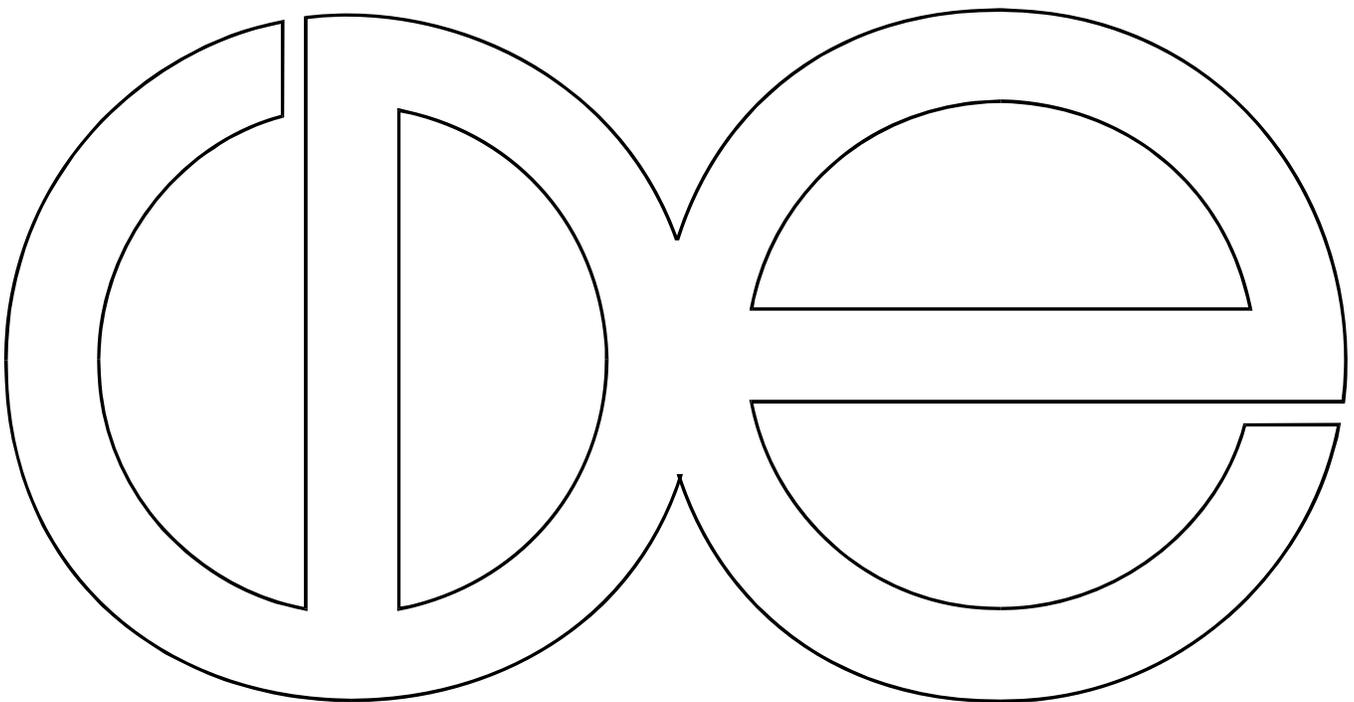


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Labor Force Transitions in Japan**

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Abstract

In this paper, we examine educational differentials in married women's attachment to the labor force in Japan. Using ten waves of data from a nationally representative survey, we estimate discrete-time multi-state hazard models of labor force participation to evaluate the role of incentives to remain in the labor force, incentives to remain out of the labor force, husbands' characteristics, living arrangements, and a measure of work orientation. Importantly, the estimation of simultaneous hazards for labor force exit and entry allows us to make inferences about theoretically relevant, but unobserved, attitudinal heterogeneity. Our central finding is that university graduates are more likely to both remain in and out of the labor force. The relatively low likelihood of exit reflects educational differences in occupational characteristics but the relatively low likelihood of reentry remains unexplained after controlling for a wide range of individual and family characteristics. These results, in combination with strong positive correlation in the unobserved components of equations for labor force exit and entry, point to the importance of opportunity costs associated with career interruption as well as unobserved differences in orientations toward work and family.

Introduction

Explanations for the increasing labor force attachment of married women in industrialized countries over the past several decades include increasing educational and occupational opportunities for women, declining economic prospects for young men, increasing marital instability, declining fertility, and changing attitudes.¹ Implications of this trend have been a prominent focus in recent research on the gender division of labor, the changing nature of marriage, fertility, divorce, children's development and well-being, and the "second demographic transition." In the U.S., it is also clear that differential change in women's labor force attachment has had important implications for variation in the economic well-being of families. Increasing family income inequality is due, in part, to the fact that growth in labor force attachment and wages has been most pronounced for highly educated women and women married to men with higher earnings (Cancian, Danziger, and Gottschalk 1994).

In Japan, evidence of similar trends in married women's labor force attachment is limited. Japan remains one of the few industrialized countries in which women's labor force trajectories continue to follow an M shape, with substantial declines in labor force participation during the prime marriage and childbearing ages (Brinton 2001). The relatively low level of labor force participation of women with small children in Japan is thought to reflect inflexible work schedules (Ogasawara 2001), limited access to high-quality, convenient childcare (Wada 2007), and husbands' limited participation in domestic work (Tsuya, Bumpass, Choe, and Rindfuss 2005) – all of which present important barriers to women's ability to balance work and family.

¹ Throughout this paper, we use the term labor force "attachment" to refer generally to stable labor force participation across the life course.

Japan is also distinctive for evidence that married women's labor force participation is inversely related to their own educational attainment (Brinton 1993; Choe, Bumpass, and Tsuya 2004) and their husbands' earnings (Higuchi 1995). This pattern is inconsistent with predictions based on human capital theory and suggests that other factors such as the socionormative value of specialization in domestic production and maternal investment in children's education outweigh the opportunity costs of intermittent labor force participation. The relatively low labor force attachment of highly educated women, combined with a high degree of educational homogamy and strong labor market returns to higher education for both men and women, has presumably worked to minimize family income inequality in Japan (Kohara 2001).

The labor force behavior of married women in Japan appears to be changing in recent years, however. Aggregate data show that the decline in labor force participation during prime childbearing ages has become less pronounced (Brinton 2001) and individual data show an increase in continuous labor force attachment (Sakai 2004). Recent studies also provide some fragmentary evidence that these changes appear to be most pronounced among women in the most favorable economic circumstances, i.e., the most highly educated (Nagase 2003; Sakai 2004) and those married to higher earning men (Kohara 2001; Manabe 2004; Ohtake 2005). However, these changes are not as pronounced as in the U.S. – indeed there is little evidence that women's socioeconomic status is positively associated with labor force participation. Rather, it appears that the negative relationship observed in earlier studies has weakened or disappeared (Kohara 2001; Waldfogel, Higuchi, and Abe 1999).

In this paper, we suggest that this pattern of change may reflect tension between growing incentives to remain in the labor force and lingering incentives to limit labor force participation, both of which may be relatively strong for highly educated women. Of particular importance is

the increasing segmentation of the female labor market into well-paid, rewarding jobs and marginal, nonstandard employment (Houseman and Osawa 2003). For the increasing number of women employed in career jobs, the opportunity costs of leaving employment at marriage or childbirth have increased. For those who do leave the labor force to focus on domestic activities, incentives to return are presumably limited by the relatively unattractive, nonstandard employment options available for married women seeking to reenter the labor market.

There is also good reason to believe that normative tensions surrounding married women's work have increased. Rapid changes in attitudes toward men's and women's roles in the family are well documented, especially declining support for a highly asymmetric gender division of labor (e.g., Atoh 2001). At the same time, however, normative expectations regarding mothers' central role in raising preschool children and in facilitating children's educational success (Hirao 2001) continue to provide strong incentives for married women with children to focus on childrearing and domestic labor. As we discuss below, there is good reason to believe that the tensions inherent in these conflicting attitudinal trends may be particularly relevant for understanding variation in the labor force participation of highly educated women.

Together, these tensions may result in a scenario in which educational differentials are limited by simultaneous increases in the relative likelihood that highly educated women remain in the labor force to take advantage of emerging occupational opportunities and in the relative likelihood that highly educated women who have left the labor force do not reenter. Furthermore, we suspect that the ability to implement preferences for prioritizing work or family should be positively related to educational attainment in Japan. Of particular importance is the tendency for highly educated women to marry men with higher earnings (the result of educational homogamy) and more egalitarian attitudes regarding the gender division of labor. The former

limits the financial need to return to the labor market and the latter may be associated with access to domestic support that facilitates work-family balance.

Our primary goal in this paper is to evaluate the extent of differentials in married women's labor force attachment both across and within educational categories. We evaluate well-documented explanations for educational differentials, including returns to human capital (substitution effect) and husbands' earnings (income effect) as well as explanations that may be particularly relevant in the Japanese context such as coresidence with parents(-in-law). We also consider the role of preferences and women's ability to implement them. There is compelling theoretical reason to believe that attitudinal factors may be an important part of the explanation for individual variation in the labor force outcomes of married women (e.g., Hakim 2000), but there are obvious empirical difficulties in evaluating the relevance of this emphasis. We adopt a modeling strategy that allows us to address some of these difficulties.

Married women's labor force participation in Japan

In contrast to the patterns observed in most other industrialized countries, the employment trajectories of Japanese women continue to be characterized by an M shape. Labor force participation is nearly universal prior to marriage and childbirth but drops sharply in the late twenties and early thirties as women exit the labor force to focus on childrearing and other domestic responsibilities (Brinton 2001; Waldfogel, Higuchi, and Abe 1999). Labor force participation rates rise to another peak in the late forties but employment at these ages tends to be in low-skill, part-time jobs with little or no opportunity for advancement. Differences in the labor force trajectories of women in Japan and other select industrialized countries are depicted in Figure 1.

Incentives to remain in the labor force

Recent studies provide some evidence that the distinctive pattern of Japanese women's labor force attachment is changing. First, it appears that labor force exit at marriage has become less common while labor force exit at first childbirth has become more common (National Institute of Population and Social Security Research 2003). There is also some evidence that the proportion of women who remain in the labor force following childbirth has increased (Sakai 2004). These trends are related to many of the same factors that have influenced the employment patterns of their American counterparts. Of particular importance is the rapid increase in women's educational attainment - both in absolute terms and relative to that of men. High labor market returns to education (Ogawa and Clark 1995; Ogawa and Ermisch 1996) mean that leaving the labor force for an extended period of childcare implies substantial opportunity costs for an increasing proportion of the female population. The opportunity costs of temporary exit have been further increased for some women by the implementation of the Equal Employment Opportunity Law in 1986 and associated growth in access to higher-paying and rewarding career-track jobs. Other policy measures such as the Childcare Leave Law (implemented in 1992) have also contributed to increased labor force participation by enabling more women to return to their career jobs following childbirth (see e.g., Boling 2007).

In addition to these structural and policy changes, there is abundant evidence of attitudinal change. For example, recent survey data indicate declining support for the idea that "men should work and women should take care of the home" (Atoh 2001) and a sizable proportion of both husbands and wives express preferences for wives to work longer hours than they currently do (Bumpass, Choe, Tsuya, and Rindfuss 2007). These attitudinal changes likely reflect changes in both labor market dynamics and marital stability. For example, increases in layoffs, downsizing,

and paycuts for men may have increased perceptions of the risks inherent in complete gender specialization, as in the U.S. (Oppenheimer 1994). Similarly, steady increases in the probability of marital dissolution (Raymo, Iwasawa, and Bumpass 2004) and the severe economic consequences of single motherhood in Japan (Peng 1997) may provide strong incentives for more married women to maintain some attachment to the labor force.

Incentives to remain out of the labor force

Despite recent increases in labor force participation, temporary or permanent labor force exit when children are young remains the modal experience for Japanese women. Among women who married in 1995-97, almost three-fourths were out of the labor force either before or after the birth of their first child (National Institute of Population and Social Security Research 2003). This figure is similar to that observed for marriages taking place in the 1980s. As a result, the labor force participation rates of Japanese women remain well below those of their counterparts in other industrialized countries (see Figure 1).

Many married women do reenter the labor force after the prime childrearing years, but the jobs available at this stage of the life course are typically inferior to those they left earlier (Houseman and Osawa 1995; Yu 2002). Recent increases in female employment in general, and the employment of married women in particular, are largely the result of growth in nonstandard employment (National Institute of Population and Social Security Research 2003) which is particularly common in Japan (Houseman and Osawa 2003; Rosenfeld and Birkelund 1995). To a large extent, married women's work and income in Japan remain supplementary and responsive primarily to temporary needs (e.g., the costs of higher education for children) or long-term economic disadvantage. This distinctive labor supply pattern of Japanese women reflects gender and age discrimination in the labor market (Brinton 2001) and tax-policy disincentives to

full-time labor force participation among married women (Ōishi 2003). Employment opportunities for women seeking to reenter the labor force are limited, many job openings are age-limited (e.g., open to those less than 35 years old), and annual earnings of more than 1.4 million yen (approximately \$12,000) preclude married women from claiming dependent status on their husbands' taxes (Boling 2007).

Furthermore, even if high-paying, attractive, full-time jobs were abundant, many married women would find it difficult to balance this kind of work commitment with family responsibilities. Two important barriers to work-family balance in Japan are the shortage of high-quality, convenient day care for pre-school age children (Wada 2007) and husbands' limited participation in housework (Tsuya, Bumpass, Choe, and Rindfuss 2005). Recent figures indicate that over 30,000 children are on waiting lists for licensed day care centers while another 200,000 are in unlicensed childcare (Boling 2007). With respect to the gender division of labor, recent data indicate that weekly hours of housework are five times higher for wives than for husbands (Japan Statistics Bureau 2003), with 30% of husbands doing no housework at all (Tsuya, Bumpass, Choe, and Rindfuss 2005). Yet another disincentive to married women's labor force participation are the strong normative beliefs that mothers should be the primary caregivers for preschool age children and that mothers bear a large responsibility for their children's educational success (Hirao 2001).

Educational differentials

In contrast to the U.S. and many other industrialized societies, there is little evidence of growing socioeconomic differentials in the labor force participation of married women in Japan.

Although the inverse relationships between women's labor force participation and both educational attainment and husbands' earnings have weakened, a strong positive relationship

similar to that observed in the U.S. (Cancian, Danziger, and Gottschalk 1994) has yet to emerge. Recent trends in family income inequality have received a great deal of attention in Japan (Ohtake 2005; Satō 2000; Tachibanaki 1998) and it is clear that the increasing labor force participation of women married to high-earning men has contributed to increasing inequality (Kohara 2001), but to a much smaller degree than in the U.S.

We suggest that the growing tension between incentives to remain in and remain out of the labor force described above may help to understand the relatively limited socioeconomic differentials in Japanese women's labor force participation. The key to this argument is recognition that incentives to remain in the labor force as well as incentives to remain out of the labor force may both be relatively strong for highly educated women. As noted above, standard theoretical emphases on returns to human capital suggest that increasing opportunities for career-track jobs should provide a strong incentive for highly educated women to remain in the labor force. This is particularly true in Japan given the large labor market returns to education for women and the high opportunity costs of temporarily exiting the labor force.

At the same time, other changes presumably work to decrease the relative labor supply of highly educated women. For those who have left the labor force at marriage or childbirth, the limited options for reemployment may represent a particularly important and powerful barrier to labor force reentry. To the extent that available jobs are inferior to those occupied prior to exit, highly educated women may be the least likely to find employment options that exceed their reservation wage or reservation job quality (Kenjoh 2007). Interestingly, it has also been suggested that intensive investment in children's education has a relatively strong labor supply inhibiting effect among the most highly educated Japanese mothers (Hirao 2007).

Unobserved heterogeneity

In this context of conflicting tensions surrounding labor force participation, differences within and across educational groups may reflect a combination of underlying lifestyle preferences and the ability to implement them. Assuming a distribution of lifestyle preferences that range from a desire to focus primarily on career to a desire to focus primarily on family (e.g., Hakim 2000), observed educational differences in labor force attachment will reflect educational differences in the distribution of preferences, the ability to implement preferences, and the strength of incentives to prioritize one domain of life over the other.

Although it is difficult to measure the distribution of preferences, it has been suggested that higher education is associated with attitudes and orientations that may promote stronger labor force attachment (Sorensen 1995). For example, higher education may be associated with a stronger commitment to work and career net of its association with human capital and the opportunity costs of not working. Regardless of the distribution of preferences, it is reasonable to expect that women's educational attainment is positively associated with the ability to implement their preferences. Among those who prefer to prioritize family, the highly educated are the most likely to be able to afford to live comfortably on their husband's income and the least likely to need to worry about divorce. Among those who prefer to prioritize work, the highly educated are the most likely to earn enough to outsource childcare and domestic labor and the most likely to be married to men who support their efforts to balance work and family.

Data from the Japanese Panel Survey of Consumers provide some empirical support for the presence of heterogeneous preferences among highly educated Japanese women. For example, among married women currently in the labor force university graduates were more likely than their less educated counterparts to cite both the challenging nature of work and the

ability to continue working after marriage and childbirth as important reasons for choosing their current job. At the same time, among women not currently working, university graduates were, by far, the most likely to cite marriage as the main reason for leaving their previous job (authors' tabulations). The former suggests relatively strong career orientation among university graduates while the latter suggests that some university graduates have strong family orientations and/or the ability to implement preferences to prioritize family.

One obvious practical barrier to understanding the role of preferences is the fact that most sources of data used to examine levels, patterns, and correlates of women's labor force participation typically do not contain these measures or any other measures that could be used to meaningfully approximate lifestyle preferences. If heterogeneous lifestyle preferences are strongly associated with the likelihood of labor force transitions, failure to account for this unobserved heterogeneity and associated changes in the composition of the population at risk of making a particular transition may result in biased estimates for the variables of interest (e.g., educational attainment in this case). There is thus great value in taking advantage of techniques that control indirectly for unobserved attitudinal heterogeneity and provide insights into the nature of that heterogeneity.

Data and methods

We use data from the first ten waves of the Japanese Panel Survey of Consumers (JPSC), an annual survey of a nationally representative sample of young women conducted by the Institute for Research on Household Economics. The original sample was stratified by marital status, with 1,002 married women and 498 unmarried women between the ages of 24 and 34 surveyed in the first wave in 1993. In wave 5 (1997), a second cohort consisting of 201 married and 299 unmarried women was added. The response rate at the first interview was low (41%) but

characteristics of the resulting baseline sample closely resemble national data and retention rates across subsequent waves have been about 95% (Higuchi, Iwata, and Nagai 1999).

Our analytic subsample is comprised of records for married women, and thus includes those who were married at initial observation in 1993 or 1997 as well as those who married subsequently. In this sample, 1,508 individual women contribute 9,643 person-years of observation. Most of these women ($n=1,203$ or 80%) were married at the first observation - wave 1 for the original cohort and wave 5 for the second cohort. Labor force trajectories for these women are thus left-censored, preventing us from observing transitions out of the labor force for many women who will remain in that state for an extended period (Yu 2005). However, we are able to use occupational history data collected in the baseline surveys to construct indicators of previous employment circumstances and to calculate the duration of the current spell of employment or non-employment at baseline. These retrospective data indicate that the large majority of women were first observed early in a given spell. Indeed, 22% of women in the sample were first observed in the first year of a (non-)employment spell and nearly half of the sample (45%) was first observed in the first three years of a spell. The proportion in the first year of a spell at initial observation was higher for those first observed in a non-employment spell (27%) than for those first observed in an employment spell (15%).

The fact that we first observe most women at early durations of (non-)employment spells reflects of the fluidity of married women's labor force participation in Japan. Slightly less than half of our sample (45%) experienced multiple spells across the duration of observation, with one-fifth experiencing three or more spells (i.e., two or more transitions). The number of transitions is inversely related to educational attainment, with 51% of those in the lowest educational category and 69% of those in the highest educational category remaining in the same

labor force status across waves. The ability to observe multiple spells for individual respondents is essential for identification of the multistate hazard models described below.

Because long-term earnings potential is strongly related to stable labor force attachment, it is more informative to examine the duration of episodes in different labor force states and transitions among those states rather than simply observing the correlates of labor force status at a single point in time using cross-sectional data (Choe, Bumpass, and Tsuya 2004) or observing the correlates of labor force exit only (Lee and Hirata 2001; Yu 2005). Tabulations of cross-wave change in labor force status presented at the top of Table 1 indicate that there is relatively little difference in the likelihood of transitioning into or out of the labor force. Among those in the labor force at wave t , 11% exited by wave $t+1$ whereas 15% of those out of the labor force at wave t entered by the next wave. Tabulations by educational attainment (not shown) indicate that labor force status is most stable among the most highly educated. Only 8% of university graduates changed labor force status at any given wave, compared to 14% for those with a high school education or less. This pattern is ostensibly consistent with a scenario in which incentives to remain in the labor force and incentives to remain out of the labor force are both relatively strong for the most highly educated women and highlights the importance of considering the role of within-educational category heterogeneity.

It is straightforward to use the longitudinal information in the JPSC to estimate the association between educational attainment and the risk of entering or leaving the labor force. By estimating nested models that include characteristics associated with both educational attainment and labor force transitions, we can also shed light on the mechanisms underlying observed educational differences in the likelihood of labor force exit and entry. Of particular importance here are the posited incentives to remain in the labor force (e.g., higher wages, higher

status jobs) and posited incentives to remain out of the labor force (e.g., previous employment in higher status jobs). However, simple models like these suffer from one important limitation - the fact that not all relevant variables are measured. If there are key variables that are unmeasured either as a result of survey design or because they are inherently unobservable, then the coefficients for the primary covariates of interest (education in this case) will be biased downward. This well-documented implication of unobserved heterogeneity in survival analysis reflects the progressive concentration in a given state of those least likely to exit that state (Vaupel and Yashin 1985). The preceding discussion of heterogeneous preferences suggests that prioritization of either career or family is one unobserved characteristic that may be particularly relevant for understanding variation in the labor force transitions of married women. Failure to incorporate these omitted variables not only results in biased estimates of observed correlates but also precludes any understanding of the nature of relationships between unobservables and labor force transitions. This is a crucial shortcoming if unobserved preferences are as important as suggested by Hakim (2000) and others.

Our primary goal in this paper is to simultaneously estimate models of labor force exit and entry that enable us to limit the problems of omitted variable bias while also taking a first step toward assessing the nature of unobserved heterogeneity. To this end, we build upon a large and growing body of research examining the nature and implications of unobserved individual variation in the propensity to experience different family transitions (Brien, Lillard, and Waite 1999; Lillard, Brien, and Waite 1995; Musick 2006). Estimation of these models represents an important step forward in assessing the covariates of married women's labor force transitions and in establishing central questions for a research agenda on the way in which differential labor force attachment may contribute to variation in the well-being of families in Japan.

Because we have annual data and can observe duration in one labor force state and the yearly likelihood of making a transition to the other labor force state, we estimate discrete-time hazard models. Coefficients from these models describe the association between covariates of interest and the log-odds of transition from state A to state B between time t and $t+1$.² Women enter observation at the baseline survey or the observation immediately following marriage and are right-censored at the earliest of the following three events: marital dissolution, loss to follow-up, or the most recent survey in 2002. These models, which build upon the recent work of Steele and colleagues (Steele, Goldstein, and Browne 2004; Steele, Kallis, Goldstein, and Joshi 2005; Steele, Kallis, and Joshi 2006), may be expressed as:

$$\ln[p_{it}^A/1-p_{it}^A] = \alpha^A t + \beta^A X_t + \delta^A Z_{it} + u_i^A$$

$$\ln[p_{it}^B/1-p_{it}^B] = \alpha^B t + \beta^B X_t + \delta^B Z_{it} + u_i^B$$

where i refers to an individual respondent, t refers to the duration of time in the given state, and A (B) indicates transition out of (into) the labor force between t and $t+1$. α thus represents the baseline hazard with respect to duration and X is a time-invariant categorical measure of educational attainment (high school or less, vocational school, junior college, and university). β^A and β^B are thus the coefficients of primary interest.

Z is a vector comprised of other variables thought to be related to both educational attainment and labor force participation. These include indicators of incentives to remain in the

² Note that we do not consider transitions from one job to another. Employment spells end only when the respondent who was in the labor force at wave t is observed out of the labor force at wave $t+1$. Subsequent analyses might profitably treat job change and labor force exit as competing risks.

labor force, incentives to remain out of the labor force, the ability to realize preferences to remain in or out of the labor force, a proxy for these preferences, and control variables. Incentives to remain in the labor force are measured by earnings, occupation, firm size, and employment status – full-time vs. part-time and other nonstandard employment. Incentives to remain out of the labor force include the occupation, firm size, and employment status associated with the employment spell prior to exiting the labor force.³ The ability to realize preferences is proxied by husband's earnings, husband's participation in housework, and coresidence with parents(-in-law). A proxy for preferences to prioritize work is constructed from a question that asked respondents the reason for choosing the school they last attended. Those who said “to prepare for employment” or “to get a good education” were coded as 1 while those who gave more passive reasons (e.g., “my teacher/parents suggested it,” “didn't think much about it”) were coded as 0. Control variables include respondents' age, parity, whether they gave birth in the previous year, and whether they have a preschool-age child.⁴

We assume that all labor force transitions take place at the end of the interval between surveys – that is immediately prior to the survey at time $t+1$. We thus assume that other inter-wave changes such as childbirth temporally precede labor force transitions. For the sake of simplicity, we also assume that the baseline hazard is linear (i.e., the probability of making a

³ For women married at the first observation, this information comes from the retrospective employment histories collected in waves 1 and 5.

⁴ Other potentially relevant control variables were not included because they were not assessed at every wave (e.g., marital quality) or because they were relevant only to a small number of women in our sample (e.g., the presence of high-school and college-age children).

transition from one state to another changes linearly with duration in the origin state) and that the risk of entry and exit are proportional with respect to the covariates in X and Z.

The individual-specific random effects denoted by u^A and u^B are assumed to follow a bivariate normal distribution with covariance matrix $\Omega_u = \begin{pmatrix} \sigma_{uA}^2 & \\ \sigma_{uAB} & \sigma_{uB}^2 \end{pmatrix}$. Identification of these models relies on the multilevel structure of the data - i.e., the nesting of multiple labor force spells within individual respondents. The correlation between u^A and u^B allows us to evaluate the nature of unobserved characteristics (e.g., preferences) associated with labor force transitions and the extent to which control for this heterogeneity is relevant for interpretation of educational differences in labor force attachment. No correlation between u^A and u^B would suggest that unobserved characteristics are largely irrelevant for understanding variation in labor force transitions and that models of exit and entry can be estimated separately without loss of information.

If, however, unobserved characteristics are indeed an important correlate of married women's labor force transitions and if those characteristics resemble the preferences for prioritizing work and family described by Hakim (2000), we would expect a strong positive correlation between u^A and u^B . More specifically, if married women can be roughly categorized as career focused (and thus relatively unlikely to exit the labor force), family focused (and thus unlikely to reenter the labor force), and adaptive (most likely to transition into and out of the labor force in response to changing life circumstances), the unobserved propensity to exit the labor force should be positively correlated with the unobserved propensity to enter the labor

force.⁵ A negative correlation, in contrast, would be consistent with more substantial labor force movement than the mover-stayer pattern suggested by a positive correlation. We would expect to see a negative correlation between u^A and u^B if the large majority of women experienced either (a) relatively stable labor force participation interrupted by brief spells out of the labor force or (b) relatively stable non-participation interrupted by brief spells of employment. However, we see little reason to expect empirical support for this scenario given that over half of women in our sample did not experience any labor force transitions during the period of observation.

Results

Table 1 summarizes the variables included in the models, separately by labor force status at wave t . The mean spell duration is slightly over 5 years and in over four-fifths of observations, women remain in the same labor force status across consecutive waves of the survey. Slightly more than one in ten observations involves a transition into or out of the labor force and 4% of observations involve a loss to follow-up. Age is slightly higher for those in the labor force (33 years old) than for those not in the labor force (32 years old) and the distribution of educational attainment is very similar across the two labor force statuses. In both cases, half of person-years are contributed by women with a high school degree or less, one in five by a vocational school graduate, a similar proportion by junior college graduates, and one in ten by a university

⁵ Note that we are not seeking to identify a specific group to which individual women belong but rather to describe the nature of unobserved heterogeneity and evaluate its relevance for understanding educational differentials in labor force transitions. Latent class models may provide another fruitful method for evaluating the nature of unobserved heterogeneity and its observed correlates.

graduate. There are notable differences, however, in the characteristics of current occupations for women in the labor force and the characteristics of previous occupations for women not in the labor force. For example, the proportion that is currently self-employed is three times higher than the proportion that was previously self-employed while the proportion that was previously in clerical positions is much higher than the corresponding proportion for currently employed women. Currently employed women are also much more likely to be employed in the public sector and are much more likely to be working in part-time, nonstandard employment. The former presumably reflects public employees' ability to balance work and family while the latter reflects both the general difficulty of balancing full-time work and family and the limited availability of full-time employment for women who reenter the labor force. Other variables indicate that coresidence is much more common among women who are employed and that employed women have somewhat lower parity and are much less likely to have a preschool age child. We also see that husbands' income is higher and husbands are more likely to do some housework if their wives are not in the labor force. The former is not surprising and the latter reflects the much higher proportion of non-working women who have a preschool age child – i.e., husbands are more likely to do housework when young children are present.

Results of a simple model including only duration, educational attainment, age, and parity are presented in the first two columns of Table 2. These are the results that obtain if we ignore unobserved heterogeneity and simply estimate two separate models for transitions out of and into the labor force. We present the exponentiated value of coefficients which represent the difference in the odds of experiencing a change in labor force status associated with a one-unit change in the covariate of interest. Odds ratios for background characteristics indicate that the likelihood of both labor force exit and labor force entry is inversely related to duration in that

state and the presence of a preschool-age child. Higher parity is associated with a lower likelihood of exit and a higher likelihood of reentry. Not surprisingly, birth of a child is associated with large increases in the risk of labor force exit and reductions in the risk of labor force entry. Coefficients for educational attainment indicate that university graduates are about half as likely as women in the lowest educational group to leave the labor force. There are no significant differences in the likelihood of exit among women with less than a university degree. University graduates are also the least likely to enter the labor market – the odds of reentry are less than half (45%) those for high school graduates. Junior college graduates are also less likely to enter the labor force than are women in the lowest educational group (although the difference is smaller than for university graduates). These results suggest that (a) married women with a vocational school education or less have significantly more fluid labor force trajectories than their more educated counterparts and (b) university graduates are a heterogeneous group, comprised of women with a strong attachment to the labor force as well as women who are relatively unlikely to reenter the labor force after leaving.

The third and fourth columns of Table 2 present the results of a model that incorporates unobserved heterogeneity by including individual-specific random effects for each transition and allowing these random effects to be correlated across models. A likelihood ratio test shows that the incorporation of random effects results in a significant improvement in model fit. The variances associated with these random effects (at the bottom of the table) also indicate the presence of substantial heterogeneity, especially for the transition into the labor force. The strong positive correlation ($\rho = .72$) between the random effects for the two models indicates that women who are most likely to exit the labor force are also those most likely to reenter the labor force. This finding is not surprising given that half of the sample remained either in the labor

force or out of the labor force for the duration of observation. The positive correlation between the random effects thus reflects the movement into and out of the labor force among the remaining half of the sample.

Comparing coefficients for education from this model with those from the model that ignored unobserved heterogeneity shows that the educational differences increase only slightly. The most noticeable change is the increasing difference in the likelihood of labor force entry among university graduates and junior college graduates. The former are now 60% less likely than the latter to enter the labor market. This is consistent with a higher proportion of highly educated women who choose not to work, but it is difficult to speculate about underlying mechanisms without controlling for observable correlates of incentives to remain out of the labor force (e.g., previous job quality) and correlates of the ability to implement preferences (e.g., husband's earnings, coresidence with parents).

The model in columns 5 and 6 (Model 3) adds several hypothesized correlates of labor force exit and entry that we also expect to be correlated with educational attainment. Inclusion of these variables results in a significant improvement in model fit and, not surprisingly, a decrease in the correlation between the two random effects. Nevertheless, the correlation remains positive and strong ($\rho = .55$) highlighting the importance of unobserved heterogeneity. To reiterate, the positive correlation between the likelihood of exit and entry indicates that women with the shortest employment spells are also the women with the shortest non-employment spells. This is consistent with expectations for the group that Hakim (2000) refers to as “adaptives” – women whom make multiple transitions into and out of the labor force in response to family needs and opportunities.

After controlling for these additional covariates, university graduates' relatively low likelihood of labor force exit disappears while their significantly lower likelihood of entering the labor force remains unchanged. Coefficients for posited incentives to remain in the labor force are, for the most part, consistent with expectations. Higher income, professional occupation, public sector employment, and full-time employment are all associated with significantly lower odds of exiting the labor force observed in Models 1 and 2. Full-time employment is particularly important in explaining the relatively low likelihood of labor force exit among university graduates. Interestingly, husband's income and participation in domestic work are unrelated to the likelihood that married women leave the labor force. Coresidence with parents(-in-law), however, is associated with a significantly lower likelihood of leaving the labor force. Consistent with expectations, our proxy of work orientation (i.e., reason for choosing school) is negatively associated with the likelihood of labor force exit but the coefficient for this measure is only marginally significant.

In contrast, we find very little support for our posited correlates of incentives to remain out of the labor force. Previous job characteristics – a proxy for women's "reservation job quality" – and our proxy of work orientation are unrelated to the likelihood of reentering the labor force. The only relationship that is statistically significant at $p < .10$ indicates that husbands' income is associated with a lower likelihood of labor force reentry. The estimated coefficients for educational attainment change very little and university graduates remain significantly less likely to enter the labor force. This is consistent with recent studies finding that highly educated women who leave the labor force are less likely than those with less education to return (Nagase 2003). Junior college graduates are also significantly less likely to exit the labor force but there is no significant difference between vocational school graduates and high school graduates in the

likelihood of reentry. This is an interesting finding in light of the conventional coding of educational attainment that combines junior college and vocational school graduates.

Discussion

Our objectives in this paper were to (a) examine educational differentials in married women's attachment to the labor force in Japan, (b) examine variation in labor force behavior within educational categories, and (c) shed light on the nature and implications of unobserved heterogeneity in the propensity to exit and enter the labor force. We find evidence of substantial heterogeneity among highly educated women. University graduates have a relatively low likelihood of both exiting and entering the labor force. The former reflects educational differences in incentives to remain in the labor force – especially access to full-time, standard employment. However, the latter is not explained by the measures of incentives to remain out of the labor force, a proxy of career orientation, or resources to implement lifestyle preferences included in Model 3. Net of these correlates, university graduates and junior college graduates remain significantly less likely than their less educated counterparts to reenter the labor force.

By taking advantage of longitudinal data in which almost half of respondents experience multiple labor force spells, we were also able to estimate simultaneous hazard models for labor force entry and exit that allow for correlation between unobserved factors associated with each transition. We show that unobserved heterogeneity is present and important. Failure to control for unobserved characteristics results in downwardly biased coefficients for educational attainment, but these biases are very small and substantive conclusions do not differ in simple single-state models and the more appropriate multi-state hazard models.

The employment patterns we have described have potentially important implications for understanding processes of social stratification among Japanese families and raise several

interesting questions that should be addressed in subsequent research. The fact that highly educated women are most likely to both remain in the labor force and remain out of the labor force points to the problems inherent in treating educational categories as relatively homogeneous groupings. The strong labor force attachment of some highly educated women employed in higher earning, full-time jobs has presumably contributed to the emergence of a stratum of dual-earner families with very high combined earnings. This process is likely accelerated by the strong relationship between education and earnings for both men and women, and the apparent inverse relationship between educational attainment and the likelihood of divorce (Raymo, Iwasawa, and Bumpass 2004). At the same time, however, the presence of another group of highly educated women with a relatively low likelihood of reentering the labor force explains why the average cross-sectional association between education and employment among married women is weak.

A very interesting and important question for future research is the identification of the correlates of membership in the group of highly educated women who do not return to the labor force. Are they comprised of women with lower earnings potential that is not captured by our measures of previous occupation? To what extent is family background, especially mother's labor force participation and parents' relationship quality, associated with membership in this group? The answers to these questions have important implications for our understanding of family stratification both within and across educational groups. For example, it is important to consider the extent to which the heterogeneity among highly educated women serves to equalize variation in family well-being. What would the distribution of family income look like if the proportion of highly educated women with stronger labor force attachment were to increase (e.g.,

as occupational opportunities increase, attitudes change, or perceptions of marital instability begin to exert greater influence on married women's labor force participation)?

An important extension of the models considered in this paper would be to examine interrelationships between labor force transitions and other life events such as marriage and childbearing. Estimation of multiple simultaneous hazard models would allow for further inference about the role of unobservable characteristics (e.g., preferences and attitudes) for understanding variation in family and career trajectories. This represents a potentially fruitful approach to (a) identifying clusters of family and work trajectories (and associated implications for stratification) in Japan where the family life course has been characterized by a high degree of homogeneity and (b) developing empirical evidence related to the life course implications of underlying differences in preferences or life orientation.

Finally, it is important to make explicit linkages between differential labor force attachment (and associated life events) and variation in family well-being. This is the subject of a large body of research in the U.S. but remains understudied in the Japanese context. To what extent does women's labor force participation and associated earnings contribute to family income inequality? To what extent do we see an increase in assortative mating on indicators of earnings potential (including, but not limited to, educational attainment)? To what extent is mothers' employment associated with children's well-being (e.g., cognitive development, behavior, etc.)? To what extent might relationships between maternal employment and child well-being be offset by access to familial care-provision (e.g., from mothers or mothers-in-law)? Is women's attachment to the labor force associated with marital stability? Is it associated with the economic well-being of women and children following divorce? These are all questions of

potentially great importance for understanding linkages between rapid family change in Japan and variation in well-being at both the individual and aggregate levels.

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Table 1: Sample characteristics, by labor force status at wave t

<i>Variable</i>	Total		In the Labor Force		Not in the Labor Force	
	Mean	s.d.	Mean	s.d.	Mean	s.d.
<i>Duration in current state (years)</i>	5.20	(4.52)	5.46	(4.78)	4.93	(4.23)
<i>Transition (wave t - wave t+1)</i>						
No transition	0.83		0.85		0.81	
Transition	0.13		0.11		0.15	
Lost to follow-up	0.04		0.04		0.04	
<i>Age</i>	32.64	(4.14)	33.36	(4.22)	31.93	(3.93)
<i>Educational Attainment</i>						
High school or less	0.52		0.53		0.51	
Vocational school	0.19		0.19		0.19	
Junior college	0.19		0.18		0.21	
University	0.10		0.10		0.10	
<i>Parity</i>	1.70	(0.93)	1.66	(0.98)	1.74	(0.87)
<i>Gave birth between t and t+1^a</i>	0.09		0.07		0.11	
<i>Has preschool-age child^a</i>	0.42		0.28		0.58	
<i>Employment income (log)</i>	2.00	(2.49)	4.00	(2.10)	0.00	
<i>Employment income missing^a</i>	0.05		0.09		0.00	
<i>Current/previous occupation</i>						
Self-employed/family work			0.17		0.06	
Professional/managerial			0.20		0.13	
Manual labor			0.16		0.09	
Clerical			0.24		0.44	
Sales/service			0.24		0.22	
Missing			0.00		0.06	
<i>Current/previous firm size</i>						
Small/medium (<500)			0.74		0.75	
Large (>=500)			0.14		0.22	
Public sector			0.12		0.03	
<i>Current/previous employment status</i>						
Full-time			0.35		0.66	
Part-time/nonstandard			0.65		0.21	
Missing			0.00		0.13	
<i>Reason for choosing final school</i>						
Active	0.48		0.49		0.47	
Passive	0.52		0.51		0.53	
<i>Husband's employment income (log)</i>	5.40	(2.07)	5.18	(2.23)	5.61	(1.87)
<i>Husband's employment income missing^a</i>	0.07		0.09		0.06	
<i>Husband's does >0 minutes of housework^a</i>	0.77		0.73		0.80	
<i>Coresides with parents(-in-law)^a</i>	0.35		0.43		0.27	
N	9,643		4,818		4,825	

a: Dichotomous variables coded 1=yes, 0=no.

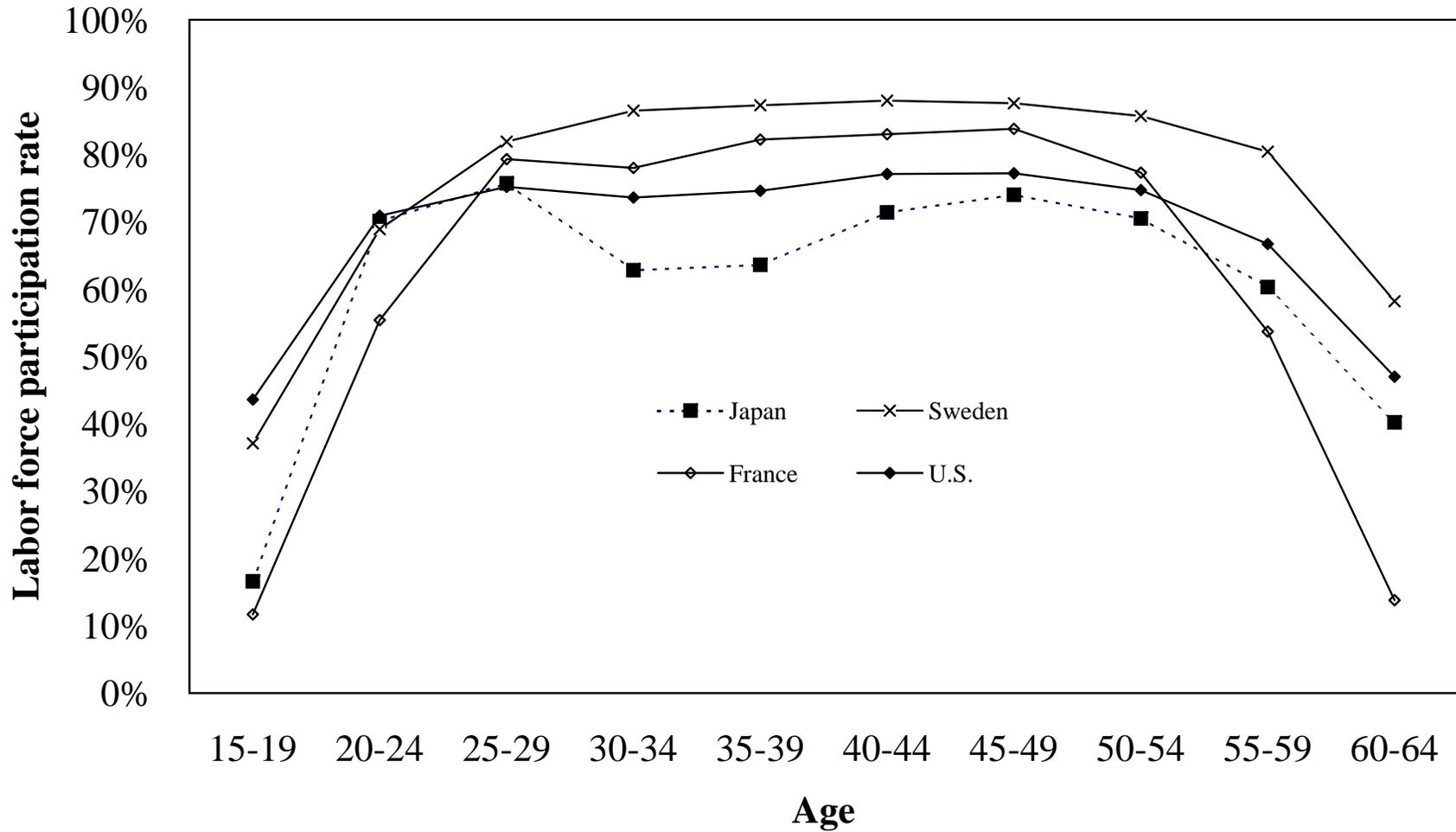
Table 2: Odds ratios for simultaneous models of labor force exit and entry

<i>Variable</i>	Model 1		Model 2		Model 3	
	Exit	Entry	Exit	Entry	Exit	Entry
<i>Duration in current state (years)</i>	0.83 **	0.87 **	0.84 **	0.89 **	0.89 **	0.89 **
<i>Age</i>	0.98	0.99	0.97 #	1.00	0.95 **	1.00
<i>Educational Attainment</i>						
High school or less (ref)	1.00	1.00	1.00	1.00	1.00	1.00
Vocational school	0.95	0.88	0.96	0.85	1.26	0.79
Junior college	0.98	0.65 **	0.99	0.61 **	1.34 #	0.61 **
University	0.59 **	0.45 **	0.59 **	0.40 **	0.90	0.40 **
<i>Parity</i>	0.78 **	1.35 **	0.77 **	1.28 **	0.76 **	1.29 **
<i>Gave birth between t and t+1^a</i>	7.28 **	0.10 **	7.70 **	0.09 **	8.83 **	0.09 **
<i>Has preschool-age child^a</i>	0.76 #	0.42 **	0.76 *	0.43 **	0.72 **	0.44 **
<i>Employment income (log)</i>					0.92 **	
<i>Employment income missing^a</i>					1.70 #	
<i>Current/previous occupation</i>						
Self-employed/family work					1.18	0.85
Professional/managerial					0.57 **	1.24
Manual labor					1.14	0.88
Clerical (ref)					1.00	1.00
Sales/service					1.02	1.08
Missing						
<i>Current/previous firm size</i>						
Small/medium (<500) (ref)					1.00	1.00
Large (>=500)					1.35 #	0.87
Public sector					0.34 **	0.63
<i>Current previous employment status</i>						
Full-time/standard					0.62 **	1.10
Part-time/nonstandard (ref)					1.00	1.00
Missing						0.80
<i>Reason for choosing final school</i>						
Active					0.77 #	0.98
Passive (ref)					1.00	1.00
<i>Husband's employment income (log)</i>					1.03	0.96 #
<i>Husband's employment income missing^a</i>					0.53 #	0.90
<i>Husband's does >0 minutes of housework^a</i>					1.16	0.85
<i>Coresides with parents(-in-law)^a</i>					0.68 **	1.05
Constant	0.67	0.50 *	0.69	0.39 #	1.62	0.49 #
var(u ^A)			0.26		0.22	
var(u ^B)				0.44		0.58
cor(u ^A ,u ^B)				0.72		0.55
df	18		21		49	
-2*log-likelihood	3,518		3,447		2,446	
LR test			0.00		0.00	

p<.10, * p<.05, ** p<.01

a: Dichotomous variables coded 1=yes, 0=no (reference category).

Figure 1: Age-specific labor force participation rates for women age 15-64 in 2006, by country



Sources: Sweden and France: EUROSTAT (European Union Labour Force Survey), Japan: Ministry of Internal Affairs and Communications, Statistics Bureau (Labor Force Survey), U.S.: Bureau of Labor Statistics (Current Population Survey)

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