS is beneficial

for this study since it collects retrospective work history as well as other life histories: marriage, childbirth, education and migration. From this information, this study is able to construct a person-period data set that provides information about an individual working and other life events over time. The construction of person-period data is also a requirement for the method of analysis used in the thesis, namely the discrete-time hazard method.

This chapter also provides a brief examination over the potential problems and limitations in the data as well as in the method. In particular, it has discussed the problem of seam bias that creates bias in the gross transitions rates in and out of employment. The magnitude, cause, and consequences as well as approaches to treating seam bias in the analysis are further discussed in Chapter 8.

The following chapters (Chapter 5, 6 and 7) present the analyses to answer the research questions. Chapter 5 explores the determinants of transition to marriage and transition to first birth although these are not the central focus of this study. Findings from the analysis in Chapter 5 are useful to provide a context for the analysis in the subsequent chapter. Chapter 6 explores the relationship between marital status and childbearing on women's employment exit. The analysis of the subsequent stage in the employment course of women as well as its determinants is presented in Chapter 7.

Appendix 4-1. Characteristics of females aged 15-49 in the IFLS and SUSENAS

Respondents characteristics	IFLS 1993		Susenas 1993		IFLS 1997		Susenas 1997		IFLS 2000		Susenas 2000		IFLS 2007		Susenas 2007	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Proportion of women by age																
15-24	3,334	38.85	20,407	37.9	3,363	36.31	59,670	35.8	4,844	38.72	55,953	34.52	4,585	32.02	54,616	30.93
25-34	2,694	31.39	16,789	31.18	2,756	29.76	51,228	30.74	3,577	28.6	49,105	30.3	4,793	33.47	52,582	29.78
35-44	1,973	22.99	12,247	22.74	2,371	25.60	41,696	25.02	2,961	23.67	41,979	25.9	3,437	24	48,879	27.68
45-49	580	6.76	4,403	8.18	771	8.33	14,081	8.45	1,127	9.01	15,030	9.27	1,504	10.5	20,518	11.62
Marital status																
Single (never married)	2,618	30.51	15,613	29.00	2,858	30.86	48,749	29.25	3,801	30.39	48,375	29.85	3,345	23.36	47,203	26.73
Married	5,490	63.98	35,203	65.38	5,856	63.23	109,314	65.59	7,970	63.71	105,424	65.05	10,010	69.91	120,877	68.45
Divorced	240	2.80	1,666	3.09	237	2.56	4,430	2.66	306	2.45	4,290	2.65	325	2.27	4,514	2.56
Widowed	233	2.72	1,364	2.53	243	2.62	4,182	2.51	310	2.48	3,978	2.45	321	2.24	4,001	2.27
missing					67	0.72			122	0.98			318	2.22		
Education level																
No schooling	1,007	11.74	5,345	9.93	812	8.77	12,524	7.51	775	6.2	10,552	6.51	539	3.76	7,752	4.39
Elementary	3,991	46.51	27,935	51.88	4,053	43.76	81,683	49.01	4,903	39.2	74,093	45.72	4,501	31.43	69,372	39.28
Junior secondary	1,325	15.44	7,997	14.85	1,568	16.93	28,553	17.13	2,264	18.1	29,604	18.27	2,792	19.5	35,424	20.06
Senior secondary	1,812	21.12	10,206	18.95	2,151	23.23	35,788	21.47	3,280	26.22	38,496	23.75	4,338	30.3	47,309	26.79
Tertiary	425	4.95	2,363	4.39	587	6.34	8,126	4.88	1,095	8.75	9,322	5.75	1,725	12.05	16,738	9.48
Uncategorized	21	0.24			90.00	0.97			192	1.53			424	2.96		
Area of living																
urban	4,608	53.70	25,107	46.63	4,757	51.37	66,627	39.97	6,536	52.25	72,941	45.01	7,926	55.35	80,691	45.69
rural	3,973	46.30	28,739	53.37	4,502	48.61	100,048	60.03	5,973	47.75	89,126	54.99	6,393	44.65	95,904	54.31
Province																
North Sumatra	722	8.41	3,629	6.74	675	7	14,172	8.5	868	6.94	13,930	8.6	988	6.9	19,596	11.1
West Sumatra	441	5.14	1,947	3.62	514	5.55	8,814	5.29	623	4.98	9,000	5.55	643	4.49	12,154	6.88
South Sumatra	437	5.09	2,545	4.73	452	4.88	8,225	4.93	649	5.19	8,125	5.01	693	4.84	10,338	5.85
Lampung	294	3.43	2,614	4.85	323	3.49	4,768	2.86	454	3.63	4,566	2.82	576	4.02	7,516	4.26
DKI Jakarta	1,078	12.56	4,264	7.92	977	11	8,733	5.24	1,216	9.72	8,000	4.94	1,170	8.17	8,609	4.87
West Java	1,296	15.10	8,834	16.41	1,520	16	23,039	13.82	2,155	17.23	22,603	13.95	2,032	14.19	21,992	12.45
Central Java	924	10.77	8,141	15.12	1,156	12	27,334	16.4	1,494	11.94	27,006	16.66	1,643	11.47	25,352	14.36
DI Yogyakarta	484	5.64	2,280	4.23	510	5.51	3,459	2.08	607	4.85	3,312	2.04	671	4.69	3,078	1.74
East Java	1,118	13.03	9,716	18.04	1,205	13	31,157	18.69	1,725	13.79	30,460	18.79	1,965	13.72	30,276	17.14
Bali	435	5.07	2,282	4.24	435	4.7	6,675	4	578	4.62	6,283	3.88	670	4.68	5,861	3.32
West Nusa Tenggara	464	5.41	2,426	4.51	568	6	5,167	3.1	784	6.27	4,756	2.93	950	6.63	6,189	3.5
South Kalimantan	373	4.35	2,136	3.97	399	4.31	6,755	4.05	553	4.42	6,460	3.99	661	4.62	8,502	4.81
South Sulawesi	515	6.00	3,032	5.63	527	5.69	18,377	11.03	728	6	17,566	10.84	811	5.66	17,132	9.7
Other than IFLS main provinces									75	0.6			846	5.91		
Female aged 15-49 (N)*	8,581		53,846		9,261		166,675		12,509		162,067		14,319		176,595	
All female (N)*	17,002		146,195		17,910		446,515		23,083		390,723		27,702		581,913	

Note: *those who were currently not in the household but listed in the household roster are excluded;
Source: IFLS (1993, 1997, 2000 and 2007); (BPS-Statistics Indonesia 1993, 1997, 2000, 2007b)

Appendix 4-2. IFLS household survey questionnaire

Book/respondents	Module	Remarks
Book T: Tracking Book		
All respondents	SC	Sampling and enumeration record
Book K: Control Book and Household Roster		
Household head, spouse, or knowledgeable other person	SC	Sampling and enumeration record
	AR	Household roster
	KRK	Housing characteristics
	IK	Information about where the respondents moved
	FP	Interview book check and tracking form
Book 1: Expenditures and Knowledge of Health Facilities		
Wife of household head, household head, or other knowledgeable person	KS	Household expenditures
	KSR	Assistance received by household
	CR	Crime
	PP	Knowledge of outpatient care providers
Book 2: Household Economy		
Household head, wife of household head, or other household member	KR	Housing characteristics
	UT	Farm business
	VU	Avian Flu
	NT	Nonfarm business
	HR	Household assets
	HI	Household non-labour income
	GE	Household economic shocks
	ND	Natural disasters
	BH	Loans
Book 3A: Adult information (part 1)		
Each household member age 15+	DL	Education history
	SW	Subjective well-being
	HR	Individual assets and non-labour income
	HI	Non-labour income
	KW	Marital history (all men and women age 50+)
	PK	Household decision making (married respondents)
	BR	Pregnancy summary (women age 50+)
	MG	Migration history
	SR	Circular migration
	TK	Employment history
	RE	Retirement
	SI	Risk and time preferences
	TR	Trust
Book 3B: Adult information (part 2)		
Each household member age 15+	KM	Tobacco smoking
	KK	Health condition
	VG	Health vignettes
	CD	Chronic conditions
	KP	Depression scale
	CO	Cognitive test
	MA	Acute morbidity
	AK	Health insurance
	PS	Self-treatment
	RJ	Outpatient visits
	FM	Food intake frequency tables
	RN	Inpatient visits
	PM	Community participation
	BA	Non-coresident family roster and transfers
	TF	Transfer to/from outside household member
	EP	Expectations
	BH	Borrowing history

Source: Strauss et al. 2004, Table 2.7

Appendix 4-2. IFLS household survey questionnaire (continued)

Book/respondents	Module	Remarks
Book 4: Ever-married women information		
Each ever-married woman 15-49	KW	Marital history
	BR	Pregnancy summary
	BA	Non-coresident children and transfers
	BF	Breastfeeding update
	CH	Pregnancy and infant feeding history
	BX	Non-coresident adopted child roster
	CX	Contraceptive knowledge and use
	KL	Contraceptive use on a monthly basis
Book 5: Child information		
Each child age 0-14 (or mother if child less than age 11)	DLA	Child education history
	MAA	Child acute morbidity
	PSA	Child self-treatment
	RJA	Child outpatient visits
	FMA	Food intake frequencies
	RNA	Child inpatient visits
	BAA	Parental information
Book Proxy: Adult Information by proxy		
Someone who answered for the intended respondent to book 3A, 3B, and 4 in his/her absence	Shortened version of other modules	
	Book 3A – KW, MG, DL, TK	
	Book 3B – PM, KM, KK, MA, RJ, RN, BH	
	Book 4 - BR, CH, CX, BA	
Book US1 : Health Assessment (measure of physical health)		
Book US2: Health observation/evaluation (health workers' evaluation of respondent's physical health)		
Book EK: Cognitive Assessment (skills in abstract reasoning and in numeracy)		

Source: Strauss et al. 2004, Table 2.7

Appendix 4-3. Occupation codes used in the IFLS

Code	Description
Professional/technical	
0X	Professional, category 0, second digit could not be assigned
01	Physical scientist and related technicians
02	Architects, engineers, technologists
03	Surveyors, draftsmen, engineering assistants
04	Aircraft and ship's officer
05	Life scientists and related technicians
06	Physicians, medical assistants, dentists, dental assistants, pharmacists, nutritionists
07	Nurses, midwives, x-ray technicians, traditional medicine
08	Statisticians, mathematicians, system analysts, and related technicians
09	Economists
1X	Professional, category 1, second digit could not be assigned
11	Accountants and auditors
12	Jurists
13	Teachers
14	Workers in religion
15	Authors, critics, journalists, editors, and related writers
16	Sculptors, painters, photographers, and related creative artists
17	Composers, performing artists
18	Athletes, sportsmen, and related workers
19	Professional and technical workers not elsewhere classified
Administrative and managerial	
2X	Administrative/managerial but second digit could not be assigned
20	Legislative officials and government administrators
21	Managers
26	Administrators unknown
27	Administrator, government
28	Administrator, non-government
29	Manager not elsewhere classified (mostly school principals)
Clerical and related workers	
3X	Clerical but second digit could not be assigned
30	Clerical supervisors
31	Government executive of officials
32	Stenographers, typists, and card tape-punching machine operators
33	Bookkeepers, cashiers, and related workers
34	Computing machine operators
35	Transport and communications supervisors
36	Transport conductors
37	Mail distributors and related workers
38	Telephone and telegraph operators
39	Clerical and related workers not elsewhere classifieds
Sales workers	
4X	Sales but second digit could not be assigned
40	Managers (wholesale and retail trade)
41	Working proprietors (wholesale and retail trade)
42	Sales supervisors and buyers
43	Technical salesman, commercial travellers, manufacturer's agents
44	Insurance, real estate, securities and business services salesman and auctioneers
45	Salesmen, shop assistants and related workers
48	Sales agent
49	Sales workers not elsewhere classified

Source: Demographic Institute and RAND (1995)

Appendix 4-3. Occupation codes used in the IFLS (continued)

Code	Description
Service workers	
5X	Service but second digit could not be assigned
50	Managers (catering and lodging services)
51	Working proprietors (catering and lodging services)
52	Housekeeping and related service supervisors
53	Cooks, waiters, bartenders, and related workers
54	Maids and related housekeeping service workers
55	Building caretakers, char workers, cleaners, and related workers
56	Launderers, dry-cleaners and pressers
57	Hairdressers, barbers, beauticians and related workers
58	Protective service workers
59	Service workers not elsewhere classified
Agricultural, animal husbandry, forestry workers, fisherman, and hunters	
6X	Agriculture but second digit could not be assigned
60	Plantation managers and supervisors
61	Planters and farmers
62	Agricultural and animal husbandry workers
63	Forestry workers
64	Fishermen, hunters, and related workers
69	Agricultural worker not elsewhere classified
Production and related workers, transport operators, and labourers	
7X	Production, category 7, but second digit could not be assigned
70	Production supervisors and general foremen
71	Miners, quarrymen, well-drillers, and related workers
72	Metal processors
73	Wood preparation workers and paper makers
74	Chemical processors and related workers
75	Spinners, weavers, knitters, dyers, and related workers
76	Tanners, fellmongers, and pelt dressers
77	Food and beverage processors
78	Tobacco preparers and tobacco product makers
79	Tailors, dressmakers, sewer, upholsterers, and related workers
8X	Production, category 8, but second digit could not be assigned
80	Shoemakers and leather good makers
81	Cabinet makers and related wood makers
82	Stone cutters and carvers
83	Blacksmith, tool makers and machine tool operators
84	Machinery fitters, assemblers, repairers and precision instrument makers (except electrical)
85	Electrical fitters and related electrical and electronic workers
86	Broadcasting station, sound equipment operators, and cinema projectionists
87	Plumbers, welders, sheet-metal and structural metal preparers and erectors
88	Jewellery and precious metal workers
89	Glass formers, potters, and related workers
9X	Production, category 9, but second digit could not be assigned
90	Rubber and plastics product makers
91	Paper board product makers
92	Printers and related workers
93	Painters
94	Production and related workers not elsewhere classified
95	Bricklayers, carpenters and other construction workers
96	Stationary engines and related equipment operators
97	Material handling and related equipment, operators dockers and freight handlers
98	Transport equipment operators
99	Labourers not elsewhere classified

Source: Demographic Institute and RAND (1995)

Appendix 4-4. Characteristics of women in the panel, attrition, and original sample of IFLS 2000

Characteristics in 2000	Panel respondents IFLS 2000 & 2007	Attrition from IFLS 2000	Total respondents IFLS 2000
Age			
15-24	28.4	32.6	29.3
25-34	25.1	16.4	23.1
35-44	21.1	10.9	18.8
45-54	12.7	8.1	11.7
55+	12.7	32.0	17.0
Marital Status			
Single	19.7	28.6	21.7
Currently married	69.3	44.6	63.8
Separated/divorced/widowed	11.0	26.8	14.5
Highest education level			
No schooling	12.7	22.6	14.9
Elementary	42.9	34.7	41.0
Junior secondary	16.3	12.8	15.5
Senior secondary	21.5	21.1	21.4
Tertiary	6.3	8.1	6.7
Others/missing	0.4	0.7	0.5
Urban rural residence			
Urban	47.8	55.8	49.6
Rural	52.2	44.2	50.4
Employment status			
Working	53.6	42.8	51.2
Not working	46.4	57.2	48.7
Female aged 15+ in 2000 (n)	10,421	2,984	13,413
%	77.7	22.2	100

*From 13,413 women, 82 per cent are panel respondents from 1993; 5 per cent from 1997, and 13 percent are new respondents in 2000.
Source: IFLS 2000 & IFLS 2007.

5 Transition to marriage and first birth

In countries in Asia, marriage is closely associated with childbearing. Although the trend of delayed marriage has increased, childbearing generally occurs straight after marriage (Jones 2004, p. 17). In a society that expects people to marry before childbearing, married couples generally face pressures from their relatives to have a child soon after the wedding (Jones 2004, Jones 2007). Consequently, the timing of marriage as well as the timing of entering motherhood indicate the time when a woman will start to carry out her familial responsibilities that will later influence her time allocation for market work. The similarity of the Indonesian context to the other Asian countries implies that Indonesia may adopt the same view about marriage and childbearing timing as previously elaborated.

Analysing the determinants of transition to marriage and transition to first birth is conducted to examine whether marriage and childbearing are codetermined in Indonesia, given this study explores the effects of these two transitions on women's employment exit. When these life events are jointly decided, marriage and motherhood are expected to have the same effects on women's decision to leave employment. When they are not jointly decided, motherhood might have a larger effect on women's employment than marriage. In this case, recently married women who have not yet entered motherhood do not necessarily reduce their time for paid work since they have no need to allocate more time at home to perform the caring role, except when other factors provide opportunities or put pressure on women to leave employment (for example husbands' higher earning or husbands forbid wives to work).

Besides codetermination, analysing the transition to marriage and transition to first birth are important to provide a context about the life course sequence of women. In particular, analysis in this chapter focuses on the effect of premarital work experience on women's decision to marry and the effect of work experience after marriage on the onset of motherhood. Studies have noted that the increase in women's participation in the labour market has been argued as one of the factors that contribute to the trend of delayed marriage in Asia (see for example: Jones 2004). However, little is known whether the

effect of continuity of work after marriage influences the onset of motherhood. Moreover, as previously stated in section 4.51, incorporating the work experience in the models that predict transition to marriage and transition to first birth would provide an indication whether marriage as well as childbearing have a reciprocal relationship with the work status of women.

This chapter provides an analysis of the transitions to marriage and first birth among women of reproductive age in Indonesia. The main objective of the analysis in this chapter is to investigate whether marriage and childbearing are codetermined in Indonesia. The analysis is divided into two parts: transition to marriage and transition to first birth. Although the main objective of this chapter is to provide evidence about codetermination of marriage and childbirth, analysis of determinants of marriage transition is also important to understand the factors contributing to the decision to marry, which in this thesis is hypothesized to be similar to the decision to have a child. Findings from this analysis are expected to provide a context for the research question addressed in the next analysis: to what extent does marriage and childbearing influence women's employment exit?

5.1. Trends of first marriage and first birth in Indonesia

Although marriage is still the norm in Indonesia, recent trends show a substantial increase in the number of men and women having a longer period of singlehood and delaying marriage as well as an increase in the trend of never-marrying.

Both the expansion of job opportunities and the rise in education level have also significantly contributed to the increase in the number of women remaining single in Indonesia (Manning 1998, Hull and Hartanto 2009). The proportion of young women with single status has increased sharply in the last 30 years. Adioetomo (2005) noted that the proportion of women aged 20-24 years old who are still single has increased from 14 per cent in 1964 to 42 per cent in 2000, while for those aged 25-29 years old the proportion increased from 4 to 17 per cent.

This trend shows that there has been a substantial increase in the proportion of women delaying marriage or being never married. The singulate mean age at marriage (SMAM) of females in Indonesia rose from 19.3 in 1971 to 23.4 years old in 2005 and the percentage of those who were never married at age 45-49 also increased from one to two per cent during the same period (Jones and Gubhaju 2008, p.50). Similar to other regions in Asia, women with tertiary education are the ones who have the largest proportion never married (Jones 2004, p.15).

Research shows that delayed marriage is associated with the increase of women's education and labour force participation (for example: Jones 2004). Education provides women with more options and authority, particularly in finding husbands. Educated women have higher expectations of the qualities of a husband. Malhotra (1997, p.439) suggests that well educated women in most societies in Asia, including Indonesia, expect to marry men with the same or higher education level. Moreover, perspectives of household division of labour also influence educated women in mate selection. The problem of delayed marriage is related to women not being able to find men who share the same values (Hull 2002, p.8), particularly about shared domestic work and childcare (Quah 1998).

Delayed marriage has also been associated with women avoiding having children. Jones et al. (2009, p.13) note that "marriage is a package" which is strongly associated with childbearing and other familial obligations. Recently married couples in Asian societies have generally been expected to have children as soon as possible after the wedding. Jones (2007, p.24) states that "to marry without the intention to have children is still considered aberrant behaviour throughout the region." In countries with strong traditional values about the family, such as Japan, recently married couples are subject to greater pressure to have children than the pressure on single people to marry. In addition, the pressure on women is even greater since society demands that couples produce high quality children, while women continue to be the main caregivers for children.

The avoidance of childbearing in Southeast and East Asia is also associated with the patriarchal norms practised by employers. Employers' preference toward hiring young, single women has a considerable impact on raising the opportunity cost of marriage:

...the unwillingness of employers to allow time off to give birth or care for children, or return to the workforce thereafter, along with strong sexual division of labour within the household, means that the opportunity cost is very high for women to raise a family. (Jones 2007, p.26).

The trend of age at first marriage and age at first birth in Indonesia suggests that although there is a trend of delayed marriage, women in Indonesia are less likely to delay motherhood for an extended period. The Indonesian Demographic Health Survey (IDHS) shows that the median age at first birth among women age 25-49 years old has increased, from 19.9 years old in 1987 to 21.5 years old in 2007 (ICF International 2012). In the same period, the median age at first marriage among the same group has also increased, from 17 years old to 19.8 years old. The difference between the two age indicators suggests women aged 25-49 on average have had their first birth in the second year of marriage.

5.2. Findings from previous studies on determinants of transition to marriage and first birth

While there has been a substantial body of research in developed countries, studies on transition to marriage and first birth at the individual level in developing countries are very limited. The majority of available works on marriage timing in developing countries mainly focus on cross-national patterns and determinants of age at marriage and age at first birth. This section elaborates factors that contribute to timing of marriage and timing of first birth based on the available studies in Asian countries.

5.2.1. Timing of marriage

Past research on marriage timing in Asian countries has generally used macro approaches. These studies focus on the patterns and determinants of age at marriage in a single country (Bloom and Reddy 1986, Nath et al. 1999) or across countries (Rindfuss et al. 1983, Mensch et al. 2005, Jones and Gubhaju 2008, Abeynayake et al. 2012). A few studies address the determinants of entering into the marital stage of female individuals using the event history approach (Malhotra and Tsui 1996, Malhotra 1997, Shirahase 2000, Nobbles and Bутtenheim 2008). Despite variations in the approach, studies in Asian

countries agree that socioeconomic factors, particularly education and women's labour force participation, play important roles in explaining the differences in age at marriage.

Findings from previous studies show that a female's education has a positive association with age at marriage in both developed and developing countries (Chowdury and Trovato 1994, Shirahase 2000, Abeynayake et al. 2012). There are two arguments provided to explain the mechanism of how education decelerates marriage timing. First, a direct implication of attending higher education is that it creates conflicting roles of being a student and a wife/mother. Attending school is time consuming, therefore women who pursue higher education would delay marriage until they have completed their education (Smith et al. 2012). Second, an indirect implication of having higher education is that it increases the chance of women joining the labour force. Consequently, participation in the labour force leads to delayed marriage since work and family roles are incompatible (Bracher and Santow 1998) and it takes a longer time to find the right partner (Jejeebhoy 1995, Jones 2004).

A few studies address the timing of marriage and measure female involvement in the labour market in their analyses. Some studies indicate their intention to measure women's participation in the labour market, but there is an issue with data availability and quality as well as consistency in the measurement of women's employment across nations (for example: Singh and Samara 1996).

In the available work, the measurement of women's participation in the labour market is varied and so are the results of analysis. Using the DHS data across countries, Singh and Samara (1996) define women's labour market attachment as the proportion of women who were currently working for pay. They found that there was no significant relationship between the proportion of women doing paid work and early marriage (Singh and Samara 1996). United Nations (UN) analysis of the World Fertility Survey data that uses employment experience before marriage found a positive relationship between the labour market attachment measurement and age at marriage. Women who had premarital work experience in modern occupations had the highest mean age at marriage (United Nations 1987 cited in Singh and Samara 1996, p.155). A study by Chowdury and Trovato (1994)

also used the World Fertility Survey data in Nepal, Bangladesh, Pakistan, Srilanka, and Malaysia, and found that paid work, work outside the home and work in high-level occupations had positive associations with delayed age at marriage.

In Indonesia, studies on transition to marriage have been conducted by Malhotra (1997) Sundaram (2006), and Nobbles and Buttenheim (2008). Malhotra (1997) investigates the rural-urban differences of the timing of marriage among men and women using the Indonesian part of the Asian Marriage Survey 1979-1980. She found that labour force participation and education are important factors in determining the timing of marriage, although education is only significant among urban women, while labour force participation is significant among rural women. Sundaram (2006) examines the impact of socioeconomic characteristics of women on transition to marriage in Indonesia using the 1993 IFLS. His findings show that education and labour force participation of women increases the odds of marrying. From his findings, he concludes that women enter marriage when they are considered as 'socially ready' as reflected by their participation in the labour market. Nobbles and Buttenheim (2008) focus on the effect of economic trends on the transition into first marriage using the IFLS. Their findings indicate that the changing regional wage rate, labour market experience, mother's education and the number of years since migration significantly influence entry into marriage.

5.2.2. Timing of first birth

Studies in Asia have generally linked the trend in delayed marriage with the declining cumulative fertility level (Jones 2004, Abeynayake et al. 2012). Less attention has been given to the timing of childbearing within marriage, although a growing number of studies focus on this topic.

Earlier studies that examine the timing of first birth mostly used a macro approach to discover the patterns of first birth interval and its determinants within a country (for example, see Bloom and Reddy 1986,) or across countries (Rindfuss and Morgan 1983, Rindfuss et al. 1983). More recent studies use multivariate analysis as a tool to investigate the socioeconomic and cultural impact on the length of first birth interval (Feng and

Quanhe 1996, Nath et al. 1999, Shirahase 2000, Amin and Bajracharya 2011). Most of these studies also incorporated age at marriage as the predictor of duration from marriage to first birth.

Despite differences in the impact of socioeconomic characteristics, previous studies on timing of first birth agree that age at marriage is the most important determinant of length of first birth interval (Feng and Quanhe 1996, Nath et al. 1999, Shirahase 2000). For example, a study of Japanese women found that the significance of socioeconomic indicators disappears when the model controls for the effect of age at marriage (Shirahase 2002). Shirahase (2002) concludes that while education plays an important role in the decision to marry, the timing of marriage is proven to be the only strong factor influencing the timing to have the first child.

Meanwhile, there are fewer studies that focus on the transition to first birth in Indonesia compared to the number of studies on transition to marriage. One such study was done in 1985 by Trussell et al. (1985) that analyse the determinants of fertility using the World Fertility Survey. They mainly investigated the use of contraception and the duration of breastfeeding on the likelihood of a live birth, and the age at marriage variable was not included in the model.

5.2.3. Link between age at marriage and age at first birth

Studies in demography have pointed out the link between timing of marriage and timing of first birth, particularly in countries where marriage is an antecedent of childbearing and the level of non-marital fertility is low. Studies show that increase in age at marriage is generally followed with a shorter marital birth interval, particularly in the absence of contraceptive use (Trussell and Reinis 1989, Rindfuss and Morgan 1983)

One explanation of the relationship of age at marriage and timing of first birth is centralized in the variant norms of the ideal time to have a child between early and late marriers. Amin and Bajracharya (2011) argue that norms about delaying childbirth may form among societies in which the majority of women marry early, when women are still in the sub-

fecund stage. In contrast, the norms in societies where late marriage is dominant expect couples to have children immediately since they have reached the peak of the fecundity period. In this setting, couples who are marrying late would have a child immediately to compensate for their 'late start' (Mensch et al. 1998).

However, delayed marriage is not necessarily followed by immediate childbearing. Rindfuss and Morgan (1983) found that early marital conception is found among women who were married at ages below and after their 20s in Malaysia, Taiwan and Korea. Their finding indicates that an explanation of early marital conception is more complex than just being due to the increase in age at marriage. They argue that the shorter marriage to birth intervals in the three countries are closely linked to the higher frequency of coitus early in marriage, which also reflects the shift of norms from arranged toward more 'romantic' marriages (Rindfuss and Morgan 1983).

In general, research has found that socioeconomic characteristics play important roles in determining the timing of family formation. Women's education and labour market attachment are two factors that have been highlighted as key determinants of age at marriage. Although some studies indicate a similar importance of socioeconomic factors, the studies on timing of first birth mainly suggest that timing of marriage determines the length of time to first birth intervals in many countries. Women who marry at a later age tend to have their first child more quickly than those who marry earlier. However, an explanation of the timing of the first birth needs to go beyond the relationship with age at marriage. It needs to include not just the socioeconomic characteristics of women, but also the societal norms related to the timing to have the first child.

5.3. *Data, variables and method*

The samples for the analysis of transition to marriage and first birth were selected from the main female panel respondents of IFLS 2000 and IFLS 2007. The analysis of transition to first marriage and transition to first birth used a the sample consisting of women who have ever worked and never worked throughout the period of the work history in IFLS 2000 and IFLS 2007, and who were aged less than 50 years in 1996.

For the analysis of marriage transition, a person-years data set was constructed to follow a woman from age 15 years up to the year of first marriage or the last survey. Since the analysis incorporates a time-varying work status, the sample only includes marriages that occurred during the period of work history covered in IFLS 2000 and 2007, that is, from 1996 to 2007. Further sample selection is done to exclude women who had only one year of observation. The total number of women in the sample for transition to marriage analysis was 3,411 women.

The sample for transition to first birth analysis included those women who were married between 1996 and 2007. The person-year data followed the women from the year of their first marriage up to the year when they had the first birth, or to the last survey, if a woman had not had a child. The analysis only included pregnancies with the first child that ended with a live birth. After excluding women who had only been one year in the observation, the total number of women in the analysis of transition to first birth was 2,269 women.

The model developed to test the codetermination of marriage and first childbirth in this chapter is based on a modification of Shirahase's (2000) model. Shirahase (2000) uses discrete time event history analysis to investigate the role of education in fertility decline in Japan using the 1995 Social Stratification and Mobility (SSM) survey. Given that the proportion of children born outside marriage is very low in Japan, Shirahase (2000) tests whether birth rates and marriage are closely related. She examines the transition to marriage and the timing of the birth of the first child after marriage. In her model, Shirahase (2002) uses women's family's occupation background, women's education level, first job occupation, and school completion cohorts as the independent variables. For the timing of first birth model, she adds variables of husband's job at marriage, age at marriage and marital cohort.

Two models are analysed in this chapter: transition into first marriage and transition into first birth. The dependent variables are the probability of a woman entering marriage or first birth given that she has never experienced that event before. The dependent variable for transition to marriage is measured by a dummy variable equal to 1 if a woman is married and 0 if a woman is still single. Likewise, the dependent variable for transition to

first birth is also measured by a dummy variable equal to 1 if a woman has a first birth and 0 if a woman had not yet had a first birth.

The explanatory variables are modified from the studies by Malhotra (1997) and Shirahase (2002). Those are the categorical variables of time-varying work status (whether a woman is not working, working in the formal sector, or working in the informal sector), the last education level of women (no schooling or elementary, junior secondary, senior secondary, and tertiary), and the education of mothers as a proxy for women's family socio-economic background. Age of marriage and husband's education are included in the transition into first birth model. The mean and standard deviation of the values of the variables used in the analysis are presented in Appendix 5-1 and Appendix 5-2.

Since information about work status is limited to the observation period of IFLS 2000 and IFLS 2007 work history, and observation in the person-period data set for analysing transition to first marriage started at age 15, there is missing data on work status prior to 1996. Instead of being excluded from the analysis, the work status prior to 1996 is coded as missing and included in the analysis.³¹ Since work status is mostly missing around the beginning of the singlehood spell, the missing value indicator included in the analysis is expected to have a negative effect on both transitions to marriage and first birth.

For the variable of work status, this analysis adopts the method used in Malhotra's study (1997), that is, to impute the work status in a lagged form in order to reduce the problem of causal reciprocation. Following Malhotra (1997), the timing of first marriage model also includes the variables of age and age in a quadratic form since the shape of the hazard of experiencing a first marriage increases with age up to a certain point. In the transition into first birth model, age and the age quadratic are excluded from the analysis since these variables are highly correlated with age at marriage.

The models of transition to first marriage and transition to first birth are estimated using discrete-time hazard analysis and apply logit regression to estimates the models (see section 4.4 for detail discussion of the method).

³¹ Similar technique is also used by Taniguchi and Rosenfeld (2002) to indicate the missing values in family income.

5.4. Results: Transition to first marriage

5.4.1. Characteristics of women who had a first marriage

Table 5-1 shows the median age at first marriage and per cent of women who entered marriage for each characteristic. The median age of marriage for all women in the sample is 22 years; 76 per cent of women in the sample entered a first marriage up to 2007. Women who were not working a year before the spell ended, had junior secondary education, and whose mothers had elementary education are more likely to get married.

Table 5-1. Characteristics of women who had a first marriage			
	Median age at marriage	% Married	n total
Work status (lagged)			
Not working	22	88.3	1,499
Work in informal sector	21	68.6	577
Work in formal sector	23	70.0	1,334
Missing			1
Women's education			
no/elementary	20	83.7	785
junior	20	85.9	746
senior	22	77.6	1,247
tertiary	25	61.3	628
Missing			5
Mother's education			
no schooling	22	73.3	1,630
elementary	22	85.7	1,015
junior secondary	24	70.8	325
senior secondary+	24	72.8	202
missing			239
Schooling status			
still at school	23	77.6	171
not at school	24	82.5	3,240
Total	22	76.1	3,167

Source: IFLS 2000 and IFLS 2007

5.4.2. Discrete-time hazard analysis

The results of discrete-time hazard analysis of the determinants of transition to first marriage are presented in Table 5-2. Models 1, 2, and 3 estimate the effects of each of the main explanatory variables (work status, education, and mother's education), while model 4 estimates the combined effects of the overall explanatory variables on entry into first marriage. The results from the analyses of Models 1 to 3 show that almost all explanatory variables are individually significant in determining transition to marriage, except for cumulated work experience. Each explanatory variable is also showing significant effects in the result of the analysis based on Model 4.

The results from both the individual and overall models show work status in the previous year is a significant predictor of transition to marriage among women in Indonesia. In the overall model, working in the formal sector increases the hazard to marry, while working in the informal sector reduces the hazard to marry. The results of the analysis of individual and overall models show a consistent effect of education on transition to marriage. Compared to those with no schooling or some elementary education, women with senior secondary and tertiary education have a lower hazard to marry.

The estimation results of Model 3 and Model 4 show a contradictory result of the effect of mother's education on women's transition to first marriage. In the individual model (Model 3), women whose mothers have attained secondary or higher education are less likely to marry earlier than women whose mothers have never attended schooling. Moreover, the result of estimations of Model 3 shows women whose mothers have elementary education are more likely to marry earlier than those whose mothers have no schooling. In contrast, the result of the overall model (Model 4) indicates that mother's education has a positive effect on the hazard to marry. This means that when other factors are controlled, having a mother who has gone to school increases the likelihood of marrying.

Table 5-2. Discrete time hazard regression coefficients for the transitions to first marriage

	Model 1	Model 2	Model 3	Model 4
<i>Working status (ref: not working)</i>				
Working in informal sector	0.006			-0.223***
Working in formal sector	0.375***			0.165***
Missing	-2.029***			-2.128***
<i>Education level (ref: no schooling/elementary)</i>				
Junior secondary		0.301*		-0.013
Senior secondary		-1.328***		-0.489***
Tertiary		-3.063***		-0.941***
<i>Mother's education (ref: no schooling)</i>				
Elementary			0.512***	0.741***
Junior Secondary			-0.744***	0.333***
Senior Secondary and higher			-0.572***	0.718***
Still at school				-1.561***
Age	0.954***	2.030***	1.563***	0.738***
Age squared	-0.018***	-0.032***	-0.025***	-0.014***
Constant	-14.088***	-29.614***	-23.947***	-10.735***
Number of person-years	32,589	32,557	30,521	30,481
Number of women	3,411	3,406	3,172	3,167
Log likelihood	-8,097.42	-8,402.28	-7,922.85	-7,087.49
Sigma u	0.966	2.603	2.009	0.645
Rho	0.221	0.673	0.551	0.112
df	5	5	5	12
chi2	727.436	212.823	175.047	1072.669

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

Note: the estimated coefficients, standard errors, and odds ratios are presented in Appendix 5-3.
Source: IFLS 2000 & IFLS 2007

The result of the Model 4 estimation also shows that, as expected, the effect of currently attending school reduces women’s hazard to marry. The effect of age and age square on transition to marriage shows that the risk of marrying increases for those in the earlier ages, but it declines in the older ages.

5.5. Results: Transition to first birth

5.5.1. Characteristics of women who had a first birth

Sixty eight per cent of married women had a first birth up to 2007 with the median age at first birth being 23 years (Table 5-3). The differences between median age at marriage and first birth suggest that on average, women have one year of duration from marriage to first

birth. The percentage of women who had a first birth was high among women who were not working in the previous year, had junior secondary education, and women whose mothers had elementary education.

Table 5-3. Characteristics of women who had a first birth

	Median age at marriage	Median age at first birth	% Had first birth	n total
<i>Work status at the end of spell</i>				
Not working	22	23	94.6	1,146
Work in informal sector	21	22	86.1	410
Work in formal sector	22	23	88.2	713
<i>Women's education</i>				
no/elementary	20	21	90.9	618
junior	20	21	92.8	567
senior	22	23	90.6	788
tertiary	25	26	89.0	292
missing				3
<i>Husband's education</i>				
no schooling	21	22	90.3	683
elementary	22	23	94.6	443
junior secondary	23	24	91.8	846
senior secondary+	24	24	85.0	294
missing				3
<i>Mother's education</i>				
no schooling	21	22	88.9	998
elementary	22	23	94.1	762
junior secondary	23	24	87.0	192
senior secondary+	24	24	91.7	121
Missing				196
Total	22	23	68.6	2,269

Source: IFLS 2000 and IFLS 2007

Figure 5-1 indicates that women had their first child soon after they got married. The average duration from marriage to first birth is 1.4 years, which means most women had their first child after the first year of marriage. Figure 5-1 also shows that late marriers (women married at age 30+) have a lower proportion of those who had a first birth compared to women who married earlier. This indicates that late marriers in the sample seem to have a lower risk of having their first child more quickly compared to the early marriers.

Figure 5-1. Proportion of women who had a first birth by duration of marriage

Source: IFLS 2000 and IFLS 2007

5.5.2. Discrete-time hazard analysis

Table 5-4 presents the results of the discrete time hazard estimations of the determinants of transition to first birth. Six models are estimated; Models 1 to 5 predict the effects of explanatory variables individually; and Model 6 includes all variables.

The results from Model 1 to Model 5 show that each explanatory variable has a significant effect on the transition to first birth, except age at marriage. Contrary to expectations, the coefficients of a woman’s and her husband’s education show a positive relationship. These suggest that couples with higher education have a higher hazard of having their first child as compared to couples with lower education. The result of the model that predicts the impact of mother’s education shows that women whose mothers have elementary education have a higher risk of having their first birth earlier than women whose mothers are uneducated.

The result from Model 6 shows that age at marriage becomes a significant predictor of transition to first birth, controlling for other factors. The coefficient shows a negative relationship which indicates that late marriers are less likely to enter motherhood faster

than early marriers. However, unlike Shirahase (2002) who found that only age at marriage is significant in predicting transition to first birth in her complete model, this study found that women's education and participation in the formal sector accounted for the transition to first birth among married women in Indonesia. This result indicates that both higher education and labour market attachment in the formal sector seem to become 'push' factors for women to enter motherhood.

Table 5-4. Discrete time hazard regression coefficients for the transitions to first birth

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<i>Working status (ref: not working)</i>						
Working in informal sector	-0.171**					-0.092
Working in formal sector	0.160**					0.193***
<i>Education level (ref: no schooling/elementary)</i>						
Junior secondary		0.223***				0.206**
Senior secondary		0.276***				0.308***
Tertiary		0.313***				0.422***
<i>Husband's education (ref: no schooling/elementary)</i>						
Junior secondary			0.245***			0.155*
Senior secondary			0.250***			0.105
Tertiary			0.117			-0.105
<i>Mother's education (ref: no schooling)</i>						
Elementary				0.130**		0.078
Junior Secondary				0.06		-0.039
Senior Secondary and higher				0.139		0.012
Age at first marriage					-0.011	-0.035***
<i>Birth Cohort (ref: <1960)</i>						
1970-1979	0.961***	0.978***	0.947***	0.992***	0.843***	0.699***
1980+	1.049***	1.079***	1.033***	1.068***	0.870***	0.672***
Constant	-1.714***	-1.907***	-1.838***	-1.780***	-1.313***	-0.971***
Number of person-years	6,455	6,446	6,450	5,846	6,456	5,829
Number of women	2,269	2,265	2,266	2,073	2,269	2,066
Log likelihood	-4,003.36	-3,995.98	-4,000.00	-3,641.26	-4,012.40	-3,604.24
Sigma u	0.001	0.001	0.001	0.001	0.001	0.001
Rho	0	0	0	0	0	0
df	4	5	5	5	3	14
chi2	73.136	76.46	73.241	53.317	57.908	98.768

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

Note: the estimated coefficients, standard errors, and odds ratios are presented in Appendix 5-4.

Source: IFLS 2000 & IFLS 2007

5.6. Discussion and conclusion

This chapter presents the results of investigation into the relationship between timing of marriage and first birth among women in Indonesia. Besides the determinants of the timing of family formation among women in Indonesia, the analyses in this chapter examine whether timing of marriage is jointly decided with the timing to have the first child. The findings show that socioeconomic characteristics are important determinants of both marriage and childbearing timing. The following discussion highlights some interesting findings of the analysis.

The positive effect of work status, particularly in the formal sector, on transition to marriage and first birth may reflect that economic independence or social status is one of the main considerations for women in starting a family. Working is seen as the entry into adulthood and a signal that a woman is “socially ready” (Sundaram 2006, p.6) to embark on family formation. This finding suggests that women choose to work before having a family as their preferred life stage sequence, which is found among female university students in Utomo’s study (2008).

The results in both analysis of transition to marriage and first birth show that education plays an important role but its effect in each transition is ambiguous. A negative effect of senior secondary and tertiary education on transition to marriage implies that women with higher education are less likely to marry earlier than less well-educated women. In this case, education possibly delays marriage either through enrolling in school or through increasing the chance of participating in the labour market before marriage. Knowledge gained from attending higher education might also change women’s views and attitudes toward marriage and partners. Finding an ideal partner has been argued as a factor causing marriage delays in Asia given that higher educated women are finding it harder to meet an ‘ideal’ partner who shares the same values about domestic responsibilities (Hull 2002, p.8, Quah 1998).

The findings show that education has a positive effect on the timing of first birth. Women with higher education seem to have a higher likelihood of entering motherhood faster than

those who are less educated. Similar to the explanation about the positive effect of participating in work in the formal sector, this finding may signal the preferred life stage of educated women. Utomo's study (2008) suggests that female university students in Jakarta and Makassar choose a sequential life path of establishing career before marriage, and having children soon after marriage. Following Utomo (2008), it is possible that women with higher education delay marriage for either career or economic stability, but they expect to have children as soon as they enter marriage.

Contrary to previous studies, the results of the analysis in this chapter show that age at marriage has a significant negative relationship with the timing of the first birth. The likelihood of experiencing a first birth declines when women enter marriage at older ages. This finding suggests that women who delay marriage also delay childbearing. However, given the limitations of the observation year in the data, it is unclear whether the negative effect of age at marriage on the hazard of entering a first birth is due to women having a longer marriage interval to first birth and this is censored in the data, or it is due to women not intending to have children at all.

To explain the negative effect of age at first marriage on the timing of first birth, I speculate that relating timing of marriage with other aspects may affect expectation toward the timing of having the first child. First, early marriers are generally entering motherhood early because they are less likely to work for pay or are dropping out of school. Second, those who marry at the average age are the ones who may still have aspirations to pursue a career as well as accumulating enough income to be 'economically' prepared before having children. Third, women who marry late may already be in their late fecundity stage. It is possible that these women have a lower biological ability to become pregnant and therefore, late marriers are less likely to have children.

Finally, the results of the analysis of transition to first birth show that timing of marriage is an important determinant of timing to enter motherhood among women in Indonesia. From this finding, it is tempting to conclude that childbearing is jointly determined with marriage as reflected in their significant relationship. However, there are other factors that are involved in determining the timing of childbearing; those are women's education and work

status. Such findings perhaps suggest that timing of first birth is determined by both life course (where having children is the next stage after getting married) and economic stability to anticipate the cost of having a child.

The findings in this chapter suggest that women wait to enter family formation until they are 'socially ready' in addition to the norms that idealize women's role at home after marriage. The next chapter investigates the reverse effects, of marriage and childbearing on women's employment. It seeks to answer whether entering family formation is associated with a higher risk of women exiting employment

**Appendix 5-1. Descriptive statistics for the transitions
to first marriage analysis**

Variables	Mean	SD	Minimum	Maximum
Work status				
Not working	0.33	0.47	0	1
Working in informal sector	0.09	0.28	0	1
Working in formal sector	0.18	0.38	0	1
Missing	0.40	0.49	0	1
<i>Education level</i>				
No schooling/elementary	0.22	0.41	0	1
Junior secondary	0.18	0.39	0	1
Senior secondary	0.38	0.48	0	1
Tertiary	0.23	0.42	0	1
<i>Mother's education level</i>				
No schooling/elementary	0.53	0.50	0	1
Junior secondary	0.29	0.45	0	1
Senior secondary	0.12	0.32	0	1
Tertiary	0.07	0.25	0	1
Still at school	0.33	0.47	0	1
Age	28.59	7.08	15	49

Source: IFLS 2000 & IFLS 2007

Appendix 5-2. Descriptive statistics for the transitions to first birth analysis

Variables	Mean	SD	Minimum	Maximum
Work status				
Not working	0.52	0.50	0	1
Working in informal sector	0.20	0.40	0	1
Working in formal sector	0.28	0.45	0	1
<i>Education level</i>				
No schooling/elementary	0.31	0.46	0	1
Junior secondary	0.24	0.43	0	1
Senior secondary	0.33	0.47	0	1
Tertiary	0.12	0.33	0	1
<i>Mother's education level</i>				
No schooling/elementary	0.48	0.50	0	1
Junior secondary	0.37	0.48	0	1
Senior secondary	0.09	0.29	0	1
Tertiary	0.06	0.23	0	1
<i>Husband's education level</i>				
No schooling/elementary	0.33	0.47	0	1
Junior secondary	0.19	0.39	0	1
Senior secondary	0.35	0.48	0	1
Tertiary	0.13	0.33	0	1
Still at school	0.00	0.06	0	1
Age at marriage	22.09	4.72	15	42
Age	23.56	5.25	15	49

Source: IFLS 2000 and IFLS 2007

**Appendix 5-3. Discrete time hazard regression results for the transitions to first marriage
(coefficients, standard errors, and odds ratios)**

	Model 1			Model 2			Model 3			Model 4		
	β	se	odds ratio	β	se	odds ratio	β	se	odds ratio	β	se	odds ratio
<i>Working status (ref: not working)</i>												
Working in informal sector	0.006	0.084	1.006							-0.223	0.085	0.800***
Working in formal sector	0.375	0.06	1.455***							0.165	0.058	1.180***
Missing	-2.029	0.096	0.131***							-2.128	0.093	0.119***
<i>Education level</i> (ref: no schooling/elementary)												
Junior secondary				0.301	0.156	1.351*				-0.013	0.079	0.987
Senior secondary				-1.328	0.178	0.265***				-0.489	0.082	0.614***
Tertiary				-3.063	0.307	0.047***				-0.941	0.127	0.390***
<i>Mother's education</i> (ref: no schooling)												
Elementary							0.112	0.512	1.668***	0.741	0.064	2.097***
Junior Secondary							0.176	-0.744	0.475***	0.333	0.097	1.395***
Senior Secondary+							0.202	-0.572	0.565***	0.718	0.124	2.051***
Still at school										-1.561	0.11	0.210***
Age	0.954	0.056	2.597***	2.03	0.158	7.617***	0.147	1.563	4.774***	0.738	0.058	2.091***
Age squared	-0.018	0.001	0.983***	-0.032	0.002	0.968***	0.002	-0.025	0.975***	-0.014	0.001	0.986***
Constant	-14.088	0.719	0.000***	-29.61	2.257	0.000***	2.193	-23.947	0.000***	-10.74	0.726	0.000***
Number of person-years		32,589			32,557			30,521			30,481	
Number of women		3,411			3,406			3,172			3,167	
Log likelihood		-8,097.42			-8,402.28			-7,922.85			-7,087.49	
Sigma u		0.966			2.603			2.009			0.645	
Rho		0.221			0.673			0.551			0.112	
df		5			5			5			12	
chi2		727.4			212.823			175.047			1072.669	

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

Source: IFLS 2000 & IFLS 2007

Appendix 5-4. Discrete time hazard regression results for the transitions to first birth (coefficients, standard errors, and odds ratios)

	Model 1			Model 2			Model 3			Model 4			Model 5			Model 6		
	β	se	odds ratio	β	se	odds ratio	β	se	odds ratio	β	se	odds ratio	β	se	odds ratio	β	se	odds ratio
<i>Working status (ref: not working)</i>																		
Working in formal sector	-0.171	0.073	0.842**													-0.092	0.079	0.912
Working in informal sector	0.16	0.062	1.174**													0.193	0.068	1.212***
<i>Education level (ref: no schooling/elementary)</i>																		
Junior secondary				0.223	0.074	1.250***										0.206	0.083	1.228**
Senior secondary				0.276	0.069	1.318***										0.308	0.089	1.361***
Tertiary				0.313	0.093	1.368***										0.422	0.126	1.525***
<i>Husband's education (ref: no schooling/elementary)</i>																		
Junior secondary										0.245	0.077	1.278***				0.155	0.086	1.168*
Senior secondary										0.25	0.066	1.284***				0.105	0.083	1.111
Tertiary										0.117	0.091	1.124				-0.105	0.118	0.9
<i>Mother's education (ref: no schooling)</i>																		
Elementary							0.13	0.062	1.139**							0.078	0.064	1.081
Junior Secondary							0.06	0.103	1.062							-0.039	0.109	0.962
Senior Secondary and higher							0.139	0.125	1.149							0.012	0.135	1.012
Age at first marriage													-0.011	0.009	0.989	-0.035	0.01	0.966***
<i>Birth Cohort (ref: <1960)</i>																		
1970-1979	0.961	0.137	2.614***	0.978	0.137	2.660***	0.992	0.148	2.696***	0.947	0.136	2.578***	0.843	0.162	2.322***	0.699	0.176	2.012***
1980+	1.049	0.138	2.856***	1.079	0.139	2.943***	1.068	0.15	2.910***	1.033	0.138	2.809***	0.87	0.184	2.387***	0.672	0.199	1.957***
Constant	-1.714	0.136	0.180***	-1.91	0.14	0.148***	-1.78	0.149	0.169***	-1.84	0.138	0.159***	-1.313	0.318	0.269***	-0.971	0.353	0.379***
Number of person-years		6,455			6,446			5,846			6,450			6,456			5,829	
Number of women		2,269			2,265			2,073			2,266			2,269			2,066	
Log likelihood		-4003.357			-3995.983			-3641.262			-4000.004			-4012.398			-3604.236	
Sigma u		0.001			0.001			0.001			0.001			0.001			0.001	
Rho		0			0			0			0			0			0	
df		4			5			5			5			3			14	
chi2		73.14			76.46			53.32			73.24			57.91			98.768	

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

Source: IFLS 2000 & IFLS 2007

6 Opting out: Determinants of women's employment exit

In Indonesia, marriage and childbearing play a significant role in determining women's labour market attachment. Gender roles in marriage assume that childrearing and household domestic tasks are women's primary responsibility. After marriage and motherhood, women are expected to perform their caring role at home, leaving women with the choice of leaving their jobs or continuing to work by using maternity leave, family, or housemaids to support them during the early years of childrearing (Hull 2002).

Previous studies confirm that marital status and the presence of young children have a negative impact on women's labour force participation (see for example: Widarti 1998, Manning 1998, Feridhanusetyawan and Aswicahyono 2001, Ogawa and Akter 2007). With the presence of gender discrimination in the labour market, the negative effect of marriage and childbearing seems to be stronger for women employed in jobs with low security, such as factory work. Anthropology studies that focus on women as factory workers indicate that the existence of employers' discrimination against married women with children had influenced married women workers to quit their jobs (Caraway 2005, Matsui 1996).

However, some studies suggest marriage and the presence of young children may not affect the continuity of women's labour force participation. The presence of extended families or domestic helpers to substitute women's role at home is argued to be the factor that reduces maternal role incompatibility in Indonesia (Benjamin 1996). A qualitative study by Grijn et al.(1994) found that women working in well-paid employment did not quit work because they had childcare provided by either relatives or husbands. Findings from these studies suggest that work interruption is evident in Indonesia although it depends on different factors and contextual settings.

This chapter explores the determinants of female employment exit in Indonesia. It mainly focuses on transition to first marriage and first birth in influencing women's transition out of employment. The analysis is based on the framework depicted in Figure 3-5 in section 3.3. Besides family formation measures, the analysis also seeks

to investigate the role of education and employment characteristics in the likelihood of leaving employment.

6.1. Findings from previous studies on determinants of women's employment exit

In Chapter 2, the conflict between balancing work and family that influences a woman's employment pattern was discussed. This conflict arises because women continue to assume that the family is their main responsibility and because of the presence of contextual factors that limit women's opportunities to continue to work after having children. The conflicting roles of women in developing countries may seem to have less influence on women's labour market attachment. The availability of extended families and housemaids as childcare has been argued to help women continue to work. Moreover, women in developing nations are able to do 'joint production' of both market and domestic work simultaneously when they are employed in informal work. Women dominate the informal economy in developing countries due to this reason.

Studies in developed countries on the determinants of women's employment patterns generally agree that family responsibilities in developed countries are limiting the employment continuity of women. The presence of young children is found to increase the likelihood of employment exit (Felmlee 1984, 1993, Drobnic et al. 1999, Grimm and Bonneuil 2001, Budig 2003), although some studies have found the opposite relationship, particularly for single women (Boushey 2008). Findings from previous studies also show that entering a formal marital union reduces women's labour force participation by increasing the employment exit rate (Glass and Riley 1998, Drobnic et al. 1999). Recent studies indicate that the effect of marital status on women's labour force participation is negatively associated with the increased trend of marital dissolution³² (Taniguchi and Rosenfeld 2002, Stier and Yaish 2008).

Previous studies also point out the importance of human capital and the choice of occupation in determining women's decisions to leave employment. The majority of studies found that having a high education reduces a woman's risk of employment exit (for example: Drobnic et al. 1999, Taniguchi and Rosenfeld 2002, Jeon 2008). Some

³² However, the relationship between labour force participation and marriage break down might be reflective of changes in social norms, expectations, and women's connectedness to the labour market indicating a weaker relationship between marital status and female labour force participation.

studies indicate that women with the highest education level have higher likelihood to leave employment, although its effect is weak (Felmlee 1984, Taniguchi and Rosenfeld 2002). Previous studies also exhibit the importance of occupation on a woman's risk of employment exit. Working in high-ranking occupations or in the public sector that generally offer relatively high wages and better fringe benefits has been found to reduce the employment exit rates of women (Taniguchi and Rosenfeld 2002, Parrado 2006, Yu 2006).

To date, there have been no studies that specifically address the factors that determine women's employment exit in Indonesia. Studies on women's labour market attachment in Indonesia mostly use cross-sectional data to explore the determinants of the probability of participating in the labour force. From an analysis which focuses only on one point in time, it is hard to decompose the net effect of explanatory variables on women's non-participation in the labour force and to discover whether determinants are holding back women who have never worked from entering the labour force or forcing women who have ever worked to leave the labour force. From these studies, it is hard to conclude whether marital status and childbearing are causing women to have a lower probability of participating in the labour force.

Nevertheless, the available works on the determinants of female labour force participation in Indonesia are still useful in building a hypothesis for analysing the relationship between marital status and childbearing and women's employment exit. For example, a negative relationship between marital status and women's probability of participating in the labour force may indicate that a woman with premarital labour force participation may withdraw from work when she enters marriage.

Findings from previous studies in Indonesia show that being married and having young children reduce the probability of a woman working (Widarti 1998, Feridhanusetyawan and Aswicahyono 2001, Ogawa and Akter 2007). In these studies, women's education is also found to be a significant factor that influences women's decision to enter the labour force. The relationship between education and women's labour force participation follows a J-curve shape that indicates women with lowest and highest education level have the highest probability of participating in the labour force (Widarti 1998, Feridhanusetyawan and Aswicahyono 2001, Ogawa and Akter 2007).

Moreover, studies on the determinants of women's labour force participation in Indonesia have found that a husband's socioeconomic status plays an important role (e.g., Widarti 1998). Women who marry highly educated husbands have a lower probability of participating in the labour force compared to women who marry husbands with a lower education level (Widarti 1998). Since education level is a proxy for potential earnings, women who marry highly educated husbands have the option to remain out of the labour market compared to women who marry low-educated men (Widarti 1998, p.107).

In the previous studies, other factors that have been found to be important in women's labour force participation are urban-rural differences, regional variations, and migration experience. These factors represent a labour market structure that provides women with either opportunities or constraints to continue to work. In their study that uses the IFLS 2000 dataset, Ogawa and Akter (2007) found that women who live in urban areas have a lower predicted probability of participating in the labour force as compared to women who live in rural areas. Ogawa and Akter (2007) also found that women living in Jogjakarta have the highest predicted probability of participating in the labour force, while those living in South Sulawesi have the lowest probability (see section 3.2.1).

6.2. *Analytic sample, variables and method*

6.2.1. Sample

Two sub-samples were selected to separately analyse the impacts of marriage and first birth on the likelihood of leaving employment. For the analysis of the effects of marriage on women's employment exit, a sub-sample consisting of female panel respondents aged 15-38 in 1996 who reported to be ever employed in their work history and single when the first work spell began were selected³³. From this sample, women with more than 1-year duration of working spell were further selected. The total number of women in the sample used for analysing the impact of transition into first marriage on employment exit was 2,047 women.

³³ Those who were married before the start of work history period are excluded since their work status following marriage and first childbirth is not recorded in IFLS 2000 and IFLS 2007.

The second analysis, that is the transitions into first birth on employment exit, is based on the sub-sample consisting of women aged 15-38 in 1996 who were already married but had not had a first birth when the first work spell started. This sub-sample was selected because the IFLS collects childbirth histories only for ever-married women. Thus, only married women at risk of having the first birth were identified in the dataset. Similar to the first sub-sample, women who had only one year of observation in their first work spell were excluded from the analysis. The total number in the sample for analysis of the impact of first birth on employment exit was 486 women.

6.2.2. Variables

The dependent variable measures the odds of the yearly conditional probability of leaving employment within a particular year, given that a woman had stated that she had worked until that year and had never declared to be not working from the first year she was observed in the work history. The dependent variable is a binary of 0 if a woman is employed and 1 if a woman is not employed. Employment exit in this analysis can be either voluntary or involuntary since IFLS's work history section did not provide reasons for the respondents not being in the non-working state, such as marriage or being laid-off. Thus, another limitation of this analysis is that it cannot prove that exiting employment is a result of an employer's preference for hiring young and single women as their employees.

Transitions into first marriage and first birth are the key independent variables in this analysis. For the sub-sample that consisted of women who were single at the beginning of the work spell, transition into marriage was measured by a dummy variable equal to 1 if a woman was married during the working spell and it is equal to 0 if they were still unmarried. Similarly, analysis of the sub-sample consisting of married women with no children at the start of work spell used the variable first birth to measure the onset of motherhood. First birth is represented in a dummy variable equal to 1 if a woman had a first birth during the work spell and 0 if she was not at risk of having the first birth. The covariates measuring both the transitions into marriage and first birth are expected to have positive effects on the likelihood of employment exit.

The analyses also measured the effects of human capital and employment characteristics on women's transition out of work. Human capital is measured by the

highest educational attainment of women. Highest educational attainment is divided into four categories: no-schooling or completed elementary education; completed junior high school education; completed senior high school education; and completed tertiary education³⁴. This variable is constructed to be a time-variant variable, with the assumption that all women did not experience grade repetitions if they were still at school during the first work spell. There were 11 per cent women still attending school at the beginning of the first work spell in the first sub-sample, and 1.1 per cent in the second sub-sample³⁵. These women were not excluded from analysis given that some of them were completing school during the first work spell, therefore transitions out of work among these women occur after they leave school. A dummy variable that indicates a woman had completed or left school was included in the analysis.

Since higher education represents access to jobs with better income and benefits, the effect of education is expected to have a negative effect on employment exit. The more highly educated are generally working in higher level of occupations that provide employment benefits, including maternity leave, and have better job security. From an economic perspective, women with higher education have also been argued to have a higher opportunity cost of being out of work, given the investment in their education. Hence, women with higher educational attainment are expected to have more stable employment compared to the low-educated women. However, it is important to note that higher-level jobs have higher incompatibility with childbearing. Thus, there is a possibility that education may have a positive effect on employment exit.

As previously stated in section 2.2.3, employment characteristics play an important role in determining women's employment interruption. In this analysis, employment characteristics are measured by two categorical variables that represent women's employment status and occupation. There are three groups of employment status measured in the study: workers in informal, government, and private sectors³⁶. Occupations are grouped into six categories: professionals and managers, clerical

³⁴ Tertiary education includes one to three years of academy degree, undergraduate, master, and PhD degree.

³⁵ From the first sub-sample, throughout the first work spell, 3.7 per cent of women had moved from elementary to junior secondary, 5 per cent moved from junior to senior secondary, and 2.6 per cent moved from senior secondary to tertiary education. From the second sub-sample, 0.07 per cent of women moved from elementary to junior secondary, 0.22 per cent moved from junior to senior secondary, and 0.83 moved from senior secondary to tertiary education.

³⁶ Other studies generally dichotomize employment status into formal and informal. However, this study found that the behaviour of women working in the government and the private sector is different. Detail employment status defined in the IFLS is presented in section 4.3.1.

workers, sales workers, service workers, agriculture workers, and production workers or labourers³⁷. Both variables are measured at one year before the women exit from work or at the last survey if the observation is censored. Women who worked in low-level occupations, as labourers or sales workers, are expected to have a higher likelihood to leave employment given that such jobs provide less stable careers and benefits.

The effect of the presence of other adult females in the household on women's employment exit is also estimated in the analysis. This variable is a proxy of the presence of other family members or domestic helpers who provide childcare while women work. Their presence reduces the likelihood of a woman being out of work (see for example: Widarti 1998). However, information about the presence of other adult females in the household is only available in the cross-sectional year. Therefore, this variable is derived from the presence of other adult females in the year 2000 for women who were unmarried throughout the first work spell or married in 2000 or before, and it is derived from the information in the year 2007 for those women who were married after the year 2000. This measure assumes that women's household structure after marriage does not change over time. Women's household structure after marriage can be dynamic because women may move into the husband's family's household or move out of their parents' house.

The analysis of women's employment exit also controls for women's socioeconomic characteristics measured by household assets and husband's education. Household assets is defined as the total value of assets (in one million rupiah) owned by household members where the women resides (see section 4.2.7). Since a higher household assets value indicates a higher level of women's economic endowment, it is expected that the risk of a woman leaving employment declines as the value of household assets increases. A husband's education is measured by a categorical variable with has the same definition as women's education. Besides representing their socioeconomic status, education also indicates an individual's earning potential. Women who marry men with a higher level of education may have a lower risk of leaving employment because their opportunity cost of being out of the labour market would be compensated by her husband's higher income potential.

³⁷ Detail of occupation code used in IFLS is presented in Appendix 4-4. The distribution of women in the sample of employment exit analysis by their last occupation (two digits) is presented in appendix 6-1.

A variable that measures migration experience is included in the analysis. Migration in a particular year is measured as a dummy variable equal to 1 if a woman lived in a different area compared to the previous year, and 0 if a woman stayed in the same area as the previous year. Migration to a different area is hypothesized to have a negative effect on women's employment.³⁸ Those who migrated are expected to have a higher likelihood of quitting their work compared to those who did not migrate, irrespective of the type of destination area. Movement between areas means women have to leave their jobs in the origin areas and it would take some time to find a new job. If the motivation to migrate for women is to follow their spouse, the likelihood of being permanently inactive is higher compared to women who move for other motivations.

The analysis of women's employment exit also controls for differences in between urban and rural and whether or not they live in Java island. Urban-rural differences are measured in a dummy variable equal to 0 if a woman lived in a rural area, and 1 if a woman lived in an urban area. Java and non-Java differences are measured in a dummy variable, where 0 indicates that a woman lived in outside Java island, and 1 indicates that a woman lived in Java island. Both variables are time-variant and are based on the movements of women during their working spell.

As previously mentioned in section 4.2.1, the data suffers from the problem of seam bias. To address this problem, a seam dummy is included to indicate the year of the seam (Nielsen and Gottschalck 2009). Further explanation of alternative approach to tackle the seam effect, including the importance of including a seam indicator dummy in the analysis, is provided in Chapter 8. Mean and standard deviation of the variables of sample 1 and sample 2 are presented in Appendix 6-2 and 6-3 respectively.

6.2.3. Method

The discrete-time hazard method is used to estimate the models. This applies a logit regression to the event-history data structured for each sub-sample. Since the analysis is intended to investigate the change across time within individuals and the variation across individuals, a multilevel approach is taken to differentiate the change within and

³⁸ IFLS's migration section classified movement from one area to another village, a small city, and a big city.

across individuals, by including random effects that measure the differences at the individual level. A stepwise estimation approach is used to measure the effect of changing family status *per se* (Model 1) and its effect when controlling for other variables. Models that include an interaction between marital status and occupation/employment sectors as well as the interaction between marital status and education are also estimated in this chapter. These models are estimated to examine whether the effect of being married is stronger in a particular occupation, job sector, and level of education³⁹.

6.3. *Effect of transition into marriage on women's employment exit*

6.3.1. Descriptive analysis

Figure 6-1 presents the age of exiting work (or age in 2007 if a woman is censored), age at marriage and duration of work between women who are censored and women who had an employment exit. Among women who had an employment exit, age when leaving work and age at marriage is the same (23 years old), indicating that employment exit occurs around the timing of marriage. On average, women in the sample spent four years working in their first work spell before exiting employment.

Table 6-1 presents a distribution of women in the sample by their individual characteristics. It shows that women who started the work spell at a young age, who entered marriage during the first work spell, had junior secondary education, worked as employees in private companies or businesses, and worked in low-level occupations (sales, service, agriculture, and production workers), tend to have a high percentage experiencing an employment exit.

³⁹ Other interaction terms are also tested between marital status and migration, and education and employment of the last job.

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

6.3.2. Results of discrete-time hazard analysis

Table 6-2 shows the results from estimations of discrete-time hazard models of women's employment exit for women who were unmarried at the beginning of the work spell. Model 1 estimates the effect of changing family status *per se*, controlling for age. Model 2 estimates the effect of changing family status, controlling for socioeconomic variables as well as age.

As expected, marital status has a positive and significant effect on the hazard of employment exit in both Model 1 and Model 2. The estimation result of Model 2 that controls for other factors, shows that the odds for marriage become smaller but marriage has a significantly strong effect on employment exit. The impact of marriage is substantial, where the odds of employment exit of women who entered marriage are 7.4 times the odds of women who were single during the first work spell⁴⁰.

Contrary to the previous studies in developed countries, education variables show significant and positive effects on women's employment exit, except for the dummy for tertiary education. The positive effect of education implies that women with secondary education have a higher risk to have an employment interruption compared to women with no or some elementary education.

The estimation result of Model 2 also shows that employment sector and occupation also significantly influence women's transition out of employment. The odds ratios of indicate that working in the public sector reduces the risk of leaving employment, while working in the private sector increases the risk of leaving employment as compared to working in self-employment. Meanwhile, working in occupations other than professional/managerial increases the risk of having an employment interruption. These findings confirm Buchman et al.'s argument (2010) that working in a regulated sector or high-rank occupations reduces the risk of having intermittent employment.

⁴⁰ To test the hypothesis, a model that tests the impact of the duration of marriage on transition out of the employment was also estimated. Duration of marriage is measured in a categorical variable equal to zero if a woman is single, one if a woman enters the first year of marriage, and two if a woman is in the second or more year of marriage. The result (Appendix 6-5) shows that being in the first and second year and further of marriage increases the hazard of employment exit. The difference between being in the first and second or further year of marriage is small. A model that includes husband's education is also estimated. The result is presented in Appendix 6-5.

The estimation results of Model 2 (Table 6-2) also show that age, migration and island, are significant in influencing women’s employment exit. The coefficient of age is significant and positive, indicating that the risk of leaving employment among women declines as women get older. As expected, migration in the previous year has a positive effect on women’s employment exit because moving out to a different area means that women have to leave their jobs. Living in Java Island is found to reduce women’s risk of leaving employment. The effect of living in urban or rural area does not have an effect on the likelihood of a woman leaving employment.

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***
<i>Education level</i> (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
<i>Employment sector</i> (ref: informal sectors)						
Government				-1.332	0.324	0.264***
Private				0.947	0.107	2.578***
<i>Occupation</i> (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

To examine the difference in the probability of leaving employment across occupation, an average predicted probability of employment exit for each type of employment characteristic was estimated⁴¹. Figure 6-2 shows that the probability of employment exit is highest for women who worked as sales workers (11%) followed by service workers (10%). Agricultural and production labourers share the same probability of leaving employment (8.6%). Meanwhile, women who worked in occupations such as clerical workers (7.6%) and professionals or managers (6%) that require higher skills have the lowest probability of leaving employment.

Figure 6-2. Predicted probabilities of employment exit by occupation

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 2) presented in Table 6-2.

The average predicted probabilities of employment exit by employment sectors were also estimated. The pattern presented in Figure 6-3, indicates that women working in government sectors have the lowest probability to have employment interruption compared to informal and formal-private workers. Government jobs generally provide a permanent contract and benefits that increase the commitment to work.

⁴¹ The average predicted probability is estimated using ‘margins’, where it is estimating the average probability of outcome if overall observations in the data are treated as if they are the same. For example, the average predicted probability of women working in professional/managerial occupation is equal to five per cent if all women in the sample were treated as if they were all working as professionals/managers.

Figure 6-3. Predicted probabilities of employment exit by employment sector

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 the estimation of Model 2 presented in Table 6-2.

6.3.3. Does the impact of marriage on employment exit differ across occupation, employment sector and education?

In Indonesia, studies show that married women with children are discriminated against in the formal labour market. This discrimination is particularly vigorous in the manufacturing sector, where employers exhibit a preference for hiring young, single women to avoid the costs of paying maternity leave as well as the loss of productivity given a high turnover of women workers (Blackburn 1992, Caraway 2005). Meanwhile, government employment offers a better scheme of employment compared to other sectors. This sector provides women workers with maternal leave, job security and benefits, including health insurance for the family. In agriculture work, women do not have access to benefits or job security and it is mostly unregulated. However, agriculture work which is generally carried out by family workers allows women to combine work and childcare at the same time. Similarly, self-employed women may be able to choose their times of work in response to the demands of family. These variations in characteristics across occupation and employment sector may have an effect on how women negotiate their labour market attachment and the risk of leaving their employment following marriage and childbearing.

To investigate whether the risk of leaving employment due to marriage is higher in one occupation relative to another, further analysis was taken to include the interaction between marital status and occupation, as well as between marital status and employment sector. An interaction between marital status and education is also tested to examine whether the effect of marriage on employment exit differs across education levels. The results of interactions are presented using predicted marginal probabilities of employment exit between married and single women across occupations or employment sectors. The estimated coefficients from the models that include interaction effects are presented in Appendix 6-6.

The interaction effect between marital status and occupation shows a positive and significant effect of being married and working as sales workers and production labourers on employment exit. Where the interaction effects between marital status and other types of occupation are not significant, the effect of entering marriage on the continuity of employment of women is the same across occupations.

Figure 6-4 shows the average predicted probabilities of employment exit between women who stayed single and entered marriage depending on the occupation of their last jobs. While there are minor differences among women who were single throughout the work spell, the gaps in the probability of exiting employment varies among women who married during the work spell. Among those who married, the predicted probability of leaving employment for service workers is highest (24%), followed by the sales workers (23%), production workers/labourers (20%), agriculture workers (18%), while clerical workers and professionals have the lowest probabilities of employment exit (17% and 11%).

Figure 6-4. Predicted probabilities of employment exit by marital status and occupations

Note: 1) Predicted margins with 95% confidence interval; 2) Overall interaction effect between marital status and occupation is significant at 1%.⁴²

Source: Sample 1 (women who were single at the beginning of work spell) IFLS 2000 & IFLS 2007, author's calculation based on Model 5 estimation results (see Appendix 6-6)

It is expected that the impact of marriage on women's employment exit will differ between informal and formal sectors. The analysis includes an interaction between marital status and employment sector, based on the complete model predicting employment exit are presented in Appendix 6-6. The estimation result shows that the interaction between marital status and government work is not significant, while the interaction between marital status and private work is significant and positive.

The predictive margins of probabilities of employment exit between women who entered marriage and stayed single throughout the work spell by employment sector are further estimated (Figure 6-5). The result shows that the gap in average predicted probabilities of employment exit between married and single women is largest among those who work in private business. The probability of private workers who married leaving their employment is 2.7 times higher than that for the informal sector workers.

⁴² The interaction significant test is conducted using the chi square indicator in the contrast of marginal linear predictions test in STATA.

Figure 6-5. Predicted probabilities of employment exit by marital status and employment sector

Note: 1) Predicted margins with 95% confidence interval; 2) Overall interaction effect between marital status and employment sector is significant at 1 %.⁴³

Source: Sample 1 (women who were single at the beginning of work spell), IFLS 2000 & IFLS 2007, author's calculation based on Model 6 estimation results (see Appendix 6-6)

The effect of transition to marriage on women's employment exit was also expected to be different across women's educational levels. Women with a lower level of education may continue to work since they generally come from poor households and work for economic necessities. They may also be more likely to marry men with a low education level, who have low potential earnings and forces women to continue their work after marriage.

Meanwhile high-educated women were expected to have a more modern view of their roles in the family. Women from this group value their education investment more and therefore have a higher opportunity cost of experiencing an employment interruption. However, some studies have found contradictory evidence to the premise that educated women are more likely to continue to work following marriage. For example, Sitepu's qualitative study (2000) found that educated women prioritize their family over their career and therefore choose the role of 'full-time' mother following marriage and childbearing.

⁴³ The interaction significant test is conducted using the chi square indicator in the contrast of marginal linear predictions test in STATA.

To examine whether the impact of marriage on the risk of leaving employment is different across education, a model that included an interaction variable between marital status and education is estimated (the result is presented in Appendix 6-6). The estimated coefficients of the interactions show that married women with tertiary education have the lowest risk of having a work interruption⁴⁴. The average predicted probability of the effect of marriage across different education levels is estimated and presented in Figure 6-6. The pattern shows that among women who entered marriage during the work spell, the probability of having an employment exit is higher as education increases, but it drops and reaches the lowest level in relation to tertiary education. This implies that married women with tertiary education have the lowest probability of leaving employment compared to married women with a lower level of education. This confirms the hypothesis that highly educated women are less likely to exit from work when they marry.

Figure 6-6. Predicted probabilities of employment exit by marital status and education level

Note: 1) Predicted margins with 95% confidence interval; 2) Overall interaction between education and marital status is significant at 1%⁴⁵

Source: Sample 1 (women who were single at the beginning of work spell), IFLS 2000 & IFLS 2007, author's calculation based on Model 7 estimation results (Appendix 6-6).

⁴⁴ Interaction effects between being married and education level lower than tertiary are also negative, but they are not significant.

⁴⁵ The interaction significant test is conducted using the chi square indicator in the contrast of marginal linear predictions test in STATA.

To summarize, the analysis of the impact of entering first marriage on the hazard of employment exit has found that marital status strongly affects the risks of women leaving employment. Education and employment characteristics are also found to be important determinants of the employment exit from the estimation results of the complete model, although they do not reduce the significance level of marital status.

The effect of marriage on employment exit also varies across employment characteristics and education. The interaction effects between marital status and employment characteristics suggest that the positive effect of marriage on employment exit is stronger in the service and sales types of occupation. The analysis also finds that the impact of marital status on employment exit is larger among women working in the formal - private sectors compared to women informal workers. The results of the analysis that includes interactions between marital status and education suggests that the probability of employment exit following marriage is lowest among tertiary educated women.

6.4. Effect of transition to first birth on women's employment exit

In Chapter 5, it was found that among women in the IFLS sample, timing of marriage is an important determinant of transition to first birth. Bittenheim and Nobles (2009) argue that Indonesians view marriage as the time to have a family and therefore marriage becomes the determinant of a woman's fertility. In some cases, marriage may not be associated with having the first birth immediately. Married women, particularly from the middle class delay having their first child because motherhood disrupts the initiation of a career (Hull 2002, p.381). It may be the case that instead of at marriage, women delay the employment exit up until the birth of their first child.

The next analysis examines the effect of having a first birth on employment exit among married women. Previous analyses only compared those who marry and stay single throughout a work spell and from such analyses, one cannot measure the effect of children in the model as it is highly correlated to marital status. The following analysis measures the different impacts of being childless and having the first birth on the hazard of employment exit among women who have already married but were childless when they begin the work spell. The analysis of transition out of employment in this

section is carried out based on the sample 2, consisting of married women who were childless at the beginning of a work spell.

6.4.1. Descriptive analysis

Figure 6-7 presents the mean age of leaving employment (or age at the last survey if a woman is censored), age at first birth, and duration of work among women in the sample 2. On average, married women who experienced work interruption gave birth to their first child at age 23 years old, and continue to work for three years before they leave employment. The average duration of a working spell among women in this sample is four years.

Table 6-3 examines the tendency of experiencing employment exit among married women who had no children at the beginning of a work spell by their individual characteristics. Women who started the work spell at a young age, have senior secondary education, worked in the private sector, and worked as production workers or labourers have a higher percentage of experiencing interruption to work. The percentages of women who exited employment and were censored among those who already had a first birth are almost equal.

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

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.

6.4.2. Results of discrete-time hazard analysis

Similar to the analysis presented in section 6.3, two models are estimated: Model 1 includes only the variable of first birth and controls for age. Model 2 estimates all variables to test whether the impact of first birth is stronger compared to the effects of education and employment characteristics and whether the impact of first birth is reduced by the inclusion of these characteristics.

In Table 6-4, the results of the discrete-time hazard model predicting the effect of first birth on the transition out of work show that entering motherhood increases the hazard of leaving employment among married women. The impact of having the first child is positive and significant on the hazard of leaving employment. Its significance is not reduced when other variables are included and the odds related to a first birth are higher in Model 2 as compared to Model 1. The odds of employment exit among married women who experienced a first birth are almost 6 times the odds of

employment exit among married women who had had no child throughout the first work spell. The impact of a second birth is found to be not significant in determining employment exit in both Models 1 and Model 2.

The results in Table 6-4 suggest that the dummy variable of tertiary education is significant in predicting women's employment exit. Its effect is negative, indicating that women with tertiary education have a lower risk of employment exit than women with a lower level of education. The estimated coefficients of employment characteristics show a positive effect for the private sector while the coefficients for occupation show insignificant results. The impact of migration is also found to be significant and positive on employment exit among married women. The estimated coefficient of age indicates that the risk of leaving employment also increases with age. Similar to previous analysis in section 6.3.2, the presence of other adult females in the household is not a significant predictor of employment exit among married women.

Similar to section 6.3.3, the analysis of the relationship between first birth and transitions out of employment is extended to include interaction variables between first birth and employment characteristics, and between first birth and education⁴⁶ (results are presented in Appendix 6-8). The results indicate that interaction effects between first birth and occupations and between first birth and employment sectors are not significant, possibly because the number of women in the sample is too small.

⁴⁶ Interaction terms between first birth and presence of other adult females in the household is tested, but the result is not significant (see Appendix 6-6).

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
<i>Education level (ref: no schooling/elementary)</i>						
Junior secondary				-0.379	0.334	0.685
Senior secondary				-0.125	0.333	0.883
Tertiary				-1.675	0.612	0.187***
<i>Husband's education level (ref: no schooling/elementary)</i>						
Junior secondary				-0.592	0.355	0.553*
Senior secondary				-0.026	0.317	0.974
Tertiary				-0.177	0.525	0.838
<i>Employment sector (ref: informal sectors)</i>						
Government				0.071	0.6	1.074
Private				1.507	0.288	4.512***
<i>Occupation (ref: professional/managers)</i>						
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

Meanwhile, the estimation result of the model that includes interaction effects between first birth and education shows that only the interaction between first birth and secondary education is significant at the five per cent level. The predictive margins of probability of employment exit by childbearing status and education is presented in Figure 6-8. It shows that among women who had the first birth, the secondary educated have a higher risk of employment exit compared to women with other levels of education. Among women who were childless throughout the work spell, their probability of leaving employment decreases in the higher level of education.

Figure 6-8. Predicted probabilities of employment exit by childbearing status and education

Note: 1) Predicted margins with 95% confidence interval; 2) Interaction between childbearing status and education is significant ⁴⁷.
 Source: Sample 2 (married women who were childless at the beginning of work spell) IFLS 2000 & IFLS 2007, author’s calculation based on Model 5 estimation results (Appendix 6-8).

Findings from the above analysis show the significance of the transition to first birth for the hazard of employment exit among married women. Women who had experienced a first birth are more likely to exit from work than those who have not had a first birth. Having tertiary education and working in formal private employment increase the risk of experiencing employment exit for married women. The interaction effect between first birth and education indicates that married women with senior secondary education have a higher probability of leaving employment when they had their first child compared to women with other levels of education.

6.5. Reasons for job termination among formal workers

The previous analyses in section 6.3 and 6.4 find that both transitions into marriage and first birth significantly determine the employment exit between two different groups of women. The events of first marriage and first birth increase the hazard of employment exit of women in the sample. However, from the results of discrete-time hazard analysis, it is hard to tell whether marriage and childbearing themselves are the

⁴⁷ Interaction significant test is conducted with the contrast of marginal linear predictions test, using the chi square indicator.

actual cause of employment exit among women. This section provides a brief analysis of the reasons for quitting jobs among women formal workers. This information is collected in the section TK in book 3A of the IFLS 2007 (see Appendix 4-2) that explores job termination among formal workers in the past five years. This analysis took a sample consists of women who were included in the samples for analysis of employment exit and provided information about their reasons for quitting their jobs in the IFLS 2007. The total number of sample for this analysis is 1,155 women.

Table 6-5 examines the reasons for quitting a job in the past five years among women who worked in the formal sector⁴⁸. Twenty three per cent of ever-married women stated that marriage was the reason for quitting their job, while 29 per cent of single women stated they had quit the job for reasons not classified by the IFLS. Among ever-married women, only 11 per cent of them stated that childbirth was the reason for them leaving the job.

Table 6-5 suggests that marriage rather than work-related matters is the main reason for women aged 21-49 years old in 2007 quitting their jobs in the formal sector. It also suggests that marriage rather than childbirth is the cause of job termination among these women. However, further investigation is needed to examine the detailed responses classified into ‘other reason’ of job termination in IFLS since the percentage of women stating this is high.

Table 6-5. Reasons of job termination among women formal workers

Reason of job termination	Marital status in 2007		Total
	Single	Ever-married	
Fired by the company due to business -related cause	13.4	10.1	10.7
Fired for other reason	7.8	3.6	4.4
Wage was too low	13.0	6.0	7.4
Working condition is not conducive	20.8	6.1	9.0
Refused being relocated	2.2	0.9	1.1
Prolonged sickness	3.5	3.0	3.1
Marriage	0.0	22.8	18.3
Childbirth	0.0	11.5	9.2
Other family reason	10.0	18.9	17.1
Other reasons	29.4	17.2	19.7
<i>number of women</i>	231	924	1,155

Source: IFLS 2007

⁴⁸ The descriptive analysis is based on women aged 21 to 49 years in 2007 who ever worked as formal workers (government or private companies/businesses).

6.6. Discussion and conclusion

Results from the models predicting transition out of employment show that marriage and childbearing are inhibiting the continuity of women's employment. Both variables continue to show a high significance even when education, occupation, the sector of the last job, as well as other factors are included in the model. Unlike Taniguchi and Rosenfeld (2002) who conclude that family status holds similar importance to human capital of the women, this study found that marital status and having the first child seem to be the most significant factors in the model estimating employment exit of women compared to other covariates.

The positive effects of marriage and childbearing on women's employment exit provide support to the hypothesis that in Indonesia, women tend to resolve the conflict between work and family by exiting employment. The strong effect of marriage and first birth found in the analysis suggests that women in Indonesia may still hold strong norms that idealize women's roles at home after marriage and men's role as the main breadwinner. With the presence of such gendered role attitudes, society and individuals expect women to withdraw from the labour market to perform their roles as mother and wife at home.

In line with the findings from previous studies, the results of analyses in this chapter show that women from low-level occupations, including sales, service and production/manual workers are exposed to a higher risk of work interruption than those who worked as professionals/managers. The interaction between marital status and occupation shows that the effect of being married on the probability of employment exit is the highest among sales and service workers, followed by production workers.

It is important to note that the majority of women sales and service workers in the analytic sample of this chapter are those working as saleswomen and house servants (see Appendix 6-1). These jobs are dominated by low-educated women and characterized by low-wage and 'informal' contracts between employers and workers. Sales and service workers may have a lower opportunity cost of leaving employment because of the low wage level. In addition to wages, sales and service jobs have less flexible working arrangements, particularly housemaid jobs, which increase the incompatibility of women's roles at home and the labour market.

There is a possibility that high employment exit probability among low-level occupations is also a result of employers' discrimination against married women with children. Women may involuntarily leave their jobs because they do not have access to maternity leave and employers enforce a higher turnover of female workers. Studies have shown that workplace discrimination largely occurs in the manufacturing sector. The relatively high employment exit probability among married production workers may be reinforced by employers' discrimination in this sector, although their probability of exiting employment is lower compared to sales and service workers.

In predicting the impact of marriage on transition out of employment, the pattern of predicted probabilities of employment exit by education shows that women with secondary education have a higher probability of leaving work compared to women with the lowest and the highest level of education. This finding supports the J-shaped pattern of the relationship between education and labour force participation in Indonesia, found by Benjamin (1996), Widarti (1998) and Ogawa and Akter (2007) (see section 3.2.1), which indicate that women with junior secondary education have a lower probability of participating in the labour force compared to women with other levels of education. The finding in this study suggests that women with secondary education have lower participation in the labour force possibly because they have a higher risk of experiencing a work interruption. These women perhaps have lower opportunity cost of being out of work as compared to the low and highly-educated women. The 'middle educated' women, or those with secondary education, can afford to either be unemployed, or work in low-paid jobs that offer low job security because they cannot compete with the more highly-educated women in obtaining better paid employment.

Meanwhile, in the models that predict the impact of a first birth on women's employment exit, the analyses show that having tertiary education reduces the likelihood of experiencing an employment exit. This finding confirms the human capital hypothesis where among married women, high education exhibits a higher opportunity cost of leaving employment. The result of the analysis that includes an interaction between first birth and education indicates that the positive effect of having the first birth on the transition out of employment is amplified among women with senior secondary education. This finding suggests that married women with senior secondary education may have a low commitment of continuing to work and possibly their opportunity cost of leaving work is compensated by husbands' income. However, the

result shows that husband's education, which is a proxy for his potential income, has a weak effect on the hazard of leaving employment among married women.

Another interesting finding from the analyses is that migrating to a different area increases the likelihood of a woman leaving the workforce. It indicates that migration does not provide women with better jobs and opportunities as has been hypothesized by Parrado (2006). However, moving into a different area may be preceded or followed by quitting a job. Women who migrated to another village would leave their jobs in the origin village and would need time to find a new job, except if the migration was done for a work related reason. Using the IFLS 1993, Wiyono (2003) found that more than 80 per cent of women are migrating to join or follow husbands or other family members. In this case migrant women would have to endure a certain period of non-employment before they are able to return to work in the destination area.

To sum up, the analysis in this chapter confirms that marriage and childbearing are important determinants of women's employment exit in Indonesia. Marriage and childbearing have been found to be the primary determinant of a woman's likelihood of exiting from employment. The impact of marriage on transition out of employment in particular is higher among women with secondary education and those who worked in sales and service types of occupations.

The next chapter examines the employment returns among women who previously quit working. It explores the timing of women's return to work and whether they are working in a different type of employment to their previous job. This chapter also investigates the multiple outcomes of employment return, that is, whether a woman returns to work and is employed in either the formal or informal sector.

Appendix 6-1. Distribution of women in the sample by their last occupation (two digits code)

Occupation	Sample 1		Sample 2	
	n	%	n	%
Professionals/managers				
Architects, engineers, technologists	2	0.9	1	2.8
Physicians, medical assistants, dentists, dental assistants, pharmacists, nutritionists	7	3.2	1	2.8
Nurses, midwives, x-ray technicians, traditional medicine	36	16.4	7	19.4
Statisticians, mathematicians, system analysts, and related technicians	0	0.0	1	2.8
Accountants and auditors	7	3.2	0	0.0
Jurists	2	0.9	0	0.0
Teachers	123	56.2	16	44.4
Workers in religion	15	6.8	2	5.6
Sculptors, painters, photographers, and related creative artists	1	0.5	1	2.8
Composers, performing artists	10	4.6	1	2.8
Athletes, sportsmen, and related workers	4	1.8	1	2.8
Professional and technical workers not elsewhere classified	9	4.1	1	2.8
Managers	3	1.4	4	11.1
Total	219	100	36	100
Clerical workers				
Clerical supervisors	8	3.7	0	0.0
Government executive of officials	17	7.8	3	4.7
Stenographers, typists, and card tape-punching machine operators	12	5.5	1	1.6
Bookkeepers, cashiers, and related workers	87	40.1	13	20.3
Computing machine operators	5	2.3	0	0.0
Mail distributors and related workers	6	2.8	1	1.6
Telephone and telegraph operators	20	9.2	0	0.0
Clerical and related workers not elsewhere classified	62	28.6	4	6.3
Total	217	100	64	100
Sales workers				
Working proprietors (wholesale and retail trade)	13	3.1	10	5.6
Sales supervisors and buyers	6	1.4	0	0.0
Technical salesman, commercial travellers, manufacturer's agents	9	2.1	0	0.0
Insurance, real estate, securities and business services salesman and auctioneers	18	4.3	1	0.6
Salesmen, shop assistants and related workers	374	88.4	83	46.9
Sales workers not elsewhere classified	3	0.7	1	0.6
Total	423	100	177	100
Service workers				
Managers (catering and lodging services)	0	0	32	9.3
Working proprietors (catering and lodging services)	85	26.5	0	0.0
Cooks, waiters, bartenders, and related workers	48	15.0	11	3.2
Maids and related housekeeping service workers	145	45.2	30	8.7
Building caretakers, char workers, cleaners, and related workers	7	2.2	1	0.3
Hairdressers, barbers, beauticians and related workers	17	5.3	3	0.9
Protective service workers	2	0.6	0	0.0
Service workers not elsewhere classified	17	5.3	5	1.5
Total	321	100	344	100

Source: IFLS 2000 and IFLS 2007

**Appendix 6-1. Distribution of women in the sample by their last occupation
(two digits code) (continued)**

Occupation	n	%	n	%
Agriculture workers				
Planters and farmers	4	1.5	5	0.9
Agricultural and animal husbandry workers	227	86.0	131	24.5
Forestry workers	21	8.0	2	0.4
Fishermen, hunters, and related workers	12	4.5	3	0.6
Total	264	100	535	100
Production workers, transport, labourers				
Production supervisors and general foremen	8	1.4	2	5.3
Wood preparation workers and paper makers	10	1.7	3	7.9
Chemical processers and related workers	15	2.6	4	10.5
Spinners, weavers, knitters, dyers, and related workers	49	8.4	12	31.6
Tanners, fellmongers, and pelt dressers	1	0.2	0	0.0
Food and beverage processors	111	19.0	19	50.0
Tobacco preparers and tobacco product makers	6	1.0	4	10.5
Tailors, dressmakers, sewer, upholsterers, and related workers	144	24.7	11	28.9
Shoemakers and leather good makers	30	5.1	6	15.8
Cabinet makers and related wood makers	21	3.6	1	2.6
Blacksmith, tool makers and machine tool operators	9	1.5	0	0.0
Machinery fitters, assemblers, repairers and precision instrument makers (except electrical)	5	0.9	2	5.3
Electrical fitters and related electrical and electronic workers	22	3.8	0	0.0
Broadcasting station, sound equipment operators, and cinema projectionists	1	0.2	0	0.0
Plumbers, welders, sheet-metal and structural metal preparers and erectors	1	0.2	0	0.0
Jewellery and precious metal workers	3	0.5	0	0.0
Glass formers, potters, and related workers	6	1.0	1	2.6
Rubber and plastics product makers	12	2.1	2	5.3
Paper board product makers	5	0.9	1	2.6
Printers and related workers	26	4.5	1	2.6
Painters	4	0.7	9	23.7
Production and related workers not elsewhere classified	38	6.5	8	21.1
Bricklayers, carpenters and other construction workers	13	2.2	0	0.0
Stationary engines and related equipment operators	8	1.4	0	0.0
Material handling and related equipment, operators dockers and freight handlers	3	0.5	2	5.3
Transport equipment operators	32	5.5	1	2.6
Labourers not elsewhere classified	0	0.0	13	34.2
Total	583	100	38	100

Source: IFLS 2000 and IFLS 2007

Appendix 6-2. Descriptive statistics for the transitions out of employment analysis (effect of transition to marriage on employment exit)

Variables	Mean	SD	Minimum	Maximum
Had first marriage during the spell	0.35	0.48	0	1
<i>Education level</i>				
No schooling/elementary	0.23	0.42	0	1
Junior secondary	0.22	0.41	0	1
Senior secondary	0.38	0.48	0	1
Tertiary	0.18	0.38	0	1
<i>Employment sector</i>				
Informal sector	0.30	0.46	0	1
Government	0.08	0.27	0	1
Private	0.62	0.49	0	1
<i>Occupation</i>				
Professional/managers	0.12	0.32	0	1
Clerical workers	0.10	0.31	0	0
Sales workers	0.10	0.31	0	1
Service workers	0.19	0.39	0	1
Agriculture workers	0.15	0.35	0	1
Production workers/labourers	0.14	0.35	0	1
Migrate in previous year	0.05	0.21	0	1
Live in urban areas	0.51	0.50	0	1
Live in Java island	0.61	0.49	0	1
One or more adult females live in the household	0.59	0.49	0	1
Household assets (in million Rp)	10.98	22.48	0	411.00
Completed school	0.95	0.21	0	1
Age	24.71	5.84	15	49

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

Appendix 6-3. Descriptive statistics for the transitions out of employment analysis (effect of transition to first birth on employment exit)

Variables	Mean	SD	Minimum	Maximum
First birth	0.55	0.50	0	1
<i>Education level</i>				
No schooling/elementary	0.50	0.50	0	1
Junior secondary	0.17	0.37	0	1
Senior secondary	0.22	0.42	0	1
Tertiary	0.11	0.31	0	1
<i>Husband's education level</i>				
No schooling/elementary	0.18	0.57	0	1
Junior secondary	0.36	0.48	0	1
Senior secondary	0.18	0.38	0	1
Tertiary	0.28	0.45	0	1
<i>Employment sector</i>				
Informal sector	0.58	0.49	0	1
Government	0.08	0.26	0	1
Private	0.35	0.48	0	1
<i>Occupation</i>				
Professional/managers	0.09	0.29	0	1
Clerical workers	0.04	0.20	0	0
Sales workers	0.04	0.20	0	1
Service workers	0.20	0.40	0	1
Agriculture workers	0.14	0.35	0	1
Production workers/labourers	0.33	0.47	0	1
Migrate in previous year	0.06	0.23	0	1
Live in urban areas	0.37	0.48	0	1
Live in Java island	0.60	0.49	0	1
One or more adult females live in the household	0.42	0.49	0	1
Household assets (in million Rp)	6.53	12.94	0	106.43
Completed school	1.00	0.07	0	1
Age	28.59	7.08	15	49

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

Appendix 6-4. Characteristics of women who had an employment exit (Sample 1)

	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
Migrate throughout work spell		
Never	51.1	1,368
Once or more	63.2	679
Urban/rural residence		
Rural	57.0	1,023
Urban	53.2	1,024
Island of residence		
Outer island	54.1	825
Java	55.8	1,222
One or more adult females live in the household		
None	61.5	838
One or more	50.7	1,209
Completed schooling		
Still at school	100	52
Completed schooling	53.9	1,995

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

Appendix 6-5. Discrete-time hazard regression results for the transition out of employment (effect of husband's education and duration of marriage on employment exit)

Variable	Model 3			Model 4		
	β	se	Odds Ratio	β	se	Odds Ratio
<i>Husband's education</i>						
Junior secondary	0.196	0.112	1.217*			
Senior secondary	0.1	0.107	1.106			
Tertiary	0.144	0.149	1.155			
<i>Duration of marriage (ref: 0 year)</i>						
first year				2.004	0.11	7.417***
second year				1.977	0.145	7.218***
<i>Education level (ref: no schooling/elementary)</i>						
Junior secondary	0.129	0.105	1.138	0.247	0.118	1.281**
Senior secondary	0.072	0.113	1.074	0.257	0.115	1.293**
Tertiary	-0.244	0.174	0.784	0.167	0.167	1.182
<i>Employment sector (ref: informal sectors)</i>						
Government	-1.254	0.343	0.285***	-1.328	0.323	0.265***
Private	0.849	0.093	2.337***	0.942	0.109	2.564***
<i>Occupation (ref: professional/managers)</i>						
Clerical workers	0.177	0.189	1.193	0.373	0.204	1.451*
Sales workers	0.525	0.176	1.691***	0.87	0.19	2.387***
Service workers	0.501	0.184	1.651***	0.802	0.2	2.231***
Agriculture workers	0.404	0.199	1.498**	0.503	0.216	1.653**
Production workers/labourers	0.32	0.174	1.377*	0.533	0.186	1.704***
Migrate in previous year	0.807	0.117	2.241***	0.724	0.127	2.063***
Live in Java island	-0.286	0.08	0.751***	-0.392	0.088	0.676***
One or more adult females live in the household	0.008	0.072	1.008	-0.003	0.081	0.997
Household assets (in million Rp)	0	0.002	1	-0.002	0.002	0.998
Completed school	0.104	0.192	1.109	-0.577	0.184	0.562***
Age	1.39	0.088	4.016***	1.637	0.093	5.139***
Seam dummy	-0.006	0.008	0.994	-0.062	0.01	0.940***
Constant	0.074***	-2.607	0.36	-2.651	0.359	0.071***
Number of person-years		9,045			12,590	
Number of women		1,457			2,039	
Log likelihood		-2,794.72			-3,187.30	
Sigma u		0.002			0.769	
Rho		0			0.152	
df		21			20	
chi2		448.593			710.83	

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

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

Appendix 6-6. Discrete-time hazard regression results for the transitions out of employment (interaction effects between marital status and occupation, marital status and employment sector, and marital status and education)

Variable	Model 5			Model 6			Model 7		
	β	se	Odds Ratio	β	se	Odds Ratio	β	se	Odds Ratio
Had first marriage during the spell	1.381	0.296	3.981***	1.189	0.163	3.282***	2.172	0.188	8.777***
<i>Education level (ref: no schooling/elementary)</i>									
Junior secondary	0.25	0.119	1.284**	0.239	0.12	1.270**	0.339	0.175	1.403*
Senior secondary	0.258	0.116	1.295**	0.268	0.116	1.308**	0.245	0.167	1.278
Tertiary	0.179	0.169	1.196	0.152	0.17	1.165	0.693	0.214	2.001***
<i>Employment sector (ref: informal sectors)</i>									
Government	-1.309	0.323	0.270***	-1.315	0.489	0.269***	-1.222	0.323	0.295***
Private	0.948	0.108	2.581***	0.362	0.136	1.437***	0.959	0.108	2.608***
<i>Occupation (ref: professional/managers)</i>									
Clerical workers	0.112	0.286	1.119	0.363	0.208	1.438*	0.361	0.205	1.434*
Sales workers	0.556	0.25	1.743**	0.88	0.193	2.410***	0.841	0.19	2.319***
Service workers	0.344	0.266	1.41	0.814	0.202	2.257***	0.779	0.2	2.179***
Agriculture workers	0.212	0.287	1.236	0.529	0.219	1.696**	0.458	0.217	1.582**
Production workers/labourers	0.105	0.25	1.111	0.526	0.19	1.693***	0.501	0.187	1.650***
Migrate in previous year	0.729	0.127	2.073***	0.72	0.128	2.053***	0.732	0.127	2.079***
Live in urban areas	-0.059	0.088	0.942	-0.064	0.089	0.938	-0.054	0.088	0.947
Live in Java island	-0.389	0.089	0.677***	-0.393	0.089	0.675***	-0.403	0.089	0.668***
One or more adult females live in the household	-0.013	0.082	0.987	-0.01	0.083	0.99	-0.016	0.082	0.984
Household assets (in million Rp)	-0.002	0.002	0.998	-0.002	0.002	0.998	-0.002	0.002	0.998
Completed school	-0.543	0.186	0.581***	-0.456	0.187	0.634**	-0.596	0.187	0.551***
Age	-0.062	0.01	0.940***	-0.062	0.01	0.940***	1.652	0.093	5.216***
Seam dummy	1.648	0.093	5.198***	1.647	0.093	5.194***	-0.06	0.01	0.942***
<i>Interaction terms between marital status and:</i>									
Clerical workers	0.466	0.375	1.593						
Sales workers	0.559	0.331	1.750*						
Service workers	0.853	0.347	2.347**						
Agriculture workers	0.533	0.356	1.705						
Production workers/labourers	0.766	0.322	2.152**						
<i>Interaction terms between marital status and:</i>									
Government				0.16	0.608	1.174			
Private				1.108	0.178	3.029***			
<i>Interaction terms between marital status and:</i>									
Junior secondary							-0.153	0.223	0.858
Senior secondary							0.016	0.205	1.016
Tertiary							-1.057	0.276	0.348***
Constant	-2.361	0.379	0.094***	-2.342	0.364	0.096***	-2.762	0.381	0.063***
Number of person-years		12,590			12,590			12,590	
Number of women		2,036			2,036			2,036	
Log likelihood		-3,183.38			-3,167.00			-3,177.20	
Sigma u		0.797			0.814			0.805	
Rho		0.162			0.168			0.165	
df		24			21			22	
chi2		709.932			730.542			714.217	

***p<0.001; **p<0.05; *p<0.1

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

Appendix 6-7. Characteristics of women who had an employment exit (Sample 2)

	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
Migrate throughout work spell		
Never	49.5	281
Once or more	62.0	205
Urban/rural residence		
Rural	50.8	299
Urban	61.0	187
Island of residence		
Outer island	49.7	187
Java	57.9	299
One or more adult females live in the household		
None	52.6	1
One or more	57.5	485

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

Appendix 6-8. Discrete-time hazard regression results for the transitions out of employment (interaction effects between first birth and occupation, first birth and employment sector, and first birth and education)

Variable	Model 3			Model 4			Model 5			Model 6		
	β	se	Odds Ratio	β	se	Odds Ratio	β	se	Odds Ratio	β	se	Odds Ratio
Had first birth	0.994	0.309	2.703***	2.841	1.164	17.131**	0.958	0.299	2.606***	1.438	0.309	4.213***
Had second birth	0.35	0.267	1.419	0.327	0.263	1.387	0.37	0.268	1.448	0.327	0.262	1.386
<i>Education level</i>												
(ref: no schooling/elementary)												
Junior secondary	-0.296	0.299	0.744	-0.29	0.29	0.752	-0.61	0.453	0.544	-0.28	0.292	0.755
Senior secondary	-0.081	0.298	0.922	-0.07	0.29	0.931	-0.88	0.451	0.413**	-0.06	0.291	0.944
Tertiary	-1.471	0.554	0.230***	-1.42	0.543	0.241***	-2.28	0.921	0.102**	-1.32	0.534	0.267**
<i>Husband's education level</i>												
(ref: no schooling/elementary)												
Junior secondary	-0.413	0.309	0.662	-0.42	0.302	0.654	-0.42	0.308	0.659	-0.4	0.303	0.67
Senior secondary	0.152	0.285	1.165	0.103	0.276	1.109	0.153	0.281	1.165	0.118	0.277	1.125
Tertiary	-0.069	0.482	0.934	-0.01	0.471	0.986	-0.1	0.481	0.906	-0.13	0.471	0.879
<i>Employment sector</i> (ref: informal sectors)												
Government	-18.03	5622.8	0	0.145	0.532	1.156	0.147	0.546	1.158	0.262	0.53	1.299
Private	0.931	0.333	2.537***	1.38	0.245	3.975***	1.411	0.25	4.100***	1.409	0.247	4.094***
<i>Occupation</i> (ref: professional/managers)												
Clerical workers	0.114	0.63	1.12	0.2	1.409	1.222	0.107	0.628	1.113	0.107	0.617	1.113
Sales workers	0.246	0.51	1.279	1.736	1.162	5.676	0.208	0.507	1.231	0.242	0.495	1.274
Service workers	0.839	0.504	2.315*	1.587	1.171	4.89	0.751	0.497	2.119	0.763	0.485	2.144
Agriculture workers	0.119	0.516	1.126	1.543	1.159	4.68	0.128	0.513	1.136	0.065	0.501	1.067
Production workers/labourers	0.606	0.501	1.832	1.619	1.155	5.046	0.639	0.5	1.894	0.624	0.488	1.867
Migrate in previous year	0.918	0.259	2.504***	0.91	0.255	2.484***	0.937	0.259	2.553***	0.95	0.255	2.586***
Live in urban areas	0.169	0.222	1.184	0.173	0.215	1.189	0.192	0.22	1.212	0.187	0.216	1.205
Live in Java island	0.059	0.216	1.061	0.065	0.21	1.067	0.08	0.213	1.083	0.065	0.21	1.067
One or more adult females live in the household	0.078	0.201	1.081	0.072	0.196	1.075	0.031	0.199	1.031	0.055	0.314	1.057
Household assets (in million Rp)	0.009	0.008	1.009	0.009	0.007	1.009	0.009	0.008	1.009	0.009	0.007	1.009
Seam dummy	2.507	0.198	12.273***	2.488	0.196	12.041***	2.524	0.197	12.476***	2.491	0.194	12.072***
Age	-0.077	0.017	0.925***	-0.08	0.017	0.922***	-0.08	0.017	0.924***	-0.08	0.017	0.927***
<i>Interaction terms between first birth and:</i>												
Clerical workers				0.124	1.514	1.132						
Sales workers				-2.04	1.219	0.13						
Service workers				-0.94	1.231	0.392						
Agriculture workers				-1.94	1.199	0.144						
Production workers/labourers				-1.22	1.199	0.296						
<i>Interaction terms between first birth and:</i>												
Government	18.75	5622.8	1.39E+08									
Private	0.791	0.498	2.207									
<i>Interaction terms between first birth and:</i>												
Junior secondary							0.559	0.524	1.748			
Senior secondary							1.244	0.484	3.470**			
Tertiary							1.356	0.924	3.88			
<i>Interaction terms between first birth and:</i>												
presence of other adult females in household										-0.001	0.368	0.999
Constant	-2.692	0.824	0.068***	-3.939	1.297	0.019***	-2.691	0.815	0.068***	-3.001	0.815	0.050***
Number of person-years		2,899			2,899			2,899			2,899	
Number of women		482			482			482			482	
Log likelihood		-713.79			-712.33			-720.94			-725.16	
Sigma u		1.146			1.061			1.135			1.097	
Rho		0.285			0.255			0.281			0.268	
df		24			27			25			23	
chi2		224.729			230.816			231.603			231.946	

*** 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.

7 Opting in: Determinants of women's employment return

Research in developed countries, mostly in the US, has confirmed that women's family life cycle is not only associated with their likelihood of leaving from but also with their return to employment. The rate of employment return is lower when women are in the early years of childbearing, but is higher when the children have grown up (Felmlee 1993, Drobic et al. 1999, Taniguchi and Rosenfeld 2002, Budig 2003, Jeon 2008). In this context, widely available part-time work is one of the factors that reduces the work-family conflict and later contributes to women returning to work sooner after childbearing (Taniguchi and Rosenfeld 2002). Labour market structure and family policies have also been argued to influence women's employment re-entry, although these factors are rarely measured directly in the existing studies.

In Indonesia, to date, there have been no studies that specifically address the issue of homemakers returning to work after childbearing. As previously discussed in Chapter 3, studies in Indonesia are mainly concerned with the determinants of women's labour force participation. These studies have found that being married and the presence of young children lower the probability of women participating in the labour force. However, from these studies, it is unclear whether marital status and children would continue to reduce women's employment by holding back those who have exited from work to become homemakers from returning to work.

Despite the lack of research about women's employment re-entry, one can speculate that women in Indonesia may have a high likelihood of returning to work after childbearing. A large share of women work in the informal sector and this may induce homemakers to return to work sooner to this sector after marriage and childbearing. Informal work becomes the 'favourite' option among married women because such employment enables women to combine work and childrearing in addition to the structural barrier that prevents women from entering the formal sector (Gallaway and Bernasek 2002) and the pressure to supply the family's basic necessities.

Therefore, instead of seeking formal employment, homemakers return to the labour market by working in the informal sector. Although several qualitative studies have

documented women moving into informal work after childbearing (Wolf 1992, Grijns et al. 1994, Indraswari 2006), little is known about the extent to which women work in either the formal or the informal sector when they decide to return to work; and whether family life cycle is associated with women choosing the informal over the formal labour market when they return to work.

This chapter provides an examination of the transitions back to work among women who have had an employment break. Similar to Chapter 6, the analysis in this chapter examines the effects of marriage and motherhood status on women's employment return. It seeks to answer whether later stages of childrearing, measured by age of the youngest child, influence women's transition back into employment. This chapter also provides an analysis that seeks to answer women's choice of employment when they return to work, using the multi-choice framework: whether women stay out of work, return to work and work in the informal sector, or in the formal sector. It examines the influence of women's family status on their choice to work in informal rather than formal employment after an employment break.

7.1. Findings from previous studies on determinants of women's employment return

In economic theory, within a coupled household, women return to paid work when there is a change in both wife and husband's productivity in market and non-market work. When husbands' income decline, women seek employment to maintain the family's income and utility (Ehrenberg and Smith 2009, p.219). Meanwhile, women's productivity in household production changes across the life cycle; it declines when children are older and childrearing becomes less time consuming. Given this change in productivity throughout the life cycle, it can be hypothesized that the rate of women's employment return slows during the early years of childbearing and accelerates when the children are growing older. This hypothesis is confirmed in the studies among women in the Germany and the US (Drobnic et al. 1999, Taniguchi and Rosenfeld 2002), in France (Grimm and Bonneuil 2001), and in Japan and Taiwan (Yu 2006, 2002).

Although almost all available studies agree on the adverse effect of young children, some studies indicate that the effect of older children is not always to hasten women's

employment return. Budig (2003) found that an additional number of older children increases a woman's propensity of returning to full-time employment, but reduces the propensity of returning to part-time employment. Studies by Solera (2008)⁴⁹ and Jeon (2008) found that having older children does not have an impact on women's return to employment.

Meanwhile, studies have found various impacts of marital status on women's employment return⁵⁰. Some studies have shown that being married increases women's likelihood of returning to employment (Taniguchi and Rosenfeld 2002, Solera 2008 in Britain), and some found that marriage reduces it (Grimm and Bonneuil 1998, Budig 2003, Stier and Yaish 2008, Solera 2008 in Italy). Taniguchi and Rosenfeld (2002) and Solera (2008) argue that there are several possibilities for explaining the positive effect of marriage on women's rate of employment return: first, there is an increasing equality in the division of labour at home between husbands and wives that results in married women having more time allocated for market work; second, single women's entitlement to receive a government unemployment benefit is possibly holding them back from returning to work sooner.

Human capital theory postulates that women with high education have a higher opportunity cost of being out of employment. This implies that highly educated women may choose to have a shorter period of non-employment given the accumulated loss of their earning potential. Studies have found evidence consistent with the human capital theory. Women with higher education are more likely to return to work faster than those with a lower level of education (Desai and Waite 1991, Grimm and Bonneuil 2001, Drobnic et al. 1999, Taniguchi and Rosenfeld 2002).

The literature suggests that previous job experience has an important effect on women's employment return. Employment that is characterized by greater rewards measured by wages, benefits, job security, and compatibility with family responsibilities may influence women's earlier return to employment (Desai and Waite 1991, Rindfuss and Brewster 1996). Studies show that the likelihood of women's employment return is higher when women are working in high-status occupations in Japan (Yu 2006) and in

⁴⁹ The effect of youngest child aged 3 and over is not significant in Italy, but it is significant and positive in Britain (Solera 2008)

⁵⁰ Variations in sample and measures used in each of the studies may contribute to the differences of the effect of older children and marital status on women's employment return.

the public sector in Israel (Stier and Yaish 2008), while previous work experience as manual workers reduces the rate of employment return in Italy and Great Britain (Solera 2008).

Another important factor that determines women's employment return, particularly married women, is husbands' socioeconomic status. As previously discussed in the introduction, women increase their labour force supply in response to changes in their husbands' income. This is confirmed in Budig's study (2003) that finds higher husbands' income reduces women's employment re-entry rates in the US. Yu's study that uses husband's education as a proxy for their income partially confirms the hypothesis (2006). Husbands' education has a significant and negative effect on women's employment return in Japan, but it does not have an effect among women in Taiwan (Yu 2006).

Contrary to the added worker effect hypothesis (Ehrenberg and Smith 2009), husband's higher income has also been found to increase women's likelihood of returning to employment among women in Canada (Gaudet et al. 2011). One explanation of this is that higher husbands' income indicates that women can afford childcare. Another explanation is related to the education homogamy argument. Women who marry husbands earning a high income generally have a high education themselves and therefore their opportunity cost of being out of employment is compensated by their husband's income.

From the available studies that focus on the determinants of women's labour force participation, women's return to work in Indonesia might also be associated strongly with their family life cycle. The negative effect of marital status and the presence of a young child found in the previous studies (Widarti 1998, Feridhanusetyawan and Aswicahyono 2001) indicates that married women with young children may prefer to continue to stay out of labour market activity. However, from these studies, it is hard to predict whether such an effect is constant over the life course, particularly after children grow older.

Instead of examining the probability of labour force participation *per se*, Gallaway and Bernasek (2002) and Ogawa and Akter (2007) specifically examine women's labour force participation in different employment sectors. Their findings show that having

infants reduces women's likelihood of participating in paid-employment, while having toddlers increases the likelihood of participating in informal work (Gallaway and Bernasek 2002). Being married has been found to increase the likelihood of entering informal employment and reduces the likelihood to enter formal employment (Ogawa and Akter 2007).

Education also has a contradictory effect on women's labour force participation in each type of employment sector. Women with senior secondary education and above have a higher likelihood of participating in the formal sector and lower likelihood of participating in the informal sector (Ogawa and Akter 2007). The effect of husband's education on women's employment choice was also investigated by Ogawa and Akter (2007). Women who married higher-educated husbands have a lower likelihood of participating in either the informal or the formal sectors (Ogawa and Akter 2007). In other words, husband's education works to reduce women's labour force supply rather than affecting their employment choice.

7.2. *Analytic sample variables and method*

7.2.1. Sample

The sub-samples for analysis of return to employment are women who have experienced non-employment in the analytic sample of employment exit as in Chapter 6. The number of women who had left the first work spell in sub-sample 1 in that chapter (those who started a work spell when they were unmarried) are 1,125 women, while there are 247 women who left the first work spell in sub-sample 2 (those who started a work spell when they were married but childless). Initially, this study attempted to analyse employment return for each sub-sample. However, the results based on sub-sample 2 indicated low variation across individuals and weak measures of goodness of fit. Therefore, the analysis of employment return in this chapter combines women who had left employment from the two sub-samples in order to improve the variation across individuals and precision of the estimates. The total number of women in the analytic sample is 1,378 individuals.

Further investigation was done to analyse the likelihood of employment 'returnees' having an employment change, or returning to work but being employed in a different

sector to their previous job before exiting employment. The analysis was based on women who had returned to work from each of the samples described previously. However, given that the analysis is based on one point of time (that is, at the time of employment return) and the number of employment 'returnees' from sample 2 is small, the analysis of employment change is also based on the combined women who returned to work from both sample 1 and 2. The model was analysed based on cross-sectional data and it was estimated at the time the women made a return to employment. The total number of women in the sample for this analysis was 778 women.

7.2.2. Variables

Three models were estimated in this chapter. The first model predicts the transition back into employment among women who had an employment break of more than one year. The dependent variable for the first model measures the odds of the annual conditional probability of working in a particular year, given that a woman had stated that she had not been working until that year after she had left work. It is measured by a categorical variable of 0 if a woman is still not working and 1 if she is working.

The second model predicted the multiple outcomes of the event of returning to work, being: whether women continued to have an employment break, whether women return to work and are employed in the informal sector, and whether women return to work and are employed in the formal sector. The dependent variable for the second model measures the odds of the yearly conditional probability of working in either the formal or the informal sector within a particular year, given that a woman had stated that she had not worked until that year after leaving employment. The dependent variable is a categorical variable of 0 if a woman is not working, 1 if a woman is working in the informal sector, and 2 if a woman is working in the formal sector.

The last model is derived to examine whether women who returned to work were employed in a different sector of employment to their previous job before having an employment break. The model is used to predict whether women who were formal workers were employed in the informal sector when they returned to work, and vice versa. The dependent variable for the last model that predicts the likelihood of re-entering the same or different employment sector is measured by a categorical

variable. It equals to 0 when a woman re-enters the same employment sector as that before she had an employment break, 1 if a woman previously worked in the formal but re-enters the informal sector, and 2 if a woman previously worked in the informal but re-enters the formal sector.

The key independent variable in all analyses is family status of the women after an employment exit. This variable measures the different life stages of women at the time when they started an employment break. A categorical variable is used to measure the different family life stages of women throughout their employment break spell: unmarried, married without children, married with youngest child aged under five years, and married with a child older than age five. In addition to the family life stages variable, number of children aged 0-4 and the number of children aged five and older are also included in the analysis to measure the increase of economic necessities in the family that may force women to return to work sooner.

Other independent variables used in the employment return models are similar to the previous analysis which varies across time: age, education level, migration in the previous year, urban/rural residence, and island of residence; and varies across individuals: occupation and employment sector of the last job, and presence of other adult females in the household (for definitions of these terms, see section 6.2.2). Since the data suffers from the problem of seam effect that amplify the transitions rates of employment returns, a seam dummy is included to indicate the year of seam in the data (Nielsen and Gottschalck 2009). Mean and standard deviation of each of the variables are presented in Appendix 7-1a and 7-1b, respectively.

7.2.3. Methods

Similar to the analysis in Chapter 6, a discrete time-hazard analysis is used to analyse the return to employment. It uses logit regression to estimate the transition back to work based on the sample consisting of women who are at risk of returning to work. Logit regression is also used to analyse the last models that predict whether women entered into an employment sector that was different to their previous job before having an employment break. The models that predict the multiple outcomes of women's employment re-entry are analysed using multinomial logistic regression. This analysis

is also known as ‘competing risks’ analysis given that there are more than two outcomes in the event (see section 4.4 for the discussion of the method of analysis).

7.3. Descriptive analysis

The mean age of leaving work among women who return to employment is 22 years old, while women who were staying out of work (or censored) were older by one year (Figure 7-1). Relative to the years spent in a work spell (four years, see section 6.3.1 and 6.4.1), the average duration of women spent in the non-employment spell among those who returned to work is shorter (three years). Given this average duration of non-employment, women in the sample return to work on average at age 25 years. From this description, women in the sample seem to spend a longer period of non-employment compared to other countries. For example in the US, women spent 50 to 57 weeks, or around one year, of non-employment before returning to work (Taniguchi and Rosenfeld 2002).

Table 7-1 shows the characteristics of women who returned to work in the formal and informal sectors. Women who had an employment break at age 15-19, were unmarried, had tertiary education, and had previously worked in the formal sector tend to work again in formal employment when they returned to work.

Table 7-2 shows that there is a substantial proportion of women who return to work but are employed in a different sector to that of their previous job. Among ex-informal workers, more than one quarter returned to work and were employed in formal employment. Although more than 40 per cent of ex-workers of the formal sector had not returned to work until the last survey, 23 per cent of them returned to work and were employed in the informal sector.

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 7-2. Distribution of women by employment sector before employment exit and at employment return, among women had returned to work (%)

Before employment exit	At employment return			Total
	Informal	Formal	Censored	
Informal sector	37.7	21.3	41.0	456
Formal	23.1	34.1	42.8	921
Total	27.9	29.8	42.2	1,378

Source: IFLS 2000 & IFLS 2007

7.4. Results of discrete-time hazard analysis

7.4.1. Discrete-time hazard analysis of employment return

Results of estimations of the discrete-time hazard models of employment return are presented in Table 7-3. It shows that only a few variables show significant effects, which might be an indication that women’s employment exit is a selective process as suggested by Solera (2008). Despite only a few variables being significant, the results show that measures of familial responsibility have significant effects on the hazard of reentering employment (Table 7-3). The coefficients of women’s family status variables indicate that married women without children are less likely to return to work compared to unmarried women. Similarly, the estimated coefficients of family status variables also show that married women with children are less likely to return to work than unmarried women irrespective of the age of the youngest child. However, the coefficients are not significant.

Predicted probabilities are calculated to examine the risks of women returning to employment at different stages of the life cycle (Figure 7.2). Married women who have no children have a lower probability of returning to work while unmarried women have a higher probability of returning to work compared to women at the other life stages. The low probability of returning to work among childless women suggests that these women may still be in the waiting period to have their first child and therefore delay their return to the workforce. The predicted probabilities also show that among married women with children, those with the youngest child aged five and older have a slightly lower probability to return to work compared to those with the youngest child aged below five. This pattern suggests that women who return to work after the youngest child reached age five are a selected group of women who have a lower commitment to work given that these women did not return to work when their youngest child was younger.

The results of discrete-time hazard analysis of both Model 1 and Model 2 (Table 7-3) also show that women's employment return is significantly influenced by the number of children age 0-4. The estimated coefficient indicates that women's risk to return to work decreases with an additional number of young children. Other significant variables are tertiary education and the value of household assets. Having tertiary education significantly influences the hazard to return to employment. The odds of employment return of women with tertiary education are 2 times higher than the odds to return to employment of women with no schooling or with elementary education. Increase in household assets is found to reduce women's hazard of returning to work, but the coefficient of this variable is significant only at the 10 per cent level.

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

Figure 7-2. Predicted probabilities of women’s employment return by family life stage

Source: IFLS 2000 & IFLS 2007, calculated based on estimation of model 2 (Table 7-3).

7.4.2. Competing risks analysis: Transition into formal versus informal employment

When returning to work, women are at risks of working in an employment sector different to the jobs they had before experiencing an employment break. Previous studies indicate that some women left their jobs as manufacturing workers, and return to work as self-employed after marriage and childbearing (see for example: Grijns et al., 1994, Indraswari 2006). This section examines the competing risks of experiencing multiple outcomes of employment return, that is, whether a woman is employed in the informal or the formal sector when they returned to the labour market.

The results of the competing risks analysis (Table 7-4) show that family status, education, previous working experience in the formal sector, urban-rural differences, island of residence, and age are significant predictors of women’s choice to work in either the informal or the formal sector at the time of employment return. The estimated odds ratios of family status indicate that married women are more likely to work in informal employment and less likely to work in formal employment when they returned to work. Women with youngest child under age five have higher odds of working in the informal sector compared to women at the other life stages. Number of children significantly influences the hazard to work in formal employment, but not in informal

employment. The estimated odds ratio indicates that additional numbers of young children decrease women’s risk of entering formal work after experiencing an employment break.

Table 7-4. Discrete time hazard regression results for the competing risks at re-entering employment (multinomial logistic regression)

Variable	Non-employment to Informal work			Non-employment to formal work		
	β	se	Odds Ratio	β	se	Odds Ratio
<i>Family status</i> (ref: unmarried)						
married with no children	0.486	0.209	1.626**	-1.004	0.174	0.366***
married with youngest child age under 5	0.928	0.292	2.529***	-0.764	0.353	0.466**
married with youngest child age 5+	0.692	0.292	1.997**	-0.638	0.31	0.528**
Number of children age 0-4	-0.292	0.215	0.746	-0.613	0.301	0.542**
Number of children age 5+	0.187	0.162	1.206	-0.103	0.21	0.902
<i>Education level</i> (ref: no schooling/elementary)						
Junior secondary	0.178	0.145	1.195	-0.172	0.159	0.842
Senior secondary	0.11	0.149	1.116	0.074	0.151	1.077
Tertiary	0.427	0.246	1.532*	0.989	0.191	2.690***
Worked in formal sector	-0.401	0.126	0.670***	0.646	0.139	1.907***
<i>Occupation</i> (ref: professional/managers)						
Clerical workers	-0.42	0.355	0.657	-0.069	0.292	0.934
Sales workers	-0.014	0.287	0.986	0.1	0.242	1.105
Service workers	-0.143	0.295	0.867	-0.034	0.256	0.967
Agriculture workers	0.198	0.301	1.219	-0.535	0.306	0.586*
Production workers/labourers	-0.04	0.285	0.961	0.225	0.241	1.252
Migrate in previous year	0.343	0.238	1.41	-0.998	0.351	0.369***
Live in urban areas	-0.242	0.122	0.785**	-0.01	0.113	0.99
Live in Java island	-0.309	0.116	0.735***	0.25	0.122	1.284**
One or more adult females live in the househo	-0.146	0.11	0.864	0.15	0.11	1.162
Duration of previous work	-0.026	0.034	0.974	0.038	0.03	1.039
Household assets (in million Rp)	-0.005	0.004	0.995	-0.005	0.003	0.995
Seam dummy	0.656	0.144	1.927***	-0.393	0.18	0.675**
Age	0.028	0.012	1.029**	-0.02	0.012	0.98
Constant	-3.395	0.514	0.034***	-2.448	0.483	0.087***
Number of person-years	6,816					
Number of women	1,111					
Log-likelihood	-2,743.52					
McFadden R2	0.063					

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

The result of competing risks at employment return in Table 7-4 also shows that tertiary education has a positive effect on the hazard of returning to work in either the informal or the formal sector, although its effect on informal employment is weak. The odds of working in the formal sector for the tertiary educated women are 2.7 times higher than are the odds of working in the formal sector for women with a lower level of education. Past working experience in the formal sector has a significant and positive effect on women being employed again in the formal sector. This indicates that formal workers tend to return to work in the same sector after experiencing an employment break.

Other variables show a contradictory effect in each type of transition back into employment. Migration is only significant in influencing transition into formal employment, but not influencing transitions into informal employment. Living in Java seems to provide more opportunities for women to obtain formal work⁵¹. Age is only a significant predictor of the transition to informal work but not to formal work, where the hazard of returning to work increases as women grow older.

7.4.3. Employment change

From the analysis of competing risks models, it is hard to identify which characteristics influence women to choose a different employment sector when returning to work. Given this difficulty, the analysis in this section focuses on those factors associated with 'employment change' or entering a different sector to their previous employment before exit. Women who had an 'employment change' are defined as those ex-formal workers who re-enter employment as informal workers, and vice versa, ex-informal workers who return to work and are employed as formal workers.

The 'employment change' analysis is based on the women who had returned to work. There are two models estimated in this analysis: the first model predicts the likelihood of employment 'returnees' who had previously worked in the formal sector to be employed in the informal sector or continue to work in formal employment when they returned to the workforce; the second model predicts the likelihood of women who had previously worked in the informal sector to be employed in the formal sector or continue to work in the informal sector. The dependent variable for each model is a dummy variable which is equal to 0 if a woman returned to the same employment sector, and equal to 1 if a woman worked in a different sector to their previous employment before an employment break

The method of analysis is logistic regression; independent variables include family status, education level, urban rural residence, living in Java or the outer island, presence of other adult females in the household, duration of previous employment or work spell, household assets, and age. The model is predicted cross-sectionally at the time of employment return.

⁵¹ However, the proportion of women who had an employment break and living in outer islands is small.

The result of the logistic regressions of employment change among employment returnees is presented in Table 7-5. Family status was found to have a significant effect on employment change when women return to work. Irrespective of the presence of children, married women have a higher likelihood of moving from formal to informal employment than unmarried women. In contrast, the effect of marital status negatively influences women in switching from informal to formal employment.

The predicted probabilities of having an employment change in relation to different women's family statuses are presented in Figure 7-3 to see in which life stage women are exposed to highest risk of having employment change. It shows that married women with young children have a higher probability of moving from formal to informal employment compared to women at other life stages. Meanwhile, single women have a higher probability of moving from informal to formal employment compared to women who have entered familial life stages.

Among women who previously worked as formal employees before experiencing an employment interruption, education was found to have no significant effect on entering informal employment. However, women ex-informal workers who had completed tertiary education had a higher likelihood of working in formal employment rather than returning to their previous informal employment. The odds of moving to the formal sector for the ex-informal workers with tertiary education are almost four times higher than the odds of moving to the formal sector for the ex-informal workers with no schooling or elementary education. The result shows that having higher education significantly assists women in entering the formal sector after certain periods of non-employment. It is possible that women who previously worked in the informal sector might have a break to attain higher education in order to obtain a better job in the formal sector. Alternatively, these women might work in the informal sector while completing their education, and then have a break to search for employment in the formal sector.

The results also show that age has a contradictory effect on job change at the time of returning to work. Age is found to have a positive effect on ex-formal workers who wish to enter informal work, while it has a negative effect on ex-informal workers in entering formal work. This means that as women are ageing, their likelihood of employment

change from formal to informal employment increases, and their likelihood of employment change from informal to formal declines.

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
<i>Family status</i> (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***
<i>Education level</i> (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 7-3. Predicted probabilities of employment change before an employment exit and at the time of employment return

Source: IFLS 2000 & IFLS 2007, author's calculation based on estimation of employment change model (Table 7-8).

7.5. Discussion and conclusions

This chapter has presented the results of analyses of women's employment return and the likelihood of working in informal or formal employment when they return to work. It sought to answer the main research question of whether later stages of childrearing, measured by marital status and age of the youngest child, influence women returning to employment. The analysis is further expanded to examine the multiple outcomes of employment return, that is, to what extent women return to work as an informal or formal worker; and whether family status is also associated with employment change.

The descriptive analysis shows that women in the sample spend three years in the non-employment state before returning to work. Compared to the US, women in Indonesia seem to have a relatively longer work interruption. Economists argue that work interruption is causing women to have a lower average wages compared to men since interruption diminished women's human capital (See Mincer and Ofek 1982). Therefore, the long period of non-employment among women suggests that Indonesian women may experience a longer diminished human capital which contributes to the persistence of the gender wage gap in Indonesia.

The results of the analyses in this chapter confirm that marital status reduces women's employment re-entry rate, and married women with no children have a lower probability of returning to work compared to either unmarried or married women with children. It is possible that women who have recently married continue to remain out of work because they are still in the waiting period to have their first child. Meanwhile, women with children are more likely to return to work because they cannot afford to have an extended non-employment period due to growing economic pressures.

However, having an additional number of young children is found to reduce the hazard of women's employment return, particularly of entering formal employment. It seems that the number of young children increases women's value in time spent at home rather than influencing women in earning additional income to maintain the family's subsistence.

Similar to previous studies in developed countries, the results show a positive effect of education on women's employment re-entry. Women with tertiary education have the

highest rate of return to work and are more likely to work in formal employment when they return to work. This finding supports Taniguchi and Rosenfeld's (2002) argument that education is a resource for women and accelerates their transition back into employment. It also indicates that higher education is providing women with resources to penetrate the formal labour market. The formal labour market generally demands skilled workers, and those with higher education generally have the skill to fill the jobs in this sector.

Meanwhile, previous work experience in the formal sector is found to help women to return to work. It also increases the likelihood of women working in the formal sector once they are employed again. This finding, again, supports Taniguchi and Rosenfeld (2002) argument that previous work experience is a resource for women to return to work. Previous work experience in formal employment that included training and accumulated skills gained before the employment exit also seem to give an advantage to women in maintaining the same jobs when they return to work.

The results of the analysis also confirm that family responsibilities significantly influence women to move into a different employment sector when they return to work. Married women with young children who had previously worked as formal workers, were found to work in the informal sector at the time of employment return. Meanwhile, single women have a higher probability of moving from informal to formal employment compared to women at other family life stages, reflecting that the formal labour market in Indonesia may favour recruiting young, single women as discussed in section 3.2.2. Female ex-informal workers with tertiary education are also more likely to return to formal employment. This finding signals that highly-educated women are highly demanded in the formal labour market, even after they have experienced an employment break.

Similar to other Southeast Asian countries, Indonesia shows a relatively fluid boundary between formal and informal work. With reference to the Philippines, Pinches (1987) states that workers among the urban poor may easily move in and out of formal employment. However, for Indonesian women, the mobility from informal to formal employment may be relatively low, given the discrimination against women in the formal lower-level occupations. Therefore, the finding of the higher likelihood of single women moving from the informal to the formal sector needs careful interpretation. It is

possible that some women spent several years working as family workers or self-employed while completing their education, and left these jobs to find work in the formal sector. Another scenario is that women who previously worked in informal employment left their jobs to attain higher education and remained unemployed after completing their education.

Despite the numbers of possible scenarios to explain the findings, the effect of education on employment change from informal to formal work is estimated based on a small sample. It may affect the result given that the proportion of tertiary educated women who returned to work in the formal sector is high. There is also a possibility of misclassification of employment sector in the data that could affect the results of the analysis, particularly the categorization of respondents' work into family workers and self-employment. In addition to that, the underreporting problem of married women's economic activity in the statistics can potentially influence the transition of employment returns. As previously discussed in section 3.2.1, women tend to consider themselves as housewives even though they are involved in economic activity, which may be the case among women who returned to work in the informal sectors. A separate investigation is needed to address these issues.

The next chapter examines one of the problems found in the data, called the seam effect. This problem creates bias in the rates of transitions in employment which potentially affects the estimation results of the analysis of employment exit and return. This problem has been addressed in the analyses in chapter 6 and chapter 7 by incorporating a dummy variable that indicates the year where the seam problem exists. Chapter 8 provides detailed elaboration of the definition, consequences, and alternative approaches to treating the seam problem in the IFLS 2000 and IFLS 2007.

Appendix 7-1. Descriptive statistics for the transitions to employment analysis

Variables	Mean	SD	Minimum	Maximum
Family status (ref: unmarried)				
Unmarried	0.21	0.41	0	1
married with no children	0.15	0.36	0	1
married with youngest child age under 5	0.55	0.50	0	1
married with youngest child age 5+	0.08	0.27	0	1
Number of children age 0-4	0.63	0.62	0	3
Number of children age 5+	0.19	0.43	0	3
<i>Education level</i>				
No schooling/elementary	0.31	0.46	0	1
Junior secondary	0.25	0.44	0	1
Senior secondary	0.36	0.48	0	1
Tertiary	0.08	0.27	0	1
<i>Employment sector</i>				
Informal	0.09	0.29	0	1
Formal	0.02	0.13	0	1
<i>Occupation</i>				
Professionals/managers	0.05	0.22	0	1
Clerical workers	0.07	0.26	0	1
Sales workers	0.21	0.41	0	1
Service workers	0.19	0.39	0	1
Agriculture workers	0.17	0.38	0	1
Production workers/labourers	0.30	0.46	0	1
Migrate in previous year	0.05	0.22	0	1
Live in urban areas	0.46	0.50	0	1
Live in Java island	0.61	0.49	0	1
One or more adult females live in the household	0.53	0.50	0	1
Duration of previous work	9.59	1.83	2	11
Household assets (in million Rp)	8.62	18.29	0	235.98
Age	25.33	5.21	14	49

Source: IFLS 2000 and IFLS 2007

8 Estimating employment transitions in the presence of a seam effect

Longitudinal data on employment has the advantage of providing information about transitions compared to cross-sectional data. However, there are limitations in this data that are commonly found in retrospective and longitudinal data. One of these is the recall bias which creates a problem called seam effect that affects volatility in the pattern of employment transitions over a lifetime. The work history in IFLS has characteristics of both retrospective as well as longitudinal surveys; therefore it potentially suffers from the seam effect issue.

In this chapter, I examine the problem of seam effect that arises from joining work histories of the IFLS 2000 and IFLS 2007, and its impact on the estimates from the discrete-time hazard analysis of transition out of and back to employment. This section provides further descriptions of the magnitude of the seam effect problem, identifies its possible causes, and estimates how severe is the bias in the estimation results due to the inclusion of the seam effect in the analyses. The elaboration starts with a brief explanation of the nature and causes of seam effects, a review of studies that analyse seam problems in other longitudinal surveys, and examines methods used to tackle the seam bias in analysis. The subsequent elaboration focuses on the investigation of the seam problem found in the IFLS 2000 and IFLS 2007, and applies methods to determine the bias in female employment transition estimations due to the seam effect.

To analyse the causes and consequences of seam bias, this section takes a sample that includes all women panel respondents of the IFLS 2000 and IFLS 2007. The reason is that seam bias may have been associated with certain characteristics beyond the characteristics of samples selected for employment transition analysis in Chapters 6 and 7. The total sample is 7,403 women who were aged less than 39 years in 1996. To determine whether the seam effect creates bias in the estimation of employment transitions made in the previous chapters, the analysis takes the estimation results from the analysis of transition out of employment and compares it with the results of estimations based on samples that have been edited to reduce the effect of seam bias. The sample for this particular analysis is based on sample 1, described in Chapter 6, which consists of women who were single at the beginning of a work spell ($n=2,047$).

8.1. Definition, cause and consequences of seam effects

Many studies have been conducted to examine the problem of seam in longitudinal surveys in developed countries, for example the Survey of Income and Program Participation or SIPP in the US (Hill 1988, Young 1989, Martini 1989, Hill 1994, Czajka 1999, Ham et al. 2008), the Panel Study of Income Dynamics or PSID also in the USA (for example, Callegaro 2007, Callegaro and Belli 2007), the British Household Panel Survey (BHPS) in Great Britain (for example, Halpin 1998), the Survey of Labour and Income Dynamics (SLID) in Canada (for example, Lemaitre 1992), and the Household, Income and Labour Dynamics or HILDA in Australia (for example, Watson 2009). These studies point to seam effects as one among particular issue that are common to longitudinal and panel data that collects continuous histories of respondents.

Generally, panel surveys gather information about a particular status of respondents repeatedly, such as employment, income, food stamp use, for a particular reference period. The seam effect arises when the researcher joins retrospective histories of respondents' status from two or more waves of the surveys. The change in status generally explodes around the 'seam' or the period between the last reference period in the previous wave and the earliest reference period in the subsequent wave. The higher number of status changes, that are higher between waves than the status changes within the non-seam period or within waves, is called the seam effect:

Seam effects are the tendency for estimates of change measured across the 'seam' between two successive waves to far exceed change estimates measured within a single wave. (Callegaro 2008, p.387)

8.1.1 Causes of seam effects

Although the seam effect problem mainly arises as a result of the joining of continuous histories of two or more waves of panel surveys, the main causes of the greater number of transitions that occur between waves (or around seam periods) are actually the respondents' errors in reporting their status and their dating of the events. Martini (1989) and Lemaitre (1992) state that the bias of transition numbers around the seam is due to the combination of three respondent errors: first, respondents omit or under-report the events; second, respondents misclassify or incorrectly define the events; and third, respondents incorrectly report the dates of the events. These three issues can

lead to problems of underreporting of transitions within waves and can cause spurious transitions between waves (For further detail and examples, see Jäckle 2008b, Lynn et al. 2005, Callegaro 2008).

Previous studies have elaborated the underlying causes of respondents' errors (see for example: Lynn et al. 2005, Callegaro 2008, Lemaitre 1992). The problem of omission and misclassification of events by respondents is affected by the errors in reporting made by the respondents, errors made by the interviewers and also errors made by the coders during the data entry process. From the respondents' perspective, forgetting seems to be the main cause of response errors.

In explaining the response errors, Jäckle (2008a) highlights the process of respondents providing answers to questions that ask about past events and their dates, as discussed in previous literature. From respondents' perspective, there are three stages of constructing a response:

Respondents must first understand the survey question and identify what information is requested. Second stage involves searching for and retrieving information from memory. Respondents then make judgments about the completeness and relevance of the retrieved information and compete and integrate this information to compute a response. Finally, respondents map the retrieved and computed information onto one of the response options and may edit their response. (Jäckle 2008a, p.12)

The problem of seam arises due to inconsistencies in the respondents' reports about their status in a particular reference period from one to the subsequent wave of the survey. Such inconsistencies might be caused by errors from respondents and interviewers or coders.

Respondent errors may come from incorrect reporting about their status and spells in which they spent in a status. Respondents tend to omit or underreport the change in their status in a particular reference period. For example, a respondent did not report their unemployment status in a month of the reference period. The misreporting can also be caused by respondents misclassifying their state into an incorrect one. For example, a respondent reported to be a homemaker rather than unemployed even though they were looking for work in a particular reference period.

The response errors can be caused by both individual factors and the interview structure. In discussing the underlying causes of errors from the respondents' side, Jäckle (2008a) provides a review of previous studies, and argues that information processing during the interview is one of the important determinants of error. The processing starts with respondents comprehending the survey question, choosing information that is needed in the survey, processing and editing the response. One important point from Jäckle's (2008a) summary is the role of the interview structures as well as the wording in the survey questionnaire in creating inconsistency in the respondents' reported work status. For example, in panel surveys such as the BHPS labour market activity history in Great Britain, respondents are asked to provide information on the start date of work in their present position if they are working and the start date of the current spell if the respondents are not working. A second example is the survey of labour market activities by the SIPP in the USA. By anchoring the interview to a calendar, this survey asks a series of open-ended questions about work status each week throughout the reference period of the calendar.

Burkhead and Coder (1985, p.352) argue that the procedures for probing information in survey questionnaires have an impact on the response provided by the respondents. The impact is determined by "the clarity of concepts, the complexity of sentence structures, question wording and reporting instructions." (Jäckle 2008a, p.12).

Other than question' structures, response errors can also be caused by recall bias. Respondents provide incorrect information due to memory decay or lack of effort to memorize details of past events. Previous studies identify forgetting as the main cause of inconsistent responses that create the seam effect (Jäckle and Lynn 2005, Rips et al. 2003). Some respondents may forget entirely about having experienced a particular spell and therefore omit it in the retrospective history. The issue of memory decay can also arise among respondents with complicated situations. Some respondents experience multiple life events, such as work and attending school in the same period, or looking for work at the same time as looking after the family. Such complexity increases the omission of an event as well as misclassification of the spells.

In other cases, respondents may underreport a change in status over a reference period. Respondents tend to do 'reverse telescoping' when they report being in the same status as the most recent one throughout the reference period in the survey.

Another form of recall error that can cause seam effects is the so-called 'constant wave response', that is, when respondents constantly tend to report the same status in order to shorten the interview (Burkhead and Coder 1985). In the SIPP, Martini (Martini 1989), Young (1989) and Czajka (1999) find that some respondents provide a similar response for almost the entire reference period. Respondents transfer the same answer from earlier months to other months in the reference periods within an interview. This problem causes underreporting of within-wave transitions.

Some studies have suggested that recall problems are associated with particular demographic characteristics of the respondents. For example, inconsistent reports were mostly found among African Americans and older respondents in Hill's study (1988) which examines the seam bias in labour market activity in the PSID. In examining seam effects in BHPS, Jäckle and Lynn (2005) have found that older people tend to have report errors or missing data. In contrast, using the PSID data, Callegaro and Belli (2007) found older respondents seem to have fewer errors in reporting their employment status. This study also found that male respondents, those with higher education, with complicated job status changes and those who are poor are less likely to have inconsistent reporting leading to seam effects.

8.1.2 Consequences of seam effect

Seam effects potentially create bias in estimates of change. Response errors that occur around the seam year increase the number of transitions occurring during this period compared to other reference periods. Higher numbers of transitions occurring in the seam periods also affect the length of the spells spent in a particular status. Previous studies that examine the seam problem in panel surveys such as BHPS, PSID, and HILDA state that noise due to the seam effect is not minor and cannot be ignored in estimations (Nielsen and Gottschalck 2009). The magnitude of bias is discussed using the IFLS 2000 and IFLS 2007 in the next section.

8.2. Seam Effects in IFLS 2000 and IFLS 2007

Section 4.2.1 provides a brief elaboration of the problem of seam effects. This problem arises due to adjoining work histories from the IFLS 2000 and IFLS 2007. These two waves of the survey have overlapping years in their work histories reference, years 1999 and 2000 (Figure 8-1). The panel respondents of the IFLS 2000 and IFLS 2007 were asked to answer questions about their working status and employment characteristics if they were working in 1999 and 2000, in both waves of the survey. However, this study has found inconsistencies in the reporting of work status in the overlapping years. For example, one respondent stated that she was working in the year 1999 in the work history interview of the IFLS 2000, but she stated that she was not working in the year 1999 in the interview done for the IFLS 2007.

There are two practical approaches in dealing with data inconsistencies. One may choose to use information about respondents' 1999 and 2000 work experiences from either wave of IFLS, or to exclude the inconsistent respondents from the analytic sample. The former option has the consequence of causing a kinked pattern of the percentage of women who worked across time. This means that employment transitions, either entering into or exiting from work, would be more likely to occur in years 1999 and 2000. The second option, to remove inconsistent respondents, would reduce the number of observations in the analytic sample.

As previously mentioned in section 4.2.1, this study chooses to use respondents' working status information for the overlapping years from one wave. It uses information about respondents' work status in 1999 and 2000 from the IFLS 2000 (Figure 8-1) and therefore the work history in the analysis has seam years between 2000 and 2001. There are two main consequences of taking this approach: women's working pattern across years is volatile during the seam years; and the estimation results of employment transitions are possibly biased due to the larger number of transitions occurring during the seam years.

Figure 8-1. Overlapping and seam years in the work history of IFLS 2000 and 2007

The discussion in this chapter elaborates the magnitude, cause and consequences of the presence of seam effects in the IFLS 2000 and IFLS 2007. The discussion includes the identification of an inconsistent pattern in the reported work status in the overlapping years, their magnitudes, the characteristics of the respondents who provided inconsistent reports, and the approaches to treating the seam effects in the estimations of women's employment transitions.

8.2.1. Magnitude of seam effects in IFLS 2000 and IFLS 2007

To examine the seam problem in the IFLS 2000 and IFLS 2007, two indicators are used to measure the magnitude of the problem: annual employment rate which is defined as the annual proportion of women who were currently employed (in per cent), and the rate of transition out of employment (or employment exit rates), defined as the annual proportion of women who were exiting employment during the first work spell out of the total of women working and at risk of leaving employment (in per cent).

The seam problem is identified from the plotted percentage of women who worked in the overall analytic sample constructed from the IFLS 2000 and IFLS 2007 (n=7,403). Figure 8-2 shows the percentage of panel female respondents who were working throughout the period of work history covered in each of the IFLS 2000 and 2007. The patterns from IFLS show a similarity in the increasing trend throughout the reference period of the work history. The pattern from the IFLS 2000 shows that women's employment rate reached 52 per cent in 1999 and 54 per cent in 2000, while the percentage of women working from the IFLS 2007 in 1999 is 46 per cent and in 2000 is 48.5 per cent. The difference in the rate of women working in the overlapping years of the IFLS 2000 and IFLS 2007 is around 5.7 per cent on average. This gap indicates

that there are some women who were inconsistently reporting working status in the year 1999 and 2000 in the IFLS 2000 and IFLS 2007. These women reported that they were working in 1999 and 2000 in the IFLS 2000 survey, but they reported themselves as not working in 1999 and 2000 in the IFLS 2007 survey.

However, this gap continues in the subsequent years after 1999 and 2000. The percentages of women working in 2001 and 2002 are lower compared to the year 2000. As a consequence, the percentage of women working show a 'kinked' pattern or falling by around four per cent between the year 2000 and 2001 after work histories from the IFLS 2000 and IFLS 2007 were joined (Figure 8-3). Such a pattern suggests that respondents who provide inconsistent reporting in the overlapping years seem to continue to report themselves as not working in the years 2001 and 2002. This is an indication of a problem of 'constant wave response', which is discussed later in section 8.2.2.

In the analysis of employment exit, the presence of seam effects increases the rate of the transitions that occur during the seam years. Figure 8-4 confirms that the transition of employment exit mostly occurred in the year 2001. The percentage of women leaving employment in 2001 increased from 8.3 per cent in 2000 to 24 per cent in 2001 and dropped substantially to 3 per cent in 2002. Therefore, the seam effect in the IFLS 2000 and 2007 work history creates a bias in the gross flows of employment exit among women aged 10-38 years in 1996.

Figure 8-2. Employment rates 1996-2007 from individual work history of IFLS 2000 and IFLS 2007

Note: the percentage of women working is calculated based on a sample consist of both ever-working and never-working female panel respondents aged 10-38 years in 1996 (n=7,403).
 Source: IFLS 2000 and IFLS 2007.

Figure 8-3. Employment rates 1996-2007 from adjoined work history of IFLS 2000 and IFLS 2007

Note: the employment rate is calculated based on a sample consist of both ever-working and never-working female panel respondents aged 10-38 years in 1996 (n=7,403).
 Source: IFLS 2000 and IFLS 2007.

Figure 8-4. Rates of transition out of employment 1996-2007

Note: 1) transition rates are based on adjoined work history of IFLS 2000 and IFLS 2007; 2) Employment exit rate is calculated based on the sample consist of ever-working female panel respondents aged 10-38 years in 1996 (n=6,357); Source: IFLS 2000 and IFLS 2007

A further detailed investigation is carried out to explore the types of inconsistencies in work status reported in the overlapping years from the two waves of the survey. Table 8-1 shows the combination of responses given by panel female respondents in the analytic sample. Overall, 33 per cent of the women in the analytic sample reported working status in 1999 and 2000 inconsistently in the IFLS 2000 and IFLS 2007 respectively. The largest percentage of women who provided inconsistent responses was those who stated they were working in 1999 and 2000 in the IFLS 2000, but they stated they were not working in 1999 and 2000 in the IFLS 2007 interview (11.8%), followed by those who stated they were not working in both years in the IFLS 2000 interview but stated they were working in 1999 and 2000 in the IFLS 2007 (7%).

Table 8-1. Inconsistent pattern in the overlapping years of the work history in IFLS 2000 and IFLS 2007

Combination	Work Status in		Reporting Year	% (n=7,403)
	1999	2000		
1	1	1 0	2000 2007	0.3
2	0	0 1	2000 2007	1.4
3	1	0 1	2000 2007	1.7
4	0	1 0	2000 2007	3.4
5	1 0	0 1	2000 2007	0.2
6	0 1	1 0	2000 2007	0.1
7	1 0	1 0	2000 2007	11.8
8	0 1	0 1	2000 2007	7.1
9	1 0	0	2000 2007	2.5
10	0 1	0	2000 2007	0.5
11	0 1	1	2000 2007	2.2
12	1 0	1	2000 2007	1.6
Consistent	0	0	2000	67.0
	0	0	2007	
	1	1	2000	
	1	1	2007	

Note: The distribution of inconsistent reporting is calculated based on the sample consist of ever-working and never-working female panel respondents aged 10-38 years in 1996 (n=7,403).

Source: IFLS 2000 and IFLS 2007.

To see whether these inconsistencies were reported by a particular group of respondents, further investigation was carried out to examine the association between demographic characteristics of respondents and their inconsistent reporting. Table 8-2 shows that the percentages of women having inconsistent reporting across characteristics are relatively similar, although those with tertiary education tend to have a smaller percentage of those with inconsistent reporting. As a comparison, Jäckle and Lynn (2005) using the European Community Household Panel Survey (ECHP), found that the percentages of respondents reporting more employment transitions at the seam months increased with age: 37.5 per cent for the age group 16-24 years, 62 per cent for the age group 25-55 years, and 77 per cent for the age group 56 years and older.

Table 8-2. Distribution of respondents by consistency work status reports in the overlapping years

Characteristics in year 2000	% Inconsistent	n
Age		
15-19	33.5	1,433
20-24	37.5	1,482
25-29	36.0	1,341
30-34	30.2	1,293
35-39	28.5	1,172
40+	29.1	681
Education level		
No schooling	38.4	378
Elementary	35.3	2,963
Junior secondary	37.0	1,426
Senior secondary	28.4	2,033
Tertiary	23.7	574
Others	34.5	27
Marital status		
Never married	33.0	2,025
Currently married	32.9	5,101
Separated/Widowed/divorced	34.3	277
Urban/rural residence		
Urban	35.5	3,794
Rural	30.3	3,609
Currently working		
Working	29.1	3,427
Not working	36.3	3,976

Note: The distribution is calculated based on the sample consist of ever-working and never-working female panel respondents aged 10-38 years in 1996 (n=7,403)

Source: IFLS 2000 and IFLS 2007.

Further, using logistic regression⁵², this study finds there are certain demographic characteristics that contribute to the tendency of having inconsistent reporting in the overlapping years. Table 8-3 shows that age group, education, urban-rural residence and working status in 2000 are significant predictors of inconsistent reporting. Women from older age groups, those with secondary and higher education, and those living in urban areas in 2000 have lower odds of having inconsistent reporting compared to others, while those who worked in 2000 are more likely to have inconsistent reporting. Using logistic regression, Callegaro and Belli (2007) investigate the demographic characteristics that are associated with the seam effects. They found that increase in age, higher education, being male, and those with stable jobs throughout their work history reduced the odds of having seam bias.

⁵² Dependent variable for the logistic regression is a dummy variable equal to 1 if a woman has inconsistent reporting of work status in 1999 and 2000 in both IFLS 2000 and IFLS 2007, and 0 if she has consistent reporting. All of the independent variables are measured in 2000.

Table 8-3. Logistic regression coefficients – parameter estimates of inconsistent reporting in the overlapping years

Characteristics in 2000	β	se
Age group (ref: age 15-19)		
20-29	0.048	0.082
30-39	-0.408***	0.095
40+	-0.508***	0.123
Education level (ref: no schooling/elementary)		
Junior secondary	-0.005	0.070
Senior secondary	-0.366***	0.068
Tertiary	-0.622***	0.111
Marital status (ref: never married)		
Currently married	0.005	0.076
Separated/Widowed/divorced	0.014	0.148
Live in urban	-0.097*	0.054
Working	0.410***	0.054
Constant	-0.594***	0.078
Number of women	7,403	

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

8.2.2. Possible causes of inconsistent responses in IFLS 2000 and IFLS 2007

I argue that the structure of the questionnaire for the work history is the main cause of seam effects in the IFLS 2000 and IFLS 2007. Previous studies that investigated the seam effects in labour market activity from panel surveys such as SIPP, PSID, BHPS, and HILDA agree that forgetting seems to be the main reason for respondents providing inconsistent reports (Callegaro and Belli 2007, Callegaro 2008, Watson 2009, Jäckle 2008a). However, the nature of the questions probing economic activity in these surveys is different to the IFLS’s work history questions. In other panel surveys, respondents are asked whether there has been a change in employment status during the reference period, and if so, respondents are further asked to provide details of start and end dates of employment and non-employment spells.

In contrast, the retrospective work history in the IFLS asks about whether or not a respondent worked in each year in the reference periods. The question is: “did you work in [year]?” with ‘yes’ and ‘no’ answers allowed for. Moreover, unlike other panel

surveys, the reference period for the IFLS work history is long. Respondents in the IFLS 2007 are asked to recall their work experience for nine years before the survey year, which increases the likelihood of recall errors. Therefore, unlike other panel surveys in the studies mentioned in the previous section, the causes of seam effect in the IFLS might not be related to the omission, misclassification, or misdating of the events.

There are four factors that potentially create inconsistency in respondents' reports, which may occur not only around the seam years, but also throughout the overall period of work history in both IFLS 2000 and IFLS 2007. The four factors are:

- The question in the IFLS only inquires about the work status in a particular year, although the nature of work in Indonesia is sporadic and seasonal, particularly for workers in the informal and agriculture sectors. The nature of employment in Indonesia, particularly for women, can be very complex. In the agriculture sector, there are seasonal workers who are employed only during harvesting. Informal workers may also have complex job spells since their timing of work depends on their business cycle and many other factors that determine the sustainability of the business.
- The question in the IFLS work history section probes a respondent's work status in a particular year, while the work and non-work states can occur in monthly and daily time reference. In this case, when the interviewers did not probe further by asking about the respondents' work status for most of the 12 month period in a particular year; the inconsistency would occur because respondents may recall a different work status in the two different interview times.
- Given that the reference period of work history in the IFLS, particularly the IFLS 2007, is a long time before from the survey year, respondents might exhibit 'backward telescoping' behaviour when memorizing work status in the earlier reference period. There is a tendency for respondents to assign similar work status from earlier periods to the most recent years. In reporting the work status in earlier reference periods, respondents might make less effort to recall their work status and do what has been called a 'constant wave response' (Hill 1988)

or 'form of satisficing' (Callegaro 2008). This behaviour occurs when respondents give a response so that they do not need to provide further details. For example, respondents may tend to say that they were not working in earlier reference years in order to avoid providing employment details that require more effort to recall. This might have been occurring in the work history in IFLS 2007. The employment rates from the IFLS 2007 work history for the reference period from the year 1999 to 2007 show an increasing trend, but with the rates in 1999 and 2000 being lower than the rates in the same years from IFLS 2000. This might indicate that in the IFLS 2007, respondents possibly avoided reporting that they were working since they did not want to put more effort into recalling details of their employment. And because of that, they report themselves as not working in earlier reference years since 1999.

- There is a tendency for women in Indonesia to underreport their economic activity in the labour statistic collections (see Chapter 3). Women seem to assume that childcare and domestic work are their primary responsibilities after marriage, and disregard their economic contribution to the family. Previous studies, which are summarized in Singarimbun (1999, p.63-64), show that the underreporting of labour market activities tends to occur more among female informal workers. These women reported themselves as homemakers or 'just' helping husbands. Therefore, assuming that such situations occur among the IFLS female respondents and without further probing during the interview, the IFLS may have more married female respondents who report themselves to be out of work. This can potentially increase the underreporting of work status of women, particularly for the reference periods after the respondents' year of marriage.

These four factors are possibly causing recall errors that lead to the seam effect in the IFLS 2000 and IFLS 2007. Such recall errors cannot be corrected unless the data users are able to revisit the respondents and carry out a record check which is beyond the inquiry of the study. The next section discusses approaches that may be used to treat seam effects in the multivariate analysis.

8.3. Treating seam bias in the analysis of employment transitions

Although the existence of and methods used to reduce the seam problems in the surveys have been discussed extensively, a few studies have elaborated the methods of including and treating seam effects in their analysis. Most of these studies treat this seam effect by editing the data to suppress the large number of transitions occurring around seam periods (Martini 1989, Watson 2009, Halpin 1998), while other studies use parametric approaches, such as including a seam indicator in the analysis (Hill 1988, Brandon 1995, Chetty 2004, Nielsen and Gottschalck 2009, Fitzgerald 2004). This section presents two alternatives for treating seam effects in IFLS 2000 and 2007 by both editing the data as well including a seam indicator in the analysis. The objective of the analysis in this section is to investigate the magnitude of bias created by seam effects in the analysis by comparing the results of the analysis from the untreated and treated datasets.

Data editing has been found to be the most common approach used in dealing with seam bias in analysis. Given the different natures of work history structures in panel surveys, Lynn et al. (2005, p.45) summarize three common rules used in editing the data: imputing transition dates as random dates between interviews, relaxing the rules for matching spells around the seam, and editing the reports to correct misclassifications.

Section 8.2.1 has discussed the findings of the characteristics of panel respondents who report their work status in 1999 and 2000 in both IFLS 2000 and 2007 interviews. Table 8.2 shows that there is no particular demographic characteristic that stands out to differentiate among respondents who provide inconsistent and consistent reports. This indicates that reporting errors among respondents with inconsistent reporting are probably occurring randomly.

There are two approaches used to edit the data in attempting to reduce the effect of seam bias. The first is to exclude respondents with inconsistent reporting of their 1999 and 2000 work status in the IFLS 2000 and IFLS 2007, and the second approach is to keep all respondents and do smoothing of the trends of employment rates and transition rates.

8.3.1. Data editing 1: Removing respondents with inconsistent responses

The first approach to reduce the seam effect is to exclude respondents who provided inconsistent reports of their work status in 1999 and 2000 from the IFLS 2000 and 2007. This approach assumes that respondents with inconsistent reporting found in the overlapping years are also more likely to misreport their work status in other years. It also assumes that respondents with consistent reporting of work status in the years 1999 and 2000 are those who have 'true' work status and rates of employment transitions.

Figure 8-5 shows the annual working rates of all women in the sample and women with consistent reporting of their work status in 1999 and 2000 in both IFLS waves. The trends calculated for women with consistent reporting have a much smoother pattern than for the overall sample. The trend shows that the employment rates of 'consistent' respondents are slightly higher than the rates of all respondents in almost all years except during the year 1999 and 2000.

The employment rates of 'consistent' women show a constant, increasing pattern over time (Figure 8-5). However, the growth rates between 1999 and 2000 are slightly lower than in previous and succeeding years. The drop in employment growth among women with consistent responses might be related to Indonesia's macro-economic conditions during this period. According to Suryadarma et al. (2007) the size of the female labour force expanded by 4.8 per cent during the economic crisis that occurred between mid-1997 and mid-1998. After August 1998, labour force participation rate declined by 2.5 per cent, and it was followed by a 22 per cent increase in the percentage of housekeeping activities from August to December 1998.

Meanwhile, the trends in employment exit rates calculated from the 'consistent' sample show a fluctuating pattern from 1996 to 2007 (Figure 8-6). Contrary to the trends calculated from the overall sample, the transition rate is much lower in the seam year. Such a trend also seems to contradict the expansion in the labour force during the economic crisis. The percentage of women leaving employment increases up to 1998 before it drops and reaches its lowest point in 2000, indicating more women quit their jobs during the economic crisis and fewer did so afterwards. The trend of employment exit calculated from the overall sample, however, shows a large proportion of women

were not working in 2000 and it reaches its highest point in 2001. Although the increase in employment exit rate seems to be overestimated, the trends calculated from the overall sample more closely resemble the expansion and contraction in the labour force during and after the period of economic crisis, between 1997 and 2000.

The trend from ‘consistent’ respondents demonstrates that removing respondents with inconsistent reporting of their 1999 and 2000 work status in the IFLS 2000 and 2007 obliterates the seam effect in the data. However, since the trend contradicts what happened in the labour force, particularly during the period of economic downturn, it might not represent the actual trend that occurred in the absence of seam effect.

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.

Since their proportion is quite large (33 per cent), exclusion of respondents inconsistently reporting work status in the overlapping years substantially reduces the number of samples. Moreover, removing this group might lead to selectivity bias. Respondents who have inconsistency in reporting their work status in the overlapping years might have a more interrupted working pattern than those who provide consistent reporting.

Table 8-4 below shows that women inconsistently reporting their work status in the overlapping years tend to include a higher proportion of those with an interrupted working pattern and who have more than one working spell throughout the period of work history in the IFLS. However, Table 8-4 also shows that most of the 'inconsistent' respondents were found to leave the first work spell in 2001. This may indicate that these respondents are more likely to have had an interrupted working pattern because they underreported their work activity in earlier years of the work history reference period from the IFLS 2007 and most of them seem to have ended their work spell in 2001.

Table 8-4. Working pattern, end of first work spell and number of working spells throughout work history by consistency of work status reports

	Response Type		Total
	Inconsistent	Consistent	
<i>Working pattern</i>			
Never worked	1.1	20.6	14.1
Continuous less than 12 years	23.6	25.9	25.1
Interrupted	72.7	19.5	37.1
Continuous 12 years	2.6	34.1	23.7
n (person)	2,444	4,959	7,403
<i>First work spell ends*</i>			
Before 2001	22.9	6.5	11.9
At 2001	40.3	1.0	14.0
After 2001	9.5	11.9	11.1
Censored	26.2	60.0	48.8
n (person)	2,418	3,939	6,357
<i>Number of working spell*</i>			
1	55.6	72.3	66.8
2	39.4	6.7	17.5
3	3.7	0.4	1.5
4	0.2	0.0	0.1
n (person)	2,418	3,939	6,357

Note: The percentages are calculated based on the sample consist of ever-working female panel respondents aged 10-38 years in 1996.
Source: IFLS 2000 and IFLS 2007.

Therefore, removing the ‘inconsistent’ respondents reduces the appearance of the seam effect. The transition rates calculated based on the ‘consistent respondents’ might show the true transition rates of women’s employment exit since this group is expected to correctly report their work status in the seam year. However, estimating employment transitions based only on those respondents with consistent reporting might also produce a bias given that the sample excludes those who potentially have a more interrupted working pattern. The next section discusses other alternatives for data editing that retain the respondents with inconsistent reporting. The approach is to smooth the trends of women’s employment rates and the transition rates of women’s employment exit.

8.3.2. Data Editing 2: Smoothing

Given that the inconsistency in work status reporting for the overlapping years in the IFLS work history does not depend on particular demographic characteristics, the next approach to treating the seam effect is to reduce the appearance of seam effect by randomly assigning work status to those who provide inconsistent reporting. The main idea of this approach is to recode the work status of those women with inconsistent

reporting in order to obtain a smoother pattern of the annual rate of employment as well as reduce the number of transitions occurring in the seam year. The random allocation is conducted on datasets that take information about work status of respondents in 1999 and 2000 from the IFLS 2000. This approach uses the employment rates and transition out of employment rates calculated from the ‘consistent’ respondents in order to smooth the trend. The sample that includes overall women age 10-38 in 1996 is further called as original sample in the following sections.

Smoothing the annual employment rates

The first approach is to smooth the trend of employment rates, particularly in the seam year and the years where the trend shows a higher increase or decrease in rates compared to other years. The data smoothing is focused on the year 1999, 2000 and 2001, where the trend of annual employment rates shows a kinked pattern (see Figure 8-3). The steps in smoothing the annual rates of women employed are as follows:

- a. Assign the employment rates calculated from ‘consistent’ sample for the year 1999, 2000, and 2001 in order to get a smoother pattern of annual rates (see Table 8-5)

Table 8-5. Employment rates based on original and ‘consistent’ samples

Year	Original		Consistent sample		Reduction in
	%	n women employed	%	n women employed	n women employed
1999	52.0	3,851	50.5	3,739	112
2000	53.7	3,976	51.0	3,778	198
2001	50.4	3,731	52.3	3,868	-137

Note : The 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.

- b. Recalculate the number of women who were employed based on the new employment rates.
- c. Recode the work status in 1999, 2000 and 2001 of women based on the number of reductions in the original sample, in order to achieve employment rates that match the consistent rates. For example, there are 112 women whose work status in 1999 is recoded from working to not working, while there are 137 women whose work status in 2001 is recoded from not working to

currently working. The selection of these women is done randomly. For 2001, those who have been recoded as working have missing employment characteristics. The missing information is later filled by the employment characteristics in succeeding years in the estimation of transitions out of work.

This data editing approach unfortunately does not produce a smoother pattern of employment exit rates. Table 8-6 shows that the number and per cent of women leaving the first work spell calculated from the sample with smoothed employment rates are higher than the non-smoothed rates. The number and percentage of transitions out of employment in the seam year (2001) is only reduced by 0.2 per cent using this method.

Table 8-6. Rates of transition out of employment from original and smoothed samples

Year	Original		Smoothed 1999-2001 employment rates	
	number of transitions	%	number of transitions	%
1996	0	0	0	0
1997	127	3.7	127	3.9
1998	214	5.7	214	6
1999	197	5.0	234	6.2
2000	345	8.3	404	10.2
2001	1,036	23.5	988	23.3
2002	98	2.8	107	3.2
2003	91	2.5	97	2.8
2004	99	2.7	102	2.9
2005	119	3.1	121	3.3
2006	132	3.4	132	3.6
2007	285	7.3	285	8.1
n leaving the first work spell	2,743 women		2,726 women	
n women had ever worked	6,173 women		5,972 women	
mean duration of work	3.6 years		4.2 years	
mean age at exit	29 years old		27.6 years old	

Note: the rate is calculated from a sample consist of ever-working female panel respondents aged 10-38 years old in 1996.
Source: IFLS 2000 and IFLS 2007.

Smoothing the annual transitions rates

The second approach is to smooth the rates of transition out of employment. The steps are as follows:

- a. Replace the percentage transition out of work in 2001 with the average of transitions out of work in 2000 and 2001 (see Table 8-7). The average transition in 2001 is 5.4 per cent from 1,036 women, that is, there are 238 women who are assumed to have left employment in this year.
- b. Recode the work status of 798 women (1,036-238) in the untreated data (original) from not working into working. The selection of 798 women is done randomly.
- c. Recalculate the start and end dates of the first work spell and create a sub-sample for analysis based on the latest start and end dates of the spell.

Table 8-7. Number and rates of transition out of employment from original and smoothed samples

Year	Original		Smoothed at 2001	
	number of transitions	%	number of transitions	%
1996	0	0	0	0
1997	127	3.7	127	3.7
1998	214	5.7	214	5.7
1999	197	5.0	197	5.0
2000	345	8.3	345	8.3
2001	1,036	23.5	238	5.4
2002	98	2.8	98	2.7
2003	91	2.5	91	2.5
2004	99	2.7	99	2.6
2005	119	3.1	119	3.1
2006	132	3.4	132	3.4
2007	285	7.3	285	7.6
n leaving the first work spell	2,743 women		2,683 women	
mean duration of work	3.6 years		3.9 years	
mean age at exit	29 years old		29.4 years old	

Note: number and rates are calculated based on the sample of ever-working and never-working female panel respondents aged 10-38 years old in 1996.

Source: IFLS 2000 and IFLS 2007.

Alternatively, the transition rates for the whole period of work history observations are replaced by the values calculated from the consistent responses (see Table 8-8).

Table 8-8. Number and rates of transition out of employment from original and smoothed samples

Year	Original		Transition rates from consistent sample		n women with recoded work status
	number of transitions	%	number of transitions	%	
1996	0	0	0	0	
1997	127	3.7	117	3.4	10
1998	214	5.7	166	4.4	48
1999	197	5.0	152	3.8	45
2000	345	8.3	54	1.3	291
2001	1,036	23.5	87	2.0	949
2002	98	2.8	86	2.4	12
2003	91	2.5	71	2.0	20
2004	99	2.7	82	2.2	17
2005	119	3.1	111	2.9	8
2006	132	3.4	128	3.3	4
2007	285	7.3	250	6.7	35
n leaving the first work spell	2,743 women		1,304 women		
mean duration of work	3.6 years		3.9 years		
mean age at exit	29 years old		28 years old		

Note: Number and rates of employment exits are calculated from the sample consist of female respondents aged 10-38 years old in 1996.
Source: IFLS 2000 and IFLS 2007.

8.3.3. Estimating the transition out of employment: comparisons across edited samples

The main objective of analysing the seam in the IFLS 2000 and IFLS 2007 in this chapter is to investigate whether the results of the analysis of the transitions out of employment using data that contains a seam effect is biased or not. The results from seam effect data is assumed to be biased when the estimate coefficients from logit regression of employment exit based on the original sample show substantial differences in the magnitude of coefficients, standard errors, and significance level. The analyses in this section are based on the sub-sample 1 of the employment exit analysis in Chapter 6, that is: 2,407 women who were single at the beginning of a work spell.

To begin with, a descriptive analysis which compares the differences in average age of leaving employment and duration of work calculated from the original sample and the sample consisting of ‘consistent’ respondents is presented. There is almost no difference in the average age of leaving employment and the duration of work of women who left employment between the edited and original samples (Figure 8-7). However, the proportion of women who left employment by individual characteristics is smaller based on the edited samples (Table 8-9). One important point to note is that

the percentage of informal workers leaving employment is far smaller in the sample that excludes the inconsistent respondents compared to the original sample. This suggests that inconsistency is more likely to have occurred among women informal workers.

Figure 8-7. 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)

Table 8-9. Characteristics of women who had an employment exit, original and edited samples

	Original		Consistent		Smoothed transition rates	
	%	n total	%	n total	%	n total
Age at the beginning of work spell						
15-19	66.8	921	50.7	454	33.3	921
20-24	49.3	816	39.4	579	31.1	816
25-29	40.1	222	27.0	163	23.0	222
30+	25.0	88	6.3	63	6.8	88
Marital status at the end of work spell						
Single	50.6	850	29.3	505	24.2	850
Married	58.3	1,197	47.5	754	34.4	1,197
Education level at the end of work spell						
No schooling/elementary	59.7	409	36.4	206	28.1	409
Junior secondary	69.2	441	52.8	216	32.4	441
Senior secondary	57.4	794	47.2	532	35.0	794
Tertiary	30.4	401	21.5	303	20.2	401
Last job's employment sector						
Informal	47.2	530	18.1	248	13.2	530
Government	10.6	132	5.3	113	6.8	132
Private	62.4	1,384	50.7	898	38.9	1,384
Last job's occupation						
Professionals/managers	29.7	219	21.6	171	14.0	221
Clerical workers	48.6	218	38.9	167	30.5	220
Sales workers	60.0	423	45.3	258	35.4	429
Service workers	56.4	323	38.1	181	30.4	322
Agriculture workers	58.2	268	32.2	115	21.9	256
Production workers/labourers	61.1	588	49.3	363	35.7	586

Note: The distribution is calculated based on the sample consist of women who were single at the beginning of a work spell (n=2,047).

Source: IFLS 2000 and IFLS 2007.

Table 8-10 provides a comparison of the estimates of the employment exit models based on the original and edited samples. Two edited samples are tested: the sample that consists of women who provided consistent reporting and the sample in which the transitions out of work have been replaced with the rates based on the 'consistent' sample.

The results show that the estimations of the three models are similar. The size of the coefficients of estimation results based on the edited samples is of a slightly larger magnitude than the estimates based on the original sample. The significance levels of the coefficients of the three models are mostly similar, except for the dummy variables for junior secondary education, government sector, clerical occupation, agriculture workers, and completed schooling. Such differences are possibly affected by the change in the distribution of women leaving employment in the edited samples.

Table 8-10. Estimated coefficients of employment exit based on original and edited samples

Variable	Original			Consistent			Smoothed transition rates		
	β	se	Odds Ratio	β	se	Odds Ratio	β	se	Odds Ratio
Had first marriage during the spell	1.815	0.099	6.139***	2.348	0.168	10.465***	1.943	0.14	6.976***
Education level (ref: no schooling/elementary)									
Junior secondary	0.253	0.108	1.288**	0.452	0.201	1.572**	0.182	0.156	1.199
Senior secondary	0.253	0.106	1.288**	0.655	0.188	1.926***	0.393	0.147	1.481**
Tertiary	0.187	0.156	1.206	0.325	0.257	1.384	0.383	0.208	1.466
Employment sector (ref: informal sectors)									
Government	-1.285	0.307	0.277***	-0.818	0.49	0.441*	-0.395	0.398	0.674
Private	0.78	0.096	2.182***	1.873	0.216	6.506***	1.664	0.168	5.278***
Occupation (ref: professional/managers)									
Clerical workers	0.317	0.189	1.373*	0.253	0.268	1.288	0.669	0.259	1.953**
Sales workers	0.759	0.175	2.137***	0.711	0.257	2.036***	1.189	0.247	3.284***
Service workers	0.703	0.184	2.020***	0.565	0.28	1.760**	1.089	0.259	2.972***
Agriculture workers	0.479	0.2	1.614**	0.213	0.334	1.237	0.684	0.291	1.982*
Production workers/labourers	0.472	0.172	1.603***	0.5	0.251	1.649**	0.844	0.243	2.326***
Migrate in previous year	0.84	0.119	2.317***	0.9	0.194	2.459***	0.71	0.157	2.033***
Live in urban areas	-0.043	0.08	0.958	-0.009	0.127	0.991	0.018	0.108	1.019
Live in Java island	-0.355	0.081	0.701***	-0.525	0.135	0.592***	-0.295	0.111	0.744**
One/more adult females live in the household	0.008	0.075	1.008	-0.107	0.121	0.898	-0.123	0.102	0.884
Household assets (in million Rp)	-0.002	0.002	0.998	-0.001	0.002	0.999	-0.002	0.002	0.998
Completed school	-0.524	0.172	0.592***	0.309	0.409	1.362	-0.115	0.297	0.891
Age	-0.073	0.009	0.929***	-0.067	0.015	0.935***	-0.047	0.013	0.954***
Constant	-1.946	0.323	0.143***	-4.726	0.678	0.009***	-4.993	0.542	0.007***
Number of person-years		12,541			8,640			12,576	
Number of women		2,038			1,253			2,031	
Sigma u		0.576			0.872			0.8	
Rho		0.092			0.188			0.163	
df		17			18			18	
chi2		545.421			313.237			326.367	

*** 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.
Source: IFLS 2000 and IFLS 2007

The next section further discusses a parametric approach to treating seam effect by including a seam indicator in the model that predicts women’s employment exit.

8.3.4. Inclusion of seam indicator in analysis

The previous section provided description of alternatives approaches to data alteration to smooth the seam effects in the IFLS 2000 and IFLS 2007’s adjoined work histories and analysed the impact of using the altered sample in predicting transitions out of employment. One of the consequences of conducting data editing to reduce the seam effect is a reduction in the number of observations as well as manipulation of the reported work statuses. Removing the inconsistent respondents would reduce the sample size substantially, while smoothing the rates of employment as well as the rates of transition out of work would mask the actual reported transitions identified in the survey.

The next approach to treating the seam effect in the analysis of job transitions is to incorporate a variable that indicates the period of the seam in the models. This method has been used in studies that deal with monthly fluctuations of employment transitions between survey waves (Halpin 1998, Gottschalk and Moffitt 1999, Fitzgerald 2004, Nielsen and Gottschalk 2009, Ham et al. 2008). A seam indicator is measured by a dummy variable equal to 1 for the month beginning of a new interview (Fitzgerald 2004) or equal to 1 for the period when the data source changes (Halpin 1998).

Using 10 waves of the BHPS in predicting job shifts and including all spells for all individuals, Halpin (2008) found that the seam indicator had the strongest and significant effect compared to other variables. The estimate results of the seam indicator model in Halpin's study (2008) show that the magnitudes of coefficients change, although the significance and sign remain the same. In analysing job instability and insecurity using the SIPP and the PSID, Gottschalk and Moffitt (1999) incorporate a dummy variable equal to 1 if "the risk of exit is measured in the month prior to a seam." They found that the seam dummy has a large and significant effect on job transitions and indicates that transitions occur largely between waves.

Nielsen and Gottschalk (2011) estimate the unemployment transitions for eight sample groups that represent different ethnic affiliations and educational attainment, and include a seam dummy variable that indicates whether transitions occur at the seam period. The results show that the seam dummy has a significant effect across the subsamples. Nielsen and Gottschalk (2011) also found that the models that include seam variable consistently have a wider range of predicted probabilities than models that do not control for the seam effect. They argue that incorporating a seam indicator in the model is important to produce correct estimates:

[A]nalysts who do not incorporate a seam indicator variable into a multivariate model may conclude that the labour force transition probability estimates are more precise than they actually are. (Nielsen and Gottschalk 2011, p.18).

Similar to Nielsen and Gottschalk (2011), Ham et al. (2008) also incorporated a seam month dummy in their analysis of employment dynamics of disadvantaged women in the US using the 1986-1993 panels of the SIPP. In their study, Ham et al. (2008) compare the parameter estimates from the model that incorporates a seam dummy

and a model that corrects the seam bias problem by adjusting the reporting errors⁵³. They found that the coefficients and their signs as well as the significance levels of the variables produced from the model with seam and the seam corrected models are similar. They conclude that using a seam month dummy in the model is a means of simplifying the estimations of employment dynamics in the presence of a seam effect in the SIPP.

This section provides a comparison between models of employment exit which control the presence of seam effect and those models without. The seam-indicator model incorporates a dummy variable (which is called a seam dummy) that is equal to 1 for the seam year or year 2001, where most of the transitions occur. Following Nielsen and Gottschalk (2011), the transition out of work is estimated based on different subsamples to test the consistencies of the predicted probability ranges.

Table 8-11 reports estimates for models predicting transitions out of work, with and without the seam indicator. Both models produce similar results with estimates from the seam-indicator model and have a slightly higher magnitude of coefficients (β) and standard errors than the non-seam indicator model. Meanwhile, the seam dummy variable shows a positive and significant effect. This means that the seam point (or the year 2001) in the IFLS 2000 and IFLS 2007 work histories has a strong association with transitions out of employment

⁵³ In correcting seam bias in the SIPP, Ham et al. (2007) used two approaches: first, they assume that the reporting errors are constant across individuals, and second, they assume that the reporting errors vary with demographic characteristics of the individuals. For details mathematical process of seam bias correction, see Ham et al. (2007).

Table 8-11. Discrete time hazard regression results for the transitions out of employment models with and without control for seam effects

Variable	Non-seam indicator			Seam Indicator		
	β	se	Odds Ratio	β	se	Odds Ratio
Had first marriage during the spell	1.815	0.099	6.139***	1.999	0.108	7.379***
<i>Education level</i> (ref: no schooling/elementary)						
Junior secondary	0.253	0.108	1.288**	0.248	0.118	1.282**
Senior secondary	0.253	0.106	1.288**	0.258	0.115	1.295**
Tertiary	0.187	0.156	1.206	0.168	0.168	1.183
<i>Employment sector</i> (ref: informal sectors)						
Government	-1.285	0.307	0.277***	-1.332	0.324	0.264***
Private	0.78	0.096	2.182***	0.947	0.107	2.578***
<i>Occupation</i> (ref: professional/managers)						
Clerical workers	0.317	0.189	1.373*	0.374	0.205	1.454*
Sales workers	0.759	0.175	2.137***	0.874	0.19	2.396***
Service workers	0.703	0.184	2.020***	0.807	0.2	2.240***
Agriculture workers	0.479	0.2	1.614**	0.504	0.217	1.656**
Production workers/labourers	0.472	0.172	1.603***	0.535	0.187	1.708***
Migrate in previous year	0.84	0.119	2.317***	0.721	0.127	2.058***
Live in urban areas	-0.043	0.08	0.958	-0.062	0.087	0.94
Live in Java island	-0.355	0.081	0.701***	-0.394	0.088	0.674***
One or more adult females live in the household	0.008	0.075	1.008	-0.004	0.082	0.996
Household assets (in Rp 100,000)	-0.002	0.002	0.998	-0.002	0.002	0.998
Completed school	-0.524	0.172	0.592***	-0.577	0.185	0.562***
Age	-0.073	0.009	0.929***	-0.062	0.01	0.940***
Seam dummy				1.64	0.093	5.154***
Constant	-1.946	0.323	0.143***	-2.659	0.359	0.070***
Number of person-years		12,541			12,590	
Number of women		2,038			2,038	
Log likelihood		-3,340			-3,187.300	
Sigma u		0.576			0.783	
Rho		0.092			0.157	
df		17			19	
chi2		545.421			706.369	

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

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.

Source: IFLS 2000 and IFLS 2007

Another difference between the estimates from the non-seam indicator and the seam indicator models can be seen in the magnitude of predicted probabilities. Table 8-12 presents the average, minimum and maximum values of estimated probabilities of experiencing employment exit among women in the sample. The total model estimates show that the mean predicted probabilities produced in the models with and without seam indicators have a minor difference (0.8 points). Similar to the findings in the Nielsen and Gottschalk (2011) study using SIPP data, the seam-indicator model produces a wider range of predicted values than the estimates from the non-seam indicator model. The wider ranges of probabilities are consistently found in the estimations for the women working in the informal and the formal sectors before leaving employment.

Table 8-12. Predicted probabilities of employment exit from models with and without control for seam effects

Model	Non-seam indicator model			Seam-indicator model		
	Mean	Minimum	Maximum	Mean	Minimum	Maximum
<i>Total</i>	8.71	0.08	65.91	9.47	0.05	84.21
<i>By employment sector of the last job</i>						
Informal	6.34	0.18	51.99	6.89	0.12	86.18
Formal	7.53	0.07	72.27	7.81	0.06	80.28

Note: Predicted probabilities are calculated based on the estimations results presented in table 8-11 (total model) and Appendix 8-1 (by employment sector).
Source: IFLS 2000 and IFLS 2007.

8.4. Conclusion

This chapter has explored the cause, consequences, and magnitude of the seam effect in the work history data of IFLS 2000 and IFLS 2007. The analyses set out to determine whether the seam effect in the data has created a serious bias in the estimation results of employment transitions.

The findings in this chapter suggest that the seam effect creates a large hike in employment exit rates, particularly in the joint year of work histories from the two surveys. The large transitions occur due to inconsistencies in work status reporting, particularly around the overlapping years of the two surveys. From the explorations of respondents with inconsistent reporting, it was found that women from older age groups, with senior and higher education, who live in urban areas and were not working in the year 2000 have a lower tendency to have inconsistent reporting.

This chapter further explored several approaches to deal with the seam problem by editing the data and comparing estimations based on the edited data with estimations based on the original data. The findings show that estimation results from both data types are similar, with slight differences in significance level and size of coefficient of some variables. From the findings, it can be concluded that the exclusion of respondents with inconsistent responses, or adjusting the transition rates seem to create no substantial bias on the estimations of transitions out of employment. Instead, removing respondents with inconsistent reporting or adjusting the transition rates will potentially create other problems, such as sample selectivity, or the loss of information about work transitions that actually occur during the seam year.

Further, the final section of this chapter supports Nielsen and Gottschalk's (2009) approach of incorporating a variable to control the year of seam occurrence in the estimation of transitions out of employment. The finding suggests that adding a seam dummy is important for controlling for the fact that most transitions occur during the seam year. Moreover, the predicted probabilities produced by the seam-indicator model show a wider range compared to the non-seam indicator model. Therefore, modelling employment transitions in the presence of a seam effect without incorporating a seam indicator will produce 'less precise' probability estimates (Nielsen and Gottschalk 2011).

The next chapter concludes the thesis. It presents the summary of findings as well as underlines the contribution of the study. The final section of the chapter elaborates the limitations of the study and areas for future research.

**Appendix 8-1. Discrete time hazard regression results of the transitions out of employment by previous job sectors,
with and without control for seam effects**

Variable	Informal (no seam indicator)		Informal (seam indicator)		Formal (no seam indicator)		Formal (seam indicator)	
	β	se	β	se	β	se	β	se
Had first marriage during the spell	1.183***	0.139	1.545***	0.224	2.050***	0.122	2.106***	0.126
<i>Education level</i> (ref: no schooling/elementary)								
Junior secondary	0.505***	0.167	0.551***	0.196	0.05	0.142	0.035	0.148
Senior secondary	0.551***	0.176	0.603***	0.202	-0.008	0.138	-0.019	0.143
Tertiary	1.310***	0.265	1.434***	0.321	-0.710***	0.199	-0.756***	0.205
<i>Occupation</i> (ref: professional/managers)								
Clerical workers	0.197	0.57	0.346	0.645	0.484**	0.206	0.510**	0.213
Sales workers	0.608	0.4	0.654	0.464	1.053***	0.202	1.117***	0.208
Service workers	0.546	0.412	0.559	0.476	0.831***	0.211	0.883***	0.218
Agriculture workers	0.554	0.416	0.537	0.479	0.665**	0.267	0.656**	0.276
Production workers/labourers	0.207	0.416	0.156	0.478	0.682***	0.195	0.718***	0.201
Migrate in previous year	0.467*	0.268	0.037	0.304	0.900***	0.137	0.848***	0.14
Live in urban areas	-0.129	0.156	-0.116	0.176	-0.016	0.096	-0.025	0.099
Live in Java island	-0.264**	0.134	-0.363**	0.155	-0.367***	0.102	-0.382***	0.105
One or more adult females live in the household	0.137	0.13	0.055	0.148	-0.099	0.093	-0.098	0.096
Household assets (in million Rp)	-0.003	0.005	-0.003	0.005	0	0.002	0	0.002
Completed school	-0.897***	0.24	-1.157***	0.279	0.086	0.248	0.076	0.254
Age	-0.078***	0.014	-0.067***	0.015	-0.070***	0.012	-0.063***	0.012
Seam dummy			2.744***	0.166			0.912***	0.12
Constant	-1.252**	0.536	-2.137***	0.66	-1.935***	0.404	-2.212***	0.421
Number of person-years		4,284		4,284		8,306		8,306
Number of women		600		600		1,438		1,438
Log likelihood		-981.135		-806.939		-2,359.41		-2,332.21
Sigma u		0.004		0.43		0.721		0.802
Rho		0		0.053		0.137		0.163
df		16		17		16		17
chi2		125.971		333.482		422.474		443.482

***p<0.001; **p<0.05; *p<0.1

Note: 1) Models are estimated using logit regression; 2) Estimations of all models are based on the first work spell of women who have ever worked throughout 1996-2007

Source: IFLS 2000 and IFLS 2007

9 Conclusion

This thesis has explored factors contributing to the interruptions to women's employment in Indonesia. Using a dynamic approach to analyse the longitudinal datasets of IFLS 2000 and IFLS 2007, this study examines the relationship between family life cycle and women's employment exit and return.

The study fills a gap in the literature on female labour market behaviour in developing countries, which mostly lack attention to the dynamic aspects of women's labour market attachment over the life course. Examining women's employment dynamics is important for explaining the gender gap existing in the labour market of developing countries. The assumption that women will continue to carry out the caring role as their main responsibility has led women to incur more frequent work interruptions and as a result lowers their labour market attachment as well as their average wages compared to men.

The study also fills a gap in the literature on Indonesia by exploring the factors that contribute to women's employment exit and return. It explains the labour market attachment of women whose role has become increasingly important in Indonesia's economic development. With the increase in educational attainment and the expansion of the formal sectors, there are now more women entering the labour force. Past studies have examined the factors that contribute to women's decision to participate in the labour force. However, these studies have not yet investigated the continuity of women's labour force participation and its determinants due to the lack of longitudinal data.

9.1. *Summary of Findings*

This thesis examines the determinants of women's employment exit and return in Indonesia. Rather than focusing on the overall life cycle, the study focuses on women's labour market attachment through the early stages of family formation. There are three main research questions addressed in the study. First, to what extent and when do

women experience work interruption? Second, to what extent do marriage and childbearing influence women to leave employment? Third, to what extent does being in the later stages of childrearing influence women to return to employment? Fourth, what are the roles of education and employment characteristics in determining women's decision to leave and return to work?

This study finds that work interruption is common among women in Indonesia, based on the analysis of the selected female panel sample of the IFLS 2000 and IFLS 2007. The study finds that more than half of the women who had ever worked from 1996 to 2007 had experienced an employment exit in that period. The proportion of women who subsequently returned to work is also substantial. Half of the women who had had an employment break were found to have returned to work. The study also finds that women experience work interruption around the age when they are entering family formation. The average age of leaving employment is similar to the average age at first marriage. This indicates that women in the sample made the transition out of work around the time of their first marriage.

The findings in this study show that Indonesian women have a longer period of non-employment compared to women in developed countries, although women in Indonesia seem to return to work before their children reach school-age. On average, women in the sample spent three years of non-employment before returning to work. This period out of work is longer compared to the US where women on average had 50 to 57 weeks of non-employment (Taniguchi and Rosenfeld 2002).

The results of the analyses in Chapter 6 and Chapter 7 show that family life cycle plays an important role in influencing women's employment exit and return. The analysis of the transitions out of employment using a discrete-time hazard analysis shows that marriage and childbearing significantly influence women to leave their employment. Entering first marriage and motherhood are associated with a higher risk of leaving employment for women. The effect of marital status on women's employment exit is particularly strong among women who have worked in low-level occupations or in the private sector. The study also finds that the effect of marriage on women's employment exit is minor among women with tertiary education.

In Chapter 7, the results of the analyses show that later stages of childrearing significantly influence women's return to employment. The result of the discrete-time hazard analysis of the transition to a return to work shows that being married significantly influences women's employment return. The study further explores the competing risks in a return to employment for women, that is, whether a woman is working in the informal or formal sector when they return to work. While married women who are still waiting to have their first child have the lowest risk of returning to work, married women with children have a higher probability of working in the informal rather than the formal labour market when they decide to return to work. The risk of employment re-entry is also reduced when women have an additional number of pre-schoolers, possibly indicating that women are less likely to return to work when the demand of family increases.

Education and employment characteristics have been found to play important roles in influencing women's employment exit and return. The results of the discrete-time hazard analyses undertaken for this study show that among married women who began their work spell when they had no children, having tertiary education is associated with a lower risk of employment exit. Having tertiary education rather than a lower level of education also gives an advantage to women to return to work sooner. This study finds that women with secondary education have the highest risk of employment exit compared to those with no schooling or some elementary education. These findings suggest that middle-educated women have a higher risk of employment exit compared to lower and highly-educated women. The predicted probabilities from the interaction between marital status and education show that the effect of entering marriage on employment exit is amplified among women with secondary education.

The study to some extent confirms the findings from studies on the impact of employment characteristics on women's employment dynamics in developing countries. Occupational differences play a significant role in influencing women's employment exit, but have no effect on women's employment return. The probability of quitting employment is highest among women sales workers whose jobs are less regulated and institutionalized. The interaction effects between marital status and occupation shows that the impact of entering marriage is highest among women service workers. This occupation, which in the sample is dominated by housemaids, is characterised by low prestige, low wages and poor working conditions; these features

may become the drivers for these women to leave this type of employment when they enter marriage.

The risk of leaving employment also differs across employment sectors. Women working as government employees have a lower risk of leaving employment compared to private and informal workers. This lower risk may be associated with the benefits and permanency of careers accorded to employees in the public sector. This study finds that formal workers tend to continue to work in the same sector when they decide to return to work. This indicates that work experience in formal employment is useful to apply to new jobs or return to the old jobs when women return to employment.

Among women who do return to work, the majority continue to work in the same sector, although a substantial proportion of women work in a different sector. Among women who previously worked in formal employment, around 40 per cent moved to the informal sector, while among women who previously worked in informal employment, around 36 per cent moved to formal employment. Results of the employment change analysis among women who returned to work indicate that family status plays a significant role in the decision to move into different employment than the previous work period. Married women with young children have a higher probability of moving from formal to informal employment compared to women at other life stages.

This study also explored the problem of seam bias in the IFLS 2000 and IFLS 2007. This problem creates a bias in the gross transitions out of employment in the seam year. Editing the data has been shown to reduce the bias in transition rates, however the results of the discrete-time hazard analysis based on the edited data do not show different results to the analysis based on the original data. However, the literature indicates the importance of acknowledging the problem of seam in the analysis by including a dummy to indicate the year in which the transitions out of employment mostly occur. Throughout the thesis, a seam dummy is incorporated into the discrete-time hazard analysis to estimate employment exit and re-entry. Its effect is significant and positive which indicates that the transitions in employment are most likely to occur in the seam year.

9.2. Contribution to current knowledge about women's labour market attachment in Indonesia

For Indonesia, the study contributes to a better understanding of women's labour market behaviour. Previous research has highlighted the importance of marital and childbearing status on women's probability of participating in or entering the labour force, but little is known about the effect of both factors on determining women's decision to leave and return to the labour market.

While the study confirms that employment interruption occurs among women workers in Indonesia, the results of the analysis indicate that women have a longer period of non-employment compared to women in developed countries. As explained in section 1.1, work interruption is implicated as the cause of the lower average wages of women since it diminishes women's human capital. The longer non-employment period relative to other countries found in this study suggests that women in Indonesia may have a more severely diminished human capital and it perhaps explains the persistence of the gender wage gap in Indonesia.

The findings of the study show that the transitions into marriage and childbearing increase the risks of women leaving employment. This result provides an explanation of the negative association between marital status and the presence of young children on women's probabilities of participating in the labour force found in Manning (1998), Widarti (1998), Feridhanusetyawan and Aswicahyono (2001), and Ogawa and Akter (2007). Being married and having young children may be not only holding women back from entering the labour force, but also influences women with premarital work experience to leave employment.

The positive association between marital status and motherhood and women's employment exit found in this study suggests that to some extent, women in Indonesia still hold the traditional norms idealizing the role of a woman as homemaker after marriage, as discussed in section 3.2.2. The norms influence women's expectation as well as their behaviour towards their employment continuity after marriage. Although women wait until they are 'economically ready' to enter marriage, as suggested in the findings of Chapter 5, women expect to leave employment after marriage.

The study has also found a stronger effect of marital status on women's transition out of work for those working in low-level occupations in the private sector. This suggests that work interruption in these occupations perhaps exists due to the presence of employers' discrimination against married women. Low-level occupations, particularly sales and service jobs, are characterized by temporary working contracts, low wages, low job benefits, as well as an intense employer bias against female workers with families. In addition to these characteristics, the presence of outsourcing scheme particularly in the sales and service occupations, augment the vulnerability of women in Indonesia to experience work interruptions.

The role of education in women's employment exit and return found in this study support the human capital hypothesis of the relationship between education and labour supply (Becker 1991). Higher educational attainment provides resources for women to participate in the labour market and exposes them less to the risk of employment interruption. The finding on the relationship between education and employment exit also provides an additional explanation of the J-shaped feature of female labour force participation by education in Indonesia found by Widarti (1998) and Ogawa and Akter (2007). The positive effects of having secondary education on employment exit suggests that middle-educated women have the lowest labour force participation because they have the highest risk of employment exit compared to women with both the lowest and the highest education. Moreover, the J-shaped pattern of female labour force participation by education might be more closely related to the withdrawal of married women rather than single women from the labour market as indicated in the findings from the analysis that connect marital status and education variables.

This study presents evidence of the movement from formal to informal work among women workers in Indonesia already hinted in anthropological studies (see section 3.1.3). The majority of women in this study continue to work in the same sector, but a substantial proportion move to a different sector of employment when women decide to return to work. The result of the analysis indicates that movement from formal to informal sectors is associated with women's familial responsibilities. It suggests that women in Indonesia use the strategy of working in informal employment to reduce the incompatibility between income earning activities and their caring roles.

It is also important to note that employment interruption can occur to a very selective group. Solera (2008) found that women who experienced work interruption in her study had selective characteristics: low-educated, worked in low-level occupations, and had strong preference to be a homemaker. Similarly, employment exit among women in Indonesia is more likely to occur among married women with secondary education, and who have worked in low-level occupations in the private sector. Those who left work due to marriage may hold strong norms of women's ideal role as the main carer of the family after marriage, or may be those who have been working in employment that is characterized by discrimination against married women with children. Moreover, employment exit may also occur among those who do not have relatives or to those who cannot afford housemaids for childcare, although this study does not find a significant effect of the presence of other female adults in the household as a proxy of childcare.

Returning to work is also a selective process. Similar to Solera (2008) who finds that the decision to return to work among the women in her study was influenced only by number of children and marital separations, this study finds that employment return is mainly affected by family status and education of women. Those women able to return, particularly to the formal labour market, are those who have no family responsibilities and have the resources to access formal jobs, particularly highly-educated women.

9.3. *Contribution of the study and future research*

As stated in section 1.2, the main contribution of the study lies in the use of dynamic analysis of longitudinal data in exploring the determinants of female labour force behaviour in developing countries. The study employs discrete-time hazard modelling to examine the effect of different family life stages on women's employment dynamics. The study takes the benefit of the Indonesian Family Life Survey (IFLS), a panel survey that collects retrospective life histories of respondents, which enables the exploration of the dynamic relationships between family life stages and women's employment decisions.

From the use of both dynamic analyses and longitudinal data, the study is able to capture the variation of women's labour market attachment over the life cycle, particularly around the early stages of family formation. The use of longitudinal data

has enabled this study to decompose women's employment states throughout their life, that is, to differentiate whether non-participation in the workforce is sourced from never been employed or leaving the workforce; and whether participation in the workforce is sourced from the entry to the labour force for the first time or returning to the workforce. The use of the method and data also enables exploration of the effect of entering motherhood and the onset of motherhood on women's employment interruption as well as the effect of later stages of childrearing on women employment return, which remain unclear from studies that use static approaches to explore women's labour market attachment.

Despite the benefits provided by this study, the study has identified some limitations in the data and methods used in its analyses. The following lists the limitations in the research and identifies the areas that can be explored for future research.

- This study uses a single spell of work and non-work for the analysis, while the nature of employment transitions is actually repeatable. An individual can experience transitions in and out of employment multiple times throughout their life course. The impact of the family life cycle may also be different in each of the job spells. Future studies can incorporate multiple spells to provide more robust conclusion on the determinants of employment exit and return.
- Initially, this study embarked on an analysis of four waves of the IFLS dataset. However, given the time limitation and complexity of handling and combining retrospective histories from four waves of the IFLS, this study focuses only on the two most recent waves of the IFLS. Further studies will benefit from the use of several waves of the IFLS given it provides longer periods of work history observation as well as the incorporation of older cohorts of marriage and the birth of the first child that enables researchers to carry out cohort comparisons in their analysis.
- This study focuses on the interruption in work of women and assumes that men's working pattern is less affected by their life cycle. Analysis of the work interruption of the husbands of female respondents would be advantageous to examine the link between husbands' and wives' labour market attachment,

particularly to test whether husbands and wives are substitutes or complementary.

- Findings from this study provide a clearer picture of why marital status and childbearing are associated with lower labour force participation of women. However, this study is perhaps lacking in explanation of the underlying factors that contribute to women's decision to interrupt their work. This limitation is rooted in the limited number of time-varying covariates available from the data that inhibit explorations of the effects of multidimensional determinants on women's employment decision. This study would have benefited from a qualitative study that examined how women's attitudes toward work and family as well as their labour market experience influenced their decisions to quit and return to work.
- The elaboration of the causes of seam bias in the work history of IFLS 2000 and IFLS 2007 indicates that the method adopted for interviews becomes an important means to reduce the inconsistencies in respondents' reports. Literature such as Jäckle (2005) recommends a method of interviewing called dependent interviewing to reduce the potential for inconsistent reporting during interviews. Anchoring the response of the current wave to the work history in the previous wave may reduce respondents' memory bias and the potential 'backward telescoping' problem. IFLS has practised such a method for collecting information for the marriage and childbirth history sections but not in the work history section. Another possible approach that may reduce the memory bias of respondents is to collect the full rather than partial work history of a respondent based on age rather than year. The interviewer may also associate the observation period with other life histories of respondents, such as marriage and childbirth.

To conclude, this study has found that employment interruption is common among women in Indonesia. Marriage and motherhood seem to force women to leave employment as well as discouraging women returning to employment, except for tertiary educated women. This study has also found that work interruptions, particularly following marriage and childbearing, are more likely to occur among

workers working in low-level occupations, whose jobs are characterized by low-skill level and low job security.

Given that employment interruption occurs in relation to selected characteristics, a policy that specifically targets the most vulnerable women is needed if the government aims to promote overall female labour force participation. Policy needs to address the barriers to women continuing to work after marriage and having children, particularly in low-level jobs in the private sector. Stricter enforcement of the provisions of maternity leave is needed in all regulated sectors. Moreover, the regulation in the Labour Law that endorses outsourcing and non-permanent working contracts may need to be revisited. Women are the most vulnerable subjects of such regulation given the existing employer bias against women with children.

References

- ABEYNAYAKE, S. P., BOMHOFF, E. J. & LEE, G. 2012. Female age at first marriage and fertility levels: A comparison of developed and developing countries. *Proceedings of 19th International Business Research Conference 2012*. Melbourne: Monash University.
- ADIOETOMO, S. M. 2005. Reshaping population. In: HULL, T. H. (ed.) *People, Population, and Policy in Indonesia*. Jakarta: Equinox Publishing (Asia) Pte. Ltd.
- AGRAWAL, N. 1995. *Indonesia Labour Market Policies and International Competitiveness*. Background paper for World Development Report 1995. Washington, D.C.: World Bank
- AGÜERO, J. M. & MARKS, M. S. 2008. Motherhood and female labor force participation: Evidence from infertility shocks. *American Economic Review: Papers and Proceedings 2008*, 98.
- ALLISON, P. 1982. Discrete-time methods for the analysis of event histories. *Sociological Methodology*, 13, 61-98.
- AMIN, S. & BAJRACHARYA, A. 2011. Marriage and First Birth Intervals in Early and Late Marrying Societies: An Exploration of Determinants. In: EDMUNDS, E. (ed.) *Paper prepared for the 2011 Annual Meetings of the Population Association of America*. Washington, D.C.: Population Association of America (PAA).
- ANGRIST, J. D. & EVANS, W. N. 1996. *Children and their parents' labor supply: Evidence from exogeneous variation in family size*. NBER Working Paper Series 5778. Cambridge: National Bureau of Economic Research
- ANKER, R. & HEIN, C. 1985. Why do third world employers usually prefer men? *International Labour Review*, 124, 73-90.
- BARBER, J. S., MURPHY, S. A., AXINN, W. G. & MAPLES, J. 2000. Discrete-time multilevel hazard analysis. *Sociological Methodology*, 30, 201-235.
- BECKER, G. S. 1957. *The Economics of Discrimination*. Chicago: Chicago University Press.
- BECKER, G. S. 1965. Theory of allocation of time *The Economic Journal*, 75, 493-517.
- BECKER, G. S. 1981. *A Treatise of the Family*. Cambridge, MA: Harvard University Press.
- BECKER, G. S. 1991. *Treatise on the Family* Cambridge, MA: Harvard University Press.
- BECKER, P. & MOEN, P. 1999. Scaling back: Dual-earner couples' work-family strategies. *Journal of Marriage and Family*, 61, 995-1007.

- BENJAMIN, D. 1996. Women and the labour market in Indonesia during the 1980s'. In: HORTON, S. (ed.) *Women and Industrialization in Asia*. London: Routledge Studies in the Growth Economies of Asia.
- BENNET, L. R. 2008. Poverty, opportunity, and purity in paradise: women working in Lombok's tourist hotels. In: FORD, M. & PARKER, L. (eds.) *Women and Work in Indonesia*. New York: Routledge.
- BERNASEK, A. & GALLAWAY, J. 1997. Who gets maternity leave? The case of Malaysia. *Contemporary Economics Policy* 15, 94-104.
- BLACKBURN, S. 2001. Gender relations in Indonesia: what women want. In: LLYOD, G. & SMITH, S. (eds.) *Indonesia today: challenges of history*. Singapore: Institute of Southeast Asian Studies.
- BLACKBURN, S. 2004. *Women and the state in modern Indonesia*. Cambridge: Cambridge University Press.
- BLACKWOOD, E. 2008. Not your average housewife: Minangkabau women rice farmers in West Sumatra. In: FORD, M. & PARKER, L. (eds.) *Women and Work in Indonesia* New York: Routledge.
- BLAU, F. D., FERBER, M. A. & WINKLER, A. E. 1998. *The economics of women, men, and work*. New Jersey: Prentice Hall.
- BLOOM, D. E. & REDDY, P. H. 1986. Age patterns of women at marriage, cohabitation and first birth in India. *Demography*, 23, 509-523.
- BOUSHEY, H. 2008. "Opting out?" The effect of children on women's employment in the United States. *Feminist Economics*, 14, 1-36.
- BPS-STATISTICS INDONESIA 1976. *National Labour Force Statistics* Jakarta: BPS-Statistics Indonesia
- BPS-STATISTICS INDONESIA 1993. National Socioeconomic Survey (SUSENAS) [Data set]. Jakarta BPS-Statistics Indonesia,.
- BPS-STATISTICS INDONESIA 1996. *National Labour Force Statistics (August)*. Jakarta: BPS-Statistics Indonesia.
- BPS-STATISTICS INDONESIA 1997. National Socioeconomic Survey (SUSENAS) [Data set]. Jakarta: BPS-Statistics Indonesia,.
- BPS-STATISTICS INDONESIA 2000. National Socioeconomic Survey (SUSENAS) [Data set]. Jakarta: BPS-Statistics Indonesia,.
- BPS-STATISTICS INDONESIA 2007a. *National Labour Force Statistics*. Jakarta: BPS-Statistics Indonesia.
- BPS-STATISTICS INDONESIA 2007b. National Socioeconomic Survey (SUSENAS) [Data set]. Jakarta: BPS-Statistics Indonesia,.
- BRACHER, M. & SANTOW, G. 1998. Economic independence and union formation in Sweden. *Population Studies: A Journal of Demography*, 52, 275-294.
- BRANDON, P. D. 1995. *Vulnerability to future dependence among former AFDC mothers*. Institute for Research on Poverty Discussion Paper No.1055-95. Madison: University of Wisconsin-Madison
- BROOKS, A. & DEVASAHAYAM, T. 2011. *Gender, emotions and labour markets: Asian and Western perspectives*. New York: Routledge.

- BUCHMAN, M., KRIESI, I., PFEIFER, A. & SACCHI, S. 2001. Labor Market Opportunities and Women's Employment Exit and Reentry. *International Sociological Association (ISA) A Research Committee on Social Stratification (RC28) Expanding Markets, Welfare State Retrenchment, and Their Impact on Stratification*. Mannheim, Germany: International Sociological Association (ISA).
- BUDIG, M. 2003. Are women's employment and fertility histories interdependent? An examination of causal order using event history analysis. *Social Science Research*, 32, 25.
- BURKHEAD, D. L. & CODER, J. F. 1985. Gross Changes in Income Reciprocity from the Survey of Income and Program Participation *Proceedings of the Social Statistics Section, American Statistical Association*. Ann-Arbor: American Statistical Association.
- BUTTENHEIM, A. & NOBBLES, J. 2009. Ethnic diversity, traditional norms, and marriage behaviour in Indonesia. *Population Studies: A Journal of Demography*, 63, 277-294.
- CÁCERES-DELPINO, J. 2012. Can we still learn something from the relationship between fertility and mother's employment? Evidence from developing countries. *Demography*, 49, 151-174.
- CALLEGARO, M. 2007. Seam Effects Changes due to Modification in Question Wording and Data Collection Strategies: A Comparison of Conventional Questionnaire and Event History Calendar Seam Effects in the PSID. PhD Thesis, Lincoln: University of Nebraska.
- CALLEGARO, M. 2008. Seam effects in longitudinal surveys. *Journal of Official Statistics*, 24, 387-409.
- CALLEGARO, M. & BELL, R. F. 2007. Impact of the Event History Calendar on Seam Effects in the PSID: Lessons for SIPP. *Conference on the Event History Calendar Method*. Washington, D.C.: U.S. Census Bureau.
- CARAWAY, T. L. 2005. The Political Economy of Feminization: From to Gendered Discourses of Work. *Politics & Gender*, 1, 399-429.
- CASSIRER, N. & ADDATI, L. 2008. *Expanding women's employment opportunities: Informal economy workers and the need for childcare*. Geneva: International Labour Organization (ILO)
- CHEN, F., VANEK, J., LUND, F. & HEINTZ, J. 2005. *Progress of the world's women 2005: Women, work, and poverty*. New York: United Nations Development Fund for Women (UNIFEM).
- CHETTY, R. 2004. *Optimal unemployment insurance when income effects are large*. NBER Working Paper Series No.10500. Cambridge, MA: National Bureau of Economic Research
- CHOWDURY, F. I. & TROVATO, F. 1994. The role and status of women and the timing of marriage in five Asian countries. *Journal of Comparative Family Studies*, 25, 143.
- CHRISTENSEN, S. E. 2012. So what? Young housemaids' perspectives on their work and future life in Jakarta, Indonesia. Master Thesis, Trondheim: Norwegian University of Science and Technology.

- COOK, C. & BEAUJOT, R. 1996. Labour force interruptions: The influence of marital status and presence of young children. *The Canadian Journal of Sociology*, 21, 25-41.
- CORRIGAL, E. & KONRAD, A. 2007. Gender role attitudes and careers: a longitudinal study. *Sex Roles*, 56, 847-855.
- CROMPTON, R. & LYONETTE, C. 2005. The new gender essentialism - domestic and family 'choices' and their relation to attitudes. *The British Journal of Sociology*, 56, 601-620.
- CRUCES, G. & GALIANI, S. 2007. Fertility and female labor supply in Latin America: New causal evidence. *Labor Economics*, 14, 565-573.
- CZAJKA, J. L. 1999. The seam effect in SIPP estimates of the number and duration of spells of uninsurance among children *Proceedings of the Section on Government Statistics and Section on Social Statistics, American Statistics Association*. University of Michigan at Ann-Arbor: The Association.
- DAWSON, G. 2008. Keeping rice in the pot: Women and work in a transmigration settlement. In: FORD, M. & PARKER, L. (eds.) *Women and work in Indonesia*. New York: Routledge.
- DEGRAFF, D. & ANKER, R. 1999. *Gender, labour market, and women's work*. Series on Gender in Population Studies. Liège: International Union for the Scientific Study of Population (IUSSP)
- DEL BOCA, D. & LOCATELLI, M. 2006. *The determinants of motherhood and work status: A survey*. IZA Discussion Paper No.2414. Bonn: Institute for the Study of Labor (IZA)
- DEMOGRAPHIC INSTITUTE & RAND. 1995. *The 1993 Indonesian Family Life Survey: Appendix A, Household Questionnaires and Interviewer Manual*. DRU-1195/2-NICH/AID. Santa Monica: RAND
- DESAI, S. & WAITE, L. J. 1991. Women's employment during pregnancy and after first birth: occupation characteristics and work commitment. *American Sociological Review*, 56, 551-566.
- DROBNIC, S., BLOSSFELD, H.-P. & ROHWER, G. 1999. Dynamics of women's employment patterns over the family life course: A comparison of the United States and Germany. *Journal of Marriage and the Family*, 61, 133-146.
- EAGLY, A. 1987. *Sex Differences in Social Behavior: A Social-Role Interpretation*. Hillsdale: Erlbaum.
- EHRENBERG, R. G. & SMITH, R. S. 2009. *Modern labor economics : theory and public policy*. Boston: Pearson/Addison Wesley.
- ELMHIRST, R. 1999. Learning the ways of the priyayi. In: MOMSEN, J. (ed.) *Gender, migration, and domestic service*. London: Routledge.
- ESPING-ANDERSEN, G. 1999. *Social Foundation of Postindustrial Economies*. New York: Oxford University Press.
- ESPING-ANDERSEN, G. 2002. Towards a post-industrial gender contract. In: AUER, P. & GAZIER, B. (eds.) *The future of work, employment and social protection: The dynamics of change and protection of workers*. Geneva: International Labour Organization (ILO).

- EVANI, F., MARHAENJATI, B. & PRIMANITA, A. 2012. Indonesian workers demand to end to outsourcing. *Suara Pembaruan*, 4 October 2012.
- FELMLEE, D. 1984. A dynamic analysis of women's employment exits. *Demography*, 21, 171-183.
- FELMLEE, D. 1993. The dynamic interdependence of women's employment and fertility. *Social Science Research*, 22, 27.
- FENG, W. & QUANHE, Y. 1996. Age at marriage and the first birth interval: the emerging change in sexual behavior among young couples in China. *Population and Development Review*, 22, 299-320.
- FERIDHANUSETYAWAN, T. & ASWICAHYONO, H. 2001. *Gender assessment of the Indonesian labour market*. EADN Working Papers No.9. Singapore: Institute of Southeast Asian Studies for East Asian Development Network
- FITZGERALD, J. 2004. Measuring the impact of welfare benefits on welfare durations: State stratified partial likelihood and fixed effect approaches. *The Berkeley Electronic Journal of Economic Analysis and Policy*, 1.
- FORD, M. & PARKER, L. 2008. *Women and work in Indonesia*. New York: Routledge.
- FRANCESCONI, M. 2002. A joint dynamic model of fertility and work of married women. *Journal of Labor Economics*, 20, 336-380.
- FRANKENBERG, E. & KAROLY, L. 1995. *The 1993 Indonesian Family Life Survey: Overview and field report*. DRU-1195/1-NICHD/AID. Santa Monica: RAND
- FRANKENBERG, E. & THOMAS, D. 2000. *The Indonesia Family Life Survey (IFLS): Study Design and Results from Waves 1 and 2*. DRU-2238/1-NIA/NICHD. Santa Monica: RAND
- GALLAWAY, J. & BERNASEK, A. 2002. Gender and informal sector employment in Indonesia. *Journal of Economic Issues*, 36, 313-321.
- GAUDET, S., COOKE, M. & JACOB, J. 2011. Working after childbirth: A lifecourse transition analysis of Canadian women from the 1970s to the 2000s. *Canadian Review of Sociology*, 48, 153-180.
- GHOSH, J. 2004. *Informalisation and Women's Workforce Participation: A Consideration of Recent Trends in Asia*. Prepared for the UNRISD report on Gender Equality: Striving for Justice in an Unequal World. Geneva: United Nations Research Institute for Social Development (UNRISD)
- GILLS, D. 2002. Globalization of production and women in Asia. *The ANNALS of the American Academy of Political and Social Science*, 581, 106-120.
- GLASS, J. & RILEY, L. 1998. Family responsive policies and employee retention following childbirth. *Social Forces*, 76, 35.
- GLICK, P. & SAHN, D. 2005. Intertemporal female labor force behavior in a developing country: what can we learn from a limited panel? *Labour Economics*, 12, 23-45.
- GOLDER, M. 2008. *Competing Risks [PDF Document]*. Retrieved from Lecture Notes Online Website: <https://files.nyu.edu/mrg217/public/essex.htm>.
- GORNICK, J. & HEGEWISCH, A. 2010. *The impact of "Family-Friendly Policies" on women's employment outcomes and on the costs and benefits of doing business*. A Commissioned Report for the World Bank. New York: Luxembourg Income Study Center, City University of New York

- GORNICK, J., MEYERS, M. & ROSS, K. 1996. *Public Policies and the Employment of Mothers: A Cross-National Study*. Luxembourg Income Study Working Paper Series, No.140. New York: Luxembourg Income Study Center, City University of New York
- GOTTSCHALK, P. & MOFFITT, R. 1999. Changes in job instability and insecurity using monthly survey data. *Journal of Labor Economics*, 17, 91-126.
- GRIJNS, M., SMYTH, I., VAN ELZEN, A., MACHFUD, S. & SAYOGYO, P. 1994. *Different Women, Different Work: Gender and Industrialization in Indonesia*. Aldershot: Avebury.
- GRIMM, M. & BONNEUIL, N. 2001. Labour Market Participation of French Women over the Life Cycle, 1935–1990. *European Journal of Population*, 17, 25.
- GUPTA, N., SMITH, N. & VERNER, M. 2006. *Child Care and Parental Leave in the Nordic Countries: A Model to Aspire to?* IZA Discussion Paper No.2014. Bonn: Institute for the Study of Labor (IZA)
- HALPIN, B. 1998. Unified BHPS work-life histories combining multiple sources into a user-friendly format. *Bulletin de Methodologie Sociologique*, 60, 34-79.
- HAM, J., LI, X. & SHORE-SHEPPARD, L. 2008. Correcting for seam bias when estimating discrete variable models, with an application to analyzing the employment dynamics of disadvantaged women in the SIPP. *Institute for Research on Poverty (IRP) Summer Research Workshop "Current Research on the Low-Income Population"*. Madison: Institute for Research on Poverty (IRP), University of Wisconsin-Madison.
- HECKMAN, J. 1974. *Effects of child-care programs on women's work effort*. A Conference Report of the National Bureau of Economic Research (NBER). Cambridge, MA: National Bureau of Economic Research (NBER)
- HEIN, C. 2005. *Reconciling work and family responsibilities: Practical ideas from global experience*. Geneva: International Labour Organization (ILO).
- HILL, D. 1988. Response errors around the seam: Analysis of change in a panel with overlapping reference periods. *In: SOCIAL SCIENCE RESEARCH COUNCIL (U.S), U.S. BUREAU OF THE CENSUS & NATIONAL SCIENCE FOUNDATION (eds.) Individuals and families in transition: Understanding change through longitudinal data. Papers presented at the Social Science Research Council Conference*. Annapolis: U.S. Department of Commerce, Bureau of the Census.
- HILL, D. H. 1994. The relative empirical validity of dependent and independent data collection in a panel survey. *Journal of Official Statistics*, 10, 359-380.
- HULL, T. 2002. The Marriage Revolution in Indonesia. *Annual Meeting of the Population Association of America*. Atlanta: Population Association of America (PAA).
- HULL, T. H. & HARTANTO, W. 2009. Resolving contradictions in Indonesian fertility estimates. *Bulletin of Indonesian Economic Studies*, 45, 61 - 71.
- HUTAGALUNG, N., GRIJNS, M. & WHITE, B. 1994. Women as wage workers. *In: GRIJNS, M., I.SMYTH, VELZEN, A. V., MACHFUD, S. & SAYOGYO, P. (eds.) Different women, different work: Gender and industrialisation in Indonesia*. Aldershot: Avebury.

- HYNES, K. & CLARKBERG, M. 2005. Women's employment patterns during early parenthood: A group-based trajectory analysis. *Journal of Marriage and Family*, 67, 222-239.
- ICF INTERNATIONAL. 2012. *Measure DHS STATcompiler* [Online]. Available: <http://www.statcompiler.com/>.
- ILO. 2006. *The Regulation of Domestic Workers in Indonesia: Current Laws, International Standards and Best Practices*. Jakarta: International Labour Organization (ILO)
- ILO. 2011a. *Labor Statistics (Laborsta) Database* [Online]. International Labour Organization (ILO). Available: <http://laborsta.ilo.org/> [Accessed November 12, 2011].
- ILO. 2011b. *Labour and Social Trends in Indonesia 2010: Translating Economic Growth into Employment Creation*. Jakarta: International Labour Office (ILO)
- ILO FACTSHEET n.d. Domestic Workers in Indonesia. Jakarta: International Labour Organization.
- INDRASWARI. 2006. Women and warung in an urban kampung. PhD Thesis, Canberra: Australian National University.
- IRAWAN, P., AHMED, I. & ISLAM, I. 2000. *Labour market dynamics in Indonesia: Analysis of 18 key indicators of the labour market (KILM) 1986-1999*. Jakarta: International Labor Organization (ILO)
- JÄCKLE, A. 2005. *Does dependent interviewing really increase efficiency and reduce respondents burden?* Institute of Social and Economic Research (ISER) Working Paper, No.2004-24. Essex: University of Essex
- JÄCKLE, A. 2008a. *The Causes of Seam Effects in Panel Surveys*. Institute for Social and Economic Research (ISER) Working Paper No.14. Essex: University of Essex
- JÄCKLE, A. 2008b. *Measurement Error and Data Collection Methods: Effects on Estimates from Event History Data*. Institute for Social and Economic Research (ISER) Working Paper No.13. Essex: University of Essex
- JÄCKLE, A. & LYNN, P. 2005. *Dependent Interviewing and Seam Effects in Work History Data*. Economic and Social Research Council (ESRC) Research Methods Programme Working Paper No.14. Manchester: University of Manchester
- JEJEEBHOY, S. 1995. Education and women's age at marriage. In: JEJEEBHOY, S. (ed.) *Women's Education, Autonomy, and Reproductive Behaviour: Experience from Developing Countries*. Oxford: Clarendon Press.
- JELLINEK, L. 1991. *The Wheel of Fortune: The History of a Poor Community in Jakarta*. Sydney: Asian Studies Association of Australia.
- JEON, S.-H. 2008. The impact of lifecycle events on women's labour force transition: a panel analysis. *The Economic Record*, 84, 15.
- JONES, G. 2004. Not "when to marry" but "whether to marry": The changing context of marriage decision in East and Southeast Asia. In: JONES, G. & RAMDAS, K. (eds.) *(Un)tying the Knot: Ideal and Reality in Asian Marriage*. Singapore: Asia Research Institute.

- JONES, G. 2007. Fertility Decline in Asia: The Role of Marriage Change. *Asia-Pacific Population Journal*, 22, 13-32.
- JONES, G. 2009. Women, marriage and family in Southeast Asia. In: DEVASAHAYAM, T. W. (ed.) *Gender Trends in Southeast Asia: Women Now, Women in the Future*. Singapore: Institute of Southeast Asia Studies.
- JONES, G. & GUBHAJU, B. 2008. *Trends in age at marriage in the provinces of Indonesia*. Asia Research Institute Working Paper No.105. Singapore: University of Singapore
- JONES, G., STRAUGHAN, P. & CHAN, A. 2009. Very low fertility in Pacific Asian countries. In: JONES, G., STRAUGHAN, P. & CHAN, A. (eds.) *Ultra-low Fertility in Pacific Asia*. New York: Routledge.
- KILLINGSWORTH, M. & HECKMAN, J. 1986. Female labor supply: a survey. In: ASHENFELTER, O. & LAYARD, R. (eds.) *Handbook of Labor Economics*. Amsterdam: Elsevier Science Publishers.
- KONRAD, A. 2003. Family demands and job attribute preferences: A 4-year longitudinal study of women and men. *Sex Roles*, 49, 35-46.
- LAHIRI-DUTT, K. & ROBINSON, K. 2008. Bodies in contest: Gender difference and equity in coal mine. In: FORD, M. & PARKER, L. (eds.) *Women and work in Indonesia*. New York: Routledge.
- LEMAITRE, G. 1992. *Dealing with the Seam Problem for the Survey of Labour and Income Dynamics*. Income Research Paper Series No.92-05. Ottawa: Statistics Canada
- LIGHT, A. & URETA, M. 1992. Panel estimates of male and female job turnover behavior: Can female nonquitters be identified? *Journal of Labor Economics*, 10, 156-181.
- LONG, J. & JONES, E. 1980. Labor force entry and exit by married women: a longitudinal analysis. *The Review of Economics and Statistics*, 62, 1-6.
- LYNN, P. 2009. *Methodology of Longitudinal Surveys*. West Sussex: John Wiley and Sons, Ltd.
- LYNN, P., BUCK, N., BURTON, J., JACKLE, A. & LAURIE, H. 2005. *A review of methodological research pertinent to longitudinal survey design and data collection*. Institute for Social and Economic Research (ISER) Working Paper No.2005-29. Essex: University of Essex
- MALHOTRA, A. 1997. Gender and timing of marriage: Urban-rural differences in Java. *Journal of Marriage and the Family*, 59, 434-450.
- MALHOTRA, A. & TSUI, A. O. 1996. Marriage timing in Srilanka: the role of modern norms and ideas. *Journal of Marriage and Family*, 58, 476-490.
- MANNING, C. 1998. *Indonesian labour in transition: an East Asian success story?* Cambridge: Cambridge University Press.
- MARTIN, S. F. 2004. Women and Migration. *Consultative Meeting on "Migration and Mobility and how this movement affects Women"*. Malmö: United Nations Division for the Advancement of Women.

- MARTINI, A. 1989. Seam effect, recall bias, and the estimation of labor force transition rates from SIPP. *Proceedings of the Survey Research Methods Section, American Statistical Association*. San Diego: American Statistical Association.
- MASON, K. O. & PALAN, V. T. 1981. Female employment and fertility in Peninsular Malaysia: The maternal role incompatibility hypothesis reconsidered. *Demography*, 18, 549-575.
- MATRAS, J. 1989. Demographic trends, life course and family cycle - The Canadian example: Part II. Employment, parenting, and their alternatives. *Canadian Studies in Population* 16, 145-161.
- MATSUI, Y. 1996. *Women in the New Asia*. London: Zed Books.
- MCDONALD, P. 2011. *Early childhood education and care for disadvantaged families*. The 2010 Greater Jakarta Transition to Adulthood Survey Policy Brief No.3 Canberra: ADSRI at the Australian National University (ANU)
- MENSCH, B. S., BRUCE, J. & GREENE, M. E. 1998. *The Uncharted Passage: Girls' Adolescence in the Developing World*. New York: Population Council
- MENSCH, B. S., SINGH, S. & CASTERLINE, J. B. 2005. *Trends in the Timing of First Marriage among Men and Women in the Developing World*. Population Council Population Research Division Working Paper No.202. New York: Population Council
- MINCER, J. & OFEK, H. 1982. Interrupted work careers: Depreciation and restoration of human capital. *Journal of Human Resources*, 3-24.
- MOEN, P. 1985. Continuities and discontinuities in women's labor force activity. In: ELDER, G. (ed.) *Life course dynamics: Trajectories and transitions 1968-1980*. Ithaca: Cornell University Press.
- MOEN, P. & SMITH, K. R. 1986. Women at Work: Commitment and Behavior over the Life Course. *Sociological Forum*, 1, 450-475.
- NATH, D. C., LAND, K. C. & GOSWAMI, G. 1999. Effects of the status of women on the first birth interval in Indian urban society. *Journal of Biosocial Science*, 31, 55-69.
- NGO, H. Y. 1992. Employment status of married women in Hong Kong. *Sociological Perspectives*, 35, 475-488.
- NIELSEN, R. B. & GOTTSCHALCK, A. O. 2009. Estimating Employment Transitions in the Presence of a Seam Effect. *Applied Economics Research Bulletin Peer-Reviewed Working Paper Series*, 2, 1-19.
- NILAN, P. & UTARI, P. 2008. Meanings of work for female media and communication workers. In: FORD, M. & PARKER, L. (eds.) *Women and work in Indonesia*. New York: Routledge.
- NOBBLES, J. & BUTTENHEIM, A. 2008. Marriage and socioeconomic change in contemporary Indonesia. *Journal of Marriage and Family*, 70, 904-918.
- NUGROHO, A. 2007. *Hak-Hak Perempuan dalam Perkawinan: Perspektif Kesetaraan Laki-laki dan Perempuan dalam Islam* [Online]. Available: <http://pemikiranislam.wordpress.com/2007/07/27/hak-hak-perempuan-dalam-perkawinan/> [Accessed 3 April 2012 2012].

- O'REILLY, J. & FAGAN, C. 1998. *Part-time Prospects: An International Comparison of Part-time Work in Europe, North America, and the Pacific Rim*. London: Routledge.
- OEY-GARDINER, M. 1993. A gender perspective in Indonesia's labour market transformation. In: MANNING, C. & HARDJONO, J. (eds.) *Indonesia assessment 1993: Labour: sharing in the benefits of growth?* Canberra: Department of Political and Social Change, Research School of Pacific Studies, Australian National University.
- OGAWA, K. & AKTER, M. 2007. Female Labor Force Participation in Indonesia. *Journal of International Cooperation Studies*, 14.
- OPPENHEIMER, V. K. 1982. *Work and the Family: A study in Social Demography*. New York: Academic Press.
- PARRADO, E. A. 2006. Labor force dynamics and occupational attainment across three cohorts of women in urban Mexico. In: BLOSSFELD, H. P. & HOFMEISTER, H. A. (eds.) *Globalization, uncertainty and women's careers: an international comparison*. Northampton, MA: Edward Elgar Publishing.
- PINCHES, M. 1987. "All that we have is our muscle and sweat": the rise of wage labour in Manila squatter community. In: PINCHES, M. & LAKHA, S. (eds.) *Wage labour and social change: The proletariat in Asia and the Pacific*. Clayton: Centre for Southeast Asian Studies, Monash University.
- POLACHEK, S. 1981. Occupational self-selection: A human capital approach to sex differences in occupational structure. *Review of Economics and Statistics*, 63, 60-69.
- QUAH, S. 1998. *Family in Singapore*. Singapore: Times Academic Press.
- QUAH, S. 2009. *Families in Asia: Home and kin*. New York: Routledge.
- RAHARTO, A. 1992. The context of women's work decision in DKI Jakarta. PhD Thesis, Canberra: The Australian National University.
- RAND. 2010. *IFLS Provinces* [Online]. Available: <http://www.rand.org/labor/FLS/IFLS.html> [Accessed 15 February 2010].
- RINDFUSS, R. & BREWSTER, K. 1996. Childrearing and fertility. *Population and Development Review*, 22, 258-259.
- RINDFUSS, R. & MORGAN, P. 1983. Marriage, sex, and first birth interval: the quiet revolution in Asia. *Population and Development Review*, 9, 259-278.
- RINDFUSS, R., PARNELL, A. & HIRSCHMAN, C. 1983. The timing of entry into motherhood in Asia: a comparative perspective. *Population Studies*, 37, 253-272.
- RIPS, L. J., CONRAD, F. G. & FRICKER, S. S. 2003. Straightening the Seam Effect in Panel Surveys. *Public Opinion Quarterly*, 67, 522-544.
- ROBINSON, K. 2009. *Gender, islam and democracy in Indonesia*. New York: Routledge.
- RONSEN, M. & SUNDSTROM, M. 2002. Family policy and after-birth employment among new mothers - a comparison of Finland, Norway and Sweden. *European Journal of Population*, 18, 232-152.

- ROSENFELD, R. A. 1996. Women's work histories. *Population and Development Review* 22, 199-222.
- SAYOGYO, P. & WAHYUNI, E. 1994. An introduction to the economy and people of West Java. In: GRIJNS, M., I.SMYTH, VELZEN, A. V., MACHFUD, S. & SAYOGYO, P. (eds.) *Different women, different work: Gender and industrialisation in Indonesia*. Aldershot: Avebury.
- SERRATO, C. & MELNICK, G. 1995. *The Indonesian Family Life Survey: Overview and descriptive analysis of the population, health and education data*. Santa Monica: Labor and Population Program, RAND
- SHIRAHASE, S. 2000. Women's increased higher education and the declining fertility rate in Japan. *Review of Population and Social Policy*, 9, 47-63.
- SINGARIMBUN, N. S. 1999. Changing female labour force participation and work patterns in Jakarta. PhD Thesis, Canberra: Australian National University.
- SINGER, J. D. & WILLET, J. W. 2003. *Applied Longitudinal Data Analysis: Modelling Change and Event Occurrence*. Oxford: Oxford University Press.
- SINGH, S. & SAMARA, R. 1996. Early marriage among women in developing countries. *International Family Planning Perspectives*, 22, 148-175.
- SITEPU, H. 2000. Queen of the households: An empty title. In: OEY-GARDINER, M. & BIANPOEN, C. (eds.) *Indonesian Women: The Journey Continues*. Canberra: RSPAS Publishing at the Australian National University (ANU).
- SITUMORANG, A. 2007. Staying single in a married world. *Asian Population Studies*, 3, 287-304.
- SMITH, C. A., STONE, R. P. & KAHANDO, S. 2012. A model of women's educational factors related to delaying girls' marriage. *International Review of Education*, 58, 533-555.
- SMITH-LOVIN, L. & TICKAMYER, A. 1978. Nonrecursive models of labor force participation, fertility behavior, and sex role attitudes. *American Sociological Review*, 43, 541-557.
- SOLERA, C. 2008. *Combining marriage and children with paid work: Changes across cohorts in Italy and Great Britain*. Institute for Social and Economic Research (ISER) Working Paper No.2008-22. Essex: University of Essex
- SOLERA, C. 2009. Combining marriage and children with paid work: Changes across cohorts in Italy and Britain. *Journal of Comparative Family Studies*, 40.
- SORENSEN, A. 1983. Women's employment pattern after marriage. *Journal of Marriage and Family*, May 1983, 311-321.
- STANDING, G. 1976. Education and female participation in the labour force. *International Labour Review*, 114, 281-297.
- STANDING, G. 1978. *Labor Force Participation and Development*. Geneva: International Labour Organization (ILO).
- STATACORP 2009. *Stata: Longitudinal-Data/Panel-Data Reference Manual Release 11*. Texas: StataCorp LP.
- STEELE, F. 2005. *Event History Analysis*. National Centre for Research Methods Briefing Paper No.004. Swindon: Economic and Social Research Council

- STEIBER, N. & HAAS, B. 2012. Advances in explaining women's employment pattern. *Socio-Economic Review*, 10, 343-367.
- STIER, H., LEWIN-EPSTEIN, N. & BRAUN, M. 2001. Welfare regimes, family supportive policies, and women's employment along the life course. *American Journal of Sociology*, 106, 1731-1760.
- STIER, H. & YAISH, M. 2008. The determinants of women's employment dynamics: The case of Israeli women. *European Sociological Review*, 24, 363-377.
- STRAUSS, J., BEEGLE, K., DWIYANTO, A., HERAWATI, Y., PATTINASARANY, D., SATRIAWAN, E., SIKOKI, B. & WITOELAR, F. 2004a. *Indonesian living standards: Before and after the financial crisis*. Singapore: Institute of Southeast Asian Studies.
- STRAUSS, J., BEEGLE, K., SIKOKI, B., DWIYANTO, A., HERAWATI, Y. & WITOELAR, F. 2004b. *The third wave of the Indonesia Family Life Survey (IFLS3): Overview and field report*. WR-144/1-NIA/NICHD. Santa Monica: RAND
- STRAUSS, J., WITOELAR, F., SIKOKI, B. & WATTIE, A. M. 2009. *The fourth wave of the Indonesia Family Life Survey (IFLS4): Overview and field report*.
- SUNDARAM, A. 2006. Lifecourse and marriage timing in Indonesia. *Paper presented at the Population Association of America Annual Meeting Program*. Los Angeles: Population Association of America (PAA).
- SURBAKTI, S. 2002. Gender mainstreaming and sex-disaggregated data. In: ROBINSON, K. & BESSEL, S. (eds.) *Women in Indonesia: Gender, Equity and Development*. Singapore: Institute of Southeast Asian Studies.
- SURYADARMA, D., SURYAHADI, A. & SUMARTO, S. 2007. Measuring unemployment in developing countries: The case of Indonesia. *Labour* 21, 541-562.
- SURYAKUSUMA, J. 2011. *State ibuism: The social construction of womanhood in New Order Indonesia*. Depok: Komunitas Bambu
- TANIGUCHI, H. & ROSENFELD, R. A. 2002. Women's employment exit and reentry: differences among whites, blacks and Hispanics. *Social Science Research*, 31, 432-471.
- TEKLE, F. B. & VERMUNT, J. K. 2012. Event history analysis. In: COOPER, H., CAMIC, P. M., LONG, D. L. & PANTER, A. T. (eds.) *American Psychological Association (APA) Handbook of Research Methods in Psychology*. Washington, D.C.: American Psychological Association.
- THEE, M. 2012. Indonesia's nanny culture. *The Jakarta Globe*, 1 January 2012.
- THEODOSSIOU, I. & ZANGELIS, A. 2009. Should I stay or should I go? The effect of gender, education and unemployment on labour market transitions. *Labour Economics*, 16.
- TRUSSELL, J., MARTIN, L. G., FELDMAN, R., PALMORE, J. A., CONCEPCION, M. & ABU BAKAR, D. N. 1985. Determinants of birth-interval length in the Philippines, Malaysia, and Indonesia: A hazard-model analysis. *Demography*, 22, 145-168.
- TRUSSELL, J. & REINIS, K. L. 1989. Age at first marriage and age at first birth. *Population Bulletin of the United Nations*, 26, 127-185.

- UTOMO, A. 2008. Women as secondary earners : the labour market and marriage expectations of educated youth in urban Indonesia. PhD Thesis, Canberra: The Australian National University.
- UTOMO, I. 1997. Sexual attitudes and behaviour of middle-class young people in Jakarta. PhD Thesis, Canberra: Australian National University.
- VAN DER LIPPE, T. & VAN DIJK, L. 2002. Comparative research on women's employment. *Annual Review of Sociology*, 28, 221-241.
- VAN KLAVEREN, M., TIJDENS, K., HUGHIE-WILLIAMS, M. & MARTIN, N. R. 2010. *An Overview of Women's Work and Employment in Indonesia*. Amsterdam: Amsterdam Institute for Advanced Labour Studies (AIAS) University of Amsterdam
- VAN VELSOR, E. & O'RAND, A. M. 1984. Family life cycle, work career patterns, and women's wages at midlife. *Journal of Marriage and the Family*, 365-373.
- VISCUSI, W. 1980. Sex differences in quitting. *Review of Economics and Statistics*, 62, 388-398.
- VLASBLOM, J. D. & SCHIPPERS, J. 2006. Changing dynamics in female employment around childbirth: Evidence from Germany, the Netherlands and the UK. *Work, Employment & Society*, 20, 329.
- WAITE, L. 1980. Working wives and the family life cycle. *The American Journal of Sociology*, 86, 272-294.
- WAITE, L. J. & STOLZENBERG, R. M. 1976. Intended childbearing and labor force participation of young women: Insights from nonrecursive models. *American Sociological Review*, 41, 235-252.
- WAROUW, N. 2008. Industrial workers in transition: women's experiences of factory work in Tangerang. In: FORD, M. & PARKER, L. (eds.) *Women and work in Indonesia*. New York: Routledge.
- WATSON, N. 2009. Disentangling overlapping seams: The experience of the HILDA Survey. *HILDA Survey Research Conference*. Melbourne: University of Melbourne.
- WIDARTI, D. 1998. Determinants of labour force participation by married women: the case of Jakarta. *Bulletin of Indonesian Economic Studies*, 32, 27.
- WIYONO, N. 2003. Efek jenis migrasi pada status sosial ekonomi perempuan Indonesia : Penerapan *two-part model* (*The impact of type of migrations on Indonesian women's social economic status: An application of two-part model*). Master Thesis, Depok: University of Indonesia.
- WOLF, D. 1992. *Factory Daughters: Gender, Household Dynamics, and Rural Industrialization in Java*. Berkeley: University California Press.
- WOODCROFT-LEE, C. P. 1983. Separate but equal: Indonesian Muslim perceptions of the roles of women. In: MANDERSON, L. (ed.) *Women's work and women's roles: economics and everyday life in Indonesia, Malaysia and Singapore*. Canberra: The Australian National University.
- WORLD BANK. 2004. *Gender and development in the Middle East and North Africa: Women in the public sphere*. Middle East and North Africa Development Report No.28115 Washington, D.C.: The World Bank

WORLD BANK 2012. Gender Statistics.

<http://databank.worldbank.org/ddp/home.do?Step=3&id=4>.

YAMAGUCHI, K. 1991. *Event history analysis*. Newbury Park: Sage Publications.

YI, C. & CHIEN, W. 2002. The linkage between work and family: Female's employment patterns in three Chinese societies. *Journal of Comparative Family Studies*, 33, 451-474.

YOUNG, N. 1989. *Wave seam effects in the SIPP: Implications for analysis*. The Survey of Income and Program Participation Mimeo No.98. Washington, D.C. : U.S. Department of Commerce Bureau of the Census

YOUNGER, S. 2006. Labor Market Activities and Fertility. *Paper presented at the AERC/Hewlett Foundation Workshop, "Poverty and Economic Growth: The Impact of Population Dynamics and Reproductive Health Outcomes in Africa"*. Brussels: Cornell Food and Nutrition Policy Program

YU, W. 2002. Jobs for Mothers: Married Women's Labor Force Reentry and Part-Time, Temporary Employment in Japan. *Sociological Forum*, 17, 30.

YU, W. 2006. National contexts and dynamics of married women's employment reentry: The cases of Japan and Taiwan. *The Sociological Quarterly*, 47, 215-243.