Marriage vs. Cohabitation: Penalty or Premium of Women's Education on Partner's earnings

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ABSTRACT

Marriage is one of the most important institutions affecting people's lives and well-being. Using Current Population Survey, this paper will compare the 1979 and 2009 data to examine the effect a woman's education attainment has on her family's standard of living. This research mainly focuses on the relationship between the wife/partner's education level and her partner's earnings. First, this study investigates whether the IT revolution which has allowed women to have flexible work hours, has increased their household productivity and thus increase their husbands' earnings. Second, this paper examines whether the current increasing extended family households in the U.S. have a significant effect on female wages and family standard of living. Finally, we will examine whether partners' education levels in cohabited relationship are the same as in married couples. This paper used a modified version of Behrman (2002) and Mincer's (1974) wage model. New variables such as the number of children in the household, race, existence of extended family, and whether there is a home based worker will be added to the model.

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INTRODUCTION

In recent decades, women have broken the traditional impression of being just housewives and mothers; today, women play a very important role in society. Not only they keep the traditional role in the family, many of them are also highly educated and hold high level jobs. Because of this continuing trend, many labor economists have devoted a considerable amount of time and effort trying to explain the relationship between a woman's education attainment and her partner's annual earnings. From countless studies, we now know that there is a positive correlation between an individual's earnings with his/her spouse's education level (Benham, 1974). Another well-known empirical finding is that married men enjoy higher earnings than their unmarried or non-cohabitating counterparts. However, there are varied interpretations of the effects of marriage on female earnings.

The male marriage premium is the difference in wage earnings between married men and single men. Currently, the five most common arguments that have been offered for the male marriage premium are: (1) married men are more productive due to household specialization; (2) there is a so-called positive marriage selection theory, which states that productive men are more likely to get married; (3) married men have better bargaining positions thus enjoys a higher wages; (4) the sociological reasons where employers favor married men as workers even though there are no differences in actual productivity; and (5) the compensating differentials which state that married men are more likely to seek monetary compensations than single men (Chun and Lee, 2001) (Skatun, 2004). Unfortunately, these research was not conclusive in explaining why married men earns more than single men. There are few studies on the relationship between a woman's education and her spouse's earnings using recent data. Even fewer have examined the relationship between female's education attainment and her partner's earnings in a cohabitating relationship. Lastly, none of the studies these consider the influence of extended family such as grandparents, or the trend of working from home due to the improvement of technology.

Previous studies have shown that wives' education increase the labor market productivity of men, however, most of these studies used data from the 1970s. Moreover, since 1960, we see an increasing trend of education attainment and labor force participation for women in the United States. Therefore, we suspect that the effect of wife's education would diminish in the subsequent years. Moreover, we predict that wife's education would not be a significant predictor of the husband's earnings as it was in the past. Since the increase in women's overall education attainment and greater labor force participation suggest that women are using their education to benefit their own careers rather than to enrich the careers of their husbands (Jepsen, 2005). In addition, because working women are spending more time outside of their homes, thus they cannot devote more time into household specialization, which is the basis for the productivity theory in male marriage premium.

This paper contributes to the literature by considering the association of the wife's education with her spouse's earnings. Using Census data from 1979 and 2009, this paper investigate whether the positive relationship between a wife's education and her spouse's earnings found by previous works persists in the later decades. Also, we modified Benham's wage model by adding variables such as race, geographic region, number of children in the family, extended family and home based workers.

In Part II, we will discuss the current trend in the country that affecting women's role in the family. Part III will discuss other prior studies in the relating field. Part IV focus on the data used in this study. Part V is the methodology used and part VI presents conclusion.

CURRENT TREND

In this section, this paper will look into some current trends in the country, mainly issue pertaining to women's work environment (labor force participation); the IT revolution that led to possibility of working from home; family trends such as increase in living with extended family.

As reported by the Census Bureau's latest population projections, U.S. population would grow to 392 million by 2050, more than 50 percent increase from the 1990 population size. Moreover, U.S. is becoming more diverse; currently, the non-Hispanic White make up more than 72% of the total population, with about 13% Black; 11% Hispanic origin; 4% Asian and Pacific Islander; and less than 1% American Indian, Eskimo and Aleut. However, by 2050, the demographic shift quite dramatically. Non-Hispanic White only contributed to 53% of total population; 16% Black; 23% Hispanic origin; 10% Asian; and about 1% American Indian, Eskimo and Aleut. The fastest growing race groups will continue to be the Asian and Pacific Islander population with annual growth rate of more than 4%; while the Hispanic population would continue to be that largest growing group. It was projected that 60 percent of population growth from 2030 to 2050 is contributed by the Hispanic origins. As these immigrants assimilate into the U.S. culture, they also bring with them their family structure and lifestyle. We predict that because of the increase number of immigrants into the U.S., the number of extended family will also increase.

Traditionally extended families are common within immigrant families, however, as baby boomers are retiring from their jobs, coupled with the sluggish economy and high childcare expense, many young couples in the U.S. are also considering moving back and live with parents to: (1) save money, and (2) have someone to take care of the young children in the family.

One of the major components driving the population growth is the fertility rate. Yet, we see a decline in the number of children in American family. According to the Census report, in 1950, 53 percent of family households had their own child under 18. In 2008, however, the percentage of families with children under 18 had declined to 46 percent. "Decreases in the percentage of families with their own child under 18 at home reflect the aging of the population and changing fertility patterns," said Rose Kreider, family demographer at the U.S. Census Bureau. Also, the number of childless family has increased in recent decade. In 1976, only 10 percent of women between the ages of 40 to 44 were childless, in 2006, this number has double to 20 percent.

Furthermore, there is an increasing trend of deferring marriage age for both male and female. We can see from Figure 1, the median age at first marriage in 1890 was relatively high; during the 1950s, marriage age declined to its lowest level. However, since the 1970s there has been a consistent increase in first marriage age. In 2008, the median age for men at first marriage was 27.4 years, and it was 25.6 years of age for women. Age at marriage is an important indicator, because it makes the transition to adulthood in many societies. Delayed age at marriage directly affects fertility by reducing the number of years available for childbearing. Additionally, delayed marriage suggests that the society is more urbanized, and a higher levels of educational attainment. Delayed marriage allows women to attain higher education and gain labor force skills.
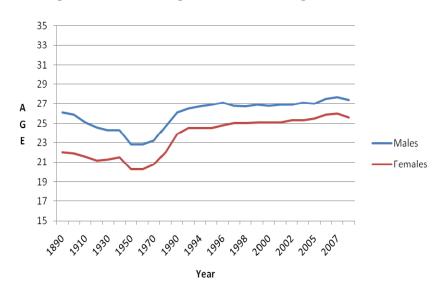
Figure 1: Median Age at First Marriage 1890 - 2008

Source:U.S. Bureau of the Census, 2003

In addition to deferring marriage age, less men and women in the U.S. are getting married. In 2008, 66.9 million opposite six couples lived together, 60.1 million were married and 6.8 million were not. (Edwards, 2009) As the United States become increasingly diverse, individuals of various backgrounds are introducing many new ideas, cohabitation before marriage is one of the most complicated and controversial topics in the marriage area. However, it has also become the norm in many countries. According to the U.S. Census

Bureau, approximately 90 percent of Americans will get married at some point in their life, what has changed is that individuals are not waiting longer to marry but instead many of them lived in cohabitation household.

Besides becoming a more diverse country and an aging population, the U.S. is moving towards becoming one of the most educated countries in the world. According to the Census Bureau, in 2008, over 87% of all adults over the age of 25 had completed at least high school, and 29% had received at least a bachelor's degree. Compared to 1998, only 83% of adults over the age of 25 graduated from high school, and 24% holds a bachelor's degree. However, disparity in education attainment lies within age, sex and race. Even though there are more men than women between the age of 18 to 24 in the U.S. (15 million to 14.2 million), nationally, the male female ratio on college campus is 43% to 57%, a reversal from the late 1960s. In 2008, 29.4 million women and 28.4 million men above the age of 25 years old had a bachelor's degree or higher. Women has a larger share of high school diplomas, as well as associate degree, bachelor's degree, and master's degree. More men than women receive a professional or doctoral degree. (see Figure 2)

Figure 2: Education between Male and Female in the U.S. 2008

Source: U.S. Bureau of Census, 2008

According to the U.S. Census Bureau, among race, 53 percent of Asians in the U.S. had a bachelor's degree or more education. For non-Hispanic Whites it was 33 percent, 20 percent for blacks and 13 percent for Hispanics. Workers with a high school degree earned an average of $31,286 in 2007, while those with a bachelor's degree earned $26,000 more on average ($57,181).

Women today accounts for 58% of all college undergraduates; 50% of law and medical graduates, and 43% in business degrees. (Census Bureau, 2008) As more women are becoming more marketable in the job market, labor force participation also increase in the recent years. In 2008, women make up about 48% of the labor force and men 52 %, compared to in 1948 women only account for 28% and men represent 72% of work force.

Lastly, as the U.S. becoming more technologically advance, many people now have the freedom to work from home. As reported by the Current Population Survey, in may 2004, 20.7 million Americans work from home as part of their primary job, these workers accounted from about 15 percent of total nonagricultural employment. Nearly two-thirds of persons who usually worked at home were employed in management, professional, and related occupations. One third of persons were self- employed. One in five sales workers usually worked at home. Only three percent of workers in production and transportation occupations. People employed in business services and education and health services were most likely to work at home.

In 2004, 13.7 million wage and salary workers worked at home. About 3.3 million of them had a formal arrangement with their employer. Of the 10.2 million workers who just take work home from the job and without paid, 22 percent of them spend more than 8 hours per week at home. School teachers and instructors were especially likely to take work home (Census, 2004).

The likelihood of working at home increased with educational attainment. Workers 25 years and over with a bachelor's degree or higher were 6 times more likely to work at home as those without a high school diploma (32 and 5 percent, respectively). Much of

this disparity is due to the varying occupational patterns of workers with different levels of education (Skatun, 2004).

Women and men have the same likelihood to be work at home in 2004, at about 15 percent each. Whites (16%) were twice as likely to work at home as blacks (8%) and Hispanics (7%); 13% Asian worked at home in 2004. More parents with children tend to work at home compared to persons without children. Married couples were more likely to work at home than their non-married counterparts (Work At Home Summary, 2005).

Technological advances has made it possible for workers in many industries to work from home. However, this form of work arrangement is not new, in fact, majority of businesses were conducted this way before the Industrial Revolution. This enabled businesses to control quantity of production, reduced costs, and provided work for unskilled workers. (Boris, 1996)

According to the Canadian Survey of Work Arrangements (SWA), working from home is more common in the service sector than in the goods industries. Most of these workers are between the age of 25 and 54, professional and working in service industries. Development of better communication information and technologies and the decrease of cost of personal computer and other office equipments are two main factors that affect the current trend of working from home.

Advantages for working from home are: reduction in expenses for work space, easier recruitment and retention of staffs, increased the flexibility of workers, easier to reconcile work and family responsibilities and reduced time of traveling. The disadvantages are: communication problems with co-workers, hard to control efficiency of work; security regarding information, fewer career possibilities, and possible increase in workload (Perusse, 1998).

People often associate working from home with reduce in stress because better balancing work and family life, however, the General Social Survey suggested that workers who work from home have the same amount of stress as workers who work in a traditional

setting, regardless of their occupation or number of children (Fast and Grederick, 1996). In addition, working from home does not necessarily reduce highway congestion or transport-related pollution, because workers are making other kinds of trips to compensate this (Pratte, 1996). However, working from home is not for everyone. Studies suggested that working from home require a lot of disciplines from the workers, therefore, only employees who are solitary, autonomous and qualified are suitable to work from home (St-Onge and Lagasse, 1995). About 25% of workers who work at home hold a university degree. Majority of these workers have more than one job. As of November of 1995, 12% of employees who are working from home have working spouse, 8% are sole breadwinners, 7% live alone, and 10% are single parents (Perusse, 1998). Working from home gives parents more flexibility to balance work and family, from researches, we observed that most of these families have children under 16 years old. Both Huws(1996) and Dooley(1996) argues that working from home is a solution to balancing work and family, especially for women. Also, it gives access to people whose childcare responsibility has restricted them from working in conventional environment. Lastly, they agreed that this would increase household participant rate for male since there is a less clear boundaries between work and home.

LITERATURE REVIEW

Previous studies have analyze the effect of the wife's education attainment on her husband's earnings, and across the board, we see a positive correlation in both developed and developing countries.

According to Benhan (1974), formal education only provides an individual the ability to acquire and assimilate information, and to understand and response to changing condition. Close associate acts as a mediator that will further the educational development and this close associate can influence the individual's stock of knowledge. Spouse is arguably the closest associate to an individual in his/her adulthood, thus spouse can assist a person's effective stock of education in three ways: First, spouse is a close substitute for formal education, thus a highly educated wife can be better at giving sound advice and providing

information; Second, an educated wife can help her husband to acquire specific skills that could lead to increase in productivity; Third, a well-informed wife can help her spouse to acquire general skills related to information acquisition and assimilation thus better at coping with changes. Moreover, individual's effective stock of knowledge also depends on the length of the association. Due to the low cost of sharing information between couples than other kinships, couples generally have greater incentive to share acquired abilities within the household, thus it is not difficult to see wife's education improving her husband's earning capability by sharing information and suggestions on career decisions. Agreeing with Benham, Wong (1986) concluded that wife's education has a significant effect on her husband's earnings when the couple runs a family business rather than working for an employer. Spouse can influence one's consumption choices as well as behavior in the labor market.

Loh(1996) also found that wife's education attainment has a large positive impact on her husband's wage. This argument is found on the premise that wage and education attainment have a positive correlation relationship. Also, Loh suggests that wife's education is a good proxy for potential wage. According to Skatun(2004), there is a positive correlation between the wage of the worker and the potential wage of the spouse. Therefore, we can conclude that education attainment of the worker is positively correlated to the wage of their spouse.

Neuman and Ziderman (1990) found that in Israel, when a wife has at least a high school education, the husband's earnings are nine percent higher. A similar result found by Scully (1979), in Iran, for each school year completed by wife, husbands earning raises by four percent. In another study, Grossbard-Shechtman and Neuman (1991) found that the wife's years of schooling are positively associatedwith higher earnings for her husband, and the size of the coefficient is about 3%. In Brazil, Lam and Schoeni (1994) also found a positive effect, wife's education accounts for 5% of husband's earning in 1982, and 3-4% for the Unite States. Benham (1974) found that for each additional year of schooling that wife complete, there is a 3-4% positive association with her husband's

earnings. However, Astrom (2009) found that when husband has a high level of education, there is a negative effect on the wife's earnings unless she has a higher level of education as well. Astrom believes that it takes a higher level of education to be able to benefit from the productivity spillover effects from the partner. Differing from Astrom's finding, Huang (2009) found a positive association between the husband's educational level and the wife's earning in China.

Besides reducing household earnings inequality (Amin, 2003), women's education has many other added benefits to their families, especially to their children. As reported by Hill and King (1993), higher maternal educational level are positively associated with improvements in children's health, decrease infant mortality and better childhood nutrition. Goldin (1992) found that woman with liberal arts education are more likely to become a better wife, mother and homemaker, because a liberal arts education endowed women the ability to use good judgment and reason to solve problems, thus better assist her spouse in life. Also, having a spouse with a higher level of education is most likely to associate with healthier behavior such as less smoking and less excessive drinking (Monden, 2003). Individuals with higher education tend to be healthier; they are more prone to engage in physical activities and preventive care (Groot and Maassen van den Brink, 2007).

Using panel data from Malaysia, Jepsen (2005) suggested that government policies in developing countries that help women to increase education could have positive effect for families beyond the women's own labor force participation and earnings. Jepsen also observed that there is a decrease trend in the coefficient of women's education to her husband's earnings. Jepsen believes this is caused by the increasing number of women working thus spend more time outside of the family, less specialization in household work. Thus, decrease the benefit of their education to their husband's earnings. Also better economic condition in recent years in Malaysia has increase husband's employment thus reduced the need for helps from their wives. Agreeing with Jepsen, Song (2007) pointed out the concept of working spouse penalty/premium. According to

Song, working spouse penalty arise when working wife's work hour increase. Because longer hours devoted to work means less division of labor within the household, married men whose wives are working earn lower wages than do comparable men with non-working wives. However, Song stated that working wife is only associated with lowering husband's wage if he is in the management position, but will increase husband's wage among non-managers. Lastly, Song argued that it is not husband's occupation that triggers the working spouse penalty or premium rather the distribution of husband's wage level.

Although labor economists might not agree on the magnitude and the cause of marriage wage premium, most of them would accept that marriage has a positive wage effect for male workers.

One of the dominant theories is the productivity hypothesis, which argues that marriage makes men more productive (Becker, 1991) (Chun and Lee, 2001). This argument is found on the premise of household specialization. It assumes that if the wife of a married man performs most of the work in the household, it will increase the opportunity for the married man to specialize in the labor market thus be more productive and have higher earnings. Single men have lower productivity because they have to perform additional work in the household, thus are not fully committed to the labor market. According to Chun and Lee (2001) and Jepsen (2005), men whose wives specialize in home production have a larger premium than men whose wives work in the labor market. Moreover, the gains from marriage are positively associated with the degree of specialization within the household. For every additional hour a wife work in the labor market, per week, wage gain from marriage decreased by 0.6%.

 A competing argument to the productivity hypothesis is the selection hypothesis proposed by Nakostenn and Zimmers (1987, 1997, 2001). This theory states that selection of marriage is not always solely base on emotional factors; there are other factors that determine whether a man finds a mate, such as having an attractive physique, a high intelligence and a stable economic basis. Although, physical appearance and IQ

are individual traits that cannot be record or are hard to gather by researchers, they are have been study and proven to be positively related to earnings potential. According to Hamermesh and Biddle (1994), physical appearance has a significant impact on earnings; people with plain-featured earn less than people with average looks, who earn less than people who are attractive. Therefore, men with higher earnings ability become more attractive in the marriage market, ceteris paribus, consequently they are more likely to get married. Married men are more productive before they were married, their productivity enable them to have higher earnings; not because they become more productive after marriage, there is no marriage premium exist. In line with Becker's assortative mating theory, people tend to marry to a partner with similar traits with respect to age, education, wealth, religion, and race.

Thus, highly educated individuals tend to marry other highly educated individuals, and high wage earners tend to marry each other. As stated in Schwartz and Mare (2005), Americans are becoming more educationally homogamous; often time they are paired off by education level. A high school graduate marrying someone with a college degree declined by 43 percent from 1940 to the late 1970s. Nevertheless, the evidence is mixed. Chun and Lee (2001) found that there is little evidence to support the selection hypothesis. Unmeasured earning capabilities are not positively correlated with unobservable traits valued in the marriage selection process.

Skatun (2004) proposed that individual in a collective partnership have a better bargaining position than a single individual. Skatun pointed out that the difference in wage earning in married and non married men might be due to their bargaining power in the labor market. In the labor market, if a married man failed to reach an agreement with his employer, he still has a safety net, which he can always relied on, and fall back on a share of their partner's income. This hypothesis argues that worker in a collective relationship are generally less impatient, thus they are less likely to enter into an agreement with the firm when their partner's income is high, as he/ she is not in need of money. Therefore, married men have a lower threat point than single men, and they can

extract a higher compensation from the firm. Skatun also suggests that married workers would use their partner's wage as leverage in the bargaining process. Furthermore, primary workers tend to do better than secondary workers, which explain why men earn more than women. As pointed out by Lundberg and Rose (2000), as a mother's wage and hour worked falls, father's wages and hours worked increase. Worker's wage is generally higher if 1) the partner's current income is lower and 2) if the partner's potential income is high.

Some researchers suggested that the differences between married and single men earnings may be caused by sociological reasons. There are no actual difference in productivity between married men and single men. Pfeffer and Ross(1982) [1] argued that married men are paid more because employers reward them for conforming to social conventions. The conformance argument is that men have a social expectation to be married and support their families; working women on the other hand, should work only because of divorce or being widowed. Therefore, when men are married and working, they are conforming to social expectations, but when women are married and working, they are not. This also explains the differential effect of marital status on men and women workers.

Another reason for the marriage premium exists in male workers is the argument of compensating differentials. This argument is relatively similar to the conformance argument in which suggest that married men are expected to provide for the family, therefore, they seek money rather than non-wage compensation (Reed and Harford, 1988).

Since there are no information on productivity alone, most of the previous studies use the presence of certain wages patterns to support the productivity argument. Kenny(1983) and Neumark (1991) found that wage rates rise faster during marriage, Hill (1979) reported that married men spend more time in training on current jobs than non married men. Lynch (1992) and Sicherman (1993) both found that married men and women are more likely to have receive company or on the job trainings.

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[1] As referenced in Skatun(2004)

Studies of changes in family household structures in the United States have noted a downward trend during most of the 20th century in the prevalence of extended family households (Goldscheider, 1989), however during the 1980s, the decline in extended family have slow down. Households that contain extended family members increased from 10 percent in 1980 to 12 percent in 1990 (Glick, Bean, VanHook, 1997). One factor is immigration. During the 1970s and 1980s, United States undertake a dramatic shift in both the volume and composition of immigrants. Majority of these immigrants are now coming from less developed countries where extended family structures are more common, 83% of total immigrants are from Asia and Latin America (U.S. Immigration and Naturalization service, 1995).

Migrants from Mexico and other Central American countries are more likely to come to the United States as labor migrants, thus are more likely to utilize social networks of distant relatives for housing, employment and other assistance (Glick, et al. 1997). These labor migrants are more likely to share households with horizontal extended relative such as siblings or cousins rather than grandparents (Chavez, 1985). On the other hand, during the 1980s, many immigrants entered into the U.S. as refugees, they came with multiple generation family members and have little hope of returning to their country of origin, thus are more likely to form vertically extended households (Chavez, 1990).

Family researchers study kinship support by focus on three key types: emotional, financial, and instrumental (such as physical and practical supports). Childcare help is an independent type of support as it has both instrumental and emotional components (Sarkisian et al. 2006).

Studies have found that Latinos were more likely than Whites to live with extended kin (Sarkisian, et al. 2006). Furthermore, comparing Latino groups with each others, we see that Mexicans were more likely to co-reside with extended kin than Puerto Ricans and other Latinos (De Vos and Arias, 2003). Moreover, researchers have found that Latinos are less likely to give financial assistance and more likely to provide instrumental helps and childcare help. Higher socioeconomic status was associated with less co-residence

and with a greater likelihood of giving financial support. Furthermore, according to Sarkisian, Gerena and Gerstel, (2006), having a partner or minor children decreased the likelihood of co-residence, but increased the likelihood of living near kin. Single parent increased the likelihood of giving instrumental help, and being a nonresident parent increased the likelihood of giving financial assistance.

DATA AND SUMMARY STATISTICS

This paper is conducted using the U.S. Census' Current Population Survey (CPS) data for the years of 1979 and 2009. The CPS sample consists of 154,452 observations for 1979 and 207,921 observations for 2009. These data contain the information needed to compare the characteristics and earnings abilities of individuals. However, when we restrict our sample to those couples with all of the necessary socio-economic information, we are left with 131,216 observations for 1979 and 91,145 observations for 2009. The dependant variable is the log of the husband and partner's annual earnings. The data are restricted to husbands and partners who work full time, where full time is defined as working at least 35 hours per week and at least 45 weeks per year. We follow Benham (1974) and define potential work experience as age minus schooling minus six.

Education attainment is a category variable defined by CPS. We group the CPS categories in to seven education levels: have 12th grade or less education, High school graduate or GED holder, Associate degree or have some years of college education, holds Bachelor's degree, holds Master degree, and holds Doctorate degree. Data are representing the highest level of formal school that the individual has completed.

The empirical model also includes variables such as race and location of residence to avoid the risk of omitted variable Race variable is measured as a series of dummy variables includes white, black, Asian, and Hispanic. Asian is the additional race added to this study that previous studies had neglected. It is estimated by the Census that by 2050, 10% of U.S. population would be Asian descents. We feel that it is important to include this race in the analysis. Metropolitan level is a location variable. Based on the

household's location, we categorized all sample data into two groups: rural and urban. We presumably believe that urban workers earn more than workers from rural area. Educated wife would have a bigger influence to her family's stand of living if she works in the urban area.

Because of lack of availability of data, we will use the number of married couples in a household (NCOUPLES) as proxy for extended family. If the number of couples in household in family is equal to 0, then we can say people who live in this household are in a cohabitating relationship. If the number of couples in household is more than 1, then we say there are extended family members living in the household. Moreover, we use number of children between 13-30 in the household as another proxy variable to reflect extended family. We believed older children in the family can help out parents to raise younger siblings, therefore act as a second set of parents. This study uses the number of home based business and self employed workers as proxies for working from home.

To implement our model, we need to have information on wife's individual characteristic as well as other family characteristic such as number of children in the household and the metropolitan level of reside city. However, the CPS data are constructed in a way that multiple families or unrelated persons are sometimes included in the same household. Therefore, matching husband with his exact wife is critical to the process. We used household serial number and relation identification information to match couples so that we can draw conclusion on how wife's education affects her spouse's earnings.

Table 1 presents the summary of statistics of the male sample by marital status. All participant males are categorized into three categories: Married (spouse present), Married but lived alone (spouse absent), and never been married. Married with absent spouse are men who are divorce, separated from their spouse, widower or spouse working away from home. Reasons to have a separate category is because we presume married men earn more because of their spouse/partner helps them to be more productive by sharing household chores. On the contrary, married men who live alone do not necessarily enjoy the same marriage premium those married men who do live with spouse. Therefore, by

having a separate category we are able to observe whether there is any difference

between married men with spouse present and married men with absent spouse.

Table 1: Summary Characteristic of Male Sample Based on Marital Status

Variables	Never Married Men		Married Men		Married But Live Alone	
	1979	2009	1979	2009	1979	2009
Earnings	33,688.59	28,352.73	49,921.12	47,087.12	39,012.37	26,332.48
	(22,708.71)	(36,825.79)	(28,665.9)	(64,635.19)	(27,988.67)	(41,446.28)
Age	34.7	37.8	43.2	48.5	43.1	46.9
Educations						
No school – 8th Grade	0.103	0.059	0.118	0.051	0.186	0.080
	(0.305)	(0.236)	(0.323)	(0.220)	(0.389)	(0.271)
9th – 12th Grade (No degree)	0.356	0.102	0.457	0.066	0.454	0.110
	(0.379)	(0.302)	(0.498)	(0.251)	(0.497)	(0.312)
High School & GED	0.030	0.327	0.026	0.293	0.023	0.359
	(0.170)	(0.469)	(0.160)	(0.456)	(0.149)	(0.479)
Associate and some college	0.369	0.243	0.292	0.242	0.252	0.248
	(0.482)	(0.428)	(0.455)	(0.429)	(0.434)	(0.432)
Bachelor Degree	0.046	0.190	0.031	0.209	0.023	0.134
	(0.210)	(0.312)	(0.173)	(0.405)	(0.149)	(0.339)
Graduate Degree	0.094	0.080	0.075	0.138	0.063	0.069
	(0.293)	(0.271)	(0.264)	(0.342)	(0.242)	(0.252)
Race						
Asian	N/A	0.046	N/A	0.054	N/A	0.031
Black	0.128	0.175	0.077	0.080	0.216	0.143
Hispanic	0.045	0.204	0.048	0.127	0.059	0.156
White	0.855	0.745	0.906	0.847	0.766	0.798
Home Based Business	0.019	0.073	0.019	0.125	0.021	0.088
% in Total Population	10.55	17.29	80.18	67.17	9.27	15.54

*Mean are reported; standard deviations are in parentheses

For both 1979 and 2009, male sample accounts for 48% of total sample. All samples are

limited to age 25 and above to take into account students and non-working male. As

expected, married men are older than never married men by more than 8.5 years. In 1979,

10.55% of men have never been married, 80.18% of men are married, and only 9.27% of

men are married but live alone. As we can see, in table 1 there is a significant difference

in average wage earnings between the married men and men who have never been

married. The average earnings of married men is 32.5% higher than that of never married men. On average, married men earn $16,232 more per year than their non married counterparts. Men whose spouse is absent earns 13.6% more than men who have never been married, but earns 27.9% less than married men with spouse present. This income gap between married men and never married man confirms the marriage premium theory while the income gap between married men who live with spouse and married men with absent spouse verifies the productivity theory.

If we accept the Selection theory or the Assortative mating theory, we would think that married men would have a higher education than never married men. Because one of the basis for these two theories is that married men were productive before they get marriage, marriage did not make them more productive. And because productive men generally have higher earning power therefore, they are more likely to attract mates. However, our results tell us differently. In 1979, never married men actually have the highest education within the three groups. 36.9% of these men have an associate degree, 4.6% holds a bachelor degree, and 9.4% received a doctoral degree. While only 29.2%, 3.1%, 7.5% of married men have the same degree and 25.2%, 2.3%, 6.3% for married men with absent spouse. This could be the explanation of why never married men on average have higher education then married men; because most of the single men are still in school pursuing education. Lastly, White male appeared to be more likely to be married than Asian, Black and Hispanic male.

In 2009, number of never married men increased 6.74 percentage points from 1979 to 2009's 17.29%; at the same time, number of married men drop from 80.18% to 7.17%; married but living alone rise to 15.54%. The results not only verify the current trend of delaying marriage but also suggest that more divorce have occurred compared to thirty years ago.

As expected, married men still have the highest earnings, roughly 39.7% higher than men who have never been married and 44% more than married men with absent spouse. Despite adjusting for inflation, all three groups of men earn less than what it would be in

1979. Earnings for never married men decreased by 18.8%; 1.5% for married men and 48% decline for married men with absent spouse.

Education attainment for men has increased significantly compare to what it was in 1979. Lesser people have 12th grade or less education; 84% of men in 2009 have at least complete high school or have a GED compare to only 53.9% in 1979. Unlike 1979, there is a mixed result for the educational attainment for the three marital groups, there is dominant group being the most educated. However, in 2009, married men accounts for the most in high education. 20.9% of married men have bachelor degree and 13.8% graduate degree; 19% of never married men graduated from college, and 8% went to graduate school.

In 2009, White male still have an advantage over other male at marriage; however, Black and Hispanic male has reversed role. In 1979, Black men are have the most disadvantage when it comes to marriage, but today, Hispanic male replaced Black male and become the most unlikely to get married. Number of home based worker has also increased substantially, In 2009, 28.6% of all men work from home compare to 1979 only 5.9%.

Table 2: Descriptive Statistic of Married Couples

Variables	1979	2009
Husband / Partner wage	43,446.03 (32,121.01)	42,236.56 (60562.3)
Husband's Age	42.3	50.95
Wife's Age	40.7	51.49
Husband/ Partner's Education		
No school – 8th Grade	13.01%	5.97%
9th – 12th Grade (No degree)	46.04%	7.71%
High School & GED	2.77%	30.65%
Associate and some college	27.69%	24.69%
Bachelor Degree	2.79%	18.97%
Graduate Degree	7.68%	10.13%
Women's Education		
No school – 8th Grade	10.58%	5.68%
9th – 12th Grade (No degree)	58.94%	7.53%
High School & GED	2.28%	31.77%
Associate and some college	23.85%	26.10%
Bachelor Degree	2.06%	18.74%
Graduate Degree	2.27%	9.08%
Rural	74.70%	71.69%
Number of Children	2.11	1.07
Number of Boys under 5	0.34	0.21
Sample Size	38,058	91,145

*Inflation adjusted wages. $1 in 1979 = $2.96 in 2009.

Table 2 shows the descriptive sample statistic for married couples in 1979 and 2009. In 1979, the average age of the husband/ partner is 42.3 years old and the average age for their wives is 40.7. As much as 13% of married men have 8th grade or less education; 46.04% of married men only have 12 years of education; 2.77% graduated from high school, 27.96 % have an associated degree or have some college level education; 2.79% hold a bachelor degree, and 7.68% of married men have graduate degree. As expected wives generally have a lower education, 69.52% of wives have 12th grade or less education, and only 2.06% holds bachelor degree and 2.27% have a graduate degree.

However, women have similar percentage in Associate degree as men, both around 24%. In 1979, roughly 25% of the couples live in urban area, which suggests a disparity between urban and rural residents in the sample. Average couple has 2.11 children in the household, and one out of three families have children under the age of 5. Table 3 shows the number of couples in household which suggests the presence of extended families and percentage of cohabitation within population about 0.99% of all households has more than one family living together. 11.15% of couples live together but are not married. 2.32% of families have more than one mother in the household, 0.84% of families have more than one father in the household. These results indicates the existence of grandparents.

In 2009 both age and education attainment increased significantly for both sexes. Only 13.68% of married men have less than 12th years of education compare to 46.04% in 1979. 30.65% graduated from high school or have a GED; 24.69% have an associate degree or have some years of college level education; 18.97% have a bachelor degree; 12.02% have a graduate degree. Education increased even more dramatically for women, in 2009, only 13.21% of all married women have less than 12 years education, this is almost a 80% decreased in the number of women who have less than 12th grade education from 1979. Also, for the first time women has less percentage than men in the lower education level. As of 2009, the numbers of women who have higher education are almost the same as the number of men who have higher education. 18.74% of married women now have a bachelor degree, 10.18% has graduate degree. This significant increased in the number of married women in higher education is not too surprising given the fact that American women are more educated than women in other parts of the world; also, women have tried very hard to gain equality in the recent decades.

In 2009, the average age of the husbands is 50.95, which is 8.65 years older than the average age in 1979. Disparity between urban family and rural family are still wide more couples move out of urban city and choose to live in rural area, 28.31% couples are from urban area. Couples are now considering to have less children in the family, on average

1.07 children per household, which is a 49 percentage points decline since 1979. This also confirms with the current trend of defer in fertility in households. One in five families have child under 5. In 2009, both the percentage of families lives in cohabitation and households with extended families have increased. 4.885% (0.1% have more than one couples in the household, about 4.825% of households have more than 1 mother, 0.05% of households have more than 1 fathers) households live with extended families and 23.31% of couples live in cohabitating relationship. The number of cohabitation household has double in thirty years; this shows that traditional family structure has changed as people's value changed. Also, we see a dramatic increase in the number of single family household.(Table 3)

Average income for Husband/ partner has decreased by $1,209(inflation adjusted). This shows that people's wage does not increase consistent with inflation, people's purchasing power has gone down in the past thirty years.

Table 3: Number of Couples, Mothers and Fathers in Household

Variables	1979	2009
Number of Couples in Household	Percentage	
0	11.15%	23.31%
1	87.86%	74.75%
2	0.98%	0.08%
3	0.01%	0.02%
Number of Mothers in Household	Percentage	
0	1.37%	42.56%
1	96.31%	52.62%
2	2.29%	4.56%
3	0.02%	0.25%
4	0.01%	0.015
Number of Fathers in Household	Percentage	
0	9.73%	48.85%
1	89.43%	49.62%
2	0.84%	0.05%

METHODOLOGY

In order to analyze the different questions posed in this paper, more than one model is used. The baseline model is based on the modified version of Jepsen's model which was a modified version of Mincer (1974) and Benham (1974)'s ordinary least squares (OLS) wage model.

To answer how women's education is affecting her spouse/partner's earnings, we use equation one. Our model adds four important independent variables, including Asian race, number of children in household, homebased worker, and extended family.

$$\text{Incwage }_{Husband} = \beta_0 + \beta1\text{Educ}_{men} + \beta_2\text{Educ}_{wife} + \beta_3\text{Age} + \beta_4\text{Exp} + \beta_5\text{Exp}^2 + \beta_6\text{Race} + \beta_7\text{Metro} + \beta_8\text{Marst} + \beta_9\text{Nchild5} + \beta_{10}\text{Child13} + \beta_{11}\text{Ncouples} + \beta_{12}\text{Homebased} + \varepsilon$$

(1)

Where, Incwage is the natural log of income of husband's annual earnings; Educ is a vector of variables of male and female individual; Exp is work experience which is defined as

Age – Schooling – 6; Race includes Asian, Black, Hispanic, and White; Metro level indicates whether the individual is living in a urban city or not; Nchild5 is the number of children under the age of 5 in a household; Child13 is number of children between 13 to 30 in a household; Ncouples is the number of couples in household.

We will estimate the model twice by changing the dependent variable. Particularly, we change spouse's earning to partner's earnings. Then we will compare the results and conclude whether men in a cohabitating relationship are impacted the same way (or not) as married men when their wives increase education attainment.

EMPIRICAL RESULTS

Regression (1) of table 4 is a basic regression of Men's annual earning with dependent variable being husband's earnings. This regression acts as a baseline for the future

comparisons. We see from table 4 that a man's own education attainment and experience are significant predictors of his earnings, as a man's education level increase his earnings increase, work experience shows a positive correlation at 10% significant level. Return to each level of education is larger in 2009 than in 1979. In 1979, only when education attainment is 12th grade or less there is a negative impact on earnings, all other levels have positively effects. However, compare to Associate and Bachelor degree, graduate degree has relatively smaller effect. In 2009, any education level less than Bachelor degree have negative impact on earnings, this is suggesting that in today's society, education is more important than what it was in the late 70's in obtaining a job. Compare to minority, White male has advantage when it comes to earnings, which is in line with previous studies. However, the degree of the negative impact increased in 2009 for Black and Hispanic males while the positive effect for White male has shrunk. Metropolitan level shows the individual's current reside city, as expected, people who live in the urban/central city make more than people who live in the rural part of the country. Result is same for both years, with very minor changes.

Regression (2) examine the effect of women's educational attainment has on husband's earnings. The coefficient of different levels of education for women differs significantly between the two years. In 1979, all levels of educational attainment for women would have positive effect on husband's earnings. This is not surprising since majority of women in the late 70's does not have a high education, therefore, any level of education is sufficient. The largest positive effect for having an Associate degree shows that people view that as a practical degree and the relative smaller positive effects in the Graduate

Table

Variables	(1)		(2)		(3)		(4)	
	1979	2009	1979	2009	1979	2009	1979	2009
Constant	8.533*** (0.079)	9.521*** (0.174)	8.533*** (0.069)	9.173*** (0.083)	8.832*** (0.109)	8.198*** (0.507)	7.823*** (0.296)	9.745*** (0.467)
Men Age	0.060*** (0.003)	0.014*** (0.005)	0.062*** (0.003)	0.014** (0.005)	0.060*** (0.005)	0.053* (0.028)	0.083*** (0.011)	0.019* (0.018)
Men Experience	0.006** (0.004)	0.032* (0.005)	0.008* (0.004)	0.033*** (0.005)	0.015** (0.006)	0.013 (0.053)	0.022* (0.012)	0.025* (0.019)
Men's Experience^2	-0.001** (0.001)	-0.001*** (0.001)	-0.001*** (0.001)	-0.001*** (0.001)	-0.001*** (0.005)	-0.001 (0.002)	-0.001*** (0.001)	-0.001*** (0.001)
Men Education								
12th Grade or less	-0.008* (0.031)	-0.940*** (0.050)	0.013*** (0.019)	-0.232*** (0.053)	-0.019* (0.031)	-0.993*** (0.246)	0.264* (0.023)	-0.398 (0.282)
High school or GED	0.016* (0.032)	-0.698*** (0.035)	0.033* (0.019)	0.241*** (0.027)	0.005* (0.046)	0.527*** (0.081)	0.197* (0.188)	-0.759*** (0.173)
Associate and Some college	0.061*** (0.018)	-0.555*** (0.030)	0.076*** (0.019)	0.367*** (0.031)	0.036* (0.045)	0.702*** (0.099)	0.655** (0.278)	-0.383*** (0.146)
Bachelor Degree	0.159*** (0.037)	0.698*** (0.038)	0.116** (0.038)	0.648*** (0.041)	0.121** (0.059)	0.974*** (0.163)	0.269* (0.177)	-0.346*** (0.126)
Graduate Degree	0.049* (0.01)	0.939*** (0.050)	0.500* (0.031)	0.882*** (0.052)	0.032* (0.062)	0.993*** (0.246)	0.430 (0.298)	0.038 (0.105)
Race								
Asian	N/A	0.023* (0.036)	N/A	0.020 (0.036)	N/A	0.094* (0.134)	N/A	-0.065 (0.095)
Black	-0.035* (0.041)	-0.090** (0.033)	-0.036* (0.042)	-0.090** (0.033)	-0.063* (0.112)	-0.101* (0.120)	-0.202** (0.108)	-0.034 (0.072)
Hispanic	-0.157*** (0.020)	-0.180*** (0.016)	-0.149*** (0.020)	-0.177*** (0.016)	-0.051** (0.047)	-0.060* (0.048)	-0.107** (0.054)	-0.175*** (0.041)

Marriage vs. Cohabitation: Penalty or Premium of Women's Education on Partner's Earnings
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	(1)		(2)		(3)		(4)	
White	0.219*** (0.037)	0.161*** (0.029)	0.222*** (0.037)	0.160*** (0.029)	0.167*** (0.101)	0.118* (0.048)	0.087* (0.102)	0.062 (0.065)
	1979	2009	1979	2009	1979	2009	1979	2009
Metro	0.105*** (0.072)	0.121*** (0.006)	0.103*** (0.007)	0.121*** (0.006)	0.089*** (0.017)	0.058** (0.024)	0.124*** (0.018)	0.101*** (0.017)
Women's Education								
12th Grade or less			0.056** (0.040)	-0.075*** (0.027)			-0.133 (0.192)	-0.314** (0.133)
High school or GED			0.102** (0.045)	-0.078*** (0.022)			-0.139 (0.178)	-0.033 (0.089)
Associate and Some college			0.137*** (0.021)	-0.053** (0.022)			-0.529* (0.273)	-0.201*** (0.073)
Bachelor Degree			0.102** (0.045)	0.007* (0.023)			-0.212* (0.177)	-0.105 (0.072)
Graduate Degree			0.074* (0.054)	0.014* (0.026)			-0.415 (0.301)	-0.157* (0.089)
# of children under 5					-0.016* (0.021)	-0.024* (0.033)		
Children 13-30					0.011** (0.005)	-0.002** (0.001)		
# of couples					0.024 (0.045)	0.134* (0.096)		
Homebase Worker					-1.129*** (0.091)	-0.655*** (0.103)		
Adjusted R²	0.183	0.202	0.185	1.980	0.178	0.157	0.189	0.143

level of education show that very few women pursue graduate education. In 2009, only when wife have a bachelor degree, she will contribute positively to her husband's earnings. Uneducated wives give husband's penalty in terms of earnings. Moreover, in 2009, the magnitude of the positive effect women has on husband is significantly less than 1979. We concluded that in today's society, more people have higher levels of education, therefore less effective to have certain level of education than it was in the 70s.

Regression (3) is an extension of Regression (1) with additional variable such as number of children, extended family and home based worker. Number of children under 5 years old shows negative effect for both years. This is because in general young children require more time from parents to take care of them, in some family, parents might have to leave from full time worker to part times, which decreases the average wage earnings. However, in 2009, childcare expenses is more expensive than it was in 1979, therefore, there is a larger magnitude of negative effect. Number of children between ages 13-30 gives different results. In 1979, there was a positive effect to husband's earnings. Because back then older children usually assume the role of parents in a family, they take care or younger siblings, also many of them start working in a young age to help to support the family financially. Conversely, in 2009, this variable gives a negative correlation. This is because in today's society, older siblings have to go to school therefore not able to babysit their younger brothers or sister or work to support family. Plus, the increase of education expenses, more children in a family in this age group means higher expense for the family. Number of couples in a household is a proxy variable for extended family. Both years have positive effect on husband's earnings. In 2009, the larger coefficient suggests the increasing trend of extended family contribute positively to husband's earnings by helping to take care of children by grandparents. Home based worker have negative effects on earnings, but 2009 has a smaller magnitude of negative impact. This is because in the 70's working from home usually means the individual is a part time worker, which generally has a lower wage. However, as technology advance, working from home do not necessarily means the person is a part time worker, many of the home based workers are full time workers. Therefore, these home based workers earn the same amount as people who travel to office.

Regression (4) test the effect of female partner's education has on her partner's earnings in a cohabitating relationship. Most coefficients are negative and not significant. We concluded that women's education does not affect male partner's earnings. The dynamic in a cohabitating relationship is very different the marriage and it is hard to explain. This mixed signal could be explained by that in some cohabitating households, female partner is the provider, and in some households, male partner is the provider. Also, because in a cohabitating relationship, partners still remain separate financial accounts, and they do not receive any government benefits such as married couples do.

CONCLUSION

Using the 1979 and 2009 Current Population Survey data, this paper examined the effect of wife's educational attainment has on her husband' earnings along with other exogenous variables such as living with extended family and work from home. Our results show that wife's education has not been as a significant predictor of the husband's earnings as it was thirty years ago. Yet, a man living with extended family and with highly educated wife is likely to earn more in the labor market than his counterparts, which confirmed with previous study on male marriage premium. We believe that the productivity theory is what is causing the smaller positive coefficient of women's educational attainment has on her husband's earnings. Because higher education tend to suggests demanding jobs that will take time away from home, therefore defeat the purpose of household specialization. However, the mostly negative and insignificant result in cohabitation led us to believe that in a cohabitating relationship, female partner's educational attainment has no effect on her male partner's earnings because both party still remain independent at financial and there are none government benefits for cohabitating couples.

Limitations such as lack of data on extended families and cohabitation restricted us from further investigation at the current time.

APPENDICES

Table 1: Description of Variables

Variable	Description
year	Survey year
serial	Household serial number
numprec	Number of person records following
region	Region and division
metro	Metropolitan central city status
hhincome	Total household income
phone	Telephone availability
ncouple	Number of couples in household
nmothers	Number of mothers in household
nfathers	Number of fathers in household
nchild	Number of own children in household
perwt	Person weight
nchlt5	Number of own children under age 5 in household
eldch	Age of eldest own child in household
relate	Relationship to household head
age	Age
sex	Sex
race	Race
marst	Marital status
citizen	Citizenship status
hispan	Hispanic origin
educ	Educational attainment recode
wkswork1	Weeks worked last year
uhrswork	Usual hours worked per week (last year)
incwage	Wage and salary income
earnweek	Weekly earnings
hourwage	Hourly wage
fullpart	Worked full or part time
classwkr	Class of worker
labforce	Labor force status
occ	Occupation
ind	Industry
kidcare	Received child care assistance
Exp2	Experience square
Mage	Men Age
Wifeschool	Wife Education
Menschool	Men Education
Homebase	Home Base worker

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