HOME-BASED WORK, HUMAN CAPITAL ACCUMULATION AND WOMEN'S LABOR FORCE PARTICIPATION

A Dissertation

by

PIYALUK CHUTUBTIM

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

August 2005

Major Subject: Economics

HOME-BASED WORK, HUMAN CAPITAL ACCUMULATION AND WOMEN'S LABOR FORCE PARTICIPATION

A Dissertation

by

PIYALUK CHUTUBTIM

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment to the requirements for the degree of

DOCTOR OF PHILOSOPHY

Approved as to style and content by:

Co-Chairs of Committee,	Manuelita Ureta
	Donald Deere
Committee Members,	John Straub
	Lori Taylor
Head of Department,	Leonardo Auernheimer

August 2005

Major Subject: Economics

ABSTRACT

Home-Based Work, Human Capital Accumulation

and Women's Labor Force Participation. (August 2005)

Piyaluk Chutubtim, B.S., Chiang Mai University;

M.A., Western Michigan University

Co-Chairs of Advisory Committee: Dr. Manuelita Ureta
Dr. Donald Deere

This dissertation examines the effect of changes in the stock of human capital on the labor force participation decision of women aged 25-54. Without the option of home-based work, some women choose to leave the labor market and stay at home temporarily for family reasons. Working women realize that time out of the labor force could impose penalties on their work careers. This is because during the break, they do not accumulate any new human capital while the existing job skills continuously depreciate.

Nowadays, home-based work becomes possible for many jobs because rapid development in personal computers and advances in information and communications technology have reduced employers' cost of offering home-based work arrangements. Working women can resolve the time conflict between demand for paid work and family responsibility by working from home. In a previous study, the home-based work decision depends on the fixed cost of working and potential home production. Women who are disabled, have small children, or live in rural areas are likely to work from home because they have high fixed costs of working and high potential home production.

However, none of the existing studies applies the human capital theory of labor supply to the home-based work decision.

Using data on the female labor force from the Integrated Public Use Microdata Series (IPUMS) of housing units from the 2000 U.S. Census, I estimate a nested logit model to examine the effects of expected costs of non-participation, in terms of forgone earnings, forgone human capital accumulation and human capital depreciation, on women's labor force participation decision. I find that, other things being equal, women aged 25 to 44 who have potentially high human capital accumulation and high human capital depreciation are likely to stay in the labor force. In the case that the value of their home time is so high that they choose to stay at home, they prefer to work for pay at home than to be out of the labor force.

ACKNOWLEDGEMENTS

I am greatly indebted to my advisors, Dr. Manuelita Ureta and Dr. Donald Deere, for their valuable time, creative suggestions and intellectual guidance. I would also like to thank the other members of my committee, Dr. John Straub and Dr. Lori Taylor, for their insightful comments.

Many thanks to my sponsor, the Harvard-Yenching Institute for the generous support over the past four years. I would also like to thank the Private Enterprise Research Center for supporting my research through the Lynde and Harry Bradley Fellowship.

I would like to thank my friend, Birendra who helped me edit this dissertation. I could not have made it without the patience, love and encouragement of my husband, Puchong. Last, but surely not the least, I would like to thank my parents for believing in me.

TABLE OF CONTENTS

Page

LIST OF FIGURES

LIST OF TABLES

TABLE Page

CHAPTER I

INTRODUCTION

Women's labor force participation has been an interesting issue for labor economists for a long time. This is because women not only have to choose between work and leisure but also between work in the market, housework and leisure (Gronau, 1977). Women's use of time and allocation of time between market and non-market activities usually depends on family needs along with the activities and characteristics of other family members. Many times, working women have to temporarily leave the labor market for family reasons such as having young children, having ill or disabled family members and having elders in the family. When women want to revive their careers, they face difficulty finding a job or they are offered lower wages and lower positions than they had before the interruptions (Chaker and Stout, 2004). The human capital theory explains this phenomenon. During career breaks women do not accumulate any new human capital and, at the same time, their existing stock of skills gets depreciated. This is particularly true for women who used to have a job that requires less durable skills. At the time they re-enter the market, they cannot catch up with the industry requirements because their skills become obsolete. [1]

In the last two decades, rapid development in personal computers and advances in information and communications technology have reduced employers' cost of offering home-based work arrangement and made it possible to perform some jobs at

---

This dissertation follows the style and format of *The American Economic Review*.

[1] Alternatively, the signaling hypothesis explains that time out has the potential to signal a women's "type" which can be interpreted as degree of career commitment. A high-type woman has a high degree of commitment and thus fewer career interruptions of shorter duration.

home. It can be observed from the increasing numbers of jobs relying on computers, word processors and telecommunication technology. Workers do not have to be in the central office to work but can work from any place where they can hook up to their office's mainframe computer. From the employers' point of view, allowing some of their employees to work at home can save on capital costs. This is because they can limit or eliminate the need for additional office space while some of their employees work at home.

Estimates from the U.S. Census using data on women (Table 1) indicate a decline in the number of female home-based workers from 1.1 million in 1960 to 0.9 million in 1980. However, this trend reversed in the 1990's. The number of female home-based workers had increased to 2.2 million in 2000. The same pattern is observed for the proportion of female home-based employment in total employment from 1960 to 2000. The decline in the proportion of home-based workers from 1960 to 1980 was presumably a result of the fall in farm-related occupations and the consolidation of formerly home-based professional occupations such as doctors or lawyers and the reverse trend was apparently caused by the advance in personal computers and information technology (U.S. Census Bureau, 1998; U.S. Census Bureau, 2001). This is confirmed in Table 2. The composition of occupations in home-based employment has changed in the last 40 years. The percentages of home-based farmers and home-based farm laborers are falling while the percentages of professionals, technicians, and sale workers are rising. The advancement in personal computers and Internet technology in the past two decades has certainly facilitated women in computer-related occupations to work from home.

The increasing number of home-based workers raises many interesting public issues. One policy issue addressed by the Office of Technology Assessment in its report to congress is whether the Federal Government should actively encourage home-based work. This is because there are two contradictory theories about home-based work. The first theory views home-based workers as an advantaged group of individuals because they gain flexibility and better control over their time. In this view, home-based work allows the workers to take care of family members such as young children, elderly or disabled relatives. In addition, home-based work also facilitates the employment of the disabled. Even though these workers may forgo fringe benefits that they would have received if they worked in a workplace, these benefits may not very important to the home-based workers because they can receive such benefits from their spouse's employers.

The competing theory considers home-workers as an exploited group because they are not willing to work but they are forced to work for low pay. The International Ladies Garment Workers (ILGWU) opposes industrial homework because it creates potentially unsafe work conditions, and possible violations of minimum wage, overtime standards and child labor laws (Christensen, 1987; Boris and Daniels, 1989). One or the other of these two views underlies most of the arguments that have been advanced for or against home-based work. Therefore, policy makers need a better knowledge of the home-based workers' characteristics and the factors having an impact on home-based work decisions for making judgments.

Previous empirical studies on home-based work show that those who need time and work flexibility such as women having young children or persons with a disability prefer to work from home. Examples include Gerson and Kraut (1988), Kraut (1988), Pratt (1993) and Edwards and Field-Hendrey (2002). These results would support the first theory regarding home-based work. Home-based work is a solution for women to resolve the time conflict between demand for paid work and family responsibilities.

Nevertheless, not all women view home-based work as ideal. Some home based workers feel socially isolated and stressed, and if they are career-oriented professionals they feel that they are sacrificing their careers. According to Christensen (1987, 1992), women view their decision to work at home as a temporary stage in their children's life cycle. As children get older, women intend to leave home and opt for outside work. This means that some women may want to work from home only when the demands on their time due to family responsibilities are very high. They want to remain in paid employment in order to catch up with the industrial development, prevent skills from depreciating and build up new skills. Once they want to return to conventional work, they will have less damaged careers than non-working women. Therefore, in addition to the benefits from flexibility, I wish to examine if the cost of non-employment in terms of human capital loss has an impact on women's labor force participation decision and the labor supply of home-based work.

In this dissertation, I investigate the relationship between the labor force participation decision and human capital accumulation. Using a 5% sample of the 2000 U.S. Census, I examine women's labor force participation decision with three working states: not working, working at home and working on-site. I use a nested logit model that allows for a decision maker to partition her set of alternatives into subsets. In the first step of my model, a woman decides between working on-site and staying home. In the next step, if she chooses to stay home, she has to decide whether or not to she wants to work at home. The results show that the rate of human capital accumulation and the rate of human capital depreciation are negatively associated with the odds of women staying at home compared with working on-site. However, they are positively related to the odds of working at home compared with being out of the labor force. Then, women expecting high cost of non participation will choose working at home over being out of the labor force. Therefore the result suggests that home-based work makes a positive contribution to women because it enables women to remain employed while the demand of their home time is high.

This dissertation is organized as follows. In the next chapter, I review the related theoretical and empirical literature. In Chapter III, I present a theoretical framework for the analysis. Chapter IV describes the data briefly and identifies home-based workers in the data set. Chapter V summarizes the model specification and variable imputations. Chapter VI presents estimation results. In Chapter VII, I present the conclusion.

CHAPTER II

RELATED LITERATURE

Home-based work becomes more and more important mainly because of the structural changes in the U.S. family and the structural changes in the U.S. economy. Structural changes in the U.S family can be seen from the women's labor force participation rate. Over the last several years, women entered the work force in large numbers and the gap between women's work and men's work becomes smaller. Although women increasingly participate in the paid labor force, they are still responsible for their home and family care. Most of them work 25 hours or more for child care and housework besides their primary jobs (Gershuny and Robinson, 1988; Hochchild, 1989). To resolve the time conflict between the demand for paid work and family responsibility, women with families turn to more flexible jobs such as home-based work. (Silver and Goldescheider, 1994)

Structural changes in the U.S. economy included (1) highly international competition that forces U.S firms to find ways to cut labor costs, maintain quality and remain competitive in the world market, (2) advanced technology development that facilitates some types of workers to work at home and to communicate through internet connection and (3) transformation of the U.S. economy from an industrial economy to a service economy such that time and space dependence becomes less necessary.

The availability of home-based work gives women an additional choice of labor force participation. Women do not have to choose between family responsibility and their careers. Home-based work is a solution to pursue their family-related goals without completely sacrificing their career goals (Pratt, 1987). In a British survey, Huws (1984) finds that the most cited reason to be a home-based worker is to have more time with children. Some other reasons are flexibility, no other available work, and geographic factors.

Most surveys find that home-based workers have to accept a low pay in order to compensate for the privilege of working from home. Huws (1984) finds that on average home-based computer teleworkers were paid less than office-based workers. Gerson and Kraut (1988) use survey data on clerical work in secretarial services. They compare the average benefits of home-workers with those of office workers. They find that home-workers are relatively disadvantaged because they receive fewer financial benefits than office workers. Recently, Oettinger (2004) uses the 1980, 1990 and 2000 Census to analyze the growth rate of home-based employment and wage penalties on home-based work in the last two decades. He restricts his sample to wage and salary workers and divides workers by sex, age, and education. He concludes that, overtime, wage penalties on home-based work have become smaller relative to on-site work. The increase in the employment shares and relative wages of home-based workers are largest for highly educated workers.

The decision to work at home is affected by factors such as gender, family life cycle state, occupation and work style preference (Doherty, Andrey and Johnson, 2001). However, there are only a few empirical studies that have examined the decision to work at home. Kraut (1988) uses data from the 1980 Census to estimate binary choices on home-based work for working men and women. He finds that a married woman with children is more likely to work at home than a man with the same characteristics. Blacks are less likely to work at home. Disability and other household income increase the probability of working at home. Lastly, he finds that home-based workers earn less than the on-site workers in all types of occupations.

Pratt (1993) uses 3 National Longitudinal Survey cohorts; mature Women, Young Women and the National Longitudinal Survey of Youth men and women. She finds that educational, executive, professional and sales occupations and professional industry increase the likelihood of working at home. Interestingly, she does not find that having young children increase the probability of working from home for all groups and health limitations increase the probability of working from home only for men and women in their twenties.

Edwards and Field-Hendrey (2002) examine whether an economic model can explain the reasons that women want to work from home. They modify Cogan's (1981) fixed cost model to explain the motivation of home-based workers. They use data on women from the 1990 Census to examine women's choices regarding labor force participation. The model predicts that women with high fixed costs of working are more likely to work at home or be out of the labor force. They use individual characteristics such as presence of young children, presence of elders or living in a rural area, to proxy fixed costs of working. Their results show that having such characteristics increases the probability of working from home and being out of the labor force. They conclude that women choose working from home because their fixed costs of working and value of potential home production are very high. This finding supports viewing female home-based workers as a relatively advantaged group since they gain flexibility and better control over their time when they work at home. Their result is consistent with the findings in previous studies such as Gerson and Kraut (1988) and Kraut (1988).

These studies examine the decision on home-based work based on a static model only. Women's labor force participation is determined by women's present circumstance only. In my study, I would like to include a forward looking aspect in a labor force participation model. This is because some women report that they prefer to work at home only when their home time becomes more valuable such as when they have young children. Those women want to stay at home and also remain in an industry to keep up with the new developments. After their children grow up and no longer require all-day care in the home, women prefer to work outside home. That is, women would rather work at home than not work at all so that they can return to conventional work with less damaged career prospects (Huws, 1984; Christensen, 1987).

There are many studies examining the impacts of career interruption on wages. Most studies find that there are negative effects of work interruptions on subsequent wages (Mincer and Polachek, 1974; Mincer and Ofek, 1982; Corcoran and Duncan, 1979; Stratton, 1995; Albrecht, Edin, Sundström and Vroman, 1999; Phipps, Burton and Lethbridge, 2001). The differences of labor market experiences and labor force intermittency are commonly used to explain differential earnings between men and women or between mothers and non-mothers. Light and Ureta (1990) compute the fraction of time spent working in order to determine the labor force participation patterns for men and women. They find that the gender wage gap is smaller for continuously employed workers and the gender wage gap is narrowing more rapidly among the continuously employed workers.

Nevertheless, Corcoran, Duncan and Ponza (1983) find that the net loss of time out is small. This is because in the long run the wage loss will be offset by a rapid wage growth immediately after women re-enter the labor force. Moreover, Belzil and Hergel (1999) suggest that the decision to interrupt and the decision to have children are jointly determined. They find that there is no evidence of a negative impact on wages if the model is corrected for self-selectivity and endogeneity. The estimated size of wage loss varies across gender, race, education, occupation, work experience and the reason for time out of the labor force (Corcoran, 1979; Corcoran and Duncan, 1979; Groot, Schippers and Siegers, 1990; Albrecht, Edin, Sundström and Vroman, 1999; Phipps, Burton and Lethbridge, 2001).

The negative impact seems to be higher for those who have a larger rate of human capital accumulation (Mincer and Polachek, 1974). Therefore, human capital theory is the primary explanation of the negative impact of interruption on wages and gender earnings gap. Wages rise more rapidly with time spent in the labor force than with time spent in non-market activities. During interruptions, women do not acquire human capital (or acquire less human capital) and their job skills depreciate. Consequently, women who typically take time out of the labor force will earn less than men or continuously working women (Polachek and Siebert, 1993; Mincer, 1997). A negative relationship between career interruption and skill is confirmed by Edin and Gustavsson (2003). They find evidence suggesting that depreciation of literacy skills is indeed associated with time out of the labor force. The other hypotheses for lower wages of intermittent workers are the following. First, after the interruption, women change to a more flexible job that pays less than the job before interruption, such as part-time jobs or mother friendly jobs. Second, time out of the labor force could be a result of some unobservable characteristics such as career motivation. Last, women with intermittent careers may face discrimination in the labor market. (Waldfogel, 1997; Phipps, Burton, and Lethbridge, 2001).

Even though, my study is also based on a cross-sectional analysis, I have included the expected cost of non-employment on human capital in the model. This variable is related to women's future human capital. Women who have a high penalty on their future human capital will choose to stay in the labor market. Therefore, in my model, women determine their labor force participation decision not only from their current constraints but also from their expected future conditions.

CHAPTER III

WOMEN'S LABOR FORCE PARTICIPATION

Home-Based Work in a Labor Force Participation Model

Consider a woman facing the problem of choosing her labor force participation. Her decision depends on the utility she can derive in each alternative. Assume that a woman *i* has a utility function of the form

(1) $$U_i = U_i(C_i, L_i, Z_i).$$

where C_i is consumption, L_i is leisure and Z_i is a vector of individual characteristics which affects preferences. In this study, there are three different labor force participation choices: out of the labor force, home-based work, and on-site work. The problem is to maximize utility subject to a budget constraint that varies over the labor force participation alternatives. The general form of the budget constraint for alternative *j* is given as

(2) $$C_{i,j} + W_{i,j} L_{i,j} \leq N_i + W_{i,j} L_i^*$$

where L_i^* is total available time, the price of consumption is normalized to one, N_i is unearned income and the wage rate $W_{i,j}$ varies with the choice of the labor force participation *j*. $C_{i,j}$ is consumption and $L_{i,j}$ is leisure in the labor force participation choice *j*. Cogan (1981) introduces fixed costs of working in the labor supply model. He argues that individuals have to pay some fixed costs if they choose to work. These costs can be divided into two groups: time fixed costs (TFC) and monetary fixed costs (MFC). An example of time fixed costs is that workers have to travel from their residence to their workplace. Hence, they lose a certain amount of time every time they go to work. Monetary fixed costs could be any other cost besides time such as uniform expenses and transportation costs. When these costs are taken into account, the individual's budget constraint in (2) becomes

(3) $$C_{i,j} + W_{i,j}L_{i,j} \leq N_{i,j} - MFC_{i,j} + W_{i,j}(L_i^* - TFC_{i,j}).$$

To introduce home-based work to a labor force participation model, Edwards and Field-Hendrey (2002) modify Cogan's model. They assume that the fixed cost of working at home is lower than the fixed cost of working on-site and that the wage offer to an individual home-based worker is below what she would receive for on-site work. In addition, the modified model also allows for the possibility of joint production of market output and household goods (such as child care or elder care). However, the sum of wage offers for home-based work and monetary value of household production is still lower than wage offer for on-site work. The basis for this assumption is that if the return from home-based work were the same as on-site work, then home-based work dominates on-site work. Thus a worker will not prefer on-site work.

Unlike Edwards and Field-Hendrey (2002), I do not view all home production as complementary with home-based work. Therefore, home production is classified into two categories. The first type (H_1) is home products that are jointly produced with home-based work. The second type (H_2) is home products that cannot be produced while a woman is working at home or not jointly produced with home-based work. I consider the first type as less time-intensive home production and the second type as more time-intensive production. However, the first type and the second type of home production can be done together if a woman chooses to be out of the labor force and do only home production. Therefore the individual's budget constraint becomes

(4) $$C_j + W_j L_j \leq N_j - MFC_j + (W_j + H_{1j} + H_{2j})(L^* - TFC_j)$$

Where H_1 and H_2 are the values of home production of type 1 and 2 respectively. The budget constraints for different alternatives are presented in Figure 1. The diagram is modified from Edwards and Field-Hendrey (2002). I assume that home-based workers have lower time fixed costs (TFC) and monetary fixed costs (MFC) than on-site workers do but the wage offered for on-site work (W_o) is higher than the sum of the home-based wage offer (W_h) and the value of less time-intensive home goods (W_h+H_1) or the value of total home products (H_1+H_2). If the home-based wage is higher than the value of more time-intensive home products (H_2), the new budget constraint is *ABDE.* Depending on the woman's indifference map, she may locate at point B and be out of the labor force, she may locate on the segment *BD* and work at home, or she may locate on the segment *DE* and work on-site. If the home-based wage (W_h) is lower than the value of more time-intensive home products (H_2), the new budget constraint is *ABCE.* Depending on the woman's indifference map, she may locate at point B and stay out of the labor force, she may locate on segment *BC* and work only for home production and stay out of the labor force, or she may locate on the segment *CE* and work on-site.

Let the vector characterizing the budget constraint for alternative *j* be denoted by $T_j = (N_j, W_j, TFC_j, MFC_j, H_{1j}, H_{2j})'$. Then the indirect utility function resulting from maximizing Equation (1) subject to Equation (4) can be written as

(5) $$V_j = V(T_j \mid Z), j = 1,2,3 .$$

The woman assesses the utility attainable in each alternative given her current characteristics such as marital status, presence of young children or disability. Then she chooses the alternative j that maximizes her indirect utility $V(T_j \mid Z)$.

I replicate the model of Edwards and Field-Hendry (2002) using the sample from the U.S. 2000 Census which is the same sample used in this study.[2] In that model, women have five choices of labor force participation: (1) out of labor force, (2) work at home as a self-employed, (3) work at home as an employee, (4) work onsite as a self-employed and (5) work onsite as an employee. The explanatory variables include woman's characteristics such as race, age, education, interaction terms between age and education, and the living area and her household's characteristics for the proxy of her responsibilities in the family such as having elders, having children and having a disabled spouse. I did not use the identical set of variables because the dummy variable for rural area is not available in the U.S. Census.

The result of a universal logit model is shown in Table 4.[3] The base category is "out of the labor force". The first two columns report the estimated effects of the explanatory variables on the probability of a woman working on site by whether the woman is an employee or is self-employed compared to being out of the labor force. The last two columns report the estimated effects of the explanatory variables on the probability of women working at home as an employee and as a self-employed worker

---

[2] See Chapter IV for details on data description

[3] See Chapter V for details on a universal logit model

compared to staying out of the labor force. Almost all estimated coefficients in the table are statistically significant at the 10 percent level except for age/education interaction for an on-site employee, presence of spouse for a home-based employee, a dummy variable for living in area which population density between 25th -50th percentile and a dummy for having children aged less than 6 for a home-based worker.

The positive (negative) value of a coefficient implies that the variable has a positive (negative) impact on the odds that a woman chooses that specific alternative over being out of the labor force. I find that most of the estimates are consistent with the predictions of Edwards and Field-Hendry (2002)'s theoretical models and their estimated logit coefficients. Unearned income, being married with presence of a spouse, and number of children are negatively associated with the probability of labor force participation.

Variables that proxy fixed costs of working and potential home production have negative relationships with the probability of labor force participation. Having children at home has a smaller negative effect on the probability of working at home compared to working on-site. Having children in school actually has a positive association with the probability of working at home as a self-employed worker. This might be because having older children is more complementary with work as a self-employed home-based woman. Having a person aged 65 and older residing in the household is positively associated with the probability of being a home-based employee while it is negatively associated with the probability of being in the other working alternatives compared to the probability of being out of the labor force. It is not clear from the estimated coefficients that having a disability and having a spouse with disability are less negatively associated with the odds of working at home compared to the odds of working on-site. In Edward and Field Hendrey's paper, they find that having disability has less negative impacts on the probability of working at home compared to the probability of working on-site for all working statuses. I find that it is true only for the case of a home-based employee and an on-site employee. Edward and Field Hendrey (2002) find that having a disabled spouse only has a negative impact on the probability of working as an on-site employee and the probability of working as a home-based self-employed worker. I find that having a disabled spouse has a negative impact on all probabilities of working compared to the probability of being out of the labor force.

Home-based workers and self employed women are more likely to live in low population density areas than are on-site employees and non-employed women. For example living in the least density area is positively associated with the probability of working at home or being self-employed while negatively associated with the probability of working as an on-site employee. Living in a low population density area implies that women live in more rural areas. That is, women may have difficulties finding a job or have costs of transportation that are too high. Therefore, they choose to be self-employed and to work from home. The overall set of estimated coefficients confirms that women having a more flexible work status such as self-employment and home-based work have less negative effects from the fixed cost of working and potential home production.

The factors that are positively associated with a woman's wage such as age and education are positively associated with the probability of most working alternatives. In

Edward and Field Hendrey's study, education has a negative but insignificant effect on the probability of being home-based employees. Using the U.S 2000 Census, I, however, find that the likelihood of being a home-based employee statistically increases with education compared to the odds of being out of the labor force. This could imply that the composition of home-based workers has changed from 1990 to 2000. There are more highly educated women in home-based work, especially wage and salary workers than on-site work. This can be the consequence of the increase in computer-related work in home-based employment.

Another possible explanation is that highly educated women want to work from home when the value of their home time is high. The life cycle labor supply model suggests that there are opportunity costs of non-employment. The labor force participation decision may not only be affected by women's current constraints but also their intertemporal constraint on human capital accumulation. That is women's current choices of labor force participation will not only affect their current utility but also affect their future utility through the human capital accumulation process. According to Shaw (1989) the human capital accumulation process can be expressed as

$$K_{t+1} = (1 - \delta_t)K_t + g(K_t, h_t) \tag{6}$$

where K_{t+1} is the human capital stock at time t+1, K_t is the human capital stock at time t, δ_t is the rate of human capital depreciation and h_t is time spent in the labor market. The first term on the right hand side of equation (6) is current human capital stock less depreciation and the second term is a human capital investment function. It is clear that the stock of human capital at time t+1 depends on the depreciation rate, hours of work, and the stock of human capital at time t. Hence, the choice of current labor force participation will affect the level of the future human capital stock.

Human Capital and the Earnings Profile

According to human capital theory, earnings can be determined by an amount of job skill which is acquired in school or on the job. Women who interrupt their employment are generally expected to have less job skill than women who work continuously in the market. This is because when women do not work in the market, they do not gain additional skill and their existing skills depreciate. Figure 2 is the graphic representation of an earnings profile which is modified from Mincer and Ofek (1982). There are two types of workers in their model. One type is continuous workers who have never left the labor market since they entered the labor force. The other type is intermittent workers who experience at least one interruption. To simplify the model, I assume the following. Continuous workers and intermittent workers have the same wage rate and wage growth in their early career. Intermittent workers have only one interruption that lasts only one period of time. I identify three principal phases in an intermittent worker's earnings profile: a pre-interruption period (t_0t_1), an interruption period (t_1t_2) and a post-interruption period (t_2t_3).[4]

In Figure 2, continuous workers have earnings profile *ABCD*. Intermittent workers' wage profile is *AB* in the pre-interruption period. In the second phase, intermittent workers withdraw from the labor market for one period ($\overline{EF}$). When they

[4] Originally, Mincer and Ofek (1982) identify four principal phases in the work and wage history of an intermittent worker: a pre-interruption period, the interruption period, a restoration period, and a post-restoration period.

want to return to the market, their wage offer at the reentry point, $\overline{GF}$, is below the wages obtained by a continuous worker, $\overline{CF}$, and the wages at the point of the labor force withdrawal, $\overline{BE}$. At this point, the gap between a continuous worker and an intermittent worker is $\overline{CG}$. The vertical interval $\overline{CI}$ is equivalent to the rate of loss in human capital accumulation due to lost working experience and the vertical interval $\overline{IG}$ is the rate of human capital depreciation due to nonuse (holding experience constant). In the last phase, intermittent women reenter the labor market with a lower level of human capital. The growth in wages of intermittent workers is equal to that of continuous workers.[5]

To introduce home-based work in the concept of career interruption and earnings profile, I classify women into three different types. The first type, called "on-site continuous workers", are women who work continuously in a conventional job that must be done at work place. The second type, called "non-working intermittent workers", are women who withdraw from the labor force and do not work for one interruption period. The last type, called "working intermittent workers", are women who withdraw from on-site employment and join home-based work for one interruption period. I assume that after the interruption ends, women in the last two types will accept the on-site employment.

The wage earnings profiles of the first two types are the same as those of continuous workers and intermittent workers in the original model. The earnings profile

[5] I omit the restoration phase included in the paper by Mincer and Ofek (1982). Therefore in this model, there is no restoration of market productivity (γ) and accumulation of job tenure (τ) that will accelerate the rate of wage growth.

of working intermittent workers is *ABKLL'M* in Figure 2. At time t_1 the "working intermittent workers" become home-based workers. Their new wage rate is $\overline{KE}$ which is typically lower than the on-site wage, $\overline{BE}$. This is because there is a wage penalty on home-based work equal to $\overline{BK}$. After the interruption, these women leave their home to work outside the home. Their on-site wage rate at the reentry point, $\overline{L'F}$, is higher than that of non working women, $\overline{GF}$, but lower than the wage rate of continuous on-site workers, $\overline{CF}$, because during the interruption, these women accumulate less human capital ($\overline{L'I} < \overline{CI}$) than on-site workers. If the skill acquired from home-based work closely substitute for that from on-site work, the gap between the two wage rates will be small.

According to this model, career interruptions have a negative impact on the wage rate through the human capital accumulation process. For this reason, some women may decide to work from home when the value of their home time is high instead of leaving the labor force altogether. Once the interruption is over, the higher stock of human capital will help such women restart their careers in on-site conventional work more easily.

CHAPTER IV

DATA DESCRIPTION

Theoretically, I need a longitudinal data set on home-based work to study the impact of the penalty on human capital accumulation on the decision to work at home. However, the sample size of home-based work in panel data sets is very small because home-based work is a low incidence event. One of the available data sets that has information on home-based work is the 2000 Census of Population of the United States which is a cross-sectional data set.

The Census of Population of the United States, called the decennial census, is conducted by the Census Bureau every 10 years. The data series includes information on a broad range of population characteristics including income, education, labor force participation, occupation structure, ethnicity and more for the United States, Puerto Rico and the Island Areas. The most recent census was conducted in April 2000. The data is redesigned to facilitate social and economic analysis and it is released as the Integrated Public Use Microdata Series (IPUMS). The IPUMS sample includes almost all the detail recorded originally by the census enumerations.

In this research, I use a 5% sample of the 2000 Census available in IPUMS to examine women's labor force participation decision. A 5 % sample is a 1-in-20 national random sample of the population. The sample includes about 5 million households and 14 million person records. I restrict the sample to women aged 25-54 because many women aged below 25 are in school and women aged over 55 are likely to be retired or be preparing for retirement. I exclude women who are in school, who live in group quarters or who are in the Armed Forces. Unemployed women are also excluded from the analysis because these women are willing to work but do not currently have a job. These women are included in the labor force but it is not possible to determine their work-site preferences. Therefore, I cannot establish which labor force participation option they will choose if they become employed. Finally, there are 2,718,707 women left in my sample.

Definition of Home-Based Workers

There are many terms currently used to characterize employment in the home. The terms "home-based work" and "homework" are used interchangeably.[6] They cover any paid work done in the home regardless of the employment status of the worker. Home-based work can be done exclusively in the home or based out of the home (Christensen, 1988).

There are several nationally representative surveys containing questions aimed at estimating the number of people who work at home during a typical workweek. For example the Survey of Income and Program Participation (SIPP) asks respondents to indicate which days of the workweek they work at home. Women are regarded as home-based workers if they report having worked at home on a given workday. Women who went to work late or left work early in order to work at home are not classified as home-based workers. Women who occasionally worked at home during the weekend are also excluded. Another survey having questions about home-based employment is the May 1997 Supplement to the Current Population Survey (CPS). The survey asks respondents

[6] The term "telecommuting" is more a restrictive term than home-based work. It covers only computer-mediated home-based work.

to indicate whether they completed any work for their job at home. Those who did any task at home were counted as having worked at home.

However, the U.S. Census provides the most conservative home-based worker estimate. I can classify workers as home-based or not depending on the respondents' answer to a question on their journey to work. The question on usual means of transportation to work identifies the various types of transportation people use to get to their jobs. In the case that respondents usually used more than one method of transportation, they answer the one used on the most days in the previous week of the survey. In this study, I define the person who responds that the means of getting to work is "worked at home" as a home-based worker. In the case that women worked at home and worked on-site, they are counted as home-based workers only if they spent more days working at home than working on-site. This is the same definition used in Kraut (1988), Edwards and Field-Hendrey (2002) and Oettinger (2004).

Definition of Women's Characteristics Variables

The variables describing women's characteristics are obtained from the household record and the person record in IPUMS. The household record includes family income variables and geographical variables. The person record includes family interrelationship variables, demographic variables, education variables, income variables, work variables, disability variables and place of work variables. I do not obtain the information of spouses and children directly from women's personal record but I use the family interrelationship variables to link husbands to wives and to link children to mothers. I also match women to the household record to indicate whether or not women live in the same household with any person aged 65 and older. It should be noted that the information on some variables does not represent respondents' condition in 2000. It depends on how the Census question was specifically asked to the respondents.

AGE, RACE and NATIONAL ORIGIN variables are demographic variables measured at the day of enumeration. Women give the age at their last birthday prior to or on the day of survey. EDUCATION variables indicate women's highest level of educational attainment. I divide EDUCATION variables into 4 levels. Women have less than high school if they report grade 11^{th} or less. Women have high school if they report grade 12^{th} or GED. Women have some years of college if they report 1 to 3 years in college. This also includes women with occupational associate degree and academic associate degree. Women who report four years and more in college are assigned college and more degree.

Geographical variables include STATE variables, DIVISION variables, Public Used Microdata Area (PUMA) and PUMA land area. I use STATE, PUMA and PUMA land area to construct a population density variable. This variable is used to substitute a RURAL-URBAN variable that is not available in IPUMS for the 2000 Census. I calculate population density from the total number of people in a PUMA divided by the PUMA land area. I categorize the population density variable into 4 groups: lower than 10^{th} percentile, between 10^{th} to 25^{th} percentile, between 25^{th} to 50^{th} percentile, and more than 50^{th} percentile. Low (high) population density area implies that the location is rural (urban). This set of dummy variables is actually better than a dummy variable for

RURAL area because it helps capture the effect of different ranges of population density.

There are different measures of disability in the Census. I use work disability to define if women are disable. WOMEN'S DISABILITY indicates whether or not the women had any lasting physical or mental health condition that caused difficulty working, limited the amount or type of work they could do, or prevented them from working altogether. The variable does not include the temporary health condition. For SPOUSE'S DISABILITY, I use personal care limitation which indicates that spouses had any physical or mental health condition that had lasted 6 or more months and made it difficult for them to take care of their own personal needs, such as bathing, dressing, or getting around inside the home. Again, this variable does not include temporary health conditions. By definition, personal care limitation is more serious than work disability. Therefore, any one who is defined as a person having personal care limitation is also defined as a person having work disability.

All income variables in the Census 2000 denote the income earned in 1999 not 2000. FAMILY INCOME is the primary family's total money income from all sources in 1999. WAGE INCOME indicates money women received as an employee. This includes wages, salaries, commissions, cash bonuses, tips, and other money income received from an employer. BUSSINESS INCOME indicates women's net pre-income-tax business and/or professional practice income. Women's unearned income is calculated from women's total family income less women's total earned income. I do not use total household income because the variable includes all incomes from everyone in the household including unrelated household members. Only income from related members should have an influence on women's preferences.

Work variables of person record include labor force participation status (LFP), occupation (OCC), industry, class of workers, number of hours worked and number of weeks worked. LFP identifies whether women participated in the labor force a week before the day of enumeration. OCC variable indicates women's primary occupation. I use the U.S. Equal Employment Opportunity Job Categories to redefine occupation coding in the U.S 2000 Census into 7 categories: Officials and Managers, Professionals and Technicians, Sales Workers, Administrative Support Workers, Craftsmen and Operatives, Laborers and Helpers and Service Workers. INDUSTRY variable records the type of industry in which women performed their occupation. I redefine industry coding into 8 industries: Agricultural and Mining, Construction, Manufacturing, Transportation/Communications/Utility, Trade/Finance/Insurance/Real Estate/Rental and Leasing, Services and Public Administration. CLASS OF WORKER indicates whether women worked for their own enterprise or for someone else as an employee. Women are defined as self-employed workers if they work for their own enterprise and women are defined as wage and salary workers if they are employees. The variables of OCCUPATION, INDUSTRY and CLASS OF WORKER indicate a woman's current working status if she is in the labor force. However, women who are not in the labor force may report their occupation, industry or class of worker if they worked within the last five years. HOURS WORKED variable and WEEK WORKED variable show the number of hours and the number of weeks that women worked for profit, pay, or as an "unpaid family worker" during the previous year.

It can be seen that income variables and work variables are measured at different points of time. Income variables, numbers of weeks worked and number of hours worked represent women's status in 1999 but occupation, industry, labor force participation and means of transportation represent women's status in 2000. Therefore, in this study, I assume that women did not change their work from 1999 to 2000.

The details of women's characteristics across the various work alternatives are reported in Table 3. The sample is composed of 738,368 non-employed women, 76,569 home-based workers and 1,903,770 on-site workers. On average home-based workers are older than women in the other alternatives. Women staying at home have higher unearned-annual income and greater likelihood of spouses being present in the household than on-site workers. Whites are more likely to work at home compared to other races. There are a high proportion of women who are out of the labor force having disability, having a disabled spouse and having person aged 65 and older in the household. The model predicts that the proportion of these variables should be lower for working women but smaller for on-site workers than for home-based workers. However, the descriptive statistics shows the opposite. The proportion of women having disability, having a disabled spouse and having person aged 65 and older in the household is lowest for home-based workers.

Women who stay at home have a high proportion of having young children than women who work on-site while proportions of having school age children are similar for all alternatives. Home-based workers tend to live in low population density area. Home-based and on-site women are similar in terms of educational attainment. However, home-based workers' annual earned income is lower than on-site worker. This could imply relative wage penalty on home-based work.

CHAPTER V

LABOR FORCE PARTICIPATION: MODEL ESTIMATION

Model Specification

In this dissertation, I use a discrete choice model to characterize women's choices from labor force participation alternatives. Following the literature on discrete choice models, I assume that the indirect utility function for woman *i* in alternative *j* can be expressed as the sum of a representative component that depends on unearned income (N_{ij}), the wage rate (W_{ij}), the fixed costs of working (TFC_{ij}, MFC_{ij}), the value of home production (H_{1ij}, H_{2ij}), the expected cost of non-participation (C^e_{t+1ij}), the woman's characteristics (Z_i) and an idiosyncratic component (u_{ij}):

(7)

$$V_{ij} = \beta_0 N_{ij} + \beta_{1j} W_{ij} + \beta_{2j} TFC_{ij} + \beta_{3j} MFC_{ij} + \beta_{4j} H_{1ij} + \beta_{5j} H_{2ij} + \beta_{6j} C^e_{t+1ij} + Z_j{}'\alpha_j + u_{ij}$$

$$j = 1, 2, 3.$$

The distribution of the idiosyncratic taste variation component u_{ij} will determine the probability that woman *i* attains the highest utility level in alternative *j* (conditional on budget constraints in alternatives 1, 2 and 3, and the woman's characteristics). Any exogenous change which increases the utility attainable in alternative *j* will increase the probability that the woman chooses that alternative.

I set up a discrete choice model of the labor force participation by assuming that the indirect utility function for woman *i* in alternative *j* is a function of characteristics of alternative *j* and characteristics of woman *i.* To estimate the model one needs information on the current wage rate, the level of non-wage income, the time fixed cost, the monetary fixed cost, the value of home production and the expected cost of non-employment in each alternative for each woman in the sample. Unearned income is the only available variable that is invariant among alternatives. Therefore I have to estimate the other variables via the following predicting equations.

(8) $$W_{ij} = X_i'\lambda_j + e_{1ij}$$

(9) $$TFC_{ij} = X_i'\rho_j + e_{2ij}$$

(10) $$MFC_{ij} = X_i'\theta_j + e_{3ij}$$

(11) $$H_{1ij} = X_i'\eta_j + e_{4ij}$$

(12) $$H_{2ij} = X_i'\sigma_j + e_{5ij}$$

(13) $$C^e_{t+1ij} = X_i'\psi_j + e_{6ij}$$

where X_i is a vector of predictor variables which may be included in Z_i, and e_{ij} is an error term in each predicting equation. Substituting this expressions into equation (7) yields

(14) $$V_{ij} = X_i'\gamma_j + v_{ij},$$

where $\gamma_j = (\alpha_j + \beta_{1j}\lambda_j + \beta_{2j}\rho_j + \beta_{3j}\theta_j + \beta_{4j}\eta_j + \beta_{5j}\sigma_j + \beta_{6j}\psi_j)$, α_j is redefined to include zero coefficients for the variables X that are not contained in Z, and $v_{ij} = \beta_{1j}e_{1ij} + \beta_{2j}e_{2ij} + \beta_{3j}e_{3ij} + \beta_{4j}e_{4ij} + \beta_{5j}e_{5ij} + \beta_{6j}e_{6ij} + u_{ij}$. The prediction errors in equation (8)-(13) are likely to be correlated. Consequently, the composite of the error terms, v_{ij}, are unlikely to be independent.

Early applications of discrete choice models relied upon the multinomial logit (MNL) specification. The multinomial logit model offers the important advantage of being computationally feasible, even for relatively large choice sets. However, the standard logit model suffers from the disadvantage of imposing the Independence of Irrelevant Alternatives (IIA) assumption. Therefore, a conventional multinomial logit model is inappropriate for this problem because it assumes that the unobserved portions of utility u_{ij} are identically and independently distributed (IID) in accordance with the extreme value distribution. Then, the MNL specification violates the IIA property.

In the study by Edwards and Field-Hendrey (2002), they use a universal logit (UL) model which relaxes the assumption that unobserved portions of utility are IID and, therefore, it does not require the IIA property. Consider my trichotomous case (j=1, 2 and 3). The specification of the probability of woman *i* being in a particular alternative in a universal logit model is given by

(15) $$\Pr_{i1} = \frac{1}{1+\exp(V_{i2})+\exp(V_{i3})},$$

(16) $$\Pr_{i2} = \frac{\exp(V_{i2})}{1+\exp(V_{i2})+\exp(V_{i3})}, \quad \text{and}$$

(17) $$\Pr_{i3} = \frac{\exp(V_{i3})}{1+\exp(V_{i2})+\exp(V_{i3})}.$$

In a universal logit model, the indirect utility function V_{ij} is an arithmetic function of the attributes of all available alternatives, not only the attributes of alternative *j*. Therefore this model does not require an assumption of zero correlations across work alternatives. The main drawback of a universal logit is that it violates one of the probabilistic choice systems. The model does not allow calculation of the probability of a new alternative before that alternative comes into existence. This will not affect my results since this analysis does not intend to examine how the probability changes if an alternative is added or dropped.[7] When the V functions are linear in the explanatory variables with coefficients that generally vary with the alternatives, the universal logit model is reduced to a multinomial logit model (Amemiya, 1985).

Another alternative is the nested multinomial logit (NL) model developed by McFadden (1978). The model retains the computational virtues of the multinomial logit model, but selectively relaxed the IIA assumption by assuming a hierarchical decision process. A nested logit model is appropriate when the set of alternatives faced by a decision maker can be partitioned into subsets, called nests. For any two alternatives that are in the same nest, the ratio of probabilities is independent of the attributes or existence of all other alternatives. It means that IIA holds within each nest. The model allows that the ratio of probabilities of any two alternatives in different nests can depend on the attributes of other alternatives in the two nests. That is, IIA does not have to hold for alternatives in different nests (Maddala, 1983; McFadden, 1984; Long, 1997).

Use of nested logit models requires imposing a nesting structure or making an assumption regarding the correlation between alternatives. In addition, nesting structures are sometimes interpreted to imply a sequential decision-making process. However, there is no theoretical basis for choosing among nesting structures; the decision is made

[7] See Hutchens et al. (1989) for more detail.

at the discretion of the analyst.[8] In this dissertation, the three alternatives available to a woman for her labor force participation are (1) remaining out of the labor force, (2) work at home and (3) work on-site. There are two possible nesting structures in this situation. One structure would be to put "out of the labor force" and "work at home" in the same nest (NLA model nesting alternatives (1, 2) and (3)). Alternatively, "work at home" and "work on-site" could be grouped together in the same nest (NLB model nesting alternatives (1) and (2, 3)). The two nesting structures are represented by a tree diagram in Figure 3. In this dissertation, I impose the former nesting structure, NLA. A woman first chooses whether or not she wants to stay at home and then whether or not she wants to work if she has chosen to stay home. This is because from surveys, most women view home-based work as an alternative when the demand of their home time is high. Therefore, home-based working women and non-employed women may share similar characteristics. The advantage of this structure is that the estimated coefficients in the bottom level can be directly used to test my hypotheses on the impact of human capital on labor force participation. The specification of the probability of woman *i* being in a particular alternative in a nested logit model is given by

(18) $$\mathrm{Pr}_{i1} = \frac{1}{1+\exp(V_{i2})} \times (1-\mathrm{Pr}_{i3}),$$

(19) $$\mathrm{Pr}_{i2} = \frac{\exp(V_{i2})}{1+\exp(V_{i2})} \times (1-\mathrm{Pr}_{i3}), \quad \text{and}$$

---

[8] Herriages and Kling (1997) suggest selecting a model with largest log likelihood value or a model that is consistent with utility theory i.e. the dissimilarity coefficients, the coefficients on the inclusive value, lie within the unit interval.

(20) $$\Pr_{i3} = \frac{\exp(V_{i3})}{\exp[\tau_{12} \times I_{12}] + \exp(V_{i3})},$$

where $I_{12} = \ln(1 + \exp(V_{i2}))$ is the inclusive value for the staying at home branch and τ_{12} is the coefficient on the inclusive value of staying at home.

When τ_{12} is restricted to equal 1, the nested logit model becomes the multinomial logit model. Thus, one can test the IIA assumption by testing whether the estimated valued of τ_{12} is significantly different from unity.

Explanatory Variables

The set of explanatory variables includes the fixed costs of working, the log current wage rate, the value of home production, the opportunity costs of non-employment, a measure of unearned income and tastes. Because it is not possible to obtain the information of fixed costs of working, the log current wage rate, the value of home production, and the opportunity costs of non-employment for all alternatives, I use women's characteristics to estimate these variables from equations (8) – (13). In this subsection, I discuss the explanatory variables that represent women's current constraints which are the fixed cost of working, the log current wage rate, the value of home production, unearned income and tastes. In the next subsection, I discuss the imputation of women's cost of non-participation. I follow the methodology by Edwards and Field-Hendrey (2002) for most of the definitions of variables in this subsection.

The women's characteristics I use to proxy the log current wage for each working alternative are age, dummy variables for highest education attainment (Less than high school, High school, Some college, College or more) and dummy variables for race and ethnic groups (White-non Hispanic, Black-non Hispanic, Hispanic, and Other). Increases in age and education should increase the probability of working.

In order to proxy the fixed cost, I include a set of dummy variables for the presence in the household of preschool children and children aged 6 to 17[9], an indicator for work disability, for presence of a disabled spouse who needs personal care, for presence of persons aged 65 and older living in the household, and dummy variables for different ranges of population density in the area where the woman resides. The latter variables are used to substitute for the "URBAN" variable that is available in IPUMS for the 5% sample 1990 Census but it is not available for the 5% sample 2000 Census. Since population density is one of the criteria needed to construct the variable RURAL/URBAN, the lower is the density, the more likely it is to be defined as a "rural area". Living in an area of low population density and positive increases in the remaining variables are expected to have a positive correlation with the cost of traveling to the work place and the cost day care for children. Increases in these variables thus increase the probability of staying at home. Therefore, the hypothesis about how the fixed cost affects the probability of staying at home versus working on-site can be tested from these variables.

Edwards and Field-Hendrey (2002) view all home production as complementary with home-based work. However, in this study, I divide home production into two types: more time-intensive home production and less time-intensive home production. The dummy variables for the presence of children of different ages may be used as proxies

[9] I include a dummy variable for children aged less than 1, one for children aged 1 to 3, one for children aged 4 to 5 and one for children aged 6 to 17.

for the different types of home production. I believe that caring for preschool children, especially children less than one year old is very time intensive. The mothers have to be with the children a lot of the time. Therefore, it is less feasible to work and take care of children at the same time. The caring of older children or children of school age, i.e. children aged 6 to 17, is less time-intensive. It is possible for the mothers who have school aged children to do paid work at home. For this reason I specify dummies for having children aged less than 1, aged 1 to 3, aged 4 to 5 and aged 6 to 17 in order to generalize the effect of home production with different time-intensities. This specification is consistent with a survey done by Christensen (1987) that finds that home-based workers do not work and care for their children simultaneously. About two-thirds of the women in the survey who identified themselves as professionals and managers used other forms of child care for their preschool children when they worked at home.

The other variables considered to be proxies for home production are presence of a spouse who needs personal care and presence of persons aged 65 and older in the household. Since the needs of such persons vary according to individual conditions, I do not attempt to classify time-intensity for these two variables.

Unearned income is negatively associated with the probability of labor force participation. This is because “leisure” is assumed to be a normal good. However, if women can stay at home while working, unearned income could have a less negative impact on the probability of working at home. Dummy variables for race and ethnic groups (Non-Hispanic White, non-Hispanic Black, Hispanic, Other) are included to examine if there is any racial different in labor force participation. For example, black women are more attached to the labor force than are women of other races. Therefore, I expect that the dummy variable for blacks is positively associated with the probability of working. A dummy variable for the presence of the spouse in the same household is used to proxy women's preferences. Women who have a spouse in the household may prefer to stay at home because of labor division within the family--women are responsible for taking care of the home.

Imputed Human Capital Variables

In addition to the above variables, I include the expected cost of non-participation to test whether the anticipated change in women's future human capital stock has an impact on women's labor force participation decision. As I mention in Chapter III, the cost of non-participation can be divided into two components: the cost of forgone work experience and the cost of human capital depreciation. Because the information in the Census is based on cross-sectional data, I have to impute a variable for forgone human capital accumulation and a variable for human capital depreciation to proxy the cost of non-employment used in the labor force participation model. In addition to these variables, I also control for the level of human capital stock or current opportunity cost of non-employment ($\overline{BE}$ in Figure 2). In this subsection, I explain how to estimate the rate of human capital accumulation, the rate of human capital depreciation and the current opportunity cost for each woman in the sample.

Human Capital Accumulation

The first component of the cost of non-employment is the amount of human capital women accumulate if they work continuously. It can be measured by the rate of wage growth. Ureta and Welch (2001, 2002) distinguish workers who have the same amounts of work experience but whose experience is of different ages. Two identical workers who have same years of work experience, same age and same education could have different wages because the ages when they accumulated human capital are not the same. Workers whose human capital accumulated a long time ago will have lower wages than workers with the same amount of work experience who accumulated human capital recently. This is because the knowledge or skill acquired long time ago becomes obsolete or depreciate.

Following Ureta and Welch (2001, 2002), the instantaneous rate of human capital accumulation at time $t = \tau$ (while the person is working) is

(21) $$\frac{d \ln K(\tau)}{d\tau} = \alpha \,, \qquad \text{for } t_1 \le \tau \le t_2$$

The accumulated human capital depreciates at an instantaneous rate δ from the time it is acquired, τ, until the present time, T:

(22)Depreciation by time T of human capital acquired at time $\tau = \int_{\tau}^{T} \alpha\delta\, dt = \alpha\delta(T - \tau)$

Then, the net human capital accumulation between times t_1 and t_2 is

(23) $$\int_{t_1}^{t_2} (\alpha - \alpha\delta(T - t))dt = \alpha(t_2 - t_1) - \alpha\delta\left(T(t_2 - t_1) - \frac{t_2^2 - t_1^2}{2} \right)$$

$$= \alpha D - \alpha\delta D\left(T - \frac{t_2 + t_1}{2}\right)$$

$$= \alpha D - \alpha\delta(DA)$$

where $D = t_2 - t_1$ = duration of the spell and $A = T - \frac{t_2 + t_1}{2}$ = average "age" of the spell.

In the case of a worker with "I" spells, the net human capital accumulation is

$$= \alpha\left(\sum_{i=1}^{I} D_i\right) - \alpha\delta\left(\sum_{i=1}^{I} D_i \overline{A}\right)$$

where $\sum_{i=1}^{I} D_i$ = the aggregate spell duration and $\overline{A}$ = the duration-weighted average age of the "I" spells. In the case of women who work continuously, this specification becomes Mincer's quadratic experience specification.

In this study, the rate of wage growth is obtained from the estimated coefficient of experience in a wage equation. The coefficient is the percentage change in the wage with respect to the change in work experience. I can interpret the coefficient as a rate of human capital accumulation. Since wage growth may vary by race, education and occupation, I include interaction terms between a set of dummy variables for race, education and occupation in the equation and estimate wage growth from the following equation

(24) $\ln W_i = \alpha_1 EX_i + \alpha_2 EX_i D_i^R + \alpha_3 EX_i D_i^E + \alpha_4 EX_i D_i^{OC} + \gamma EX_i^2 + X_i\beta + \varepsilon_i$

where $\ln W_i$ is the log of hourly wages, EX_i is potential work experience of worker *i*, D_i^R, D_i^E and D_i^{OC} are dummy variables for 3 race groups (White, Black, and Other), 4 education attainment (Less than high school, High school, Some college, and College or more) and 7 occupations (Officials and Managers, Professionals and Technicians, Sales Workers, Administrative Support Workers, Craftsmen and Operatives, Laborers and Helpers and Service Workers). The other variables included in the equations are the main effects of race, education and occupation and dummies for state variables. Potential work experience is calculated by using an individual's age and education level. Murphy and Welch (1990) assume that workers start working at age of 18 and high school graduates, some years of college and college graduates have 13 years of schooling, 14 years of schooling and 16 years of schooling. That is, for high school drop outs, experience is age less 18 years. For high school graduates, experience is age less 19 years. For workers with some years in college but no bachelor's degree, experience is age less 20 years. Experience for college graduates is age less 22 years.

Since the shape of the earnings profile is concave, I would like to divide an earnings profile into four phases, three phases before the peak and one phase after the peak. I use nine-year intervals for each phase because the maximum years of potential work experience in the sample is 36 years. The peak at 28 years of potential work experience is reasonable because, based on figures in Murphy and Welch (1990), the earnings profiles are highest when workers have between 25 and 30 years of work experience. Workers in the sample are divided into 4 groups based on the potential experience they have (0-9 years, 10-18 years, 19-27 years and 28-36 years). I estimate a wage equation for each group of workers. The rate of human capital accumulation is the estimated coefficient of potential work experience which varies by race, education, occupation and ranges of experience.

Most women do not work continuously during their life time. The wage growth estimated from a wage equation for women underestimates the wage growth of continuous workers because women's potential work experience may not be a good proxy for their actual work experience. Unlike women, men are less likely to interrupt their careers. Hence, I use a wage equation for men to estimate the wage growth rate of continuously working women.[10] Since the distribution of occupations for men could be different from that for women, I expand the set of dummy variables for occupations from 7 to 17. The extra 10 occupations are for the ten most frequent 2-digit occupations of women in my sample. They are occupation codes 47, 23, 57, 51, 31, 36, 58, 42, 40 and 52.[11] The additional dummies allow a better match of men's occupations to women's occupations. In addition, workers who work less than half-time or half-year jobs may acquire less on-the-job-training. Clearly, their wage growth would be different from the wage growth of those who work more than half-time and half-year. For this reason, I limit the sample to wage and salary workers who work more than half-time (more than 20 hours per week) and half-year (more than 26 weeks per year) to estimate wage growth for workers who do not interrupt their careers in a significant way.

After I estimate the rate of wage growth, I assign each woman a rate of wage growth based on her characteristics: women who are in the same cell (years of potential work experience, education level, race and occupation) are assigned the same value of wage growth. However, if a woman has been out of the labor force for more than 5

[10] Ureta and Light (1990) find that the gender wage gap is less pronounced among continuously employed workers than among all workers and the gap is narrowing for more rapidly among the continuously employed

[11] See the note under Table 5 for details

years, the information on work variables such as occupation is not available. I randomly assign an occupation to them by assuming that their occupational distribution is the same as the distribution of those who have been out of the labor force for less than five years because their information on occupation is still available in the Census.

The results from the estimation of the wage regression in (24) by years of experience are shown in Table 5.[12] The first column for each experience group shows the main effects of race, occupation and education on the log wage. Whites earn more than blacks and other race except for workers with 0 to 9 years of experience. Workers in Official, Manager, Professional and Technical occupations have a higher wage than workers in any other occupation. Education has a positive effect on the log wage. Workers with bachelor's degree or more earn the highest wage.

The second column for each experience group reports the effect of an additional year of potential work experience on log wages or the rate of wage growth. For example, a white professional with a bachelor's degree and 7 years of potential work experience enjoys a rate of wage growth of 6.5 % (4.2 % - 1.2 % +3.5 %). The average rate of return from one year of experience decreases almost monotonically with years of potential experience. Whites have a higher rate of return than any other race except for blacks with more than 19 years of potential work experience. In general college graduates also have a higher rate of return than workers with lower education levels except for workers with 19 to 27 years of potential work experience. Workers in Official and manager

---

[12] See Appendix B for the full set of estimated coefficients for the wage regressions by years of experience.

occupations have the highest rate of wage growth except for workers with more than 27 years of experience.

Human Capital Depreciation

The second component of the expected cost of non-employment is the rate of human capital depreciation. I also follow the approach in Ureta and Welch (2001, 2002) that is used to estimate the rate of wage growth to estimate the rate of depreciation. Ureta and Welch (2001, 2002) find that women's human capital depreciates at the rate of 7% per year regardless of the activities they do. That is, employed women or non-employed women could have the same rate of depreciation but employed women have compensated the depreciation by investing in new human capital. Thus, employed women have higher rates of net human capital accumulation than non-employed women have. I estimate the rate of human capital depreciation from the estimated coefficient $\hat{\delta}$.

In order to follow the specification in Ureta and Welch (2001, 2002), I require complete information on a worker's work history to determine women's work experience and the times when they acquired the experience. Since the U.S. Census does not ask respondents about their past work, it is not possible to estimate the actual rate of human capital depreciation for women in my sample. Nevertheless, I attempt to construct each woman's employment history in order to estimate their rates of human capital depreciation. Since women typically leave the labor force to take care of their young children and return to the labor market when their children become older, the number of children is used to proxy women's career interruptions. The higher is the number of children a woman have, the more interruptions we expect. Therefore, in this study, I assume that having children is the only reason why women leave the market.[13] I also assume that women do not have any other training after they earn their highest degree and they start their careers right after they finish school. Hence, I can approximate women's employment history based on information on their age, education, number of children in the household and the age of the children. In this study, I have to restrict the sample to women aged 25 to 44 because women aged 45 and older are less likely to live with their children. When a woman and her children do not live in the same household, I do not know whether the woman has children. I match women with children only if there is an unambiguous link from children to mothers. Women having more than 9 children are also excluded in order to avoid the case of a foster home. Home-based workers are excluded from this calculation.

In addition, I also need to know how long women will be out of the labor force for child caring. I impute different years out of the labor force per child to women in different education level because I believe that highly educated women have high career commitment and take shorter time out of the labor force than other women do. I use the information on women's labor force participation and children's age to calculate the maximum years that women in each education level leave the market. I restrict to a set of women who have only one child and calculate the percentage of women in different labor force participation alternatives.

[13] This is a strong assumption for estimating the rate of depreciation. Phipps, Burton and Lethbridge (2001) show that the depreciation rates vary with the reasons for interrupting such as demand-related interruption, health-related interruption, maternity and child care interruption.

In the IPUMS sample, I can determine whether or not women are in the labor force and if women are out of the labor force, how long they have been out. If a woman is out of the labor force in 2000 but she has a reported occupation, I can infer that she has been out of the labor force for no more than 5 years. If a woman is out of the labor force in 2000 and she does not have a reported occupation, I can infer that she has been out of the labor force for more than 5 years.

First, I calculate the proportion of women who are in the labor force out of the total number of women who have a child aged less than 1 (P1). This number is used as the percentage of women who do not take time out after giving birth. Second, I calculate the proportion of women who are out of the labor force for no more than five years from the total number of women who have a child aged 1 to 5 (P2). This proportion is used as the percentage of women who spend three years out of the labor force caring for a child. Lastly, I calculate the proportion of women who are out of the labor force for more than five years among the total number of women who have a child aged 6 to 17 (P3). This proportion is used as the percentage of women who spend 12 years out of the labor force caring for a child. Finally, I estimate the maximum number of years of interruption as $(P1 \times 0) + (P2 \times 3) + (P3 \times 12)$. I find that for less women with less than a high school education, the maximum period for each career interruption is 9 years. The spells decrease to 7 years, 4 years and 2 years for high school graduates, women with some college education and college graduate women, respectively.[14]

[14] The labor force participation behavior could be different when women have only one child or when women have more than one child. There might be economies of scale when women have more than one child. Therefore, I recalculate the figures for women who have 2 children and women who have 3

I suppose that during the n^{th} year within the spell, women also have a probability of returning to work which equals the labor force participation rate of women with only one child aged n. For example, the labor force participation rate of women who have a child aged less than 1 is used as a measure of the probability that women do not take time out. The labor force participation rate of women who have a child aged 1 is used to denote the probability that women take one year out of the labor force. The assigned probabilities are shown in Table 6. It can be seen from the table that at a given age of a child, highly educated women have a higher proportion of labor force participation or probability of returning to work. Within the same education level, the probability increases as women approach the end of a spell.

Women in the sample are randomly assigned the period of time out per child according to their education level. For example, immediately after having a child, 35.05 % of high school drop out women are assigned zero years of time out while the other 64.95 % of these women will be assigned at least one year of time out. Next, 38.32 % of the women who take at least one year of time out or 24.89 % of less than high school graduate women are given one year of time out. This process is repeated until the 9^{th} year. All women in this group are assumed to return to work. The number of women with children by the years of time out per child and education level is shown in Table 7.

Based on the information about children's age, women's age, women's education and duration of child caring, I can estimate women's work experience and the timing of

---

children. The proportions of labor force participation are very similar to the case when I restrict the sample to women with only one child.

the work spells during which they accumulate experience after having earned their highest degree. The examples of work history based on women's age, women's education, years women take time out, number of children and children's age are shown in Figure 4. In Panel A, a woman has only one child. She starts working at the age of "years in school *(S)* + 6". Her age when she has her child equals "woman's age (*WA*) - child's age (*KA*)". She does not take time out if she is assigned "zero" for the years of time out (*Sp*). If she is assigned to "non-zero" time out, she leaves the market for "*Sp*" years and returns to the labor force at the age of "woman's age (*WA*) - child's age (*KA*) + *Sp*". The total experience of this woman is e_1+e_2 and the total home time is h_1. Panel B-1 is the case where there are two children and the first child is older than the second child by more than the assigned spell. Therefore the total experience of this woman is e_1+e_2+e_3 and the total home time is h_1+h_2. Panel B-2 depicts the case where the first child is older than the second child by less than the assigned spell. This woman leaves the labor market when she has her first child and returns to the market after her second child's age is equal to the assigned spell. The total experience in this case is e_1+e_2 and the total home time is h_1.

After I obtain the information on experience and the age at the time experience is acquired, I use the following wage equation to estimate the rate of depreciation.

$$\ln W_i = \beta_0 + \beta_1 X_i + \alpha \sum_{t=1}^{T} D_{i,t} + \alpha\delta \left(\sum_{t=1}^{T} D_{i,t} \overline{A}_i \right) + \varepsilon_i \qquad (25)$$

where $\ln W_i$ is log of annual wage, $\sum_t D_t$ is the aggregate employment duration, $\overline{A}$ is the duration-weighted average age of the *t* employment spells, and *Xs* are other characteristics that affect the log wage which are women's age, dummy variables for education, dummy variables for race, a dummy variable for working 20-34 hours per week, a dummy variable for working full-time per week and number of years since the highest degree was earned. In this specification, women's age is included in the model because I want to capture a cohort effect. The number of years since the highest degree is included as it reflects the current usefulness of knowledge acquired in school. I assume that job skill depreciates at different rates across occupations and age. An occupation requiring less-durable skills will have a high rate of decay. Old workers are likely to have a higher rate of decay than young workers because the knowledge they acquired in school could become obsolete at a faster rate.

As is clear from examining equation (25), the depreciation rate cannot be obtained directly from a wage equation. To estimate the rate of decay, I have to estimate a wage equation and compute the rate of human capital depreciation from the estimated coefficient of experience interacted with age divided by the estimated coefficient of experience. The standard error of the rate of depreciation is computed from the estimated covariance matrix of the wage regression. The estimated rate of decay and its standard error are repored in Table 8.[15]

The estimated rates of decay for women are between 4.23%-17.17%. Older women have higher rates of depreciation except for women in craftsmen and operative occupations in which women aged 35 and older have lower rates of decay than do the younger women. Next, I do a Hausman test to check if there is a statistically significant

[15] See Appendix C for the estimated wage equations by occupation.

difference between the depreciation rates of young workers and old workers. The results of the Hausman tests suggest that the estimated rates of young workers and old workers in craftsmen and operatives, sale workers, administrative support workers and laborer and helpers occupations are not different. Therefore, the depreciation rates assigned to women in these occupations are from the estimates based on the wage regression for all women in the occupation. Consequently, there are only 10 rates of depreciation assigned to women in the sample.

Current Opportunity Cost of Non-Employment

This variable is included in the model because I wish to examine the effect of a change in the rate of wage growth and the depreciation rate for a given level of current opportunity cost. I use reported on-site wages as a measure of the current opportunity cost for women who are working on-site. For home-based workers, I adjust their reported home-based wage by an estimated home-based wage penalty. For women who are out of the labor force in 2000, I impute them wage from an estimated log wage equation with a Heckman's correction for selectivity.

I estimated the home-based wage penalty (premium) from a wage regression on individual characteristics and a dummy variable for women who work at home. The estimation sample consists of all women working on-site and working at home. The decision to be a home-based worker may not be independent of a woman's characteristics. There is an effect of the endogenously chosen work place on a woman's wage rate. To correct for self-selectivity, I estimate the wage equation using a treatment effect model.

The treatment effect model consists of two equations. The first equation is a probit function for the probability of being a home-based worker. The second equation is a regression of log wage on the woman's characteristics and a dummy variable for home-based workers. Let H_i denote an endogenous dummy variable for home-based work. H_i is modeled as the outcome of an unobserved latent variable, H_i^*. It is assumed that H_i^* is a linear function of the exogenous variables, w_i, and a random component, u_i. Specifically,

$$H_i^* = w_i\gamma + u_i \tag{26}$$

and the decision rule is

$$H_i = \begin{cases} 1, & \text{if } H_i^* > 0 \\ 0, & \text{otherwise}. \end{cases} \tag{27}$$

The primary equation is specified by

$$\ln W_i = X_i\beta + \pi H_i + \varepsilon_i \tag{28}$$

where $\ln W_i$ is the log hourly wage, X_i are other variables that determine the wage rate, H_i is a dummy variable for working at home, and ε and u are bivariate normal with mean zero and covariance matrix $\begin{bmatrix} \sigma & \rho \\ \rho & 1 \end{bmatrix}$. The parameter π represents the average "wage penalty" (or "wage premium") for home-based workers. The likelihood function used to estimate this model is

$$(29)\quad l_i = \begin{cases} \ln \Phi\left\{\dfrac{w_i\gamma + (y_i - x_i\beta - \delta)\rho/\sigma}{\sqrt{1-\rho^2}}\right\} - \dfrac{1}{2}\left(\dfrac{y_i - x_i\beta - \delta}{\sigma}\right)^2 - \ln(\sqrt{2\pi}\sigma), H_i = 1 \\ \ln \Phi\left\{\dfrac{w_i\gamma + (y_i - x_i\beta - \delta)\rho/\sigma}{\sqrt{1-\rho^2}}\right\} \qquad , H_i = 0 \end{cases}$$

where $\Phi(\ )$ is the cumulative distribution function of the standard normal distribution.

My specification allows for heterogeneous wage penalties for 16 different skill categories. Each category is defined by four age groups (25-29, 30-34, 35-44, and 45-54) and four education levels (Less than high school, High school degree, Some college, and College or more). Equation (28) can be rewritten as

$$(30)\qquad \ln W_i = X_i\beta + \sum_{k=1}^{16}\gamma_k D_{ik} + \sum_{k=1}^{16}\pi_k D_{ik} H_i + \varepsilon_i$$

where D_k is a dummy variable equal to one if an individual's skill category is *k*. The parameter π_k represents the average "wage penalty" (or "wage premium") for home-based workers in category *k* compared to on-site workers in the same category.

To estimate the penalty, I restrict the sample to women who work more than half-time (20 hours per week) and half-year (26 weeks per year) in order to make a reasonable comparison. In the selection function for home-based work, I include women's characteristics such as having a spouse present in the household, number of children aged less than 18 in the household, having a work disability, dummy variables for population density, dummy variables for education level and interaction terms of all variables with education except for population density. In the wage equation, I use the log hourly wage as the dependent variable. I include age, dummy variables for education, a dummy variable for Black, a dummy variable for Hispanic, a dummy for working 35 hours or more per week, a dummy for working more than 48 weeks a year, dummy variables for 7 occupations, dummy variables for 8 industries and dummy variable for geographic divisions. The estimated wage penalty, $\hat{\pi}_k$, is assigned to women in the category *k*. Then, the actual wage of home-based workers will be adjusted by the factor $\left(\frac{1}{1+\hat{\pi}_k}\right)$.

I adjust home-based wages to on-site wages by the estimated home-based wage penalty from the wage regression in Table 9. The first panel is the probit function for the home-based work selection equation. Living in low population density areas increases the probability of working from home. I find that education reduces the probability of working at home. However, the presence of a spouse in the household and the interaction of education with the fixed cost of working variables are positively associated with the probability of working at home. This implies that highly educated women who have low fixed cost of working and low potential home production choose to work on-site. When the value of their home time is high, e.g. having a child, highly educated women will choose to work at home. The results of the wage equation for estimating the wage penalty are shown in the next panel. In specification 1, I restrict the wage penalty to be the same for all women. The estimated homogenous wage penalty is about 4.4 %. It means that overall home-based workers earn 4.4 % lower wages than do on-site workers. In specification 2, I allow for heterogeneous wage penalties across age and educational attainment. The estimated covariance between the two equations ($\hat{\rho}$) is not statistically different from zero. This means that selectivity may not be a problem in this specification. The summary of wage penalties by age and education from specification 2 are shown in Table 10. Within the same education level, the penalty increases with age for almost all education levels. Wage penalties are high for high school graduates and high school drop outs. Interestingly, I find a home-based wage premium for highly educated young women. This result is similar to that obtained by Ottinger (2004).

There are several reasons that could explain the estimated home-based wage premium for highly educated young women. First, there might be a wage premium for telecommuters who are highly educated home-based workers. Nowadays, the cost of a home-based computer work arrangement is low while the expense of a workstation in a commercial building is high. Employers can lower costs by allowing computer workers to work from home.[16] Therefore, employees in computer related jobs could be offered a higher wage as an incentive to work at home. Second, several studies of telecommuters such as Huws (1984) and Pratt (1987) find that home-based computer work offers significant advantages over similar work done at a conventional work site. Increases in workers' productivity could also potentially create home-based wage premium for college graduates. Third, highly educated women who have very good performance at work may have greater bargaining power with their employers. Then, women in this category can negotiate for better work condition such as permission to work from home. Last, it may be the case that there are monetary and non-monetary benefits to on-site

[16] Pratt (1987) cites 2 sources reporting cost saving from telecommuting. First, telecommuting helps a market-research firm reduce physical costs by 16 % per year (Telecommuting Review, November 1, 1986 p.2). Second, state of California finds cost-saving through productivity increases per one home telecommuter is as high as 71 % of each worker's salary (Telecommuting: A Pilot Project Plan by Jala Associates, 1985).

workers other than wage and salary that are not offered to home-based workers. When all of the benefits are fully accounted, the home-based wage premium may disappear.

For women without reported wage and salary, I assign the predicted wage from Heckman's wage equation. Heckman's two-step procedure consists of two equations. The model estimates a probit function of the labor force participation decision and a wage regression. The primary regression equation is

$$\ln W_i = X_i \beta + u_{1i} \tag{31}$$

and the selection equation is

$$LFP_i = z_i \gamma + u_{2i} \tag{32}$$

where $u_1 \sim N(0, \sigma)$ and $u_2 \sim N(0,1)$.

In Heckman's two step procedure, probit estimates of the selection equation give the probability of participating in the labor force, $\Pr(LFP = 1) = \Phi(z_i \gamma)$ where $\Phi(\,)$ is the standard cumulative normal function. Then, I can estimate the nonselection hazard or inverse Mill's ratio, m_i, for each observation i as $\dfrac{\varphi(z_i \gamma)}{\Phi(z_i \gamma)}$, where $\varphi(\,)$ is the normal density function. In the selection equation, I include unearned income, and the same set of the variables that were used in the treatment effect model. In the wage equation, I include age, a dummy variable for Black, a dummy variable for Hispanic, dummy variables for education and dummy variables for geographic divisions. In this estimation, I use all wage and salary women and non-employed women in the sample. For women who are home-based workers, I use their reported wage rate after adjusted for the home-based wage penalty.

The estimates of the Heckman model are shown in Table 11. The upper panel is the labor force participation selection equation. Having a spouse present in the household, having young children in the household and having a disability reduce the odds of working. Education is positively associated with the probability of labor force participation. The estimated wage equation is shown in the lower panel. All estimated coefficients of the explanatory variables have the expected signs. The inverse Mill's ratio is positive and significant at the 1 % level. This implies that there is positive selectivity in the women's wage equation. Women who expect to earn low wages choose not to work.

The averages of the rate of human capital accumulation, the rate of human capital depreciation and the current opportunity cost of non-employment and their standard deviations by labor force participation choices are presented in Table 12. The means of all human capital variables are high for women who choose to be employed. The average wage growth of on-site workers is higher than those of home-based workers. However, the average depreciation rate and current wage of on-site workers is slightly lower than that of home-based workers.

Since the most likely reason for women to interrupt their careers is giving birth and caring for a child, I divide the women in my sample into 2 subsamples: women aged 25 to 44 and women aged 45 to 54. This is because women aged over 44 are less likely to give birth and have young children. According to my sample, about 30% of women aged 25 to 44 have preschool children while only 1% of women aged over 45 have preschool children. Moreover, women aged over 45 have potentially less time left in the labor force than younger women. Therefore women aged 25 to 44 and women aged 45 to 54 could behave differently in response to changes in human capital variables.

In Table 12, working women aged 25 to 44 have higher opportunity cost of non-employment than those who are out of the labor force. Home-based workers have slightly higher current wage and wage growth than on-site workers. However, for women aged over 44, the rate of wage growth for home-based workers is much lower than that for on-site workers and that for out of labor force women. This could imply that women aged over 44 are less concerned about human capital accumulation. The depreciation rate and current on-site wage for home-based workers are slightly higher than that for on-site workers and that for out of labor force women.

CHAPTER VI

EMPIRICAL RESULTS

In this study, I follow Edward and Field Hendry's model and include the impact of expected penalties on human capital from career discontinuity in a woman's labor force participation model. Unlike Edward and Field Hendry, I do not distinguish between self-employed workers and wage and salary workers because women accumulate human capital when they are (self) employed. As I mention in Chapter III, human capital stocks of intermittent workers are expected to be lower than those of continuously working women for two reasons. First, non-employed women do not invest in new human capital while not employed. Second, their job skills are not maintained and become obsolete because of technical and organizational progress. Since human capital accumulated on the job is one of the main factors that determine women's wage rate, future wages should be affected by women's career interruptions. I include 3 variables which are the expected future rate of wage growth, the rate of human capital depreciation and current on-site wage to test my hypothesis. The model predicts that an increase in these variables raises the probability of working at home compared to being out of the labor force.

The result from a universal logit model that includes all the constructed human capital variables is reported in Table 13. The sample for this estimation consists of women aged 25 to 54. The base category is "out of the labor force". The positive (negative) value of a coefficient implies that the variable has a positive (negative) impact on the odds that a woman chooses that specific alternative over being out of the labor force. I find that age and education are positively associated with the odds of being employed. Unearned income, most proxy variables for the fixed cost of working and potential home production decrease the likelihood of working. However, the impacts are smaller for home-based workers than for on-site workers except for those having a disability and having a disabled spouse. Black, Hispanic and other race are negatively associated with the probability of working. The effects of having children of different ages are consistent with the theoretical model. Having very young children has a greater negative impact on the probability of working but having children aged 6 to 17 increases the probability of working at home compared to the probability of being out of the labor force. More time-intensive home production is less complementary with working even in home-based work. Except for the expected future rate of wage growth, all human capital variables are associated with the odds of labor force participation. That is, women with high cost of non-employment are likely to work. Increases in the current opportunity cost and the rate of human capital depreciation will increase the probability of working on-site compared to the probability of working at home.

Next, I estimate a universal logit model for women aged 25 to 44 and women aged 45 to 54 separately and report the results in Table 14 and Table 15, respectively. Most of the estimated coefficients in these two tables have the same sign as the estimated coefficients from the regression on all women but the coefficients of the human capital variables are different. The estimates from the sample consisting of women aged 25 to 44 are more consistent with the predictions of my model. An increase in the current wage, or in the expected rate of wage growth or in the rate of human capital depreciation is positively associated with the probability of working. The estimates from the sample of women aged 45 and older are less consistent with the predictions of my model. I find an increase in the expected rate of wage growth is associated with a decrease in the probability of working at home compared to the probability of being out of the labor force.

As an alternative to the universal logit model, I use a nested logit model by grouping together home-based workers and women who are out of the labor force. Because of the results from the universal logit model, I estimate separate nested logit models for women aged 25 to 44 and women aged 45 to 54. There are 3 nested logit models for each subsample. In the first model, the cost of non participation is measured by forgone experience (the expected growth rate in wages) only. In the second model, the cost of non-participation is measured by the summation of forgone experience (the growth rate) and human capital depreciation (the depreciation rate). The last model allows for different effects of forgone experience and depreciation. Each model consists of two equations. The first equation is a branch equation showing the determinants of the first level decision and the second equation is a choice equation showing the determinants of the bottom level decision in Figure 3A. Because the estimation of a nested logit model is more computationally difficult than the estimation of a universal logit model, I need to have a smaller sample size. Therefore, I randomly select 5 % of non employed women, 50% of home-based workers and 3% of on-site workers to estimate a nested logit model for each subsample.

In order to examine the effect on the estimated probabilities of a change in each of the explanatory variables, I manually calculate the partial effects of each variable based on the logit estimates in Table 16s and17 and report them in Tables 18 and 19. The partial effects are the change in the predicted probability of being in alternative *j* when a particular variable is changed holding other regressors constant. I obtain partial effects from the difference in the predicted probability of a specific alternative by changing the value of dummy variables from 0 to 1 and by increasing the remaining variables from the mean value to one standard deviation above the mean. For education, I change the variables from less than high school to high school, from high school to some college and from some college to college or more. For population density of living area, the change is from the lowest density to the highest density. For presence of children in the household, I change the variables from no child to children aged less than 1, from children aged less than 1 to children aged 1 to 3, from children aged 1 to 3 to children aged 4 to 5 and from children aged 4 to 5 to children aged 6 to 17 in order to see the partial effect of each alternative when children get older. It should be noted that this predicted probability corresponds to the observations in the stratified subsample only.

Women Aged 25 to 44

The estimated coefficients of a nested logit model for women aged 25 to 44 are shown in Table 16. The estimated coefficients of the expected value of the alternative in the staying at home nest or the estimated coefficients of the inclusive value of staying at home are in the range of 0.3918-0.5005 and are significantly different from unity in all the models. This implies that there is some degree of similarity of the alternatives in the nest of staying at home and the IIA assumption does not hold for the alternatives within the nest.

The branch equation includes the variables measuring women's characteristics interacted with the choice of working on-site. The positive (negative) value of an estimated coefficient means that the characteristic is positively (negatively) associated with the probability of working on-site compared to the probability of staying home (either working at home or being out of the labor force). The results show that most of the variables in the three models have the expected signs and are statistically significant at conventional levels. The human capital variables are statistically significant at the 5% level. At this decision level, age is negatively associated with the probability of working on-site. Unearned income and having a spouse in the household are negatively associated with the probability of working on-site and education is positively associated with the probability of working on-site. The presence of children, a disabled spouse, having a working disability and persons aged 65 and older living in the household are negatively correlated with the probability of working on-site. Except for Blacks, being a minority is also negatively associated with the probability of working on-site. In all models, the current opportunity cost is positively related with the odds of working on-site. The expected rate of human capital accumulation and the rate of human capital depreciation are positively associated with the probability of working on-site in all models.

The choice equation includes the factors affecting labor force participation decision within a nest. Since there is only one nest (excluding the degenerate nest), this set of variables includes the variables measuring women's characteristics interacted with the choice of working at home. They determine whether or not women work at home given that they have chosen to stay at home. The results show that most variables in the three models have the expected signs and are statistically significant at conventional levels. Except for the rate of depreciation, the human capital variables are statistically significant at the 1% level. At the bottom decision level, age and education increase the probability of working at home. Unearned income is negatively associated with the probability of working at home. Interestingly, having a spouse at home is positively associated with the probability of working. This might be because women have time to work for pay at home when their spouses can help them take care of the home and children. The variables that proxy the fixed cost of working and potential home production reduce the probability of working at home except for the dummy for children aged 6 to 17. Having school aged children is positively associated with the probability of working at home. This implies that caring for children aged 6 and older is more complementary with home-based work than caring for very young children. Having persons aged 65 and older in the household has a negative impact on the probability of working at home which is smaller than the effect of having a work disability or having a disabled spouse. As the model predicts, the level of human capital, the expected rate of human capital accumulation and the rate of depreciation are positively associated with the probability of working at home.

The partial effects of each variable based on the nested logit estimates in Table 16 are shown in Table 18. Overall, an increase in age reduces the probability of being out of the labor force and working on site and increases the probability of working at home. An increase in the education level decreases the odds of being out of the labor force and increases the odds of working at home and the odds of working on-site. Unearned income and the presence of a spouse increase the probability of working at home and the probability of being out of the labor force. Whites are more likely to work at home because changing from Whites to Black, Hispanic and other race reduces the probability of working at home. On average, changing from living in a low population density area to a high population density area reduces the probability of working at home but increases the probability of working on-site and the probability of being out of the labor force.

The probability of being out of the labor force increases when women have children age less than one. As the children grow up, the probability of being out of the labor force declines by 0.0181, 0.0415 and 0.0516 percentage points, respectively. The odds of working at home increase when women have children aged up to 3 years old and then the probability of working at home declines. The probability of working on-site drops when women have very young children but it increases once the children get older. This could imply that being out of labor force or working at home can be viewed as a stage in women's life cycle. Women choose to stay at home for child caring when their children are very young. Once the children grow up, women are likely to move from being out of the labor force to working at home and from working at home to working on-site. To test my hypotheses on the complementarity of potential home production and home-based work, I compute the effects of changes in the probability of working at home and the probability of being out of the labor force conditional on staying at home and report them in Table 20. I find that having children aged less than one year reduces the probability of working at home while having children of older ages increases the probability of working at home. This could imply that having children aged less than one year requires home production that is less complementary to working at home and can be considered as more time-intensive home production (H_2).

The other variables in Table 18 - having persons aged 65 and older, having a working disability and having a disabled spouse in the household - reduce the probability of working. Interestingly, the probability of working at home decreases more than does the probability of working on-site.

Next, consider the impact of a change in the variables that proxy for human capital. An increase in the current wage reduces the probability of staying out of the labor force and increases the probability of working on-site and working at home. It means that, other things being equal, women with a high opportunity cost of non-employment prefer to work in order to maintain the level of human capital. The result shows that an increase in the rate of depreciation reduces the probability of being out of the labor force and increases the probability of working. The anticipated rate of wage growth has almost no impact on the probability of working on-site but it increases the probability of working at home and reduces the probability of being out of the labor force. Women who expect to accumulate human capital at a high rate when employed want to keep themselves in the market. The result is highlighted when I focus on women staying at home in Table 20. Increases in the current wage, the expected rate of wage growth and the rate of human capital depreciation raise the conditional probability of working at home. This result supports my theoretical model that women aged 25 to 44 with family responsibility at home choose to work at home if they expect a high cost of non-participation on human capital. This is because they still accumulate some human capital while they are working at home.

Women Aged 45 to 54

The estimated coefficients of the nested logit model for women aged 45 to 54 are shown in Table 17. There are fewer estimated coefficients that are statistically significant at conventional levels than I find in the nested logit model for women aged 25 to 44. The estimated coefficients of the inclusive value of staying at home are in the range -0.3762 to 0.0553. The coefficients are significantly different from unity in all the models. The coefficients of the inclusive value are negative in model 2 and model 3 but only the coefficient of model 2 is significantly different from zero. This means that model 2 is not consistent with utility maximizing behavior and implies that improving the attributes of an alternative can decrease the probability of the alternative being chosen. The coefficients in model 1 and model 3 are not significantly different from zero meaning that the two alternatives in the nest of staying at home are very similar and the IIA assumption does not hold for the alternatives within the nest.

The branch equation includes the variables describing women's characteristics interacted with the choice of working on-site. In the first decision level, the results for women aged 45 to 54 are similar to the results for women aged 25 to 54. Education is positively correlated with the probability of working on-site. Unearned income, having a spouse in the household, having persons aged 65 and older in the household, having a disability and having a disabled spouse are negatively associated with the probability of working on-site compared to the probability of staying at home. Except for children aged under 1, having children aged 17 and younger in the household also reduces the probability of working on-site. The coefficient of having children aged under 1 is negative but statistically insignificant. This may be because the incidence of women aged 45 and older who have a baby is very low in the sample. Race has almost no impact on the decision to work on-site or to stay home. Only the "other" race group is positively associated with the probability of working on-site. In all models, the current level of human capital stock and the expected rate of human capital accumulation are positively related with the odds of working on-site.

The choice equation includes the factors affecting the labor force participation decision within a nest. This set of variables includes the women's characteristics interacted with the choice of working at home. They determine whether or not women work at home given they have chosen to stay at home. At the bottom level, age does not have an effect on the probability of working at home versus the probability of being out of the labor force. Education increases the probability of working at home. Unearned income is negatively associated with the probability of working at home. Having a spouse at home has no impact on the decision to work for women aged 45 to 54 in model 1 and model 2 but it increases the probability of working at home in model 3. The proxy variables for fixed cost and potential home production reduce the probability of working at home except for the dummy for children aged under 1 and the dummy for children aged 6 to 17. Having children may not to be the main factor that determines whether or not women aged 45 to 54 work at home. The current on-site wage and the rate of depreciation are positively associated with the probability of working at home but the expected rate of human capital accumulation is negatively associated with the probability of working at home.

The partial effects of each variable based on the logit estimates in Table 17 are shown in Table 19. An increase in age increases the probability of staying at home. An increase in education level decreases the odds of being out of the labor force and increases the odds of working at home and the odds of working on-site. Unearned income and the presence of a spouse increase the probability of being out of the labor force and the probability of working at home. White women aged 45 to 54 are more likely to work at home as is the case for women aged 25 to 44. On average, an increase in the population density of the area of residence reduces the probability of working at home but increases the probability of working on-site and the probability of being out of the labor force.

The partial probabilities do not make sense when women have a child aged under 1. This could be because the estimated coefficients of the dummy variable for having children aged less than 1 in both the branch level and the choice level are not statistically significant. The probability of staying at home increases when the age of children increases from 1 to 5 and then declines. The probability of working on-site drops when women have very young children but it increases as the children get older. Table 21 shows the effects of changes on the probability of working at home and the probability of being out of the labor force conditional on staying home. Except for children aged under 1, I find that having children aged 1 to 3 reduces the probability to work at home while having children aged over 3 increases the probability of working at home. This could imply that for women aged over 44, having children aged 1 to 3 years old is home production that is less complementary to working at home.

Back to Table 19, having a person aged 65 and older increases the probability of staying at home. Having a disability and having a disabled spouse in the household reduce the probability of working for both work sites, with the probability of working at home decreasing by less compared to the probability of working on-site.

The impact of changes in the proxy of human capital variables is not really consistent with the prediction of my model. I find that an increase in the expected rate of wage growth reduces the probability of working at home but increases the probability of being out of the labor force and that an increase in the rate of depreciation reduces the probability of working on-site.

According to the results of the estimation from women aged 25 to 44 and women aged 45 to 54, I find that the model with human capital variables predicts the labor force participation decision better for women aged 25 to 44 who are in fertile ages and who have a longer time left in the labor market than the other group. Women aged 25 to 44 who have a high cost of non-employment are likely to work at home instead of being out of the labor force. Women who have very young children are less likely to work. As children grow up, women first tend to take up home-based work and later on-site work. The results for women aged 25 to 44 do not show that women who have a work disability, a person aged 65 and older or a disabled spouse in the household prefer to work at home compared to work on-site while the result from women aged 45 and older does. This could imply that the fixed cost of working and potential home productions in terms of having a disability, having elders and a disabled spouse in the household are the factors that determine the decision to work from home for women aged over 44 but not for women aged under 44.

CHAPTER VII

CONCLUSION

Women's labor force participation usually depends on family needs, activities and characteristics of other family members. Many times, working women choose to leave the labor market temporarily in order to take care of their family. After an interruption, it is not simple to find a job that is as good as the one they had before the interruption. Human capital theory suggests that, while those women are out of the labor force, they do not accumulate any new human capital and their existing stock of skill depreciates. Women can reduce the negative impact of non-employment on their human capital by working at home. In this study, I measure the cost of the loss of human capital from the expected wage growth of continuous workers and the rate of human capital depreciation. When I limit the sample to women aged 25 to 44, I find that women who have a high expected future wage and a high rate of human capital depreciation prefer to work at home rather than to remain out of the labor force when the value of their home time is very high. However, the expected rate of human capital accumulation and the rate of depreciation represent only a lower bound of the cost of non-labor force participation. If leaving the labor market costs women non-monetary benefits and perhaps an opportunity to find a job, the effect of the cost of non-employment on the probability of working at home compared to that of being out of the labor force could be much larger. For future study, one may try to capture other potential costs of non-employment and apply the approach developed in this work to the analysis of a longitudinal data set on home-based work when it becomes available.

REFERENCES

Albrecht, James; Edin, Per-Anders; Sundström, Marianne and Vroman, Susan. "Career Interruptions and Subsequent Earning: A Reexamination Using Swedish Data." *Journal of Human Resources*, Spring 1999, *34*(2), pp.294-311.

Amemiya, Takeshi. *Advanced Econometrics*. Cambridge, MA: Harvard University Press, 1985.

Belzil, Christian and Hergel Phillip. "Fertility and the Human Capital Loss of Non-participation." *Oxford Bulletin of Economics and Statistics*, May 1999, *61*(2), pp.153-166.

Boris, Eileen and Daniels, Cynthia. *Homework: Historical and Contemporary Perspectives on Paid Labor at Home*. Champaign-Urbana: University of Illinois Press, 1989.

Chaker, Anne and Stout Hilary. "After Years off Women Struggle to Revive Careers." *The Wall Street Journal*, May 6, 2004, p.1.

Christensen, Kathleen. "Impacts of Computer-Mediated Home-Based Work on Women and Their Families." *Office:Technology and People,* November 1987, *3*(3), pp.211-230.

______. "White-Collar Home-based Work-The Changing U.S Economy and Family." in *The New Era of Home-based Work*. Boulder, CO: Westview Press, 1988.

______. "Managing Invisible Employees: How to Meet the Telecommuting Challenge." *Employment Relations Today*, Summer 1992, *19*(2), pp.133-143.

Cogan, John. "Fixed Costs and Labor Supply." *Econometrica*, July 1981, *49*(4), pp.945-963.

Corcoran, Mary. "Work Experience, Labor Force Withdrawals, and Women's Wages: Empirical Results Using the 1976 Panel of Income Dynamics." in *Women in the Labor Market*, New York: Colombia University Press, 1979.

Corcoran, Mary and Duncan, Greg. "Work History, Labor Force Attachment, and Earnings Differences between the Races and Sexes." *Journal of Human Resources*, Winter 1979, *14*(1), pp.3-20.

Corcoran, Mary; Duncan, Greg, and Ponza, Michael. "A Longitudinal Analysis of White Women's Wages." *Journal of Human Resources*, Fall 1983, *18*(4), pp.497-520.

Doherty, Sean; Andrey, Jean and Johnson, Laura. "The Economic and Social Impacts of Telework." in *Telework: The New Workplace of the 21st Century*, Washington, DC: U.S. Department of Labor, 2001.

Edin, Per-Anders and Gustavsson, Magnus. "Time Out of Work and Skill Depreciation." Unpublished paper, Uppsala University, Department of Economics, 2003.

Edwards, Linda and Field-Hendrey, Elizabeth. "Home-Based Work and Women's Labor Force Decisions." *Journal of Labor Economics*, January 2002, *20*(1), pp.170-199.

Gershuny, Jonathan and Robinson, John. (1988) "Historical Changes in the Household Division of Labor." *Demography*, November 1988, *25*(4), pp.509-520.

Gerson, Judith, and Kraut, Robert. "Clerical Work at Home or in the Office :The Difference It Makes." in *The New Era of Home-Based Work*, edited by Kathleen Christensen. Boulder, CO: Westview Press, 1988.

Gronau, Reuben. "Leisure, Home Production, and Work – the Theory of the Allocation of Time Revisited." *Journal of Political Economy*, December 1977, *85*(6), pp.1099-1123.

Groot, Loek; Schippers, Joop and Siegers, Jacques. "The Effect of Unemployment, Temporary Withdrawals and Part-time Work on Workers' Wage Rates." *European Sociological Review,* December 1990, *6*(3), pp.257-273.

Herriages, Joseph and Kling, Catherine. "The Performance of Nested Logit Models When Welfare Estimation Is the Goal." *American Journal of Agricultural Economics,* August 1997, *79*(3), pp.792-802.

Hochchild, Arlie. *The Second Shift: Working Parents and the Evolution at Home*. New York: Viking Penguin, 1989.

Hutchens, Robert; Jakubson, George and Schwartz, Saul. "AFDC and the Formation of Subfamilies." *Journal of Human Resources,* Autumn 1989, *24* (4), pp.599-628.

Huws, Ursula. *The New Home Workers: New Technology and the Changing Location of White-Collar Work*. London: Low Pay Unit, 1984.

Kraut, Robert. "Homework: What Is It and Who Does It?" in *the New Era of Home-based Work*, edited by Kathleen Christensen. Boulder, CO: Westview Press, 1988.

Light, Audrey and Ureta, Manuelita. "Gender Differences in Wages and Job Turnover Among Continuously Employed Workers." *American Economic Review,* May 1990, *80*(2), pp.293 -297.

Long, Scott. *Regression Models for Categorical and Limited Dependent Variables*. London: SAGE Publications, 1997.

Maddala G.S. *Limited-Dependent and Qualitative Variables in Econometrics.* New York: Cambridge University Press, 1983.

McFadden, Daniel. "Modeling the Choice of Residential Location.", in *Spatial Interaction Theory and Planning Models,* edited by A. Karlqvist,L. Lundqvist, F. Snickars, and J. Weibull, Amsterdam: North-Holland, 1978.

______. "Econometric Analysis of Quantitative Response Model." Chapter 24 in *Handbook of Econometrics Volume II*, edited by Griliches Z. and Intriligator New York: Elsevier Science Publishers, 1984.

Mincer, Jacob. "The Production of Human Capital and the Life Cycle of Earnings: Variations on a Theme." *Journal of Labor Economics*, January 1997, *15*(1), pp.S26-S47.

Mincer, Jacob and Ofek, Haim. "Interrupted Work Careers: Depreciation and Restoration of Human Capital." *Journal of Human Resources*, Winter 1982, *17*(1), pp.3-24.

Mincer, Jacob and Polachek, Solomon. "Family Investments in Human Capital Earnings of Women." *Journal of Political Economy*, March-April 1974, *82*(2), pp.S76-108.

Murphy, Kevin and Welch, Finis. "Empirical Age-Earnings Profiles." *Journal of Labor Economics*, April 1990, *8*(2), pp.202-229.

Oettinger, Gerald. *The Growth in Home-Based Wage and Salary Employment in the United States, 1980-2000: How Much and Why?* Unpublished paper, The University of Texas at Austin, Department of Economics, 2004.

Phipps, Shelley; Burton, Peter and Lethbrigde, Lynn. "In and Out of the Labour Market: Long-Term Income Consequences of Child-Related Interruptions to Women's Paid Work." *Canadian Journal of Economics*, May 2001, *34*(2), pp.411-429.

Polachek, Solomon and Siebert, Stanley. *The Economics of Earnings.* New York: Cambridge University Press, 1993.

Pratt, Joanne. "Methodological Problems in Surveying the Home-Based Workforce." *Technological Forecasting and Social Change,* March 1987, *31*, pp.49-60.

______. *Myths and Realities of Working at Home Characteristics of Home-Based Business Owners and Telecommuters*. Washington, DC: U.S. Department of Commerce, 1993.

Shaw, Kathryn. "Life-Cycle Labor Supply with Human Capital Accumulation." *International Economic Review,* May 1989, *30*(2), pp.431-456.

Silver, Hilary and Goldscheider, Frances. "Flexible Work and Housework: Work and Family Constraints on Women's Domestic Labor" *Social Forces*, June 1994, *72*(4), pp.1103-1119.

Stratton, Leslie. "The Effect Interruptions in Work Experience Have on Wages." *Southern Economic Journal*, April 1995, *6*(4), pp.955-970.

Ureta, Manuelita and Welch, Finis. "Wages and Interrupted Careers". Working paper Texas A&M University, Department of Economics, January, 2001.

______. "The Obsolescence of Skill" in *the Economics of Skills Obsolescence: Theoretical Innovations and Empirical Applications*. Amsterdam: Elsevier Science Ltd., 2002.

U.S. Census Bureau. "Increase in At-Home Workers, Reverses Earlier Trend." *Census Brief,* March 1998, Washington, DC: U.S. Census Bureau.

______. "Home-Based Workers in the United States: 1997." *Household Economic Studies,* December 2001, Washington, DC: U.S. Census Bureau.

Waldfogel Jane. "The Effect of Children on Women's Wages." *American Sociological Review*, April 1997, *62*(2), pp.209-217.

APPENDIX A

TABLES AND FIGURES

Table 1
Proportion of Female Home-Based Workers in Total Female Employment

Census Date	Number of Workers		Percent Work at Home
	Total	Work at Home	
1960	19,622,941	1,091,019	5.57
1970	28,713,309	883,131	3.07
1980	41,297,174	918,126	2.22
1990	52,504,909	1,733,144	3.30
2000	60,502,393	2,208,575	3.66

Note: Women aged 14 to 80
Source: Own calculations. 1% sample U.S. Census 1960-2000

Table 2
Proportion of Home-Based Workers, by Year and Occupation

	1960	**1970**	**1980**	**1990**	**2000**
Professional & Technical	92,523	123,503	141,374	310,319	535,313
	(8.48)	(13.98)	(15.4)	(17.9)	(24.24)
Farmers	89,574	41,073	63,648	77,520	52,235
	(8.21)	(4.65)	(6.93)	(4.47)	(2.37)
Managers, Officials, Proprietors	117,354	81,917	87,836	159,594	257,342
	(10.76)	(9.28)	(9.57)	(9.21)	(11.65)
Clerical & Kindred	102,722	151,124	182,261	321,078	435,615
	(9.42)	(17.11)	(19.85)	(18.53)	(19.72)
Sale Workers	61,175	60,496	61,946	123,459	203,944
	(5.61)	(6.85)	(6.75)	(7.12)	(9.23)
Craftsmen	11,557	13,518	14,884	32,839	23,619
	(1.06)	(1.53)	(1.62)	(1.89)	(1.07)
Operatives	69,747	65,011	52,251	93,027	84,496
	(6.39)	(7.36)	(5.69)	(5.37)	(3.83)
Service Workers	409,781	298,503	264,161	574,941	588,361
	(37.56)	(33.8)	(28.77)	(33.17)	(26.64)
Farm Laborers	134,591	41,776	44,269	30,062	19,843
	(12.34)	(4.73)	(4.82)	(1.73)	(0.9)
Other Laborers	1,995	6,210	5,496	10,305	7,807
	(0.18)	(0.70)	(0.6)	(0.59)	(0.35)
Total	1,091,019	883,131	918,126	1,733,144	2,208,575
	(100)	(100)	(100)	(100)	(100)

Note: The numbers in parentheses are percentage of a specific occupation in total home-based employment.
Source: Own calculations. 1% sample U.S. Census 1960-2000

Table 3
Socioeconomic Characteristics of Women Aged 25 to 54, by Work Status and Work Site

Variable	**Out of the labor force**	**Work at home**	**Work on site**
Number of sample	738,368	76,569	1,903,770
Mean age (years old)	39.82	41.11	40.23
Age distribution			
Aged 25-29 years old	13.79	9.32	13.60
Aged 30-34 years old	16.83	15.40	15.45
Aged 35-44 years old	36.41	39.98	37.78
Aged 45 to 54 years old	32.96	35.29	33.17
Spouse present	70.79	76.57	62.48
Presence of children			
Children aged less than 1 year	6.49	4.98	2.93
Children aged 1 to 3 years old	18.22	16.42	9.54
Children aged 4 to 5 years old	14.33	13.34	8.92
Children aged 6 to 17 years old	45.98	46.68	41.44
Black	11.34	4.52	10.77
White	72.52	88.09	79.15
Other races	16.14	7.39	10.08
Hispanic origin	16.48	5.91	8.56
Lives in area with population density			
Below the 10th percentile	12.03	14.87	11.62
Between the 10th and the 25th percentiles	17.61	17.68	17.23
Between the 25th and the 50th percentiles	24.20	25.99	26.35
Above the 50th percentiles	46.16	41.46	44.80
Disabled	14.40	8.06	9.99
Self-employed	-	59.53	5.57
Earned income ($1,000)	-	23.73	28.06
Unearned income ($1,000)	52.05	56.41	38.93
Less than high school	21.19	5.64	6.80
High school degree	37.16	26.24	30.83
Some college	25.07	34.53	33.32
Bachelor degree and more	16.58	33.59	29.05
Spouse has personal care limitation	1.19	0.60	0.64
Presence of person(s) aged 65+ in household	6.58	4.92	5.35

Note: Unless otherwise indicated, data are percentages of the full sample in each category.

Table 4
Logit Coefficients from Edwards and Field-Hendrey (2002)'s Specification Using Census 2000

Variables	On Site				Home Based			
	Employee		Self-Employed		Employee		Self-Employed	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
Age	0.036***	0.002	0.166***	0.005	0.167***	0.009	0.100***	0.008
Age squared	-0.001***	0.000	-0.002***	0.000	-0.002***	0.000	-0.001***	0.000
Education	0.041***	0.004	-0.166***	0.008	0.070***	0.017	0.051***	0.017
Education squared	0.007***	0.000	0.012***	0.000	0.009***	0.000	0.005***	0.000
Age/Education interaction	0.0001	0.000	0.002***	0.000	-0.002***	0.000	0.002***	0.000
Unearned income	-0.006***	0.000	-0.003***	0.000	-0.002***	0.000	-0.003***	0.000
Married spouse present	-0.136***	0.004	-0.111***	0.008	-0.010	0.015	0.200***	0.013
Number of children	-0.551***	0.005	-0.409***	0.015	-0.204***	0.020	-0.093***	0.015
Black non-Hispanic	-0.189***	0.005	-0.927***	0.015	-0.886***	0.027	-1.063***	0.025
Hispanic and other race	-0.365***	0.004	-0.264***	0.010	-0.444***	0.018	-0.984***	0.018
Child under aged 6 in household	-0.173***	0.008	-0.167***	0.022	-0.032	0.031	0.022	0.025
Child aged 6 to 17 in household	-0.078***	0.003	-0.118***	0.007	-0.072***	0.013	0.138***	0.011
Disabled	-0.352***	0.004	-0.290***	0.011	-0.332***	0.021	-0.446***	0.018
Person age 65+ in household	-0.172***	0.006	-0.263***	0.015	0.079***	0.024	-0.261***	0.025
Lives in area with population density								
Less than 10^{th}	-0.042***	0.005	0.193***	0.011	0.082***	0.019	0.336***	0.015
Between 10^{th}-25^{th}	-0.029***	0.004	0.037***	0.010	-0.093***	0.018	0.082***	0.014
Between 25^{th}-50^{th}	0.057***	0.004	0.021**	0.009	-0.024	0.015	0.021*	0.013
Spouse disabled	-0.428***	0.015	-0.461***	0.040	-0.312***	0.069	-0.677***	0.066
Constant	-0.518***	0.052	-5.251***	0.126	-8.022***	0.242	-6.807***	0.215

Notes: 1. "Out of the labor force" is the reference group
2. * significant at 10% level
** significant at 5% level
*** significant at 1 % level

Table 5
Estimates of Rates of Wage Growth, by Experience, Race, Education and Occupation

	EXP 0 to 9 years		EXP 10 to 18 years		EXP 19 to 27 years		EXP 28 years and over	
	Main Effect	**Interaction w/exp**	**Main Effect**	**Interaction w/exp**	**Main Effect**	**Interaction w/exp**	**Main Effect**	**Interaction w/exp**
Base		0.042***		0.055***		0.014***		0.009
Race								
White (reference)								
Black	-0.014	-0.010***	-0.034***	-0.007***	-0.235***	0.004***	-0.342***	0.008***
Other	0.128***	-0.024***	-0.030***	-0.006***	-0.113***	-0.002**	-0.024	-0.005***
Occupation								
1 (reference)								
2	0.079***	-0.012***	0.052***	-0.008***	-0.049**	-0.002*	-0.292***	0.006***
3	-0.145***	0.000	-0.021	-0.015***	-0.259***	-0.001	-0.631***	0.011***
4	0.045**	-0.002	0.140***	-0.011***	0.156***	-0.011***	-0.110	-0.001
5	-0.217***	-0.002	-0.170***	-0.011***	-0.327***	-0.001	-0.670***	0.010***
6	-0.293***	-0.001	-0.164***	-0.018***	-0.403***	-0.004***	-0.754***	0.008***
7	-0.237***	0.003	-0.087***	-0.013***	-0.173***	-0.007***	-0.123*	-0.008***
8	-0.176***	-0.003	-0.111***	-0.010***	-0.123***	-0.008***	-0.361***	0.000
9	-0.145***	-0.018***	-0.173***	-0.015***	-0.777***	0.018***	-0.299**	0.002
10	-0.338***	0.008	-0.120	-0.016**	-0.427***	0.000	-0.184	-0.007
11	-0.182***	-0.009	-0.136**	-0.016***	-0.406***	-0.001	-0.857***	0.014**
12	0.187***	-0.016**	0.218***	-0.020***	-0.267***	0.006	-0.683**	0.018**
13	-0.346***	-0.002	-0.145***	-0.024***	-0.443***	-0.005	-0.969***	0.014**
14	-0.290***	0.001	-0.210***	-0.010***	-0.431***	0.001	-0.710***	0.010*
15	-0.383***	0.001	-0.255***	-0.017***	-0.400***	-0.008***	-0.938***	0.011***
16	-0.475***	0.001	-0.319***	-0.018***	-0.444***	-0.011***	-1.116***	0.012***
17	-0.163***	-0.009*	-0.131***	-0.012***	-0.276***	-0.004	-0.897***	0.017***

Table 5 Continued

	EXP 0 to 9 years		EXP 10 to 18 years		EXP 19 to 27 years		EXP 28 years and over	
	Main Effect	Interaction w/exp	Main Effect	Interaction w/exp	Main Effect	Interaction w/exp	Main Effect	Interaction w/exp
Education								
Less than high school (reference)								
High school	0.098***	0.012***	0.199***	0.000	0.143***	0.003***	0.266***	-0.002
Some college	0.169***	0.020***	0.335***	0.001	0.330***	0.000	0.324***	0.000
College or more	0.330***	0.035***	0.611***	0.004***	0.753***	-0.006***	0.381***	0.007***

Notes: 1. See Appendix B for estimated regressions.

2. Occupation 1=Official and Manager (Reference), Occupation 2=Professional and Technical, Occupation 3=Craftsmen and Operative, Occupation 4=Sale Workers, Occupation 5= Administrative Support, Occupation 6=Laborer and Helper, Occupation 7=Service workers, Occupation 8=Sale workers with 2 digit code:47 (First-Line Supervisors/Managers, Cashiers, Counter and Rental Clerks, Parts Salespersons and Retail Salespersons) Occupation 9=Teachers with 2 digit code:23 (Preschool and Kindergarten Teachers, Elementary and Middle School Teachers, Secondary School Teachers, Special Education Teachers and Other Teachers and Instructors), Occupation 10= Secretaries and Administrative Assistants with 2 digit code, Occupation 11=Administrative support workers with 2 digit code: 51 (Bill and Account Collectors, Billing and Posting Clerks and Machine Operators, Gaming Cage Workers, Payroll and Timekeeping Clerks, Procurement Clerks and Tellers), Occupation 12= Healthcare Practitioners and Technical Occupations with 2 digit code: 31 (Physician assistant, Podiatrists, Registered Nurses, Audiologists, Occupational Therapists and Physical Therapists), Occupation 13= Healthcare Support Occupations with 2 digit code: 36 (Nursing, Psychiatric, and Home Health Aides, Physical Therapist Assistants and Aides, Massage Therapists, Dental Assistants and Medical Assistants and Other Healthcare Support Occupations), Occupation 14= Office and Administrative Support Occupations with 2 digit code: 58 (Computer Operators, Data Entry Keyers, Word Processors and Typists, Desktop Publishers, Insurance Claims and Policy Processing Clerks, Mail Clerks and Mail Machine Operators, Except Postal Service and Office Clerks, General), Occupation 15= Building and Grounds Cleaning and Maintenance Occupations with 2 digit code: 42 (First-Line Supervisors/Managers of Housekeeping and Janitorial Workers, First-Line Supervisors/Managers of Landscaping, Lawn Service, and Grounds keeping Workers, Janitors and Building Cleaners, Maids and Housekeeping Cleaners, Pest Control Workers and Grounds Maintenance Workers), Occupation 16= Food Preparation and Serving Occupations with 2 digit code: 40 (Chefs and Head Cooks, First-Line Supervisors/Managers of Food Preparation and Serving Workers, Cooks, Food Preparation Workers, Bartenders, Combined Food Preparation and Serving Workers, Including Fast Food and Counter Attendants, Cafeteria, Food Concession, and Coffee Shop) and Occupation 17= Office and Administrative Support Occupations with 2 digit code (Brokerage Clerks, Correspondence Clerks, Court, Municipal, and License Clerks, Credit Authorizers, Checkers, and Clerks, Customer Service Representatives, Eligibility Interviewers, Government Programs and File Clerks)

3. * significant at 10% level
** significant at 5% level
*** significant at 1 % level

Table 6
Percentage of Women Returning to the Labor Market after Having a Child

Education Level	**Child's Age**	**Percent of Women Returning to the Labor Market**
Less than High School	0 (no time out)	35.06%
	1	38.32%
	2	39.91%
	3	40.03%
	4	44.80%
	5	46.46%
	6	49.07%
	7	55.13%
	8	52.36%
High School	0 (no time out)	55.89%
	1	58.01%
	2	62.35%
	3	64.81%
	4	66.49%
	5	68.79%
	6	71.72%
Some College	0 (no time out)	67.41%
	1	68.15%
	2	73.23%
	3	75.90%
College or More	0 (no time out)	71.82%
	1	71.29%

Table 7
The Number of Women with Children and the Assigned Years Out of the Labor Force per Child

Assigned Years out of the Labor Force	Education				Total
	Less than High School	High School	Some College	College or More	
0	23,459	151,506	193,286	135,562	503,813
1	16,728	69,449	63,897	37,926	188,000
2	10,838	31,719	22,134	15,324	80,015
3	6,581	12,547	6,126		25,254
4	4,424	4,510	1,886		10,820
5	2,500	1,526			4,026
6	1,412	464			1,876
7	798	178			976
8	336				336
9	277				277
Total	67,353	271,899	287,329	188,812	815,393

Table 8
Estimates of Rates of Decay, by Age and Occupation

Occupation	Rate of Decay	Std. Error	95 % Confidence Interval	
			Lower	Upper
Official and Manager				
All	0.0704***	0.0030	0.0647	0.0763
Aged less than 35	0.0777***	0.0059	0.0661	0.0893
Aged 35 or more	0.1362***	0.0225	0.0922	0.1802
Professional and Technical				
All	0.0507***	0.0019	0.0470	0.0544
Aged less than 35	0.0446***	0.0058	0.0333	0.0559
Aged 35 or more	0.1717***	0.0004	0.1411	0.2023
Craftsmen and Operative				
All	0.0700***	0.0052	0.0598	0.0802
Aged less than 35	0.0725***	0.0178	0.0376	0.1074
Aged 35 or more	0.0644***	0.0106	0.0436	0.0852
Sales Worker				
All	0.0581***	0.0033	0.0516	0.0646
Aged less than 35	0.0691***	0.0081	0.0532	0.0850
Aged 35 or more	0.1991***	0.0932	0.0164	0.3817
Administrative Support				
All	0.0423***	0.0020	0.0383	0.0463
Aged less than 35	0.0451***	0.0075	0.0303	0.0599
Aged 35 or more	3.1120	20.2600	-36.5896	42.8295
Laborer and Helper				
All	0.0617***	0.0087	0.0446	0.0788
Aged less than 35	0.0675***	0.0261	0.0164	0.1186
Aged 35 or more	0.0667***	0.0140	0.0393	0.0941
Service Worker				
All	0.0602***	0.0044	0.0514	0.0689
Aged less than 35	0.0472***	0.0145	0.0194	0.0764
Aged 35 or more	0.0625***	0.0214	0.0377	0.0873

Note: * significant at 10% level
** significant at 5% level
*** significant at 1 % level

Table 9
Women's Log Wage Regression with Homogenous and Heterogeneous Wage Penalties: Treatment Effect Model

Selection Equation (Home-Based Work)	Coefficient	Std. Error
Spouse present	0.0158	0.0194
Disabled	-0.0914***	0.0248
Number of children aged less than 18	0.0022	0.0072
High school	-0.2036***	0.0185
Some college	-0.1891***	0.0181
College or more	-0.0954***	0.0180
Spouse present x High school	0.1466***	0.0220
Spouse present x Some college	0.1904***	0.0216
Spouse present x College or more	0.1350***	0.0218
Disabled x High school	0.0396	0.0288
Disabled x Some college	0.1089***	0.0288
Disabled x College or more	0.1091***	0.0306
Number of Children aged less than 18 x High school	0.0266***	0.0083
Number of Children aged less than 18 x Some college	0.0472***	0.0081
Number of Children aged less than 18 x College or more	0.0768***	0.0082
Living in population density		
Less than 10th percentile	0.0155*	0.0083
Between 10th - 25th percentile	-0.0548***	0.0074
Between 25th - 50th percentile	-0.0329***	0.0060
Constant	-2.1415***	0.0163

Table 9 Continued

Wage Equation	Specification 1 Homogenous Penalty		Specification 2 Heterogeneous Penalty	
	Coefficients	**Std. error**	**Coefficients**	**Std. error**
Constant	1.5435***	0.0114	1.8158***	0.0213
Age	0.0377***	0.0005	0.0261***	0.0011
Age square	-0.0004***	0.0000	-0.0003***	0.0000
Black	0.0162***	0.0013	0.0152***	0.0013
Hispanic	-0.0479***	0.0015	-0.0499***	0.0015
High school	0.1400***	0.0018	0.1180***	0.0048
Some college	0.2744***	0.0019	0.2249***	0.0047
College or more	0.5407***	0.0020	0.4191***	0.0048
Work at home	-0.0449***	0.0107	-0.0730*	0.0385
Less than high school x age 25-29 (Reference)				
Less than high school x age 30-34			-0.0043	0.0509
Less than high school x age 35-44			-0.0958**	0.0431
Less than high school x age 45-55			-0.0706*	0.0423
High school x age 25-29			-0.0396	0.0425
High school x age 30-34			-0.0125	0.0410
High school x age 35-44			-0.0265	0.0386
High school x age 45-55			-0.0622	0.0387
Some college x age 25-29			-0.0014	0.0410
Some college x age 30-34			0.0015	0.0398
Some college x age 35-44			0.0214	0.0383
Some college x age 45-55			-0.0190	0.0385
College or more x age 25-29			0.1470***	0.0408
College or more x age 30-34			0.1244***	0.0393
College or more x age 35-44			0.0866**	0.0382
College or more x age 45-55			-0.0342	0.0386
Rho	-0.0026	0.0076	0.0102	0.0073
N	1,746,549		1,746,549	

Notes: 1. I bottom-code hourly wages at 3 dollars per hour and top-code at 200 dollars per hour for those whose annual incomes have been top-coded by IPUMS and calculated hourly wage is higher than 200 dollars per hours.
2. The specifications include dummies for 7 occupations, dummies for 8 industries, a dummy for fulltime work (≥ 35 hours per week), a dummy for full-year work (≥ 48 weeks per year) and dummies for 9 geographical division but the estimated coefficients are not shown
3. * significant at 10% level
** significant at 5% level
*** significant at 1% level

Table 10
Home-Based Wage Gap, by Age and Education

Education	Age	Percentage Home-Based/On-Site Wage Gap
Less than High School	25-29	-7.30
	30-34	-7.74
	35-44	-16.88
	45-54	-14.37
High School	25-29	-11.26
	30-34	-8.56
	35-44	-9.95
	45-54	-13.52
Some College	25-29	-7.45
	30-34	-7.16
	35-44	-5.16
	45-54	-9.20
College or More	25-29	7.40
	30-34	5.14
	35-44	1.35
	45-54	-10.72

Note: Positive numbers imply a home-based wage premium.

Table 11
Women's Log Wage Regression: Heckman Selectivity Model

Labor Force Participation Equation	**Coefficient**	**Std. Error**
High school	0.7254***	0.0051
Some college	1.1994***	0.0053
College or more	1.5748***	0.0060
Unearned income	-0.0032***	0.0000
Spouse present	-0.0254***	0.0051
Disabled	0.0559***	0.0062
Number of children aged less than 18	-0.0488***	0.0018
Disable x High school	-0.2329***	0.0075
Disable x Some college	-0.4774***	0.0079
Disable x College or more	-0.4280***	0.0097
Spouse present x High school	-0.0279***	0.0060
Spouse present x Some college	-0.1410***	0.0062
Spouse present x College or more	-0.2086***	0.0071
Number of Children aged less than 18 x High school	-0.0386***	0.0022
Number of Children aged less than 18 x Some college	-0.0851***	0.0023
Number of Children aged less than 18 x College or more	-0.1834***	0.0025
Living in population density		
Less than 10th percentile	0.0265***	0.0029
Between 10th - 25th percentile	0.0545***	0.0025
Between 25th - 50th percentile	0.0917***	0.0022
Constant	-0.0795***	0.0044
N	2,484,917	

Wage Equation	**Coefficient**	**Std. Error**
Age	0.0379***	0.0005
Age squared	-0.0004***	0.0000
Black	0.0072***	0.0014
Hispanic	-0.0643***	0.0016
High School	0.2317***	0.0022
Some College	0.4505***	0.0025
College and More	0.8378***	0.0027
The inverse of the Mill's Ratio	0.0762***	0.0032
Constant	1.2428***	0.0104
N	1,746,549	

Notes:
1. I bottom-code hourly wages at 3 dollars per hour and top-code at 200 dollars per hour for those whose annual incomes have been top-coded by IPUMS and calculated hourly wage is higher than 200 dollars per hours.
2. The specifications of wage equation include dummies for 9 geographical divisions but the estimated coefficients are not shown.
3. * significant at 10% level
   ** significant at 5% level
   *** significant at 1% level

Table 12
Average Imputed Human Capital Variables of Women Aged 25 to 54, by Work Status and Work Site

Variable	N	Mean	Std. Deviation	Min	Max
ALL SAMPLE					
Log of Current Wage					
Out of the labor force	738,368	2.362	0.468	1.099	5.298
Work at home	76,569	2.559	0.526	1.027	5.483
Work on site	1,903,770	2.535	0.592	1.099	5.298
Expected Growth Rate (%)					
Out of the labor force	738,368	2.671	1.778	-0.645	8.535
Work at home	76,569	2.703	2.094	-0.645	8.535
Work on site	1,903,770	2.863	1.924	-0.645	8.535
Depreciation Rate (%)					
Out of the labor force	738,368	7.186	3.983	4.234	17.173
Work at home	76,569	8.436	4.799	4.234	17.173
Work on site	1,903,770	8.166	4.935	4.234	17.173
AGE 25 to 44					
Log of Current Wage					
Out of the labor force	495,019	2.337	0.481	1.099	5.298
Work at home	49,546	2.533	0.523	1.027	5.483
Work on site	1,272375	2.504	0.588	1.099	5.298
Expected Growth Rate (%)					
Out of the labor force	495,019	3.297	1.790	-0.453	8.535
Work at home	49,546	3.570	2.068	-0.433	8.535
Work on site	1,272375	3.564	1.931	-0.453	8.535
Depreciation Rate (%)					
Out of the labor force	495,019	6.809	3.700	4.234	17.173
Work at home	49,546	7.784	4.506	4.234	17.173
Work on site	1,272375	7.496	4.532	4.234	17.173
AGE 45 to 54					
Log of Current Wage					
Out of the labor force	243,349	2.414	0.434	1.099	5.298
Work at home	27,023	2.605	0.529	1.195	5.453
Work on site	631,395	2.599	0.594	1.099	5.298
Expected Growth Rate (%)					
Out of the labor force	243,349	1.396	0.812	-0.645	4.171
Work at home	27,023	1.114	0.825	-0.645	4.171
Work on site	631,395	1.449	0.811	-0.645	4.171
Depreciation Rate (%)					
Out of the labor force	243,349	7.952	4.405	4.234	17.173
Work at home	27,023	9.633	5.081	4.234	17.173
Work on site	631,395	9.518	5.414	4.234	17.173

Source: Own calculations.

Table 13
Universal Logit Coefficients: All Women

	Work at Home		Work on Site	
	Coefficient	**Std.Error**	**Coefficient**	**Std.Error**
Age	0.0742***	0.0061	0.0187***	0.0021
Age squared	-0.0010***	0.0001	-0.0005***	0.0000
Education				
High School	0.7177***	0.0176	0.8458***	0.0048
Some College	1.3540***	0.0177	1.3152***	0.0052
College or More	1.7250***	0.0195	1.5860***	0.0063
Unearned income	-0.0021***	0.0001	-0.0056***	0.0000
Spouse present	0.0983***	0.0101	-0.1518***	0.0036
Lives in area with population density				
Below the 10th percentile	0.2752***	0.0121	0.0175***	0.0049
Between the 10th-25th percentiles	0.0597***	0.0113	0.0212***	0.0043
Between the 25th-50th percentiles	0.0270***	0.0098	0.0778***	0.0038
Children in Household				
Child aged less than 1	-0.3230***	0.0183	-0.8546***	0.0071
Child aged 1 to 3	-0.1548***	0.0116	-0.7932***	0.0046
Child aged 4 to 5	-0.0639***	0.0120	-0.5458***	0.0048
Child aged 6 to 17	0.0393***	0.0085	-0.0947***	0.0032
Person aged 65+ in household	-0.1153***	0.0178	-0.1914***	0.0061
Disabled	-0.3895***	0.0140	-0.3420***	0.0044
Spouse disabled	-0.4921***	0.0485	-0.4007***	0.0151
Black	-0.9464***	0.0185	-0.1806***	0.0049
Hispanic	-0.5001***	0.0172	-0.2112***	0.0052
Other race	-0.5243***	0.0155	-0.1985***	0.0050
Human Capital Variables				
Current wage	0.1601***	0.0081	0.2282***	0.0031
Expected growth rate	-0.0501***	0.0036	0.0064***	0.0014
Depreciation rate	0.0089***	0.0009	0.0188***	0.0004
Constant	-4.7714***	0.1300	-0.0654	0.0450
N	2,718,707			
Pseudo R squared	0.0831			

Notes: 1. "Out of the labor force" is the reference group
2. There are 738,368 non-employed women, 76,569 home-based workers and 1,903,770 on-site workers in the sample.
3. * significant at 10% level
** significant at 5% level
*** significant at 1 % level

Table 14
Universal Logit Coefficients: Women Aged 25 to 44

	Work at Home		Work on Site	
	Coefficient	**Std.Error**	**Coefficient**	**Std.Error**
Age	0.0626***	0.0128	-0.0788***	0.0046
Age squared	-0.0003	0.0002	0.0010***	0.0001
Education				
High School	0.6933***	0.0229	0.7990***	0.0059
Some College	1.3217***	0.0231	1.2758***	0.0065
College or More	1.5822***	0.0257	1.5021***	0.0081
Unearned income	-0.0023***	0.0001	-0.0060***	0.0000
Spouse present	0.1255***	0.0129	-0.2011***	0.0045
Lives in area with population density				
Below the 10^{th} percentile	0.3272***	0.0152	0.0897***	0.0061
Between the 10^{th}-25^{th} percentiles	0.1023***	0.0142	0.0920***	0.0053
Between the 25^{th}-50^{th} percentiles	0.0559***	0.0122	0.1138***	0.0046
Children in Household				
Child aged less than 1	-0.3289***	0.0185	-0.8301***	0.0072
Child aged 1 to 3	-0.1623***	0.0120	-0.7624***	0.0047
Child aged 4 to 5	-0.0661***	0.0124	-0.5135***	0.0049
Child aged 6 to 17	0.0668***	0.0106	-0.0842***	0.0039
Person aged 65+ in household	-0.1501***	0.0258	-0.1521***	0.0083
Disabled	-0.2362***	0.0181	-0.1483***	0.0057
Spouse disabled	-0.5588***	0.0745	-0.3504***	0.0219
Black	-0.9222***	0.0231	-0.1362***	0.0061
Hispanic	-0.5615***	0.0208	-0.2121***	0.0060
Other race	-0.4732***	0.0191	-0.1908***	0.0060
Human Capital Variables				
Current wage	0.1745***	0.0100	0.2691***	0.0038
Expected growth rate	0.0789***	0.0049	0.0339***	0.0019
Depreciation rate	-0.0012	0.0012	0.0144***	0.0005
Constant	-5.6768***	0.2168	1.2991***	0.0762
N	1,816,940			
Pseudo R squared	0.0894			

Notes: 1. "Out of the labor force" is the reference group
2. There are 495,019 non-employed women, 49,546 home-based workers and 1,272,375 on-site workers in the sample.
3. * significant at 10% level
** significant at 5% level
*** significant at 1 % level

Table 15
Universal Logit Coefficients: Women Aged 45 to 54

	Work at Home		Work on Site	
	Coefficient	**Std.Error**	**Coefficient**	**Std.Error**
Age	0.1614*	0.0899	0.3486***	0.0349
Age squared	-0.0017*	0.0009	-0.0040***	0.0004
Education				
High School	0.5637***	0.0281	0.9122***	0.0082
Some College	1.1806***	0.0284	1.3543***	0.0089
College or More	1.5964***	0.0314	1.6891***	0.0110
Unearned income	-0.0020***	0.0001	-0.0054***	0.0000
Spouse present	0.0556***	0.0163	-0.0546***	0.0062
Lives in area with population density				
Below the 10th percentile	0.2071***	0.0202	-0.1280***	0.0083
Between the 10th-25th percentiles	0.0114	0.0191	-0.1181***	0.0073
Between the 25th-50th percentiles	-0.0124	0.0168	0.0049	0.0065
Children in Household				
Child aged less than 1	-0.3757**	0.1890	-0.5408***	0.0705
Child aged 1 to 3	-0.1712**	0.0699	-0.6676***	0.0301
Child aged 4 to 5	-0.1504***	0.0552	-0.6932***	0.0244
Child aged 6 to 17	-0.0001	0.0155	-0.1177***	0.0061
Person aged 65+ in household	-0.0922***	0.0247	-0.2303***	0.0091
Disabled	-0.6141***	0.0221	-0.6468***	0.0071
Spouse disabled	-0.4299***	0.0642	-0.4480***	0.0209
Black	-0.5788***	0.0316	-0.3000***	0.0089
Hispanic	-0.2948***	0.0305	-0.2052***	0.0100
Other race	-0.5469***	0.0267	-0.1390***	0.0092
Human Capital Variables				
Current wage	0.1267***	0.0136	0.1590***	0.0054
Expected growth rate	-0.5057***	0.0088	0.0603***	0.0034
Depreciation rate	0.0330***	0.0015	0.0203***	0.0006
Constant	-6.6871***	2.2185	-7.5574***	0.8619
N	901,767			
Pseudo R squared	0.0797			

Notes: 1. “Out of the labor force” is the reference group
2. There are 243,349 non-employed women, 27,023 home-based workers and 631,395 on-site workers in the sample.
3. * significant at 10% level
** significant at 5% level
*** significant at 1 % level

Table 16
Nested Logit Coefficients: Women Aged 25 to 44

	Model 1		Model 2		Model 3	
	Coefficient	**Std.Error**	**Coefficient**	**Std.Error**	**Coefficient**	**Std.Error**
BRANCH (Work on Site v.s. Stay at Home)						
[All interactions with the choice of working on-site]						
Constant	1.5779***	0.3319	1.6113***	0.3364	0.6498**	0.3218
Age	-0.1148***	0.0195	-0.1136***	0.0197	-0.0616***	0.0190
Age squared	0.0014***	0.0003	0.0013***	0.0003	0.0006**	0.0003
Education						
High School	0.6994***	0.0347	0.7073***	0.0370	0.6829***	0.0332
Some College	1.0220***	0.0616	1.0275***	0.0685	0.9817***	0.0623
College or More	1.1792***	0.0823	1.1698***	0.0933	1.0729***	0.0809
Unearned income	-0.0055***	0.0002	-0.0055***	0.0002	-0.0051***	0.0002
Spouse present	-0.2630***	0.0197	-0.2604***	0.0199	-0.2392***	0.0199
Lives in area with population density						
Below the 10th percentile	0.0334	0.0330	0.0337	0.0342	0.0077	0.0344
Between the 10th-25th percentiles	0.0776***	0.0234	0.0766***	0.0235	0.0846***	0.0231
Between the 25th-50th percentiles	0.1395***	0.0201	0.1399***	0.0202	0.1259***	0.0193
Children in household						
Child aged less than 1	-0.7328***	0.0369	-0.7316***	0.0373	-0.6654***	0.0389
Child aged 1 to 3	-0.7432***	0.0236	-0.7425***	0.0240	-0.7120***	0.0231
Child aged 4 to 5	-0.4617***	0.0219	-0.4647***	0.0220	-0.4909***	0.0213
Child aged 6 to 17	-0.0889***	0.0179	-0.0921***	0.0178	-0.1150***	0.0166
Person aged 65+ in household	-0.0837**	0.0375	-0.0833**	0.0376	-0.1223***	0.0372
Disabled	-0.1732***	0.0306	-0.1735***	0.0314	-0.1330***	0.0291
Spouse disabled	-0.2617**	0.1087	-0.2639**	0.1094	-0.1550	0.1060
Black	0.0451	0.0539	0.0416	0.0586	0.1147**	0.0523
Hispanic	-0.1183*	0.0377	-0.1204***	0.0391	-0.0653*	0.0355
Other race	-0.0810**	0.0351	-0.0874**	0.0387	-0.0578*	0.0344
Human capital variable						
Current wage	0.2255***	0.0201	0.2175***	0.0205	0.1957***	0.0200
Sum of Expected growth rate and Depreciation rate	-	-	0.0109***	0.0020	-	-
Expected growth rate	0.0180*	0.0093	-	-	0.0204**	0.0089
Depreciation rate	-	-	-	-	0.0117***	0.0021
IV [home]	0.4928***	0.1198	0.5005***	0.1290	0.3918***	0.1163
IV [on-site]	0.5000	.	0.5000	.	0.5000	.

Table 16 Continued

	Model 1		Model 2		Model 3	
	Coefficient	**Std.Error**	**Coefficient**	**Std.Error**	**Coefficient**	**Std.Error**
CHOICE						
(Work at Home v.s. Out of the Labor Force Given Stays at Home)						
[All interactions with the choice of working at home]						
Constant	-3.2499*	0.4296	-3.4153***	0.4309	-2.9510***	0.4315
Age	0.0552**	0.0255	0.1017***	0.0250	0.0353	0.0256
Age squared	-0.0002	0.0004	-0.0012***	0.0004	0.0001	0.0004
Education						
High School	0.6976	0.0378	0.7414***	0.0375	0.6494***	0.0378
Some College	1.2665***	0.0395	1.3310***	0.0388	1.3017***	0.0394
College or More	1.5098***	0.0464	1.6309***	0.0446	1.5178***	0.0468
Unearned income	-0.0021***	0.0002	-0.0022***	0.0002	-0.0022***	0.0002
Spouse present	0.0792***	0.0263	0.0844***	0.0262	0.1279***	0.0260
Lives in area which population density						
Below the 10th percentile	0.3454***	0.0316	0.3470***	0.0316	0.3894***	0.0317
Between the 10th-25th percentiles	0.1338***	0.0287	0.1324***	0.0288	0.1468***	0.0285
Between the 25th-50th percentiles	0.0985***	0.0245	0.0991***	0.0245	0.0791***	0.0247
Children in household						
Child aged less than 1	-0.3080***	0.0359	-0.3019***	0.0357	-0.4179***	0.0362
Child aged 1 to 3	-0.2127***	0.0245	-0.2089***	0.0245	-0.2192***	0.0246
Child aged 4 to 5	-0.0963***	0.0251	-0.0989***	0.0252	-0.0738***	0.0253
Child aged 6 to 17	0.0828***	0.0214	0.0733***	0.0214	0.0247	0.0217
Person aged 65+ in household	-0.1074**	0.0492	-0.1057**	0.0492	-0.2082***	0.0485
Disable	-0.3811***	0.0358	-0.3786***	0.0360	-0.3439***	0.0359
Spouse disable	-0.5004***	0.1360	-0.4981***	0.1360	-0.7673***	0.1391
Black	-0.9177***	0.0402	-0.9450***	0.0401	-0.9203***	0.0410
Hispanic	-0.5857***	0.0366	-0.5865***	0.0365	-0.5438***	0.0366
Other race	-0.4641***	0.0349	-0.5324***	0.0340	-0.4527***	0.0351
Human capital variables						
Current wage	0.1951***	0.0222	0.1933***	0.0223	0.2042***	0.0227
Sum of Expected growth rate and Depreciation rate	-	-	0.0085***	0.0024	-	-
Expected growth rate	0.0905***	0.0097	-	-	0.0858***	0.0099
Depreciation rate	-	-	-	-	0.0041	0.0027

Notes: 1. I do not use all women in the sample because of computational difficulty. The data for non-employed women are based on a 0.05 subsample of the non-employed women aged 25 to 44 in the full sample. The data for home-based workers are based on a 0.5 subsample of the full sample of home-based workers and the data for on-site workers are based on 0.03 subsample of the full sample of on-site workers.

2. * significant at 10% level
   ** significant at 5% level
   *** significant at 1 % level

Table 17
Nested Logit Coefficients: Women Aged 45 to 54

	Model 1		Model 2		Model 3	
	Coefficient	**Std.Error**	**Coefficient**	**Std.Error**	**Coefficient**	**Std.Error**
BRANCH (Work On Site v.s. Stay at Home)						
[All interaction with the choice of working on-site]						
Constant	1.5389	3.3641	1.2142	3.4729	1.4997	3.3713
Age	-0.0726	0.1365	-0.0713	0.1408	-0.0768	0.1368
Age squared	0.0003	0.0014	0.0004	0.0014	0.0003	0.0014
Education						
High School	0.8460***	0.0420	0.6973***	0.0532	0.8265***	0.0419
Some College	0.9624***	0.0677	0.6796***	0.0993	0.8837***	0.0640
College or More	1.0399***	0.1068	0.6036***	0.1474	0.8933***	0.0945
Unearned income	-0.0046***	0.0002	-0.0040***	0.0003	-0.0044***	0.0002
Spouse present	-0.0425*	0.0244	-0.0520**	0.0253	-0.0454*	0.0244
Lives in area which population density						
Below the 10^{th} percentile	-0.2280***	0.0351	-0.2761***	0.0402	-0.2490***	0.0350
Between the 10^{th}-25^{th} percentiles	-0.1161***	0.0291	-0.1085***	0.0302	-0.1195***	0.0292
Between the 25^{th}-50^{th} percentiles	0.0385	0.0257	0.0716***	0.0271	0.0444*	0.0256
Children in household						
Child aged less than 1	-0.3518	0.3325	-0.2730	0.3325	-0.3288	0.3299
Child aged 1 to 3	-0.8338***	0.1361	-0.7676***	0.1409	-0.8057***	0.1365
Child aged 4 to 5	-0.6579***	0.1049	-0.6477***	0.1088	-0.6401***	0.1053
Child aged 6 to 17	-0.1160***	0.0239	-0.1316***	0.0253	-0.1214***	0.0240
Person aged 65+ in household	-0.1359***	0.0382	-0.1154***	0.0400	-0.1296***	0.0383
Disable	-0.4062***	0.0477	-0.2505***	0.0689	-0.3533***	0.0473
Spouse disable	-0.3488***	0.0987	-0.2179**	0.1068	-0.3086***	0.0988
Black	-0.0905**	0.0438	0.2868*	0.0764	-0.0572	0.0427
Hispanic	-0.0534	0.0464	0.0185	0.0505	-0.0312	0.0460
Other race	0.1474***	0.0521	0.1314**	0.0529	0.1974***	0.0513
Human Capital Variable						
Current wage	0.1160***	0.0250	0.0605**	0.0296	0.0942***	0.0243
Sum of Expected growth rate and Depreciation rate	-	-	0.0162***	0.0029	-	-
Expected growth rate	0.3121***	0.0342	-	-	0.3553***	0.0336
Depreciation rate	-	-	-	-	0.0012	0.0033
IV [home]	0.0553	0.1121	-0.3762**	0.1798	-0.1054	0.1088
IV [on-site]	0.5000	.	0.5000	.	0.5000	.

Table 17 Continued

	Model 1		Model 2		Model 3	
	Coefficient	**Std.Error**	**Coefficient**	**Std.Error**	**Coefficient**	**Std.Error**
CHOICE						
(Work at Home v.s. Out of the Labor Force Given Stays at Home)						
[All interaction with the choice of working at home]						
Constant	1.1078	4.6445	-0.5033	4.5664	0.7915	4.6623
Age	-0.0525	0.1882	0.0005	0.1850	-0.0491	0.1889
Age squared	0.0004	0.0019	-0.0003	0.0019	0.0004	0.0019
Education						
High School	0.5995***	0.0482	0.6870	0.0474	0.5948***	0.0483
Some College	1.2886***	0.0511	1.2728	0.0507	1.2373***	0.0515
College or More	1.8522***	0.0598	1.6656	0.0612	1.6564***	0.0619
Unearned income	-0.0019***	0.0002	-0.0019	0.0002	-0.0019***	0.0002
Spouse present	0.0475	0.0344	0.0526	0.0338	0.0507***	0.0345
Lives in area which population density						
Below the 10^{th} percentile	0.2123***	0.0435	0.2089	0.0427	0.2112***	0.0437
Between the 10^{th}-25^{th} percentiles	0.0343	0.0397	0.0315	0.0392	0.0384	0.0399
Between the 25^{th}-50^{th} percentiles	-0.0745**	0.0355	-0.0798	0.0350	-0.0675*	0.0357
Children in household						
Child aged less than 1	0.3821	0.3702	0.2215	0.3568	0.3609	0.3676
Child aged 1 to 3	-0.3607**	0.1432	-0.3717	0.1391	-0.3918***	0.1435
Child aged 4 to 5	-0.2202*	0.1184	-0.1907	0.1151	-0.2425**	0.1183
Child aged 6 to 17	0.0481	0.0327	0.0557	0.0320	0.0550*	0.0328
Person aged 65+ in household	-0.0743	0.0505	-0.0914	0.0495	-0.0777	0.0506
Disable	-0.7293***	0.0412	-0.7383	0.0405	-0.7310***	0.0411
Spouse disable	-0.5644***	0.1187	-0.6035	0.1173	-0.5883***	0.1192
Black	-0.5502***	0.0565	-0.8306	0.0567	-0.5113***	0.0570
Hispanic	-0.3291***	0.0580	-0.3220	0.0572	-0.3151***	0.0582
Other race	-0.6057***	0.0521	-0.4045	0.0507	-0.6040***	0.0522
Human Capital Variable						
Current wage	0.2010***	0.0338	0.1759	0.0351	0.1678***	0.0347
Sum of Expected growth rate and Depreciation rate	-	-	0.0146	0.0031	-	-
Expected growth rate	-0.5027***	0.0176	-	-	-0.5258***	0.0177
Depreciation rate	-	-	-	-	0.0417***	0.0032

Notes: 1. I do not use all women in the sample because of computational difficulty. The data for non-employed women are based on a 0.05 subsample of the non-employed women aged 45 to 54 in the full sample. The data for home-based workers are based on a 0.5 subsample of the full sample of home-based workers and the data for on-site workers are based on 0.03 subsample of the full sample of on-site workers.

2. * significant at 10% level
** significant at 5% level
*** significant at 1 % level

Table 18
Effects of Changes in Explanatory Variables on the Probability of Choosing Each Alternative For Women Aged 25 to 44 (Model 3)

	Out of the Labor Force				Work at Home				Work on Site			
Variable	**Mean**	**Std. Dev.**	**Min**	**Max**	**Mean**	**Std. Dev.**	**Min**	**Max**	**Mean**	**Std. Dev.**	**Min**	**Max**
Probability of choosing alternative *j*	0.2836	0.1456	0.0122	0.9460	0.2829	0.1108	0.0131	0.6331	0.4334	0.1354	0.0083	0.8915
Age	-0.0138	0.0094	-0.0524	0.0139	0.0475	0.0098	0.0052	0.0585	-0.0337	0.0066	-0.0446	-0.0009
Education												
Less than High School to High School	-0.1715	0.0116	-0.1833	-0.0311	0.0442	0.0233	-0.0259	0.1296	0.1273	0.0226	0.0041	0.1641
High School to Some College	-0.1052	0.0197	-0.1561	-0.0099	0.0658	0.0221	0.0024	0.1453	0.0394	0.0082	0.0026	0.0680
Some College to College or more	-0.0300	0.0075	-0.0527	-0.0021	0.0206	0.0073	0.0008	0.0507	0.0094	0.0025	0.0009	0.0201
Unearned income	0.0462	0.0110	0.0164	0.0706	0.0139	0.0124	-0.0205	0.0451	-0.0601	0.0076	-0.0715	-0.0114
Spouse present	0.0141	0.0106	-0.0263	0.0518	0.0472	0.0132	0.0018	0.0681	-0.0612	0.0080	-0.0704	-0.0018
Lives in area with population density												
Less than 10^{th} to Between 10^{th}-25^{th}	0.0175	0.0091	-0.0098	0.0579	-0.0469	0.0095	-0.0606	-0.0042	0.0294	0.0061	0.0007	0.0396
Between 10^{th}-25^{th} to Between 25^{th}-50^{th}	0.0023	0.0030	-0.0077	0.0157	-0.0149	0.0035	-0.0188	-0.0010	0.0126	0.0021	0.0004	0.0160
Between 25^{th}-50^{th} to More than50^{th}	0.0222	0.0053	0.0018	0.0314	0.0029	0.0054	-0.0179	0.0164	-0.0251	0.0032	-0.0308	-0.0011
Children												
No child to Child aged less than 1	0.1218	0.0251	0.0153	0.1642	0.0153	0.0247	-0.0849	0.0807	-0.1370	0.0126	-0.1611	-0.0040
Child aged less than 1 to Child aged 1 to 3	-0.0181	0.0068	-0.0453	0.0036	0.0365	0.0085	0.0032	0.0491	-0.0184	0.0045	-0.0274	-0.0002
Child aged 1 to 3 to Child aged 4 to 5	-0.0415	0.0080	-0.0551	-0.0060	-0.0017	0.0087	-0.0271	0.0311	0.0432	0.0054	0.0010	0.0536
Child aged 4 to 5 to Child aged 6 to 17	-0.0516	0.0149	-0.0885	-0.0061	-0.0319	0.0163	-0.0670	0.0182	0.0835	0.0075	0.0023	0.0926
Person aged 65+ in household	0.0357	0.0076	0.0031	0.0515	-0.0172	0.0077	-0.0482	0.0020	-0.0185	0.0037	-0.0290	-0.0009
Disabled	0.0513	0.0116	0.0045	0.0835	-0.0361	0.0119	-0.0807	-0.0030	-0.0152	0.0052	-0.0307	-0.0010
Spouse disabled	0.0969	0.0246	0.0092	0.1784	-0.0916	0.0277	-0.1773	-0.0142	-0.0053	0.0113	-0.0346	0.0230
Race												
White non Hispanic to Black non Hispanic	0.0763	0.0282	0.0058	0.2010	-0.1403	0.0298	-0.2174	-0.0205	0.0640	0.0153	0.0013	0.1008
White non Hispanic to Hispanic	0.0657	0.0171	0.0054	0.1275	-0.0751	0.0160	-0.1288	-0.0140	0.0093	0.0075	-0.0103	0.0283
White to Other race	0.0552	0.0145	0.0044	0.1067	-0.0626	0.0132	-0.1078	-0.0121	0.0074	0.0062	-0.0092	0.0230

Table 18 Continued

Variable	Out of the Labor Force				Work at Home				Work on Site			
	Mean	**Std. Dev.**	**Min**	**Max**	**Mean**	**Std. Dev.**	**Min**	**Max**	**Mean**	**Std. Dev.**	**Min**	**Max**
Human Capital Variable												
Current wage	-0.0228	0.0051	-0.0303	-0.0036	0.0037	0.0051	-0.0081	0.0255	0.0192	0.0027	0.0009	0.0259
Expected growth rate	-0.0212	0.0058	-0.0400	-0.0013	0.0202	0.0056	0.0029	0.0397	0.0010	0.0026	-0.0044	0.0087
Depreciation rate	-0.0073	0.0020	-0.0121	-0.0007	-0.0034	0.0022	-0.0086	0.0038	0.0106	0.0014	0.0004	0.0124

Note: 1. The reported marginal effects are calculated from the logit coefficients. Unless otherwise indicated, dummy variables change from 0 to 1. For the remaining variables, they increase from the mean values by one standard deviation.
2. The descriptive statistics are for the changes in the predicted probabilities.
3. The probability predictions are based on the stratified data not the full sample.

Table 19
Effects of Changes in Explanatory Variables on the Probability of Choosing Each Alternative
For Women Aged 45 to 54 (Model 3)

	Out of the Labor Force				Work at Home				Work on Site			
Variable	**Mean**	**Std. Dev.**	**Min**	**Max**	**Mean**	**Std. Dev.**	**Min**	**Max**	**Mean**	**Std. Dev.**	**Min**	**Max**
Probability of choosing alternative *j*	0.2725	0.1488	0.0089	0.9448	0.3032	0.1205	0.0228	0.7232	0.4244	0.1209	0.0117	0.8807
Age	0.0176	0.0058	0.0015	0.0312	0.0125	0.0072	-0.0063	0.0288	-0.0301	0.0043	-0.0334	-0.0013
Education												
Less than High School to High School	-0.1970	0.0157	-0.2155	-0.0463	0.0171	0.0236	-0.0992	0.1238	0.1799	0.0282	0.0110	0.2137
High School to Some College	-0.0918	0.0162	-0.1546	-0.0129	0.0700	0.0176	-0.0024	0.1521	0.0217	0.0031	0.0016	0.0283
Some College to College or more	-0.0511	0.0116	-0.1020	-0.0048	0.0422	0.0128	-0.0014	0.1014	0.0089	0.0017	0.0005	0.0122
Unearned income	0.0495	0.0137	0.0133	0.0752	0.0211	0.0179	-0.0235	0.0652	-0.0706	0.0101	-0.0792	-0.0070
Spouse present	-0.0015	0.0026	-0.0114	0.0086	0.0113	0.0022	0.0013	0.0139	-0.0098	0.0013	-0.0112	-0.0005
Lives in area with population density												
Less than 10^{th} to Between 10^{th}-25^{th}	0.0099	0.0077	-0.0223	0.0407	-0.0367	0.0062	-0.0448	-0.0051	0.0268	0.0040	0.0012	0.0320
Between 10^{th}-25^{th} to Between 25^{th}-50^{th}	-0.0042	0.0081	-0.0341	0.0232	-0.0321	0.0076	-0.0400	-0.0031	0.0363	0.0047	0.0018	0.0407
Between 25^{th}-50^{th} to More than50^{th}	-0.0034	0.0030	-0.0154	0.0080	0.0129	0.0025	0.0017	0.0171	-0.0094	0.0011	-0.0110	-0.0005
Children												
No child to Child aged less than 1	-0.0150	0.0172	-0.0836	0.0588	0.0843	0.0139	0.0116	0.0991	-0.0694	0.0098	-0.0812	-0.0032
Child aged less than 1 to Child aged 1 to 3	0.1548	0.0305	0.0170	0.1921	-0.0492	0.0429	-0.1742	0.0856	-0.1056	0.0224	-0.1360	-0.0032
Child aged 1 to 3 to Child aged 4 to 5	-0.0397	0.0068	-0.0475	-0.0056	0.0066	0.0098	-0.0287	0.0349	0.0331	0.0078	0.0009	0.0446
Child aged 4 to 5 to Child aged 6 to 17	-0.0945	0.0227	-0.1305	-0.0098	-0.0202	0.0314	-0.1069	0.0654	0.1147	0.0206	0.0042	0.1357
Person aged 65+ in household	0.0236	0.0062	0.0019	0.0330	0.0070	0.0082	-0.0173	0.0277	-0.0305	0.0044	-0.0342	-0.0014
Disabled	0.1386	0.0227	0.0158	0.1810	-0.0509	0.0311	-0.1704	0.0501	-0.0877	0.0139	-0.1046	-0.0035
Spouse disabled	0.1135	0.0199	0.0118	0.1470	-0.0378	0.0270	-0.1366	0.0482	-0.0757	0.0125	-0.0905	-0.0031
Race												
White non Hispanic to Black non Hispanic	0.0730	0.0163	0.0067	0.1242	-0.0536	0.0186	-0.1214	0.0068	-0.0194	0.0039	-0.0262	-0.0007
White non Hispanic to Hispanic	0.0441	0.0104	0.0037	0.0764	-0.0329	0.0118	-0.0748	0.0040	-0.0112	0.0023	-0.0152	-0.0004
White to Other race	0.0523	0.0219	-0.0230	0.1414	-0.0905	0.0191	-0.1471	-0.0172	0.0382	0.0050	0.0026	0.0478

Table 19 Continued

	Out of the Labor Force				Work at Home				Work on Site			
Variable	**Mean**	**Std. Dev.**	**Min**	**Max**	**Mean**	**Std. Dev.**	**Min**	**Max**	**Mean**	**Std. Dev.**	**Min**	**Max**
Human Capital Variable												
Current wage	-0.0166	0.0038	-0.0231	-0.0021	0.0036	0.0049	-0.0091	0.0213	0.0131	0.0018	0.0006	0.0149
Expected growth rate	0.0177	0.0157	-0.0500	0.0984	-0.0817	0.0147	-0.1100	-0.0131	0.0639	0.0064	0.0032	0.0721
Depreciation rate	-0.0274	0.0069	-0.0511	-0.0020	0.0231	0.0076	-0.0010	0.0505	0.0043	0.0012	0.0001	0.0067

Note: 1. The reported marginal effects are calculated from the logit coefficients. Unless otherwise indicated, dummy variables change from 0 to 1. For the remaining variables, they increase from the mean values by one standard deviation.
2. The descriptive statistics are for the changes in the predicted probabilities.
3. The probability predictions are based on the stratified data not the full sample.

Table 20
Effects of Changes in Explanatory Variables on the Probability of Working at Home Given Women Choose to Stay Home for Women Aged 25 to 44 (Model 3)

	Work at Home v.s. Out of the Labor Force			
Variable	**Mean**	**Std. Dev.**	**Min**	**Max**
Probability of being home-based workers	0.5120	0.1819	0.0143	0.8924
Age	0.0492	0.0079	0.0054	0.0568
Less than High School to High School	0.1389	0.0255	0.0128	0.1609
High School to Some College	0.1516	0.0136	0.0237	0.1616
Some College to College or more	0.0485	0.0045	0.0115	0.0540
Unearned income	-0.0275	0.0049	-0.0318	-0.0017
Spouse present	0.0278	0.0047	0.0017	0.0320
Lives in area with population density				
Less than 10^{th} to Between 10^{th}-25^{th}	-0.0520	0.0084	-0.0606	-0.0045
Between 10^{th}-25^{th} to Between 25^{th}-50^{th}	-0.0147	0.0024	-0.0169	-0.0011
Between 25^{th}-50^{th} to More than50^{th}	-0.0172	0.0029	-0.0198	-0.0012
No child to Child aged less than 1	-0.0907	0.0161	-0.1041	-0.0088
Child aged less than 1 to Child aged 1 to 3	0.0431	0.0082	0.0037	0.0496
Child aged 1 to 3 to Child aged 4 to 5	0.0316	0.0054	0.0032	0.0363
Child aged 4 to 5 to Child aged 6 to 17	0.0213	0.0035	0.0024	0.0246
Person aged 65+ in household	-0.0453	0.0080	-0.0520	-0.0027
Disabled	-0.0751	0.0131	-0.0858	-0.0058
Spouse disabled	-0.1638	0.0340	-0.1895	-0.0146
White non Hispanic to Black non Hispanic	-0.2049	0.0279	-0.2261	-0.0224
White non Hispanic to Hispanic	-0.1230	0.0144	-0.1351	-0.0155
White to Other race	-0.1025	0.0117	-0.1127	-0.0135
Current wage	0.0244	0.0038	0.0019	0.0279
Expected growth rate	0.0360	0.0059	0.0032	0.0415
Depreciation rate	0.0038	0.0006	0.0003	0.0044

Table 21
Effects of Changes in Explanatory Variables on the Probability of Working at Home Given Women Choose to Stay Home for Women Aged 45 to 54 (Model 3)

	Work at Home v.s. Out of the Labor Force			
Variable	**Mean**	**Std. Dev.**	**Min**	**Max**
Probability of being home-based workers	0.5377	0.1995	0.0291	0.9369
Age	-0.0066	0.0013	-0.0079	-0.0009
Less than High School to High School	0.1286	0.0226	0.0174	0.1476
High School to Some College	0.1458	0.0152	0.0331	0.1592
Some College to College or more	0.0887	0.0142	0.0298	0.1044
Unearned income	-0.0277	0.0055	-0.0332	-0.0033
Spouse present	0.0106	0.0021	0.0014	0.0127
Live in area with population density				
Less than 10^{th} to Between 10^{th}-25^{th}	-0.0358	0.0072	-0.0432	-0.0055
Between 10^{th}-25^{th} to Between 25^{th}-50^{th}	-0.0222	0.0043	-0.0265	-0.0030
Between 25^{th}-50^{th} to More than50^{th}	0.0141	0.0028	0.0019	0.0169
No child to child aged less than 1	0.0740	0.0153	0.0121	0.0900
Child aged less than 1 to Child aged 1 to 3	-0.1564	0.0299	-0.1860	-0.0214
Child aged 1 to 3 to Child aged 4 to 5	0.0314	0.0064	0.0031	0.0373
Child aged 4 to 5 to Child aged 6 to 17	0.0624	0.0121	0.0077	0.0742
Person aged 65+ in household	-0.0163	0.0032	-0.0194	-0.0021
Disabled	-0.1552	0.0279	-0.1808	-0.0223
Spouse disabled	-0.1234	0.0245	-0.1460	-0.0181
White non Hispanic to Black non Hispanic	-0.1096	0.0182	-0.1271	-0.0185
White non Hispanic to Hispanic	-0.0675	0.0114	-0.0786	-0.0124
White to Other race	-0.1294	0.0216	-0.1499	-0.0210
Current wage	0.0192	0.0036	0.0029	0.0228
Expected growth rate	-0.0930	0.0162	-0.1083	-0.0145
Depreciation rate	0.0451	0.0082	0.0074	0.0531

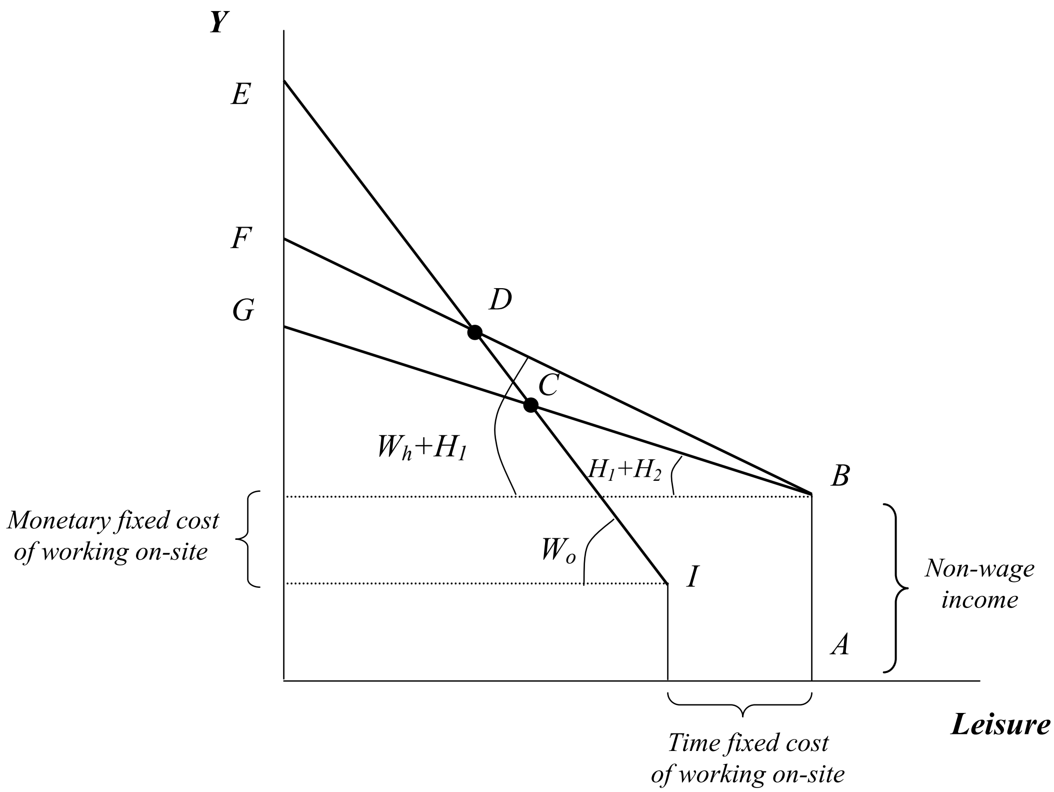


Figure 1
Diagrammatic Model of Labor Supply by Worksite

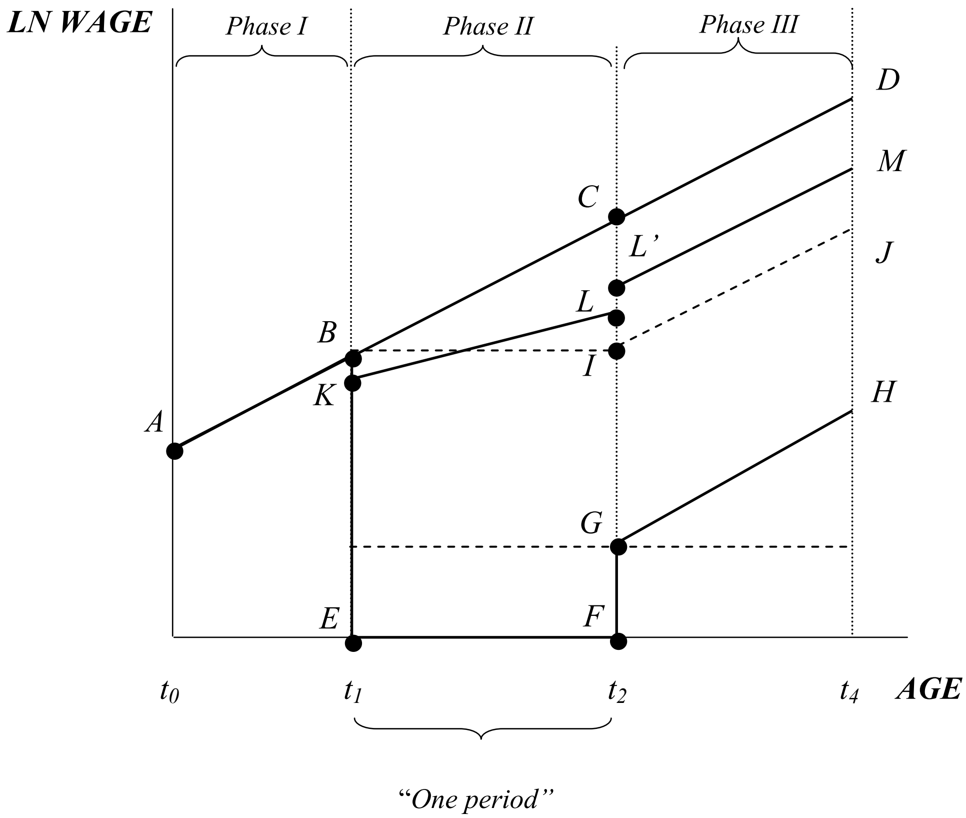
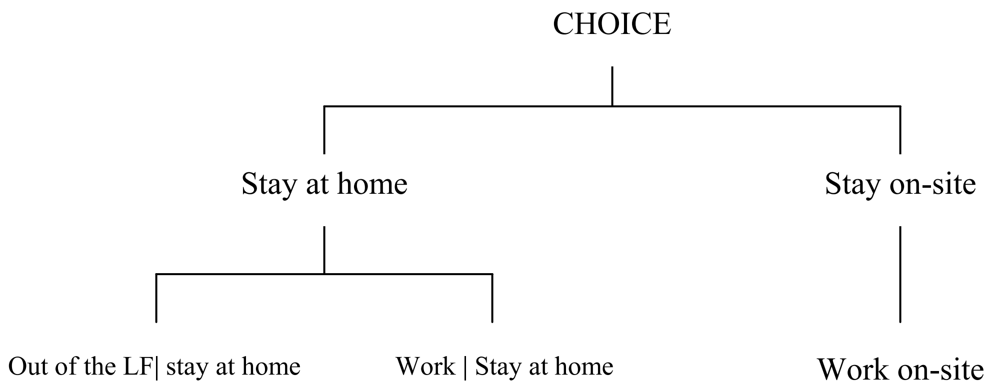


Figure 2
Lifetime Earnings Profile

(a) Nesting Structure A



(b) Nesting Structure B

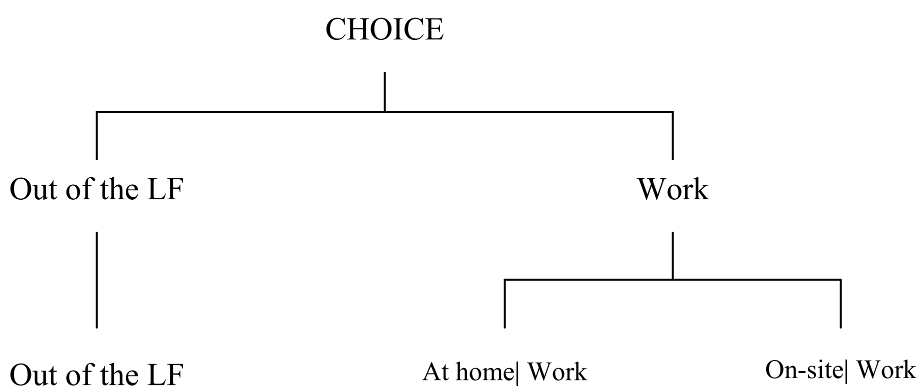
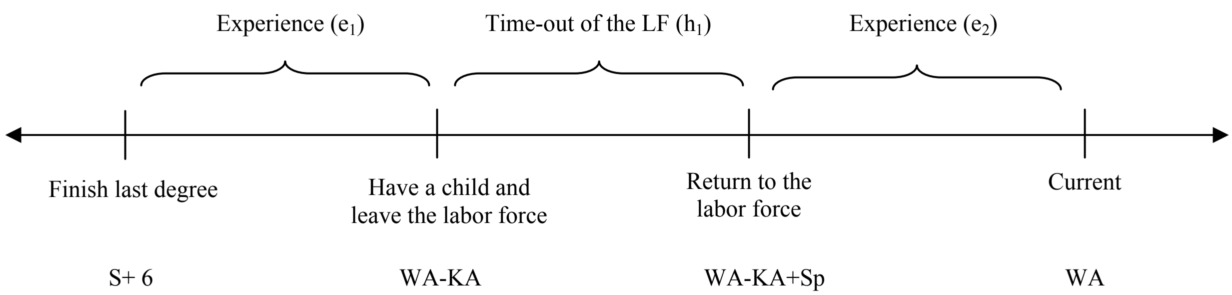
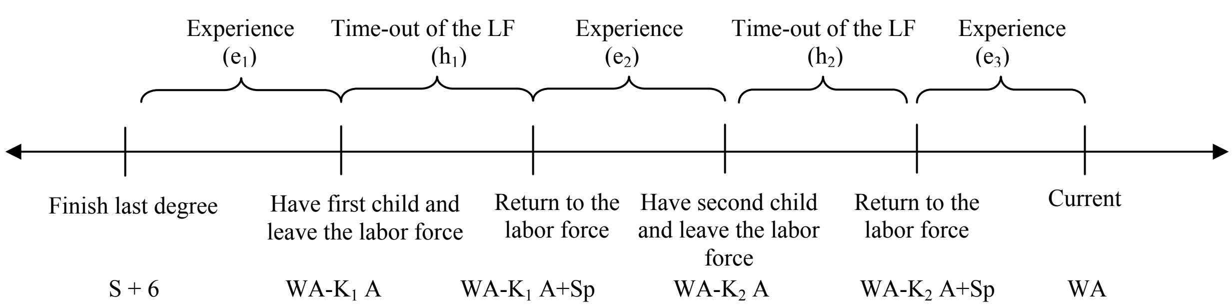


Figure 3
Tree Diagram for Labor Force Participation Choice

(A) Work history pattern if women have only one child



(B-1) Work history pattern if women have two children: the age of the 1st child and the age of the 2nd child is more than the assigned years of time out



(B-2) Work history pattern if women have two children: the age of the 1st child and the age of the 2nd child is less than the assigned years of time out

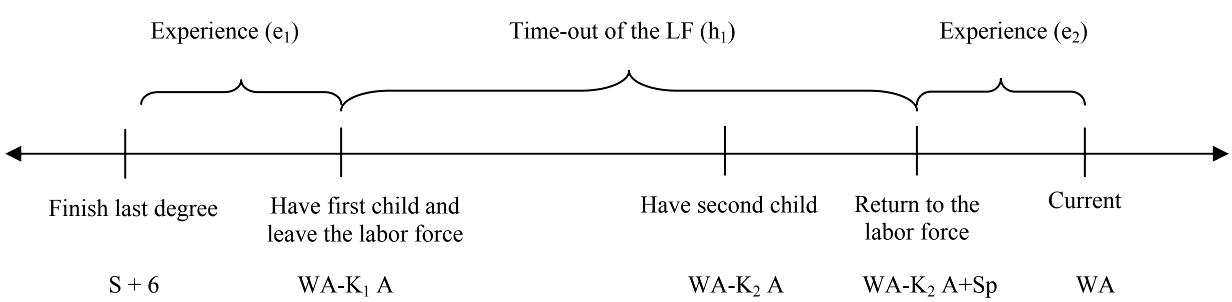


Figure 4
Examples of Employment Pattern

APPENDIX B

THE REGRESSION TO ESTIMATE THE RATE OF WAGE GROWTH

Table B-1
Men's Log Hourly Wage Regressions: Potential Experience Less than 10 years

Independent Variables	Coefficient	Std. Error
Experience	0.042***	0.008
Experience Squared	-0.002***	0.000
Black	-0.014	0.016
Other Race	0.128***	0.012
Experience x Black	-0.010***	0.002
Experience x Other Race	-0.024***	0.002
Occupation 2	0.079***	0.013
Occupation 3	-0.145***	0.015
Occupation 4	0.045**	0.020
Occupation 5	-0.217***	0.022
Occupation 6	-0.293***	0.025
Occupation 7	-0.237***	0.020
Occupation 8	-0.176***	0.019
Occupation 9	-0.145***	0.023
Occupation 10	-0.338***	0.076
Occupation 11	-0.182***	0.049
Occupation 12	0.187***	0.048
Occupation 13	-0.346***	0.066
Occupation 14	-0.290***	0.042
Occupation 15	-0.383***	0.034
Occupation 16	-0.475***	0.031
Occupation 17	-0.163***	0.032
Experience x Occupation 2	-0.012***	0.002
Experience x Occupation 3	0.000	0.002
Experience x Occupation 4	-0.002	0.003
Experience x Occupation 5	-0.002	0.003
Experience x Occupation 6	-0.001	0.003
Experience x Occupation 7	0.003	0.003
Experience x Occupation 8	-0.003	0.003
Experience x Occupation 9	-0.018***	0.003
Experience x Occupation 10	0.008	0.011
Experience x Occupation 11	-0.009	0.007
Experience x Occupation 12	-0.016**	0.007
Experience x Occupation 13	-0.002	0.009
Experience x Occupation 14	0.001	0.006
Experience x Occupation 15	0.001	0.005
Experience x Occupation 16	0.001	0.004
Experience x Occupation 17	-0.009*	0.005
High School	0.098***	0.033
Some College	0.169***	0.033
College or More	0.330***	0.035

Table B-1 Continued

Independent Variables	Coefficient	Std. Error
Experience x High School	0.012***	0.004
Experience x Some College	0.020***	0.004
Experience x College or More	0.035***	0.004
Constant	2.101***	0.043
N	281,822	
Adjusted R-squared	0.2567	

Notes: 1. Occupation 1=Official and Manager (Reference), Occupation 2=Professional and Technical, Occupation 3=Craftsmen and Operative, Occupation 4=Sale Workers, Occupation 5= Administrative Support, Occupation 6=Laborer and Helper, Occupation 7=Service workers, Occupation 8=Sale workers with 2 digit code:47 (First-Line Supervisors/Managers, Cashiers, Counter and Rental Clerks, Parts Salespersons and Retail Salespersons) Occupation 9=Teachers with 2 digit code:23 (Preschool and Kindergarten Teachers, Elementary and Middle School Teachers, Secondary School Teachers, Special Education Teachers and Other Teachers and Instructors), Occupation 10= Secretaries and Administrative Assistants with 2 digit code: 57, Occupation 11=Administrative support workers with 2 digit code: 51 (Bill and Account Collectors, Billing and Posting Clerks and Machine Operators, Gaming Cage Workers, Payroll and Timekeeping Clerks, Procurement Clerks and Tellers), Occupation 12= Healthcare Practitioners and Technical Occupations with 2 digit code: 31 (Physician assistant, Podiatrists, Registered Nurses, Audiologists, Occupational Therapists and Physical Therapists), Occupation 13= Healthcare Support Occupations with 2 digit code: 36 (Nursing, Psychiatric, and Home Health Aides, Physical Therapist Assistants and Aides, Massage Therapists, Dental Assistants and Medical Assistants and Other Healthcare Support Occupations), Occupation 14= Office and Administrative Support Occupations with 2 digit code: 58 (Computer Operators, Data Entry Keyers, Word Processors and Typists, Desktop Publishers, Insurance Claims and Policy Processing Clerks, Mail Clerks and Mail Machine Operators, Except Postal Service and Office Clerks, General), Occupation 15= Building and Grounds Cleaning and Maintenance Occupations with 2 digit code: 42 (First-Line Supervisors/Managers of Housekeeping and Janitorial Workers, First-Line Supervisors/Managers of Landscaping, Lawn Service, and Grounds keeping Workers, Janitors and Building Cleaners, Maids and Housekeeping Cleaners, Pest Control Workers and Grounds Maintenance Workers), Occupation 16= Food Preparation and Serving Occupations with 2 digit code: 40 (Chefs and Head Cooks, First-Line Supervisors/Managers of Food Preparation and Serving Workers, Cooks, Food Preparation Workers, Bartenders, Combined Food Preparation and Serving Workers, Including Fast Food and Counter Attendants, Cafeteria, Food Concession, and Coffee Shop) and Occupation 17= Office and Administrative Support Occupations with 2 digit code: 52 (Brokerage Clerks, Correspondence Clerks, Court, Municipal, and License Clerks, Credit Authorizers, Checkers, and Clerks, Customer Service Representatives, Eligibility Interviewers, Government Programs and File Clerks)

2. Dummies for state variable are included but the coefficients are not shown.

3. * significant at 10% level
   ** significant at 5% level
   *** significant at 1 % level

Table B-2
Men's Log Hourly Wage Regressions: Potential Experience 10 - 18 years

Independent Variables	Coefficient	Std. Error
Experience	0.055***	0.003
Experience Squared	-0.001***	0.000
Black	-0.034***	0.013
Other Race	-0.030***	0.011
Experience x Black	-0.007***	0.001
Experience x Other Race	-0.006***	0.001
Occupation 2	0.052***	0.014
Occupation 3	-0.021	0.013
Occupation 4	0.140***	0.022
Occupation 5	-0.170***	0.020
Occupation 6	-0.164***	0.019
Occupation 7	-0.087***	0.019
Occupation 8	-0.111***	0.018
Occupation 9	-0.173***	0.033
Occupation 10	-0.120	0.093
Occupation 11	-0.136**	0.055
Occupation 12	0.218***	0.055
Occupation 13	-0.145***	0.056
Occupation 14	-0.210***	0.046
Occupation 15	-0.255***	0.024
Occupation 16	-0.319***	0.026
Occupation 17	-0.131***	0.038
Experience x Occupation 2	-0.008***	0.001
Experience x Occupation 3	-0.015***	0.001
Experience x Occupation 4	-0.011***	0.002
Experience x Occupation 5	-0.011***	0.001
Experience x Occupation 6	-0.018***	0.001
Experience x Occupation 7	-0.013***	0.001
Experience x Occupation 8	-0.010***	0.001
Experience x Occupation 9	-0.015***	0.002
Experience x Occupation 10	-0.016**	0.007
Experience x Occupation 11	-0.016***	0.004
Experience x Occupation 12	-0.020***	0.004
Experience x Occupation 13	-0.024***	0.004
Experience x Occupation 14	-0.010***	0.003
Experience x Occupation 15	-0.017***	0.002
Experience x Occupation 16	-0.018***	0.002
Experience x Occupation 17	-0.012***	0.003
High School	0.199***	0.012
Some College	0.335***	0.013
College or More	0.611***	0.015
Experience x High School	0.000	0.001
Experience x Some College	0.001	0.001
Experience x College or More	0.004***	0.001
Constant	1.911***	0.028
N	614,400	
Adjusted R-squared	0.3142	

Notes: See note to Table B-1

Table B-3
Men's Log Hourly Wage Regressions: Potential Experience 19 - 27 years

Independent Variables	Coefficient	Std. Error
Experience	0.014***	0.005
Experience Squared	0.000	0.000
Black	-0.235***	0.022
Other Race	-0.113***	0.020
Experience x Black	0.004***	0.001
Experience x Other Race	-0.002**	0.001
Occupation 2	-0.049**	0.022
Occupation 3	-0.259***	0.021
Occupation 4	0.156***	0.037
Occupation 5	-0.327***	0.032
Occupation 6	-0.403***	0.033
Occupation 7	-0.173***	0.033
Occupation 8	-0.123***	0.031
Occupation 9	-0.777***	0.051
Occupation 10	-0.427***	0.161
Occupation 11	-0.406***	0.101
Occupation 12	-0.267***	0.093
Occupation 13	-0.443***	0.098
Occupation 14	-0.431***	0.078
Occupation 15	-0.400***	0.037
Occupation 16	-0.444***	0.052
Occupation 17	-0.276***	0.071
Experience x Occupation 2	-0.002*	0.001
Experience x Occupation 3	-0.001	0.001
Experience x Occupation 4	-0.011***	0.002
Experience x Occupation 5	-0.001	0.001
Experience x Occupation 6	-0.004***	0.001
Experience x Occupation 7	-0.007***	0.001
Experience x Occupation 8	-0.008***	0.001
Experience x Occupation 9	0.018***	0.002
Experience x Occupation 10	0.000	0.007
Experience x Occupation 11	-0.001	0.004
Experience x Occupation 12	0.006	0.004
Experience x Occupation 13	-0.005	0.004
Experience x Occupation 14	0.001	0.003
Experience x Occupation 15	-0.008***	0.002
Experience x Occupation 16	-0.011***	0.002
Experience x Occupation 17	-0.004	0.003
High School	0.143***	0.021
Some College	0.330***	0.023
College or More	0.753***	0.026
Experience x High School	0.003***	0.001
Experience x Some College	0.000	0.001
Experience x College or More	-0.006***	0.001
Constant	2.445***	0.065
N	640,440	
Adjusted R-squared	0.2883	

Notes: See note to Table B-1

Table B-4
Men's Log Hourly Wage Regressions: Potential Experience More than 27 Years

Independent Variables	Coefficient	Std. Error
Experience	0.009	0.014
Experience Squared	0.000	0.000
Black	-0.342***	0.044
Other Race	-0.024	0.043
Experience x Black	0.008***	0.001
Experience x Other Race	-0.005***	0.001
Occupation 2	-0.292***	0.056
Occupation 3	-0.631***	0.046
Occupation 4	-0.110	0.086
Occupation 5	-0.670***	0.067
Occupation 6	-0.754***	0.068
Occupation 7	-0.123*	0.073
Occupation 8	-0.361***	0.069
Occupation 9	-0.299**	0.132
Occupation 10	-0.184	0.354
Occupation 11	-0.857***	0.207
Occupation 12	-0.683**	0.272
Occupation 13	-0.969***	0.204
Occupation 14	-0.710***	0.165
Occupation 15	-0.938***	0.072
Occupation 16	-1.116***	0.117
Occupation 17	-0.897***	0.160
Experience x Occupation 2	0.006***	0.002
Experience x Occupation 3	0.011***	0.001
Experience x Occupation 4	-0.001	0.003
Experience x Occupation 5	0.010***	0.002
Experience x Occupation 6	0.008***	0.002
Experience x Occupation 7	-0.008***	0.002
Experience x Occupation 8	0.000	0.002
Experience x Occupation 9	0.002	0.004
Experience x Occupation 10	-0.007	0.011
Experience x Occupation 11	0.014**	0.007
Experience x Occupation 12	0.018**	0.009
Experience x Occupation 13	0.014**	0.007
Experience x Occupation 14	0.010*	0.005
Experience x Occupation 15	0.011***	0.002
Experience x Occupation 16	0.012***	0.004
Experience x Occupation 17	0.017***	0.005
High School	0.266***	0.038
Some College	0.324***	0.045
College or More	0.381***	0.064
Experience x High School	-0.002	0.001
Experience x Some College	0.000	0.001
Experience x College or More	0.007***	0.002
Constant	2.670***	0.231
N	386,081	
Adjusted R-squared	0.2677	

Notes: See note to Table B-1

APPENDIX C

THE REGRESSION TO ESTIMATE RATES OF DEPRECIATION

Table C-1
Women's Log Annual Wage Regression: Officials and Managers

	All		Less than 35 Year Old		More than 35 Years Old	
	Coefficient	**Std. Error**	**Coefficient**	**Std. Error**	**Coefficient**	**Std. Error**
Age	0.0673***	0.0030	0.0561***	0.0049	0.0407***	0.0046
Black	-0.1251***	0.0058	-0.1020***	0.0085	-0.1419***	0.0079
Hispanic	-0.0552***	0.0065	-0.0478***	0.0088	-0.0618***	0.0095
High School	0.0949***	0.0144	0.0741***	0.0213	0.1454***	0.0196
Some College	0.1741***	0.0175	0.1585***	0.0266	0.2556***	0.0239
College or More	0.4655***	0.0226	0.4709***	0.0349	0.5947***	0.0315
Years Employed	0.0349***	0.0017	0.0539***	0.0035	-0.0119***	0.0036
Years Employed x Age	-0.0025***	0.0001	-0.0042***	0.0004	0.0016***	0.0003
Years Since Degree	-0.0449***	0.0026	-0.0362***	0.0041	-0.0494***	0.0034
Currently Part-Time (20-34 Hrs/Week)	0.7734***	0.0154	0.6641***	0.0239	0.8388***	0.0202
Currently Full-Time (35 and More Hrs/Week)	1.6145***	0.0142	1.5028***	0.0220	1.6851***	0.0185
Constant	6.6648***	0.0539	6.9408***	0.0929	7.7731***	0.1184
N	127,555		55,052		72,503	
Adjusted R squared	0.3120		0.3003		0.3059	

Note: * significant at 10% level
** significant at 5% level
*** significant at 1 % level

Table C-2
Women's Log Annual Wage Regression: Professionals and Technicians

	All		Less than 35 Year Old		More than 35 Years Old	
	Coefficient	**Std. Error**	**Coefficient**	**Std. Error**	**Coefficient**	**Std. Error**
Age	0.0800***	0.0015	0.0599***	0.0026	0.0560***	0.0026
Black	-0.0494***	0.0038	-0.0509***	0.0055	-0.0467***	0.0052
Hispanic	-0.0576***	0.0047	-0.0556***	0.0064	-0.0595***	0.0069
High School	-0.1265***	0.0130	-0.1068***	0.0184	-0.0984***	0.0183
Some College	-0.0025	0.0135	0.0524***	0.0193	0.0409**	0.0193
College or More	0.0796***	0.0153	0.2117***	0.0224	0.1416***	0.0224
Years Employed	0.0319***	0.0012	0.0443***	0.0024	-0.0162***	0.0024
Years Employed x Age	-0.0016***	0.0001	-0.0020***	0.0003	0.0028***	0.0002
Years Since Degree	-0.0736***	0.0011	-0.0584***	0.0017	-0.0846***	0.0016
Currently Part-Time (20-34 Hrs/Week)	0.8539***	0.0064	0.8106***	0.0102	0.8812***	0.0083
Currently Full-Time (35 and More Hrs/Week)	1.4751***	0.0059	1.4194***	0.0093	1.5129***	0.0076
Constant	6.7947***	0.0301	7.1284***	0.0544	7.9714***	0.0762
N	320,914		147,169		173,745	
Adjusted R squared	0.2949		0.2759		0.3060	

Note: * significant at 10% level
** significant at 5% level
*** significant at 1 % level

Table C-3
Women's Log Annual Wage Regression: Craftsmen and Operatives

	All		Less than 35 Year Old		More than 35 Years Old	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
Age	0.0199***	0.0017	0.0117***	0.0033	0.0192***	0.0031
Black	-0.0814***	0.0052	-0.0672***	0.0081	-0.0915***	0.0067
Hispanic	-0.2159***	0.0053	-0.2266***	0.0079	-0.2049***	0.0071
High School	0.2128***	0.0068	0.2261***	0.0109	0.2070***	0.0089
Some College	0.3558***	0.0093	0.4000***	0.0152	0.3312***	0.0125
College or More	0.5944***	0.0144	0.6711***	0.0233	0.5505***	0.0199
Years Employed	0.0139***	0.0014	0.0162***	0.0035	0.0093***	0.0031
Years Employed x Age	-0.0010***	0.0001	-0.0012**	0.0005	-0.0006**	0.0003
Years Since Degree	-0.0048***	0.0013	0.0019	0.0021	-0.0091***	0.0016
Currently Part-Time (20-34 Hrs/Week)	0.4624***	0.0149	0.4159***	0.0237	0.4931***	0.0190
Currently Full-Time (35 and More Hrs/Week)	1.2407***	0.0138	1.1701***	0.0220	1.2884***	0.0176
Constant	7.6682***	0.0383	7.8641***	0.0791	7.7718***	0.1004
N	127,585		52,740		74,845	
Adjusted R squared	0.2188		0.2042		0.2166	

Note: * significant at 10% level
** significant at 5% level
*** significant at 1 % level

Table C-4
Women's Log Annual Wage Regression: Sales Workers

	All		Less than 35 Year Old		More than 35 Years Old	
	Coefficient	**Std. Error**	**Coefficient**	**Std. Error**	**Coefficient**	**Std. Error**
Age	0.0087***	0.0031	0.0088*	0.0045	-0.0131**	0.0053
Black	-0.1517***	0.0067	-0.1520***	0.0089	-0.1480***	0.0099
Hispanic	-0.0814***	0.0067	-0.0608***	0.0088	-0.1058***	0.0104
High School	0.2613***	0.0104	0.2634***	0.0142	0.2749***	0.0154
Some College	0.5037***	0.0148	0.5121***	0.0203	0.5303***	0.0225
College or More	0.9851***	0.0207	1.0202***	0.0283	1.0164***	0.0321
Years Employed	0.0273***	0.0017	0.0397***	0.0036	-0.0057	0.0041
Years Employed x Age	-0.0016***	0.0001	-0.0027***	0.0005	0.0011***	0.0003
Years Since Degree	0.0018	0.0027	0.0020	0.0036	0.0006	0.0041
Currently Part-Time (20-34 Hrs/Week)	0.6581***	0.0110	0.6169***	0.0163	0.6903***	0.0150
Currently Full-Time (35 and More Hrs/Week)	1.5643***	0.0103	1.5044***	0.0154	1.6126***	0.0140
Constant	7.4302***	0.0553	7.4073***	0.0895	8.3612***	0.1378
N	129,633		63,162		66,471	
Adjusted R squared	0.3790		0.3919		0.3640	

Note: * significant at 10% level
** significant at 5% level
*** significant at 1 % level

Table C-5
Women's Log Annual Wage Regression: Administrative Support Workers

	All		Less than 35 Year Old		More than 35 Years Old	
	Coefficient	**Std. Error**	**Coefficient**	**Std. Error**	**Coefficient**	**Std. Error**
Age	0.0126***	0.0021	0.0073**	0.0032	0.0012	0.0032
Black	-0.0121***	0.0031	-0.0263***	0.0045	0.0018	0.0043
Hispanic	-0.0299***	0.0034	-0.0323***	0.0047	-0.0252***	0.0050
High School	0.2280***	0.0079	0.2578***	0.0114	0.2124***	0.0111
Some College	0.3206***	0.0109	0.3702***	0.0158	0.3033***	0.0153
College or More	0.5029***	0.0149	0.5920***	0.0216	0.4750***	0.0213
Years Employed	0.0225***	0.0009	0.0280***	0.0020	-0.0003	0.0021
Years Employed x Age	-0.0010***	0.0001	-0.0013***	0.0003	0.0010***	0.0002
Years Since Degree	-0.0084***	0.0019	-0.0033	0.0028	-0.0141***	0.0027
Currently Part-Time (20-34 Hrs/Week)	0.6777***	0.0062	0.6340***	0.0101	0.7036***	0.0079
Currently Full-Time (35 and More Hrs/Week)	1.4463***	0.0058	1.3913***	0.0094	1.4793***	0.0073
Constant	7.7120***	0.0353	7.7891***	0.0589	8.3262***	0.0745
N	349,074		153,024		196,050	
Adjusted R squared	0.2865		0.2678		0.2969	

Note: * significant at 10% level
** significant at 5% level
*** significant at 1 % level

Table C-6
Women's Log Annual Wage Regression: Laborers and Helpers

	All		Less than 35 Year Old		More than 35 Years Old	
	Coefficient	**Std. Error**	**Coefficient**	**Std. Error**	**Coefficient**	**Std. Error**
Age	0.0195***	0.0041	0.0104	0.0078	0.0233***	0.0080
Black	0.0066	0.0162	0.0148	0.0243	-0.0008	0.0219
Hispanic	-0.2585***	0.0139	-0.2433***	0.0193	-0.2698***	0.0199
High School	0.2224***	0.0171	0.2677***	0.0254	0.1799***	0.0240
Some College	0.3186***	0.0232	0.3868***	0.0355	0.2580***	0.0333
College or More	0.3975***	0.0359	0.5443***	0.0544	0.2656***	0.0529
Years Employed	0.0209***	0.0037	0.0285***	0.0083	0.0186**	0.0081
Years Employed x Age	-0.0013***	0.0003	-0.0019	0.0012	-0.0012*	0.0007
Years Since Degree	-0.0069**	0.0029	-0.0009	0.0044	-0.0120***	0.0039
Currently Part-Time (20-34 Hrs/Week)	0.5042***	0.0301	0.4602***	0.0458	0.5344***	0.0399
Currently Full-Time (35 and More Hrs/Week)	1.2033***	0.0280	1.1252***	0.0429	1.2601***	0.0370
Constant	7.5131***	0.0927	7.6916***	0.1881	7.5073***	0.2704
N	20,749		9,328		11,421	
Adjusted R squared	0.2276		0.2174		0.2217	

Note: * significant at 10% level
** significant at 5% level
*** significant at 1 % level

Table C-7
Women's Log Annual Wage Regression: Service Workers

	All		Less than 35 Year Old		More than 35 Years Old	
	Coefficient	**Std. Error**	**Coefficient**	**Std. Error**	**Coefficient**	**Std. Error**
Age	0.0092***	0.0016	0.0043***	0.0029	0.0091***	0.0029
Black	0.0079*	0.0042	0.0019***	0.0063	0.0127***	0.0055
Hispanic	-0.0438***	0.0046	-0.0441***	0.0065	-0.0422***	0.0065
High School	0.1996***	0.0060	0.2224***	0.0092	0.1840***	0.0083
Some College	0.4048***	0.0083	0.4468***	0.0127	0.3746**	0.0116
College or More	0.6698***	0.0122	0.7183***	0.0187	0.6407***	0.0178
Years Employed	0.0137***	0.0012	0.0190***	0.0027	0.0074	0.0027
Years Employed x Age	-0.0008***	0.0001	-0.0009***	0.0004	-0.0005	0.0002
Years Since Degree	-0.0002	0.0013	0.0008***	0.0020	-0.0016	0.0017
Currently Part-Time (20-34 Hrs/Week)	0.6011***	0.0071	0.5810***	0.0108	0.6147	0.0093
Currently Full-Time (35 and More Hrs/Week)	1.2150***	0.0067	1.1779***	0.0102	1.2426	0.0088
Constant	7.7361***	0.0324	7.8287***	0.0620	7.8141	0.0890
N	200,489		92,543		107,946	
Adjusted R squared	0.2610		0.2528		0.2657	

Note: * significant at 10% level
** significant at 5% level
*** significant at 1 % level

VITA

NAME: Piyaluk Chutubtim

ADDRESS: Department of Economics
Chiang Mai University, Chiang Mai
Thailand 50202

EMAIL ADDRESS: piyalukc@econ.cmu.ac.th

EDUCATION: B.S., Agricultural Economics (Hons), Chiang Mai University,
Chiang Mai Thailand, 1995
M.A., Economics, Western Michigan University, 1997
Ph.D., Economics, Texas A&M University, 2005