GENDER INEQUALITY IN OVERWORKING AMERICA

by Youngjoo Cha

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Abstract: This dissertation examines the effect of long work hours ("overwork") on gender inequality by examining how it affects men and women's labor market outcomes. Long work hours have become increasingly prevalent in many advanced industrial societies and established workplace norm. By working long hours, employees demonstrate professional competence and work commitment, especially in many professional and managerial jobs. By adopting a theoretical perspective emphasizing gendered organizations and institutions, I argue that although seemingly gender neutral, the overwork norm disadvantages many women, who have less time available to do paid labor because they are expected to do more housework and perform most of the caregiving responsibilities. To demonstrate this argument, I conduct three empirical analyses, which apply quantitative methods to longitudinal data drawn from the Survey of Income and Program Participation and data from the Current Population Surveys, conducted by the U.S. Census Bureau. The results show that overwork increases gender inequality in three important labor market outcomes: occupational mobility, employment, and earnings. The project has broader theoretical implications for the study of gender, social inequality, and organizations.

BIOGRAPHICAL SKETCH

Youngjoo Cha came to Cornell University in 2003, after receiving her M.A. in Sociology from Yonsei University, Seoul, Korea. She also received a B.A. in Sociology and English Language and Literature from the same university. Her research and teaching interests include gender, social inequality, work, organizations, and quantitative methods. In the fall, Youngjoo will join the Sociology Department at Indiana University-Bloomington as an Assistant Professor.

To my parents, Cha Sang Ho and Kim Heay Kyung

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CHAPTER 1

INTRODUCTION

Working long hours has been increasingly common in the United States. Schor (1993) found that the average paid work hours in the U.S. increased by 163 hours per year between 1970 and 1990. This trend raised concerns in sociology and related fields due to the well-known negative consequences of overwork on health, family welfare, and leisure time (Bunting 2004; Crouter et al. 2001; Hochschild 1997; Jacobs and Gerson 2004; Schor 1993; Shields 1999; Spurgeon, Harrington, and Cooper 1997). For example, long hours of work are known to increase the risk of depression, anxiety, high blood pressure and cardiovascular disorders (e.g, Shields 1999; Spurgeon et al. 1997). They are also associated with a decrease in time spent with family and negative parent-adolescent relationships (e.g., Crouter et al. 2001).

Gender scholars also have an interest in the trend toward long work hours, due in part to the persistence of a substantial gender gap in paid work (Clarkberg and Moen 2001; Epstein et al. 1999; Gornick 1999; Hochschild 1997; Hochschild and Machung 2003 [1989]; Jacobs and Gerson 2004). Among all workers in 2000, 26.5 percent of men worked 50 hours or more per week, compared with 11.3 percent of women (Jacobs and Gerson 2004). The gender gap in work hours leads to an earnings gap between men and women mainly for two reasons: (1) more women than men tend to work part-time positions, which results in the gender gap in weekly or monthly earnings (even when the same hourly rates are applied to both full-time and part-time work); (2) women tend to be under-represented in occupations where the average work hours are longer (e.g., professional occupations), but per hour earnings tend to be higher in these occupations (Jacobs and Gerson 2004).

Among various approaches that attempt to explain the overwork phenomenon, the most widely accepted is to understand overwork as an established norm in the workplace. In many high-paying professional and managerial jobs, work hours are considered a proxy for workers' commitment or their professional competence. Workers are assessed by their "face time," such that those who are present at work for long hours are perceived to be more committed, thus rewarded by higher income and more frequent promotions, while those who are present at work fewer hours are penalized for being less committed (Blair-Loy 2003; Epstein et al. 1999; Legault and Chasserio 2003; Sharone 2004).

In this dissertation, I argue that the norm of overwork systematically disadvantages women, who are less likely to work long hours because of the expectation that they will take primary responsibility for household labor with minimal spousal support (Hochschild and Machung 2003 [1989]). Although more than 60 percent of women are in the labor force (Bureau of Labor Statistics 2006a), the structure of the workplace still assumes the "separate spheres" arrangement, consisting of breadwinning men and homemaking women (Acker 1990; Hochschild 1997; Hochschild and Machung 2003 [1989]; Williams 2000). Under this assumption, the "ideal workers" are considered those who fully devote their time to work, free from other family or community obligations, as if they have full-time housewives who take care of them (Williams 2000). However, now that 78 percent of all married workers are in dual-earner households, this assumption is no longer accurate (Bond, Galinsky, and Swanberg 1998). Furthermore, the mismatch between the gendered assumption of the workplace and the reality of a changing workforce can systematically disadvantage women, who are still typically expected to do the majority of housework and childcare, even when they are employed full-time (Hochschild and Machung 2003 [1989]; Stone 2007).

By applying the gendered notion of the ideal worker, the overwork phenomenon results in negative career consequences for women in at least two important ways. First, one way is through a workplace "push factor," that is, while the workplace penalizes workers who are less likely to overwork and rewards workers who work long hours, the expectation of performing the larger share of the housework and having primary responsibility for childcare constricts women's ability to work long hours. Under this system, women are likely to be evaluated poorly and disadvantaged in promotions and wage growth, and facing these barriers, they often experience difficulties in staying in the labor force or advancing to higher positions of organizations which offer greater earnings and other valuable resources (Epstein et al. 1999; Hochschild and Machung 2003 [1989]; Stone 2007; Williams 2000).

A more subtle, but also important way that the overwork phenomenon can disadvantage married women is through their husbands' long hours of work. When men spend more hours at work, their contribution to household labor decreases, which in turn further increases women's share of housework (Bunting 2004; Stone 2007). This decreases women's availability for overwork and may even make it difficult for them to maintain their careers. As highlighted by Jacobs and Gerson (2004), the increased work hours have a greater impact on dual earner households by causing work-family conflict to a greater extent, and thus the family should be considered as a key factor in fully understanding the consequences of long work hours. Therefore, focusing on the effect of spousal overwork, this dissertation seeks to understand the effect of overwork by considering the dynamics within the family and demonstrate how the family's solution to resolving the conflict can result in disadvantageous outcomes for women.

To demonstrate these two paths, I conduct three empirical analyses that show the consequences of overwork on three important dimensions of gender inequality:

occupational sex segregation, earnings, and employment. The first two analyses focus on the first path, by which the overwork norm directly affects women in occupations where the overwork norm tends to be the strongest. The third analysis focuses an indirect path, by which the overwork norm increases the gender gap in employment through the spouse's long work hours. Each analysis addresses broader theoretical questions of how gendered assumptions about a worker and workplace and the organization of workplace and family reinforce current inequality system and stall progress toward more gender egalitarian society. These arguments are discussed in Chapter 2.

In Chapter 3, I describe the trend of the overwork phenomenon to establish the fact that long work hours have become more common, especially among professional and managerial workers. I next explore characteristics of those who work long hours (50 hours or more per week). In so doing, I examine spousal characteristics (income, work hours, and occupations) to establish that there is a great divide of spousal support between men and women who overwork.

In Chapter 4, I demonstrate that long work hours reinforce occupational sex segregation. I first show that, at the aggregate level, occupations in which long work hours are the norm tend also to be those in which women's representation is the lowest. I then turn to an individual level analysis to investigate one possible source of the correlation between overwork and segregation, specifically, that women are more likely than men to leave occupations in which overwork is the norm. These two sets of results help to evaluate whether overwork is a gendered norm that contributes to occupational sex segregation.

In Chapter 5, I show that overwork contributes to increasing gender earnings inequality. I first examine the earnings consequences of gender-typed occupational mobility driven by overwork. In particular, I examine whether the earnings of women

who previously left occupations because of overwork decrease in the next time point. In this way, I can determine how much wage loss is generated by mobility that results from overwork. In the second analysis, I engage an important puzzle of why convergence in earnings between men and women has slowed. I investigate whether the increasing compensations for overwork contribute to widening the gender earnings gap. To this end, I employ a wage decomposition method, which allows me to formally test whether the slowdown of convergence in the gender earnings gap is in part explained by the increased price for overwork.

In Chapter 6, I extend the analysis to the interaction between the workplace and the family. I emphasize the role of family that amplifies the effect of overwork on gender inequality. Specifically, I focus on the effect of spousal overwork on the likelihood of job quits among men and women in dual-earner households. Although long work hours can cause conflict between work and family for both men and women, men's careers are more likely to be prioritized, while women are assumed to be primarily responsible for household labor. Because of these prevailing gender norms, I expect that spousal overwork increases women's likelihood of quitting, but it does not increase men's likelihood of quitting. In showing this, I advance the argument that overwork reinforces the separate spheres arrangement by reintroducing the traditional gender arrangement to many formerly dual-earner households.

Lastly, in chapter 7, I draw conclusions from the findings of each of analysis and discuss the broader implications for theory and research.

CHAPTER 2

THEORY: GENDER AND OVERWORK

Work hours have a normative aspect. Those who work long hours are considered more productive and committed (Epstein et al. 1999; Fried 1998; Hochschild 1997), and thus are rewarded with upward mobility, financial security, and recognition from colleagues (Blair-Loy 2003; Legault and Chasserio 2003; Sharone 2004). Many employers are even willing to pay a wage premium to employees who work long hours (Altonji and Paxson 1986; Altonji and Paxson 1988). In contrast, when employees violate this norm, they are perceived as less committed to their careers, are disadvantaged in terms of promotion and reputation, and are also evaluated more poorly by their colleagues. This overwork norm is especially strong in the U.S. workforce (Jacobs, Gerson, and Gornick 2004), and it is assumed that the norm is inevitable or inherent in the job, but prior studies show that the work hour norm substantially varies across countries (Perlow 2001). I argue that the overwork norm is an important source of gender inequality in the U.S. labor market because it is built upon structurally disadvantageous conditions for women.

Workers' ability to devote their time to paid labor largely depends on the existence of someone who can take care of their non-paid work needs. For example, Van Echtel et al. (2009) show that both men and women are less likely to work overtime when they have more childcare and housework responsibilities. For this reason, Hochschild and Machung (2003 [1989]) argue that the necessary condition of working long hours is to have "backstage support" (254), which takes care of workers' family obligations and other needs. Earlier, Acker (1990) argued that the notion of workers is gendered, by uncovering the underlying assumption existing in the workplace that a "worker is the male worker whose life centers on his full-time, life-

long job, while his wife or another woman takes care of his personal needs and his children" (149). Similarly, the contemporary notion of the "ideal worker" is also built upon the male breadwinner model (Williams 2000).

Unlike the idealized image of the "worker," many workers in reality experience conflict between work and family, as the proportion of dual earner households has dramatically increased (Hochschild and Machung 2003 [1989]; Jacobs and Gerson 2001). Applying such an unrealistic assumption sets the stage for the oft-noted "work-family" conflict for many contemporary families in today's labor market (Clarkberg and Moen 2001; Hochschild 1997; Hochschild and Machung 2003 [1989]; Jacobs and Gerson 2004; Moen and Yu 2000).

The work-family conflict can, theoretically, affect both men and women, but a prevailing gender belief differentiates the ability of men and women to work long hours, and makes it far more likely for women than men to change their careers when dual earner couples face with work-family conflicts. Gender beliefs prescribe what behaviors are appropriate for men and women and make individual men and women accountable for enacting culturally-defined appropriately gendered behaviors (West and Zimmerman 1987).

Although a majority of the contemporary workforce is from dual-earner families, women are still expected to be do more housework and be the primary caregiver in most families (Crittenden 2002; Hochschild and Machung 2003 [1989]; Stone 2007). Even when a woman is on as equally demanding a career track as her husband, familial obligations are widely believed to be her responsibility (Berk 1985; Crittenden 2002; West and Zimmerman 1987). For example, women are still expected to do more housework (Brines 1994), do a larger share of the day-to-day aspects of childcare (Galinsky 1999; Maume 2008; Yeung et al. 2001), and make most of the major decisions about childrearing and other familial obligations (Crittenden 2002;

Hays 1998; Hochschild and Machung 2003 [1989]). Working mothers are often viewed negatively when their children have problems at school, or when housework is not done, while this social sanction does not apply to working fathers (Hochschild and Machung 2003 [1989]; Risman 1998). Because of the gendered expectations about caregiving, contemporary women spend almost the same amount of time with their children as several decades ago, despite the increased time they spend in paid labor (Bianchi 2000; Bryant and Zick 1996).

The normative conception about breadwinning also affects women's careers negatively. Despite the increased numbers of dual-earner families, the expectation of male-breadwinning remains dominant ideology in most families (Hochschild and Machung 2003 [1989]; Potuchek 1997; Stone 2007; Townsend 2002), and those men who fail to maintain primary breadwinner status are often seen as less successful and are less respected by their family, friends, and neighbors (Potuchek 1997; Schwartz 1994; Townsend 2002). Also, the normative expectation that emphasizes the male-partners' breadwinning status leads many dual-earner couples to resolve work-family conflicts in a way that they prioritize the man's careers even when the woman's job brings as much income to the family as the man's job (Hochschild and Machung 2003 [1989]; Stone 2007).

Men have increased their engagement in family life, compared to men several decades ago (Bianchi 2000). However, perhaps because of this gendered expectation operating within the family, their contributions to childcare and housework are still limited. For example, research shows that the increase of men's contributions to childrearing is mostly on weekends rather than during the work week (Galinsky 1999; Yeung et al. 2001). Even when men ideologically support their wives' paid work, the support often does not lead to the substantive contributions to childcare and

housework because of their own workplace that also expects them to work long hours (Hochschild and Machung 2003 [1989]; Stone 2007).

In summary, given the gender beliefs operating within the family, the norm of overwork assumes the particular organization of paid work and unpaid household labor, in which men are primarily engaged in paid labor, and women are responsible for unpaid household labor. Under this assumption, women, who are in the structural positions that limit their availability for paid work, are more likely to be disadvantaged by the overwork norm. Women have less time for paid work because they are under the normative expectation to be the ideal caregivers, which requires constant presence for the family members. They are also less likely than their male counterparts to receive spousal support for their paid work, which is a critical condition of being the "ideal worker." Therefore, I expect that overwork result in negative career outcomes for women in today's labor market.

Overwork and the Motherhood Effect

The expectation that women do more housework, a tendency to prioritize male partners' careers, cognitive bias that stereotypes mothers, and childless women as "potential mother," (Williams 2003) apply to both mothers and childless women, but I expect a more dramatic gender effect among workers who have children. While having a job constitutes the core ideology of fatherhood, constant availability for the children is a core component of ideal motherhood (Hays 1998; Townsend 2002). Furthermore, while the workplace increasingly demands workers to fully devote their time to work, the norm of parenting also entails increasingly more intensive care than in the past (Hays 1998; Lareau 2003). Hays (1998) describes today's working mothers as individuals who are expected to fulfill two "contradictory cultural images of

mothers who selflessly nurture their children and businessmen who selfishly compete in the paid labor force" (3).

Research also suggests that women with children may be penalized more than other workers for not being at work. Correll, Benard, and Paik (2007) found that mothers' presence and punctuality are more harshly scrutinized. In their laboratory study, the participants allowed mothers fewer days of being late or leaving work early to meet the hiring standard, compared to childless women or fathers. This is because people often associate women's absences with their childcare responsibility and maternal status, which are believed to be in conflict with the "ideal worker" image. Similarly, while many women pursue both their careers and family life, they are often perceived as either exclusively work-oriented or family-oriented (Garey 1999). This categorization assigns more women to the family-oriented category than are actually in it. While this assumption also applies to childless women, it is activated more strongly for mothers because caregiving image is more salient for mothers, which results in biased estimates of their ability and commitment (Correll et al. 2007).

While mothers are more likely to be penalized for working fewer hours than other workers, research also suggests that mothers could still be penalized even if they work long hours (Heilman 2001; Rudman and Glick 2001). Rudman and Glick (2001) found that women with achievement-oriented qualities tend to be seen as "selfish" and "interpersonally hostile," and thus are evaluated as less suitable for managerial positions. A similar bias may operate for mothers who work long hours. Women with children are often expected to be more caring and communal, while overwork is an achievement-oriented behavior (Cuddy, Fiske, and Glick 2004; Ridgeway and Correll 2004). Deviant from this expectation, overworking mothers may be perceived negatively.

In summary, mothers who overwork are more likely to experience conflict because of the expectations to fulfill the "ideal mothers" and "ideal worker" roles at the same time. The cultural ideologies of these titles are based on the separate spheres assumption, and thus, both are structurally difficult to earn simultaneously. Stone (2007) notes that in the workplace, today's working mothers are expected to make their professional decisions without considering their caregiving responsibilities, and in the family, they are expected to perform "intensive mothering" (Hays 1998:6), as if they do not have paid jobs. While mothers are situated in two conflicting norms, the expectation for women with children to be good mothers is much stronger than the expectation to be good workers. Penalties can remain even when working mothers behave like the ideal worker, for this reason. All of these factors place more pressure on women to leave the labor force facing work-family conflicts and discriminatory work environment.

Despite the insights into the gendered aspects of overwork, previous studies have not provided direct evidence to show the negative effects of overwork on women's career outcomes. In this dissertation, I show how overwork contributes to gender inequality in three important ways: occupational sex segregation, earnings, and employment. Below, I discuss each outcome in more details.

Overwork and Occupational Sex Segregation

Despite the entrance of increasing numbers of women into traditionally male-dominated occupations, occupational sex segregation remains a persistent feature of the American labor market (Charles and Grusky 2004; Petersen and Morgan 1995; Reskin 1993; Weeden 2004). Men and women tend to hold in different types of jobs (Charles and Grusky 2004; Jacobs 1989; Petersen and Morgan 1995; Reskin and Hartmann 1986; Reskin and Roos 1990). The jobs that men typically hold pay higher

earnings and offer better access to other important labor market resources, such as authority and power, while the jobs typically held by women are less valued in the labor market (Jacobs 1992; Petersen and Morgan 1995; Reskin and Roos 1990). For this reason, occupational sex segregation has been considered an important source of gender inequality. Indeed, Petersen and Morgan (1995) found that about 64 percent of the gender wage gap is explained solely by occupational sex segregation. While many scholars have attempted to identify the root causes of occupational sex segregation, our understanding of its underlying mechanisms still remains incomplete. In this dissertation, I argue that long work hours have a different impact on mobility decisions of men and women in male-dominated occupations and contribute to occupational sex segregation at the structural level.

While long work hours may constrain availability for paid work of workers across occupation, prior research suggests that the gendered nature of overwork is more prominent in male-dominated occupations (Committee on Maximizing the Potential of Women in Academic Science and Engineering 2006; Roth 2003; Stone 2007; Xie and Shauman 2003). Roth (2006) found that on Wall Street, the breadwinning man-homemaking woman arrangement is a dominant family type, and women on Wall Street reported the difficulties of competing with their male counterparts, who have disproportionately more spousal support and more time availability for paid work. Similarly, women in many high-level positions in science and engineering have also reported that competing with men who can spend long hours at work is one of the major difficulties they face in these fields (Committee on Maximizing the Potential of Women in Academic Science and Engineering 2006; Xie and Shauman 2003). The overtime hours are also higher among blue-collar workers, such as production workers and vehicle operators, than service or clerical workers (Carr 1986; Hetrick 2000; Mansfield et al. 1991). In these occupations, the norm that

all workers behave like male workers is stronger, and when workers do not meet this expectation, it oftentimes creates a workplace atmosphere that does not favor workers who are deviant from this expectation (Williams 2000). Perhaps because of the combination of unequal availability for overwork of men and women and the stronger pressure to overwork in male-dominated occupations, Maume and Houston (2001) found that women in male-dominated occupations are more likely than women in more female-dominated ones to report work-family conflict, while gender composition of the workforce does not affect men's perception of work-family conflict.

To resolve the work-family conflict, women in male-dominated fields often look for solutions such as reducing their work hours or using other flexible work arrangements, if available. However, the strong norm about work hours in male-dominated occupations inhibits the utilization of these flexible arrangements. Women may choose the "mommy track," i.e., work part-time, and change jobs to ones that require less travel, as solutions to work-family conflict (Crittenden 2002; Gerson 1986; Hochschild 1997; Jacobs and Gerson 2004; Stone 2007). However, women who work part-time are often no longer taken seriously because it signals that they no longer conform the norm of the ideal-typical male worker (Bunting 2004), and are perceived as "occupational deviants" (Epstein et al. 1999:25). In many professional occupations, employers or bosses often refuse women's request to work part-time (Stone 2007).

Certainly, male-dominated occupations tend to offer more flexibility in work schedules and locations than female-dominated occupations do, which should help decrease work-family conflicts (Glass and Camarigg 1992; Weeden 2005). However, flexible work policies are often offered only in a limited number of situations, and furthermore, workers are discouraged to use these policies because of the stronger normative pressure of overwork in male-dominated occupations (Epstein et al. 1999;

Jacobs and Gerson 2004; Maume and Bellas 2001). For example, Roth (2003) notes that even when work-family policies are implemented in many Wall Street firms, they are often only limited to childbearing, but are not applied to childcare. Flexible work policies are used by women in clerical occupations more frequently because workers in professional occupations are afraid of being penalized for using these policies (Epstein et al. 1999; Fried 1998). In the absence of formal policies, men tend to use flexible schedules more than women do (Weeden 2005). This may in part because men tend to be the jobs that allow more autonomy in schedules, but also because women's presence is more strictly scrutinized at work, and so they use flexible hours less frequently than men.

Based on this discussion, I expect that women in male-dominated occupations are more likely to leave male-dominated occupations because of the strong normative expectation of working excessive hours and the greater penalty for deviating from this norm. Women may move to more female-dominated occupations, where the norm of working long hours is weaker, or leave the labor force entirely. In contrast, I do not expect long work hours to affect men's careers in the same ways because, although they face conflict between work and family, they do not bear the same pressure to be the primary caregiver. Because the key factor that generates the gendered consequence of overwork in male-dominated occupations is caregiving responsibility, I expect that childless women will not be affected by long work hours.[1]

[1] Childless women are free from the responsibilities of childrearing, but they may still be expected to perform primary role in elder care (e.g., Kramer and Kipnis 1995). However, the proportion of women involved with elder care is relatively small, compared to childcare, and thus I do not expect that elder care drive the caregiving effect.

Overwork and Gender Earnings Inequality

Overwork may also help to maintain gender inequality in earnings. I expect that not only does overwork increase the attrition of women from male-dominated occupations, but this mobility also result in increasing gender earnings inequality. The obvious way is that fewer work hours result in lower weekly, monthly, or annual earnings, even if the same hourly rates are applied. The other way is that per hour earnings tend to be higher in jobs where average work hours are longer. Prior studies have shown that the average wages are lower in occupations with higher women's representation (Baron and Newman 1990; Cohen and Huffman 2003; England 1992; England et al. 1988; Kilbourne et al. 1994). Therefore, one may expect that moving from male-dominated to female-dominated occupations results in a decrease in earnings through the second way. Although prior research has shown that occupational sex segregation is a major source of the gender earnings gap (e.g., Petersen and Morgan 1995), it has not been shown how much of this type of mobility is motivated by overwork and what the earnings consequence generated by this mobility is. Therefore, once I establish that the prevalence of overwork in male-dominated occupations results in disproportionately higher rates of women's attrition, I also expect to find that this mobility generates earnings loss.

While mobility from male-dominated to female-dominated occupations driven by overwork may result in a decrease in earnings for both men and women, I expect earnings loss to be greater for women than for men. Prior research suggests that the wage penalty associated with being in a job with a higher proportion of women is greater for women than for men (Aiba and Wharton 2001; Budig 2002; Cohen and Huffman 2003; Huffman, Velasco, and Bielby 1996). The gender wage gap also tends to be larger in female-dominated occupations than in male-dominated occupations (Cohen and Huffman 2003). Scholars tend to attribute this to the "glass escalator"

effect, which describes structural advantages that men experience in female-dominated occupations. While women in male-dominated jobs tend to experience lack of social support and the exclusion from important social network (Kanter 1977), this "token effect" does not apply to men in female-dominated occupations. On the contrary, men in female-dominated occupations often experience structural advantages in hiring and promotions, and receive better workplace support (Acker 1990; Taylor 2010; Williams 1989). Perhaps because of the relative advantages of men in female-dominated occupations, the wage penalty associated with female-dominated jobs often decreases or even disappears for men who work in female-dominated occupations (Aiba and Wharton 2001; Budig 2002).

Men who previously worked long hours in the male-dominated occupations may experience greater glass escalator effects because they have the reputation that they are committed workers. Furthermore, the reasons why these men move to female-dominated occupations may be different from their female counterparts, who tend to leave male-dominated occupations because they find it difficult to meet the workplace demand for overwork and the family demand for "intensive mothering" at the same time (Hays 1998). More men than women may change jobs for job-related reasons, instead of reconciling work and family, and job-related mobility tends to be positively associated with subsequent earnings in part because it improves employer-worker match (Bartel and Borjas 1981; Jovanovic 1979). Conversely, given that the ideal worker norm, those who change careers, reduce their work hours, take flexible schedules, or use family policies experience wage penalty (Epstein et al. 1999; Fried 1998; Glass and Noonan 2008). This suggests that women's mobility to female-dominated occupations may generate higher wage penalties, compared to that of men. Furthermore, even when women change their jobs for non-familial reasons, they may still suffer from employers' cognitive bias that leads employers to think their mobility

as a result of familial needs. This is because gender and motherhood status are strongly attached to female workers as status characteristics (Ridgeway and Correll 2004). For these reasons, I expect wage penalty associated with mobility to female-dominated occupations driven by overwork to be greater for women.

In the earnings chapter, I also evaluate the impact of overwork on the wage structure and gender earnings inequality at the aggregate level. I expect that the returns to overwork have increased. And if returns to overwork increase, I expect that overwork widens the gender earnings gap, given the substantial gender gap in work hours.

Increased work hours in more prestigious jobs may widen the earnings gap between overwokers and non-overworkers. Work hours tend to be longer in the higher status positions and in larger corporations, both of which tend to pay higher wages. Landers, Rebitzer, and Taylor (1996) found that in a large law firms, around 90 percent of partners say that long work hours are one of the important assessment criteria of determining one's promotion to the partner positions. In a study of a large corporation, Fried (1998) shows that although the company offers a family leave policy, upper-level managers rarely use it. Roth (2003) also confirms the detailed job-level segregation associated with work hours among investment bankers on Wall Street. Among top firms, women are substantially less represented in positions above the vice-president rank and jobs in corporate finance whereas they are over-represented in lower rank positions and jobs in equity research or public finance. In her sample, women's average weekly work hours are about 4 hours lower than their male peers. These studies suggest that this finer-level job segregation may be stratified by the extent to which the overwork norm is strong, and therefore, the "glass ceiling" effect may be explained by overwork.

The tendency of working long hours in these prestigious jobs has become more common because the international competition has increased and, as a result, individuals' perception about job security has decreased (Jacobs and Gerson 2004; Maume and Bellas 2001; Newman 1994; Schor 1993). In contrast, work hours decreased in many lower-income jobs over the past three decades (Jacobs and Gerson 2004). This suggests that the wage gap between overworkers and non-overworkers may have increased, as work hours in more prestigious jobs have increased.

Within jobs, employers and clients may be willing to pay higher wages for overworkers, all else being equal. Prior research suggests that employers, colleagues, and clients consider those who can be on call anytime more competent and easier to work with (Epstein et al. 1999; Hochschild 1997; Roth 2003). Under this assessment system, overworkers are more likely to be rewarded with more job opportunities and wage promotions and also be able to build a good reputation. In contrast, workers who provide fewer hours of "face-time" may suffer from lack of career opportunities and the wage penalty, and a reputation that they are less committed, which may affect wages in their subsequent jobs. This bifurcation has become stronger as competition increases especially with the market expansion to the global economy (Jacobs and Gerson 2004; Maume and Bellas 2001; Schor 1993).

Both the finer-level job segregation (overworkers are positioned in the jobs that tend to pay higher earnings), and within-job compensation (overworkers are preferred and rewarded better even within job level) suggest that the wage premium for overwork has increased over the years. I expect that increased pay for overwork widened the gender earnings gap. In Chapter 5, I demonstrate this empirically.

Showing the effect of overwork on gender earnings inequality may also help to address an important puzzle of why we see the "slow convergence" of the gender earnings gap in recent years. Many studies find that the closing the gender earnings

gap has slowed in the 1990s (e.g., Blau and Kahn 2006). As we will see, this stalled progress continues in 2000s. As noted by Blau, Brintton and Grusky (2006), the slowed progress may be due to the fact that gender inequality is deeply embedded in social institutions. Gendered institutions, such as the workplace and family, constantly create new sources of gender inequality in various forms (Acker 1990; Ridgeway 1997). I argue that overwork is one important countervailing factor that hinders wage convergence in recent years.

Spousal Overwork and Employment

So far, I examine the ways in which the overwork phenomenon can result in negative career consequences for women through their own overwork or the norm of overwork in their own workplace. However, overwork can affect women who themselves do not necessarily work long hours or are not in the occupation where the norm of overwork is strong. Overwork can negatively affect these women's careers through their spousal overwork.

As discussed earlier, facing work-family conflicts, men's careers are more likely to be prioritized, while women are assumed to be primarily responsible for household labor, even when earnings of men and women are equal (Becker and Moen 1999; Spain and Bianchi 1996). This normative expectation disproportionately increases the expectations for women's quitting. While men's quitting or going part-time is viewed negatively due to the expectation that men should financially support the family, women's quitting is often expected as a family strategy to reconcile work and family (Epstein et al. 1999; Hochschild and Machung 2003 [1989]; Townsend 2002). In addition, employed women are more socially sanctioned than employed men when housework remains unfinished or their children have problems at school (Brines 1994; Epstein et al. 1999; Hochschild and Machung 2003 [1989]). Women themselves

also feel more responsible for and guilty about their occasional absence from their family (Becker and Moen 1999; Crittenden 2002; Gerson 1986).

Overwork has a crossover effect as well. As men increase their work hours, this constrains their availability for caregiving responsibilities (Hochschild and Machung 2003 [1989]; Stone 2007). Further, they might expect more support from their wives for their own overwork, restricting their wives' availability for paid work even more. Legault and Chasserio's (2003) study of engineers and managers, for example, found that approximately 30 percent of male workers interviewed who experienced conflict between work and their family life believed that their wives should provide more support for their work. When faced with increased work hours, a normative expectation of men's and women's roles can be reinforced.

While women are more likely to change their careers as a familial solution, I expect that men are less likely to do so because breadwinning is a central component of men's masculine identity and the notion of fatherhood (Townsend 2002). Indeed, the ideology of men's breadwinning is so strong that even when wives' jobs bring in higher incomes to the family, men are still likely to perceive themselves as the primary provider (Gornick and Meyers 2003; Potuchek 1997; Stone 2007). Similarly, if men have spouses who have demanding jobs and thus spend more time at work than they do, it may threaten their masculine identity as the primary breadwinner in the family, and they often compensate by reaffirming traditional gender norms. Brines (1994) found that men who are economically dependent on their wives tend to do less housework as their dependency increases. Similarly, men whose spouses work long hours may also experience a threat to their masculinity, and therefore are less likely to quit their jobs, even though their quitting makes more sense economically. Deutsch and Saxton (1998) found that when women earn a higher rate of pay, their husbands tend to put in more hours so that they earn more than their wives. This shows that men,

under the workplace norm of overwork and expectation of being the primary breadwinner, may not quit in response to their wives' overwork. Therefore, I hypothesize that husbands' long work hours increase the likelihood of women's quitting, while wives' long work hours do not result in an increase in the likelihood of men's quitting.

The gendered effect of spousal overwork is likely to be exacerbated for women in professional and managerial occupations. Not only does the greater pressure of their own long work hours make it difficult for professional women to maintain their careers, but also overwork on the part of their spouses makes it even more difficult to maintain their careers compared to non-professional women. Because professional women are more likely to marry professional men, who are also under the pressure of the norm of overwork, professional women are even less likely to receive spousal support from their husbands (Stone 2007; Xie and Shauman 2003). Further, professional men may expect spousal support for their own overwork. For this reason, Roth (2006) suggests that the breadwinner-homemaker arrangement remains very common among workers on Wall Street. The ideology of "intensive mothering" is also more common among families of professional workers (Hays 1998; Lareau 2003). Laureau (2003) suggests that parenting in middle-class families consists of the "concerted cultivation" of children through organized leisure activities with intense parental involvement. With scarce spousal support and a more intensive form of parenting, professional women who have children may experience more difficulties in staying in the labor force than other women.

In contrast, professional men do not face the same pressure. When men have "decent jobs," their careers are even more likely to be prioritized over their wives' careers (Becker and Moen 1999; Hochschild and Machung 2003 [1989]; Kanter 1977; Pleck 1985). Stone (2007) found that women with professional husbands tend to defer

to the priority to their husbands' careers over theirs, even when their careers are equally high-achieving (Stone 2007). Pyke (1996) describes this prominence of the prioritization of professional men's careers as the "hegemony of the male career" to highlight the fact that the importance of these men's careers is not questioned by either themselves or their wives. Also, professional men's careers are frequently used as a rationale for their lower contributions to childcare or other housework, while working class men are more likely to be contested by their wives when they are less engaged in these activities. Therefore, it is less likely to see professional men quitting in response to their wives' overwork, compared to non-professional men.

Family income can differentiate the spousal overwork effect for professional and non-professional families. Because professional women are more likely to be in an economically affluent household, their quitting may not have a decisive impact on their family's financial situation. Stone (2006) notes that husbands' higher earnings are a necessary precondition that enables high achieving women leave their jobs. Gerson (1985) also found that young women who face difficulties in promotion are more likely to quit when they are married to men who have higher earning power. In contrast, non-professional women tend to experience more economic restrictions. When women's income is essential for family wages, their employment decisions may be restricted by this economic factor more than the normative pressure of being ideal caregivers. Also, since many workers in non-professional jobs are at higher risk of unemployment (Jacobs and Gerson 2004), this can also limit the ability for non-professional women to quit. Therefore, I expect that spousal overwork has a greater effect on the odds of quitting for professional women than for non-professional women, while professional men are less likely to be affected by their wives' overwork than non-professional men.

In summary, building upon the separate spheres assumption, the overwork norm disadvantages many women, who have less time available to do paid labor because they are expected to do more housework and perform most of the caregiving responsibilities. Based on this theoretical approach, I explore a way in which overwork affects women's careers through not only their own overwork but also through that of their husbands. In next chapters, I will empirically demonstrate the gendered consequences of overwork.

CHAPTER 3

WHO WORKS LONG HOURS?

Who overworks? Previous studies indicate that although long work hours have increased over the past few decades (Jacobs and Gerson 2004; Schor 1993), this tendency has not applied to all workers. For example, Jacobs and Gerson (2004) suggest that the overwork phenomenon is more frequent among workers with prestigious jobs, whereas in the lower-income jobs, "underwork" (working fewer hours than desired) is more common because workers cannot find full-time jobs. Furthermore, the division of those who work long hours and those who do not are also closely related with gender (Epstein et al. 1999; Hochschild 1997). The prevalence of long work hours is based on the male-breadwinning model, and so women, especially women with children, are less likely to work long hours. In this chapter, I examine the trend of work hours to show that overwork is increasingly common, and this trend is especially prominent among professional and managerial workers. I also explore characteristics of overworkers, including those of overworkers' spouses, to establish the gender difference in conditions under which men and women overwork.

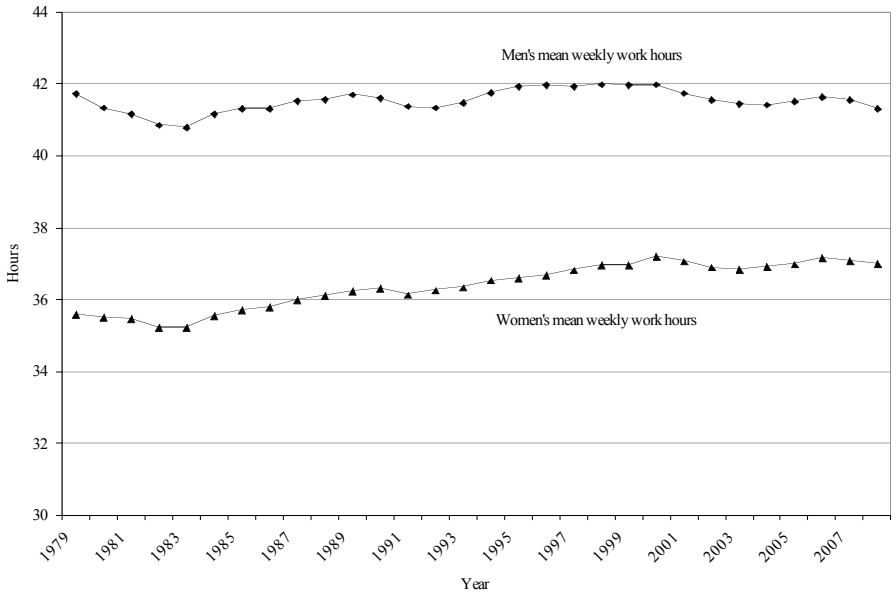
Data

I utilize two data sources to describe the trend of overwork and describe the characteristics of overworkers. I use data from the Merged Outgoing Rotation Groups of the Current Population Survey (CPS) to describe the trend of average work hours and the proportion of those who work 50 hour more hours per week. CPS offers a wide range of years (1979 to 2008), which is effective in showing longer term trends. I then use two years' data (1996 and 2001) from Survey of Income and Program Participation (SIPP) to describe characteristics of overworkers. The SIPP offers

important information such as work experience measures and spousal characteristics that are not asked in the CPS data. These two data sources are used for the empirical analyses in later chapters, in which I describe them in more detail (see data sections in Chapters 4 to 6).

Trend of Overwork

Figure 3.1 shows the trend of the average of weekly work hours for men and women. Women's average weekly work hours increased throughout the years from 35.6 hours in 1979 to 37.0 in 2008. Men's average weekly work hours, by contrast, remain steady in all years: 41.7 in 1979 and 41.3 in 2008. Because women's average work hours have increased while those of men's did not change, the overall gender gap narrowed slightly.

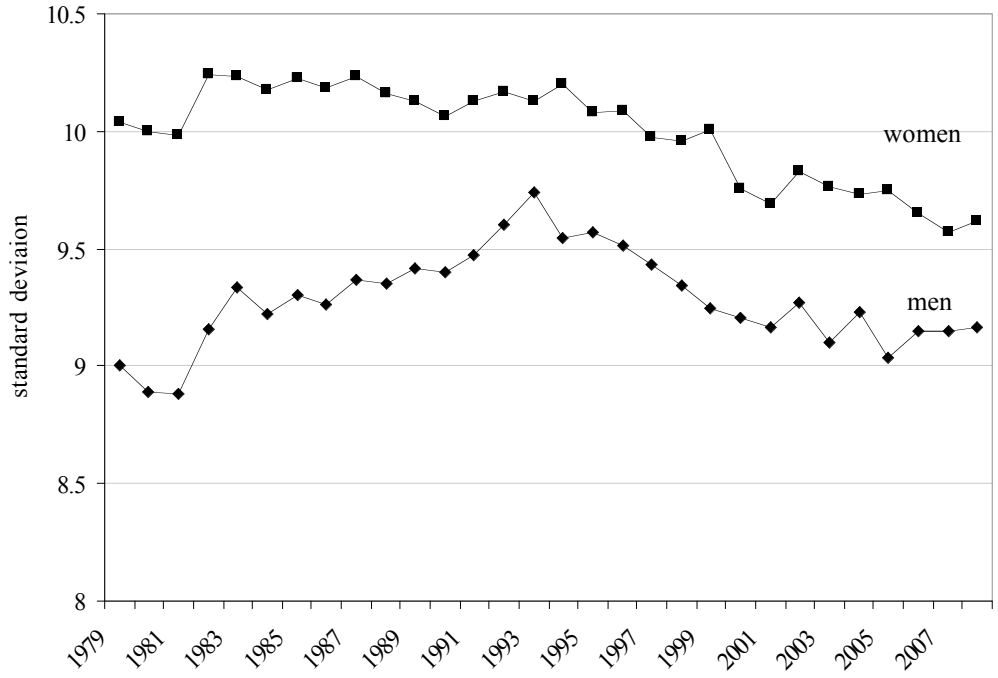


Source: Current Population Survey, Merged Outgoing Rotation Group, 1979-2008

Figure 3.1. The average weekly work hours of men and women

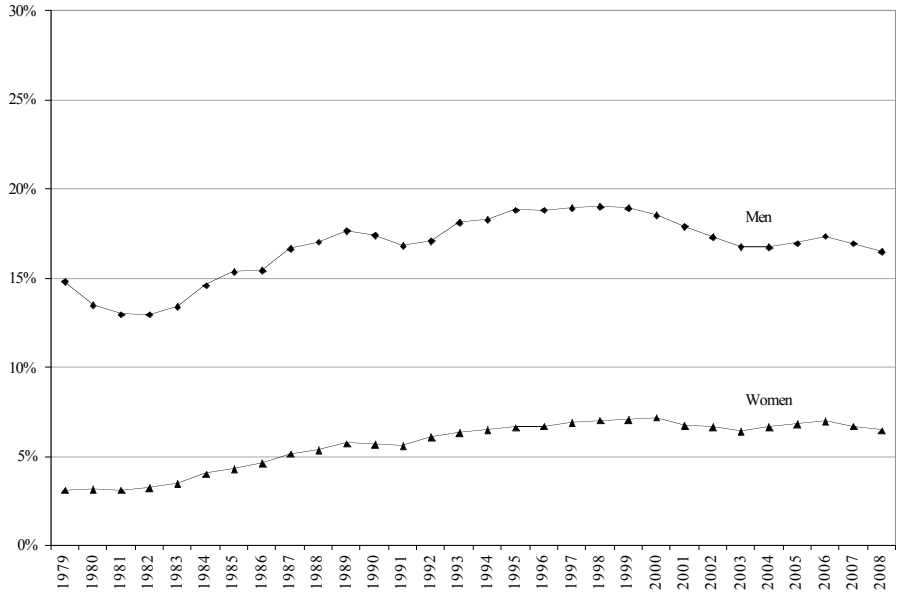
The distribution of work hours, however, has changed dramatically (see Figure 3.2). Consistent with Jacobs and Gerson (2004), men's standard deviation in work

hours increased in earlier years, perhaps as a consequence of restructuring. However, more recent years (after mid 1990s) show a decrease in standard deviation of weekly work hours, indicating that inequality between the top and the bottom of the distribution in work hours decreased. Also, Figure 3.2 shows a clear gender difference in distributional changes of work hours. Unlike men, the standard deviation for women decreases throughout the years, reflecting the fact that the proportion of women working full-time hours increased. Although the divergent pattern of work hours has weakened in recent years, the distribution shows more changes than are shown in average work hours. Below, I examine the changes at the top and at the bottom of the work hour distribution more closely.



Source: Current Population Survey, Merged Outgoing Rotation Group, 1979-2008

Figure 3.2. The standard deviation of weekly work hours



Source: Current Population Survey, Merged Outgoing Rotation Group, 1979-2008

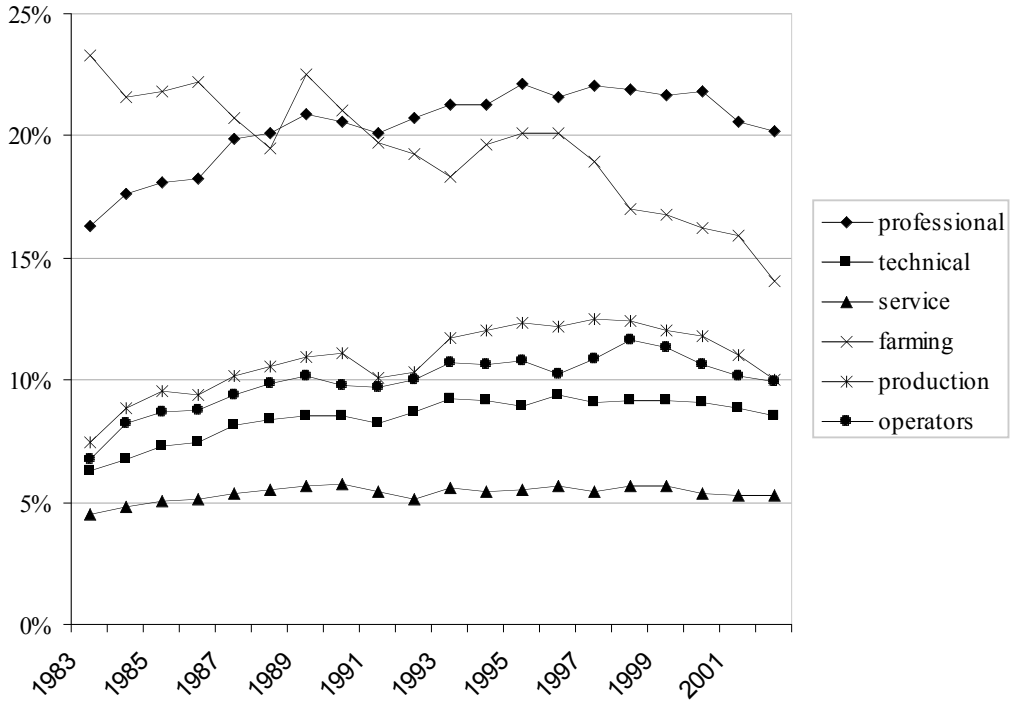
Figure 3.3. The percent of workers whose weekly work hours 50 hours or more

Figure 3.3 examines the gender gap in the percentage of those who work 50 hours or more per week, which represents the group of workers who are at the top of the work hour distribution. In 1979, 14.8 percent men worked 50 hours or more; by the late 1990s, the percent reached its peak to 19 percent; by 2000s, the percent of overworking men decreased to 16.5 percent. Despite the decrease of overworking men in 2000s, the longer term pattern indicates that percentage of overworkers increased. Women show a similar pattern, although fewer women worked 50 hours or more: 3.1 percent of women in 1979 worked 50 hours or more, 7.1 percent in 2000, and 6.4 percent in 2008. It shows that while the percent of overworkers increased over the years both for men and women, the gender gap in the percent of overworkers remained substantial. The size of the gap increased during the 1990s and decreased in 2000s, remaining stable overall. The gender difference in the percentage of overworkers was

11.7 percentage points in 1979, and it remained steady, as a 12.1 percentage point difference in 2008 indicates.

A supplementary analysis (not shown) suggests that the decline of the gender gap in work hours shown in Figure 3.1 may be driven by narrowing the gender gap in the proportion of part-time workers. A larger percentage of women than men worked part-time hours in all years, but the percentage of women who work part-time hours decreased over time, unlike men, whose part-time proportion slightly increased. In 1979, 24 percent women worked part-time hours, while 6 percent men did (18 percentage points difference); in 2008, 21 percent women, and 8 percent men worked part-time hours (13 percentage points difference). The gender gap narrowed in these two time points by approximately 5 percentage points.

Figure 3.4 shows the trend of percentages of overworkers by occupation. For this analysis, I use data of years from 1983 to 2002, in which compatible occupation codes are available (1990 Census occupation code). The figure indicates that professional and managerial occupations are composed of a higher proportion of workers whose weekly work hours are 50 hours or more. In 1983, approximately 16 percent of workers in professional and managerial occupations worked 50 or more hours per week, which is more than two times greater than most of other occupations. For example, only 4.5 percent of workers in service occupations, and 6 percent of workers in "technical, sales, administrative occupations" worked 50 hours or more per week in the same year. Both "production, craft, repair occupations" and "operator, fabricator, labor occupations" are also represented by smaller proportions of overworkers, compared to professional and managerial occupations. The percentages in these occupations increased rapidly until the late 1990s, when more than 10 percent of workers worked 50 hours or more per week in both occupational groups.



Source: Current Population Survey, Merged Outgoing Rotation Group, 1983-2002

Figure 3.4. The percent of workers whose weekly work hours 50 hours or more by occupation

The only exception here is the group that consists of farming, forestry, and fishing occupations. Until 1991, the greater percentage of workers in this occupational group worked 50 hours or more per week than workers in professional and managerial occupations. However, this percentage decreases rapidly, which perhaps corresponds to the rise of the corporate agriculture industry and decline of the family farming. Professional and managerial occupations, in contrast, show an increasing pattern. The percent of overworkers in professional and managerial occupations peaks in the late 1990s with approximately 22 percent of workers who worked 50 or more hours per week; the percentages declines slightly in 2001 and 2002, years of which coincide with the early 2000s economic recession. Still, more than 20 percent of professional and managerial workers worked 50 hours or more in these years, while all other

occupational groups show a much smaller percentage of overworkers. Many other occupational groups, such as "technical, sales, and administrative occupations"; "production, craft, and repairs occupations"; "operators, fabricators, and laborers," also show increasing patterns of the percentages of overworkers, although the overall overworker representation in theses occupations is lower than that in professional and managerial occupations. This confirms Jacobs and Gerson (2004) who argue that the overwork phenomenon is more common among workers in most prestigious jobs.

Who Works Long Hours?

Table 3.1 compares the characteristics of overworkers and non-overworkers. First of all, women are less represented in the overwork group: women are 52 percent of non-overworkers but only 27 percent of overworkers. Women's lower representation in the overworker group appears to be associated with marriage and parental status. Marriage is less common among overworking women, compared to non-overworking women: married women consists of 15 percent of overworkers, but they consist of 30 percent of non-overworkers. In contrast, marriage is more common among overworking men, compared to non-overworking men: married men consist of 53 percent of overworkers, but they consist of 27 percent of non-overworkers. The percentage of women who have children is also lower among overworkers, as compared to non-overworkers: 10 percent of women have children among overworkers, while 23 percent of non-overworking women have children. The opposite pattern is found for men: 33 percent of men have children among overworkers, as compared to 22 percent men among non-overworkers. This is consistent with the claim that mothers are expected to perform most of caregiving responsibilities, and hence are less likely to overwork, whereas fathers are under a

greater pressure to financially support the family, and hence are more likely to overwork.

Overworkers also tend to be highly educated. The percentage of workers whose educational attainment is more than a college graduate is 41 percent among overworkers, while it is 22 percent among non-overworkers. Also, the average years of work experience and job tenure tend to be longer for overworkers than non-overworkers. Average earnings are higher for overworkers. Their average monthly earnings are 5300 dollars (in 2008 $), whereas non-overworkers earnings are 2700 dollars.

Job characteristics also tend to be different for overworkers and non-overworkers. Overwork is less common in public sector and unionized jobs. As shown earlier, the representation in professional and managerial occupations are higher among overworkers than non-overworkers: 46 percent of overworkers are in professional and managerial occupations, while 25 percent non-overworkers are.

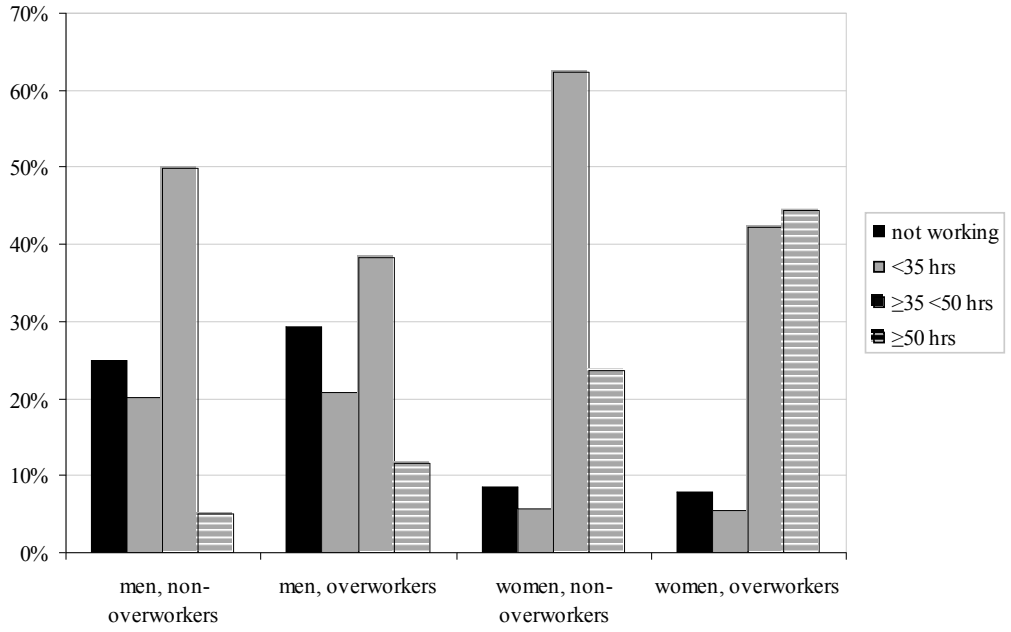
Next, I compare spousal characteristics of overworkers and non-overworks with the subset of married workers in the sample. The results in Table 3.1 show an interesting non-linear relationship between an individual's work hours and spouse's work hours: compared to non-overworkers, a higher percentage of overworkers' spouses do not work or work part-time, and also a higher percentage also overworks. Conversely, a greater percentage of non-overworkers' spouses work full-time hours (i.e., ≥35 hours <50 hours). This suggests that overworkers include workers from a single breadwinner families as well as workers from two-career families in which both partners spend long hours at work. Among the latter group, the overwork phenomenon is intensified at the family level (Jacobs and Gerson 2001).

Table 3.1. Means and standard deviations of worker characteristics for non-overworkers and overworkers

Variable	Non-overworkers (worked ≥ 50 hrs /wk) Mean	Std. Dev.	Overworkers (worked ≥ 50 hrs /wk) Mean	Std. Dev.
Female	0.52		0.27	
Married	0.57		0.68	
× Female	0.30		0.15	
Have child	0.42		0.43	
× Female	0.23		0.10	
Age	37.34	11.63	39.00	10.17
Race:				
White	0.74		0.83	
Black	0.12		0.07	
Hispanic	0.10		0.06	
Other race	0.04		0.03	
Education:				
Less than high school	0.11		0.07	
High school graduate	0.33		0.25	
Some college	0.34		0.27	
College graduate	0.16		0.25	
Advanced degree	0.06		0.16	
Years of work experience	17.57	11.50	20.36	10.50
Years of job tenure	6.76	7.73	7.82	8.04
Government	0.18		0.14	
Union	0.17		0.14	
Occupations:				
Professional and managerial	0.25		0.46	
Technical, sales, and administrative support	0.32		0.21	
Service	0.15		0.05	
Farming, forestry, and fishing	0.01		0.02	
Precision production, craft, and repair	0.11		0.12	
Operators, fabricators, and laborers	0.16		0.13	
Monthly earnings ($1,000)	2.72	2.51	5.32	5.26
N	61,931		12,419	
Spousal weekly work hours				
Not working	0.17		0.26	
<35 hrs	0.12		0.17	
≥35 hrs <50 hrs	0.57		0.39	
≥50 hrs	0.14		0.18	
Spousal monthly earnings ($1,000)	2.87	3.16	2.61	3.72
Spouse work in professional occupations	0.25		0.32	
N	30,512		7,360	

Source: Survey of Income and Program Participation, 1996 & 2001

Two overworker families are more common among families of female-overworkers than those of male-overworkers, as shown in Figure 3.5. Among both non-overworkers and overworkers, a greater proportion of men have wives who stay home or work part-time hours, compared to their female-counterparts. Among men, approximately 25 percent of non-overworkers have wives who stay at home, and about 20 percent have wives who work part-time hours. In contrast, these percentages are much smaller for women, as 8 percent and 5.5 percent of non-overworkers have husbands who stay at home or work part-time hours, respectively. This suggests that on average, men are under conditions in which their spouses provide support for their long work hours.



Source: Survey of Income and Program Participation, 1996 & 2001 (N=40,122)

Figure 3.5. Men's and women's spousal work hours by overwork status

The support divide between men and women is exacerbated among overworkers. Approximately 50 percent of overworking men's wives either stay home

or work part-time hours, but only about 13 percent of overworking women's husbands do. The percentage of stay-at-home wives is greater among overworking men than among non-overworking men, but this does not apply to women who overwork. The percentage of women who have stay-at-home husbands or husbands who work part-time are not much different for overworking women and for non-overworking women. Furthermore, the majority of overworking women's husbands works also long hours (44 percent). The percentage of overworking men's wives who overwork is much smaller, as about 12 percent of overworking men's wives also work 50 hours or more per week. This gendered pattern of spousal work hours effectively demonstrates that overworking women are under structural conditions in which they are less likely to receive spousal support, and are therefore more likely to experience difficulties competing on hours with their male counterparts, whose wives are more likely to stay home or work part-time.

The descriptive results here help to establish the argument that overwork is a gendered phenomenon that is based on different structural conditions that are more likely to be disadvantageous for women. In the following chapters, I demonstrate that overwork is in fact more likely to result in perpetuating gender inequality in occupational sex segregation, earnings, and employment.

CHAPTER 4

OVERWORK AND OCCUPATIONAL SEX SEGREGATION

In this chapter, I evaluate whether the gendered workplace norm of overwork has disparate negative impacts on women in many male-dominated occupations and contributes to occupational sex segregation. To this end, I first show a broad pattern in which long work hours are associated with women's low representation in male-dominated occupations at the occupational level. I then demonstrate that this structural pattern is reinforced by the individual-level occupational mobility process, in which a larger number of women than men leave male-dominated occupations in response to overwork. I show that this gendered mobility pattern is primarily driven by caregiving responsibilities.

OVERWORK AND OCCUPATIONAL SEX SEGREGATION

Data

The analyses draw on data from several sources. Survey of Income and Program Participation (SIPP); Integrated Public Use of Microdata Series (IPUMS); and the Occupational Information Network (O*NET) database. The SIPP is national longitudinal household survey data collected by the U.S. Census Bureau. I pool the most recent two panels (1996 and 2001 panels, which cover the years from 1995-2004) in order to estimate the occupational level variables more accurately (see below) and to capture the period in which overwork became more common. The time range of the data is appropriate for this study, given that overwork is a more recent phenomenon. For SIPP, individuals from randomly selected households were interviewed once every four months over 36-month (2001 panel) to 48-month (1996

panel) periods. The panel structure allows me to observe changes in the labor market outcomes of men and women, including their occupations

To conduct the occupational-level analysis, I reshaped the SIPP into an occupation-month format. The unit of analysis is a 3-digit 1990 Census occupation. While the 1990 Census occupational classification system consists of 501 occupations, I exclude military occupations because of their uniqueness in the organization of work hours and the payment system; "legislators," "postmasters and mail superintendents," and "judges," who were not interviewed for SIPP; and "natural science teachers, not elsewhere classified" and "social work teachers," who have missing information on years of experience.[2] The final occupation-level data set thus consisted of 496 of the 501 occupations.

I supplement SIPP with two other datasets. First, I use the 1990 IPUMS 5 percent sample to calculate accurate work-hour information for occupations that, in the SIPP, contain fewer than 100 workers. There were 36 (of 496) such occupations in the SIPP.[3] The second supplementary data source is the O*NET 3.1 database. I use this dataset to include occupational skills measures which are not available in the SIPP. O*NET is the nation's primary source of occupational information compiled by The U.S. Department of Labor (USDOL) and Employment and Training Administration (ETA). I construct the occupational skill measures from the O*NET 3.1 database, which is compatible with the 1990 Census occupation classifications through several data matching processes using crosswalks provided by ETA.[4] I created the dataset for

[2] Including these two occupations with the omission of the work experience measure does not change the substantive findings of this study.

[3] I did not use IPUMS for all cases because IPUMS reflects the labor market in 1990, whereas SIPP offers more recent data (1996 to 2004). Also, IPUMS does not offer information on years of work experience and years of job tenure. For such cases, I used the information from SIPP even if the occupations are composed of less than 100 observations.

[4] The dataset and more detailed information on the construction of the measures are available upon request.

the occupational characteristics through previous steps, which generates ten occupational skill measures that are similar to the measures used in the segregation literature (e.g., England and Kilbourne 1989; Grusky and Levanon 2008). I use these measures to adjust for the effect of occupational skills and requirements, details of which are described below. To test whether long work hours is associated with women's lower representation in the occupations, I use ordinary least square regression models.

Variables

The dependent variable is women's representation in the occupation, measured by the log odds of women's representation in each 3-digit 1990 Census occupation. It is commonly used by previous research to measure occupational segregation (e.g., England et al. 1988; Kilbourne et al. 1994; Weeden 2002). Using log odds helps to address non-linearity and non-constant variance problems of percent-based measures (Fox 1997). It also offers a measure of the level of segregation in an occupation that is not dependent on the gender ratio in the labor force, thereby allowing a cleaner interpretation. Alternative measures of segregation, such as using cutoff points (e.g., Jacobs 1989), yielded substantively similar patterns, but a less straightforward interpretation for the purposes of identifying occupation-level patterns.

The key independent variable for the occupational-level analysis is the degree to which long work hours are prevalent in an occupation. I use a continuous variable that measures the average weekly work hours by occupation. The likelihood ratio test between the model with the linear term and the model fitted with the quadratic term of occupational work hours suggests a non-linearity between occupational work hours and the level of segregation ($p<0.01$). Nonetheless, both models suggest the substantively same conclusion, so I present the linear model that provides the cleaner

interpretation. The model with the quadratic term is shown in the Table A.1 in the Appendix (also see footnote 5).

In addition, to adjust for the effect of other occupational characteristics that may affect the segregation among occupations, I include the occupational skill requirements and the average worker and work characteristics. To address the argument that women may move to female-dominated occupations more than men do because of the male-typed skill requirements in male-dominated jobs (Polachek 1975; Zellner 1975), I use skill measures that were originally introduced by England and Kilbourne (1989) and modified by Grusky and Levanon (2008). They measure the degree to which occupations require verbal skills, finger dexterity, nurturance-communal skills, physical strength and manual skills, math skills, analytical skills, authority, technical skills, and occupational specific skills (for review of gender typed skills and segregation, see England 1992). I also include the percent of college graduates to measure the general skill levels in the occupation. To address the argument that women are more likely than men to value job characteristics that are common in female-dominated occupations (e.g., clean conditions), I include a variable that measures the extent to which workplace conditions are physically demanding or unpleasant.

Each skill measure is constructed using the average score of the detailed components provided by the O*NET 3.1 database, instead of factor loadings utilized by Grusky and Levanon (2008). I use standardized scores so that each item of the composite measure contributes equally ($\alpha>0.9$, for all scale measures). Occupational specific skills are measured with the Specific Vocational Preparation (SVP) score, which is prepared by O*NET. It ranges from 1 to 5, with higher values indicating a higher level of occupation-specific skills.

Some important worker characteristics that may affect the segregation pattern are also included. When an occupation offers greater self-employment opportunities, women and men may stay in the same occupation as self-employed workers even when they experience conflict between work and family (Budig 2006). Therefore, I use variables that measure the percentages of self-employed workers in the occupation. In addition, long average years of work experience and job tenure may suggest an internal labor market, which is known to be less favorable for women (Estévez-Abe 2005). To take this factor account, I adjust for the effects of the average years of work experience and job tenure in each occupation. Finally, the percent of non-whites is used as a proxy for the workplace equity level because we may see a workplace less segregated by gender if the workplace is less discriminatory toward minority groups.

Descriptive Results

Table 4.1 lists means and standard deviations for all occupational level variables in this study. Occupations on average include 37.2 percent of women. The average weekly hours worked in the occupation are 39.4 hours. Because most occupational skill measures are standardized, their means are close to 0, and standard deviations are close to 1. The dexterity measure uses the score that O*NET provides, and its mean is approximately 2 from a range of 0 to 5, which means most occupations require medium-level dexterity. The occupation-specific skills measure indicates a mean value of 2.8, which means occupations on average require moderate-level occupational skills.

OLS Analysis of Women's Occupational Representation

I apply OLS regression models to estimate the effect of the average work hours of an occupation on women's representation in the occupation (Table 4.2). This

Table 4.1. Means and standard deviations of occupational characteristics

Variables	Mean	Std. Dev.
Percent of women	37.23	30.65
Average hours worked per week	39.43	5.37
Occupational skill measures		
Verbal	-0.01	0.96
Dexterity	2.04	0.80
Nurturance	0.00	0.86
Strength	0.00	0.95
Disamenities	0.00	0.82
Math	0.00	0.94
Analytical	0.00	0.94
Authority	0.00	0.93
Technical	0.00	0.83
Index of occupational specific skills	2.82	1.25
Other occupational characteristics:		
Percent of unionized workers	15.51	17.58
Percent of government-sector workers	17.34	23.95
Percent of self-employed workers	4.77	8.26
Average years of work experience	17.74	5.23
Average years of job tenure	7.31	4.09
Median of monthly earnings (2000 U.S. 100 dollars)	23.15	11.25
Percent of non-whites	24.55	16.40
Percent of married workers	58.03	16.63
Percent of workers with children under 18	42.94	12.89
Percent of college graduates	11.94	23.70
Percent of service industry jobs	47.77	38.64
Number of occupations	496	

Source: Survey of Income and Program Participation 1996, 2001 (1995-2003); Integrated Public Use Microdata Series 1990; and O*NET 3.1.
Note: Standard deviations are presented in parentheses where relevant.

Table 4.2. Regression coefficients for the effect of average work hours on the log odds of women's occupational representation

Variables	Model 1
Average hours worked	-0.14**
	(0.03)
Verbal	1.14**
	(0.41)
Finger dexterity	0.28
	(0.20)
Nurturance	-0.05
	(0.33)
Strength	0.33
	(0.23)
Disamenities	-2.81**
	(0.30)
Math	-0.52
	(0.29)
Analytical	0.35
	(0.35)
Authority	-0.22
	(0.26)
Technical	-0.16
	(0.22)
Index of occupational specific skills	-0.40*
	(0.18)
Percent of unionized workers	-0.01
	(0.01)
Percent of government-sector workers	-0.00
	(0.01)
Percent of self-employed workers	-0.02
	(0.02)
Average years of work experience	-0.09**
	(0.03)
Average years of job tenure	0.07
	(0.04)
Median monthly earnings (2000 100 U.S. dollars)	-0.05*
	(0.02)
Percent of non-whites	0.00
	(0.01)
Percent of married workers	0.01
	(0.01)
Percent of workers with children under 18	0.01
	(0.01)
Percent of college graduates	-0.01
	(0.01)
Percent of service industry jobs	-0.01
	(0.01)
Constant	-1.48**
	(0.12)
Number of observations	496
R-squared	0.55

Source: SIPP 1996 and 2001 (1995-2003); IPUMS 1990; and O*NET 3.1.
Note: Standard errors are presented in parentheses, * $p<.05$, ** $p<.01$ (two-tailed).

analysis reveals the anticipated negative association between the average work hours in the occupation and women's representation, net of a wide range of factors that may be associated with women's representation in the occupation. More specifically, an hour increase of average weekly work hours in the occupation is associated with a 13 percent decrease (exp[-0.14] = -0.87) in the odds of women being in the occupation.[5] This suggests that women's lower representation in male-dominated occupations is partly explained by long work hours in these occupations.

Other occupational characteristics indicate findings consistent with prior research: women are overrepresented (relative to their share in the average occupation) in occupations that require high verbal skills, low occupation-specific skills, or low average years of experience; they are underrepresented in occupations that entail physically demanding or unpleasant work or high average earnings. These occupation-level controls do not entirely absorb the work-hour effect.

These results support the contention that there is a strong, negative association between normative work hours and women's representation in occupations. It remains to be seen, however, whether individual women leave male-dominated fields and enter female-dominated fields or quit their jobs because of long work hours. To further investigate a source of this aggregate-level pattern, I turn to individual-level analysis to examine the mobility process in which more women than men exit male-dominated occupations or leave the labor force entirely, in response to overwork.

[5] When the quadratic term of the average work hours is introduced, the model suggests the substantively similar conclusion. The curvilinear model suggests that log odds of women's occupational representation increase as the average hours in the occupation increase until occupational hours reach 17 hours, and decrease afterwards. Since the minimum of occupational hours 18.7 in my data, the model suggests that log odds of women's representation decrease with an increasing rate, as the average work hours in the occupation increase (See Table A1 in the Appendix).

LONG WORK HOURS AND OCCUPATIONAL MOBILITY

Data

For the individual-level analysis, I use only SIPP. The respondents for SIPP were interviewed every four months, but monthly information was also collected retrospectively for some variables. However, it is reported that the respondents tend to report the same value for the retrospective questions and only report changes in employment in the last month ("seam bias"), which may bias the results if all four months' records are used (Weinberg 2003). Therefore, I use data only from the fourth month, which is the common practice to address this problem (e.g., Gottschalk 2005; Grogger 2004).

The sample is restricted to respondents whose ages are between 18 and 64 with positive earnings. Also, because the focus of this study is on the odds of men's and women's exiting male-dominated occupations, the analyses examine those who initially worked in male-dominated occupations. Nonetheless, to examine whether the gendered effect of overwork is indeed greater in male-dominated occupations, I additionally compare the overwork effect in male-dominated occupations to the one in other occupations. The distinction between male-dominated occupations and other occupations is made based on a cut-off point of 30 percent of women in the occupations, which is a commonly used cut-off point to define male-dominated occupations (e.g., Jacobs 1989; Kmec 2005). Male-dominated occupations in my sample include engineers, natural scientists, technologists, architects, technicians, protective service workers, construction workers, mechanics and repairers. Using this cut-off point excludes some occupations that are well known for overwork culture, such as lawyers and physicians. Therefore, I apply several other cut-off points to check the sensitivity of the results to the cutoff points. The final sample consists of 127,700 observations (person-month) from 20,038 men and 22,141 observations from

4,581 women. The sample size for men is larger than that for women because of the lower representation of women in male-dominated occupations (6 percent versus 44 percent for men).

Variables

The dependent variable is a dichotomous measure that indicates whether the respondents move out of the male-dominated occupation by the next time point.[6] If the respondents move to other occupation or leave the labor force, the dependent variable is coded 1; if the respondents stay in the male-dominated occupations, it is coded 0. In an additional analysis, I examine the effect of moving to more-female dominated occupations and quitting separately. In both cases, those who stay in male-dominated occupations constitute the baseline category. In all three types of variables, those who quit for involuntary reasons, such as job displacement and layoff, are excluded in the analyses to isolate voluntary occupational mobility or quitting. To estimate the odds of moving to more female-dominated occupations in response to long work hours, I allow a time lag between one's mobility and the independent variables. A four-month time lag is applied due to the survey design (see above).

The primary independent variable of interest, overwork, is measured with a series of dummy variables that indicate whether the respondents' usual work hours in their main jobs are (1) less than 35 hours per week ("part-time"), (2) 50 hours or more but less than 60 hours per week ("between 50 and 60 hours"), or (3) 60 hours or more per week ("60 hours or more").[7] The baseline category measures whether the

[6] Instead of using the binary measure, a continuous variable (i.e., percent of women in the occupation) can be used to measure occupational gender composition. However, a continuous measure ignores the discrete effects of changing jobs across gender-typed occupation.

[7] Of all workers in the sample, 90 percent reported that their main job is their only job. Although SIPP offers the work hours variable from the second job (where relevant), I use work hours only from the main job because a close examination of the data suggests that respondents have frequently reported the same values for the first and the second job. Nonetheless, including the hours in the second job does not

respondents work more than 35 hours but less than 50 hours per week ("between 35 and 50 hours"), and overwork is defined by weekly hours of 50 or more.[8] I use categorical variables instead of continuous variables in recognition of likely nonlinearities in the effect of overwork on the odds of one's leaving male-dominated occupations: while I expect that long work hours increase women's likelihood of moving out of male-dominated occupations, I also expect that part-timers are more likely to change their occupations or leave their jobs, given that part-time workers are also penalized for being less committed, especially in many male-dominated jobs (Epstein et al. 1999; Roth 2006).[9]

A secondary goal of the individual analysis is to determine whether long work hours have a greater effect for mothers than for childless women. To this end, I include a dummy variable that measures whether the respondents have children under the age of 18 years, and allow this variable to be interacted with weekly work-hour variables.[10] The children are the respondents' own children under the age of 18 who reside in the same household with the respondents. Children's age is not considered in the model because SIPP does not collect such information. Theory suggests mixed predictions about the effect of children's age: in some studies, younger children are represented as typically needing more intensive care than older children, but other

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change the findings.

[8] Some prior work defines overwork as 40 hours or more, to which an overtime pay rate is applied in many production and service workers. This definition is rather unrealistic for many professional and managerial workers, to whom overtime rates are not applied. Furthermore, many studies use a 50 hour cutoff point to reflect increased average work hours in the overall labor market (e.g., Cha 2010; Jacobs and Gerson 2004). Nonetheless, the findings are consistent when a 40 hour cutoff point is used.

[9] The hour variables are based on men's and women's self-reported hours. Given the expectation of working long hours, workers in male-dominated occupations may over-report their hours. If men over-report their hours more than women do, this may explain nonsignificant effect of overwork for men. To check this possibility, I examine the effect with additional overwork category, "70 hours or more," to see if this change the results. The added variable remains insignificant in men's model, which help to ensure that the gender difference in self-reporting does not drive the gendered effect found here.

[10] I use a dummy variable because it is parental status that differentiates workers' caregiving responsibilities and time availability the most. Also, research suggests that the perceptions about workers' competence or commitment differ by their parental status (Correll et al. 2007). Nonetheless, using a linear measure of number of children does not change the findings.

studies suggest that parenting older children (e.g., teenagers) also entails intensive care for their psychological and cognitive development (Kurz 2002). The mixed predictions suggest that being a parent requires intensive caregiving responsibilities throughout all age groups of the children.

To estimate the effect of overwork on the odds of moving out of male-dominated occupations, I adjust for individual characteristics that are known to affect one's mobility. I include workers' age because mobility rates are known to be higher among younger workers than older workers (Blau and Kahn 1981). Given that women's mobility is often affected by their childbearing and childrearing, I include the squared term of age to capture any non-linear effect of it. Because marital status can differentiate the level of spousal support for housework and other obligations, I include a dummy variable that indicates whether respondents are currently married. To address the possibility that workers' moving to more female-dominated occupations is driven by their lower level job skills, I include several variables that measure workers' skill levels. I utilize five categorical measures for educational attainment to measure the level of general skills. Years of work experience and job tenure with their squared terms are also considered in the models to adjust for the non-linear effect of job-specific skills (Altonji and Shakotko 1987).

I include monthly earnings because workers are less likely to change their jobs when their earnings are high.[11] They are re-scaled as U.S. 100 dollars with an inflation adjustment to a nominal 2000 dollars (Bureau of Economic Analysis 2005). When monthly earnings are missing, I use the hourly earnings multiplied by the usual hours per week worked and weeks worked per month. Since public sector jobs are under the stronger enforcement of the Equal Employment Opportunity regulations (Baron,

[11] I use monthly earnings rather than hourly earnings because monthly earnings better reflect the extent to which workers financially rely on the job. Hourly earnings are only collected for hourly workers, and calculating hourly earnings from monthly earnings may increase inaccuracy due to measurement errors.

Mittman, and Newman 1991), which may help to improve workplace equity, I use a dummy variable that indicates whether a respondent works in the public sector. Given that workers who are covered by unions are less likely to quit their jobs, I include a dummy variable for the respondents' union membership. Also, since those who hold more than one job may indicate the instability of their employment, I use a dummy variable for respondents who have two or more jobs.

Because jobs in some industries are more flexible than in others (e.g., service industry jobs have more turnovers than jobs in professional industries), I include eleven industry dummy variables based on the 1990 one-digit census industry codes. Similarly, the norm of overwork and the extent to which flexible arrangements are offered differs by occupation. Thus, I employ a series of dummy variables for occupations based on the one-digit 1990 Census occupation code.

Method

To investigate whether individual workers move out of male-dominated occupations in response to their long work hours, I employ logistic regression models. A random intercept term is introduced to take into account the dependence among observations due to the panel structure of the data. The models take the following general form:

$$\log \frac{p_{ij}}{1 - p_{ij}} = x_{ij}\beta + \alpha_i + \varepsilon_{it}, \qquad (1)$$

where p_{ij} is the probability of quitting by the next time point (4 months later), x_{ij} is a row vector of variables for individual i at time j, and β is a column vector of regression coefficients. Residuals are composed of two parts: α_i represents random

intercepts for persons, assumed to be uncorrelated with x_{ij} and normally distributed with a mean of zero and constant variance; ε_{ij} is a random disturbance term.[12]

I run the models separately by gender. This helps to avoid the bias that can be generated by assuming that all other variables have the same effect on men and women. Furthermore, while the full models would help to distinguish significant from non-significant gender differences, fully stratified models are better for the purpose of detecting gender-specific effects that are only relevant to explain the behavior of one gender. For example, men's odds of moving to female-dominated occupations may not be related with their long work hours, but they may be an important factor in explaining women's mobility.

While this is an effective way to demonstrate the effect of overwork in determining the gendered attrition from male-dominated occupations, and thereby potentially increasing occupational sex segregation, it is important to note that this study does not intend to directly measure the extent to which overwork explains increased rates of occupational sex segregation. Obviously, the segregation rates can be determined by both exit and entrance rates from/to male-dominated occupations, but the entrance rates are not considered in this analysis. However, overwork may also affect the process of men and women selecting into male-dominated occupations: fewer women than men enter male-dominated occupations because anticipated barriers, such as overwork (and other factors like discrimination, and lack of social support). Because this selection process is not captured in the model, the extent to which

[12] Alternatively, one could estimate the effect of the average work hours in the occupation (the contextual effect), instead of individual work hours, as the key independent variable and apply multi-level models in which individuals are nested in occupations. However, this modeling strategy makes it difficult to deal with the panel data structure (individuals have multiple records per person, so time is nested within the individual, and individuals are nested in occupation, but their occupations often change over time). Also, more importantly, the individual measure is better for the purpose of this study because it captures the extent to which individuals experience work-family conflict more directly, which is the key argument of this study.

overwork contributes to occupational sex segregation is likely to be underestimated when only estimating the effect of the exit process.

On a different note, however, it is entirely possible that the increased entrance rates of women in male-dominated occupations may cancel out the extent to which overwork increases segregation rates. For example, the cohort effect (the rates of women entering male-dominated fields increased among younger cohorts) may contribute to desegregation (e.g., Jacobs 1989). Determining the contribution of overwork on occupational segregation relative to other factors, or contribution of exit process relative to entry process to the overall segregation rates are important questions, which should be explored in future studies, but are beyond the scope of this study. The purpose of this study is to identify one important factor that contributes to higher exit rates of women in male-dominated occupations than other occupations, which can reinforce occupational sex segregation.

Descriptive Results

Table 4.3 presents means and standard deviations of variables used in this analysis. The dependent variable indicates that about 3.6 percent men who formerly worked in male-dominated occupations (occupations which have less than 30 percent women) leave the occupations for voluntary reasons in the next time point. 0.9 percent of men quit and 2.7 percent men move to more female-dominated occupations. Not surprisingly, women in male-dominated occupations are more likely than men to move out of the occupations, with 8.2 percent of women leaving male-dominated occupations. The majority of these women (i.e., 6.2 percent of the total) move to more female-dominated occupations, while the rest quit paid labor altogether.[13]

[13] The rates for "quitting" and "moving to more female-dominated occupations" do not add up to the overall rate (under "moving out of male-dominated occupations") because the denominator of each subcategory excludes the respondents from the other subcategory.

Table 4.3. Means and standard deviations of individual characteristics

Variables	Men		Women	
	Mean	Std. Dev.	Mean	Std. Dev.
Moving out of male-dominated occupations (%, after 4 months)	3.58		8.21	
Quitting	0.9		2.26	
Moving to more female-dominated occupations	2.67		6.22	
Usual work hours per week (%, ≥ 35 hours < 50 hours is omitted)				
< 35 hours (part-time)	17.93		27.40	
≥ 50 hours <60 hours	13.00		7.33	
≥ 60 hours	6.83		2.56	
Have own child under 18 years old	0.67		0.54	
Currently married	0.46		0.44	
Age	39.35	10.85	38.88	10.33
Race ("white" is omitted):				
Black	0.09		0.13	
Hispanic	0.12		0.09	
Other race	0.04		0.06	
Education ("less than high school is omitted"):				
High school graduate	0.36		0.34	
Some college	0.32		0.31	
College graduate	0.12		0.19	
Advanced degree	0.05		0.06	
Years of work experience	20.17	11.31	16.95	10.34
Years of job tenure	8.17	8.66	6.91	7.44
Monthly earnings (2000 U.S. 100 dollars)	29.67	23.26	24.57	19.32
Union	0.21		0.13	
Government	0.13		0.16	
Two or more jobs	0.09		0.09	
Industry ("manufacturing" is omitted)				
Agriculture, forestry, and fisheries	0.04		0.03	
Mining, construction	0.17		0.03	
Manufacturing	0.26		0.30	
Transportation, communication, and other public utilities	0.13		0.10	
Wholesale trade	0.07		0.08	
Retail trade	0.08		0.13	
Finance, insurance, and real estate	0.02		0.03	
Business and repair services	0.08		0.09	
Personal services	0.01		0.01	
Entertainment and recreation services	0.01		0.01	
Public administration	0.07		0.09	
Occupation ("professional and managerial" is omitted):				
Technical, sales, and administrative support	0.13		0.25	

Table 4.3 (Continued)

Service	0.06	0.07
Farming, forestry, and fishing	0.04	0.04
Precision production, craft, and repair	0.34	0.13
Operators, fabricators, and laborers	0.31	0.31
Year ("1996" is omitted)		
1997	0.17	0.16
1998	0.16	0.15
1999	0.12	0.12
2001	0.16	0.17
2002	0.14	0.14
2003	0.09	0.08
Number of observations	127,700	20,038

Source: Survey of Income and Program Participation 1996 and 2001 (1995-2003)
Note: Standard deviations are presented in parentheses where relevant.

The data also show that more men in male-dominated occupations work long hours than women, while more women work part-time. The gender difference in representation in the overwork categories is striking. Men who work between 50 and 60 hours per week constitute 13 percent of men, while their female counterparts constitute 7 percent. More than twice as many men work 60 hours or more per week as women (7 versus 3 percent). This suggests a substantial time divide between men and women in male-dominated occupations.

Does Overwork Increase the Attrition of Women from Male-dominated Occupations?

To evaluate whether overwork increases women's likelihood of moving out of male-dominated occupations, but not men's, I examine the effect of long work hours on the odds of men and women moving out of male-dominated occupations. Male-dominated occupations are defined by the cutoff point of 30 percent of women in the occupation. As expected, the results in Table 4.4 provide evidence that long work hours increase the odds of women moving from male-dominated occupations to more

Table 4.4. Random effects logistic regression coefficients for the effects of overwork on the log odds of moving out of male-dominated occupations (%women < 30)

	Model 1		Model 2	
	Men	Women	Men	Women
Usual work hours per week (≥ 35 hours < 50 hours is omitted):				
<35 hours (part-time)	0.37**	0.23**	0.35**	0.22*
	(0.04)	(0.07)	(0.05)	(0.10)
≥ 50 hours < 60 hours	0.00	-0.02	0.04	-0.20
	(0.05)	(0.14)	(0.07)	(0.18)
≥ 60 hours	0.07	0.39*	0.08	0.00
	(0.07)	(0.19)	(0.09)	(0.27)
Have children	-0.03	0.21**	-0.03	0.16+
	(0.04)	(0.08)	(0.05)	(0.09)
× <35 hours			0.06	0.02
			(0.08)	(0.13)
× ≥ 50 < 60 hours			-0.10	0.42
			(0.11)	(0.27)
× ≥ 60 hours			-0.02	0.86*
			(0.14)	(0.38)
Married	-0.12**	0.14+	-0.11*	0.14+
	(0.05)	(0.07)	(0.05)	(0.07)
Age	-0.12**	-0.11**	-0.12**	-0.11**
	(0.02)	(0.03)	(0.02)	(0.03)
Age squared	0.00**	0.00**	0.00**	0.00**
	(0.00)	(0.00)	(0.00)	(0.00)
Race ("white" is omitted)				
Black	0.15*	0.12	0.15*	0.12
	(0.06)	(0.11)	(0.06)	(0.11)
Hispanic	0.08	0.13	0.08	0.13
	(0.06)	(0.13)	(0.06)	(0.13)
Other race	0.22*	-0.21	0.22*	-0.21
	(0.09)	(0.16)	(0.09)	(0.16)
Education ("less than high school" is omitted)				
High school graduate	0.20**	-0.18	0.20**	-0.18
	(0.06)	(0.12)	(0.06)	(0.12)
Some college	0.38**	-0.10	0.39**	-0.09
	(0.06)	(0.13)	(0.06)	(0.13)
College graduate	0.59**	-0.12	0.59**	-0.10
	(0.08)	(0.15)	(0.08)	(0.15)
Advanced degree	0.59**	-0.11	0.59**	-0.10
	(0.12)	(0.22)	(0.12)	(0.22)
Years of work experience	-0.04**	-0.00	-0.04**	-0.00
	(0.01)	(0.01)	(0.01)	(0.01)
Years of work experience squared	0.00**	0.00	0.00**	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Years of job tenure	-0.07**	-0.09**	-0.07**	-0.09**
	(0.01)	(0.01)	(0.01)	(0.01)
Years of job tenure squared	0.00**	0.00**	0.00**	0.00**
	(0.00)	(0.00)	(0.00)	(0.00)
Monthly earnings ($US)	-0.01**	-0.02**	-0.01**	-0.02**
	(0.00)	(0.00)	(0.00)	(0.00)
Union	-0.32**	-0.18	-0.32**	-0.18

Table 4.4 (Continued)

	(0.06)	(0.12)	(0.06)	(0.12)
Government	-0.05	-0.00	-0.05	-0.01
	(0.09)	(0.15)	(0.09)	(0.15)
Two or more jobs	1.11**	1.37**	1.11**	1.37**
	(0.04)	(0.09)	(0.04)	(0.09)
Industry [a]		Included		
Occupations [b]		Included		
Year [c]		Included		
Log likelihood	-18231.7	-5106.6	-18230.9	-5103.1
$\hat{\rho}$ [d]	0.24	0.24	0.24	0.28
Number of persons	22,141	4,582	22,141	4,582
Number of observations	127,700	20,038	127,700	20,038

Source: Survey of Income and Program Participation 1996 and 2001 (1995-2003)
Note: Standard errors are presented in parentheses.
[a b c] The coefficients of dummy variables for the industry, occupation, and year are estimated in all models but are not shown here. Full results are available upon request.
[d] $\hat{\rho}$ (intra-class correlation) = $\frac{\hat{\psi}}{(\hat{\psi}+\hat{\phi})}$, where $\hat{\psi}$ is the estimate of the variance of the random intercept of persons (α_i), and $\hat{\phi}$ is the estimate of the variance of the random disturbance term (ε_{ij}).
[+] p<.1, * p<.05, ** p<.01 (two-tailed).

female-dominated occupations or leaving the labor force, while long work hours do not significantly affect men's odds of moving out of male-dominated occupations.

More specifically, in Model 1 of Table 4.4, working 60 hours or more per week increases women's odds of leaving male-dominated occupations by 48 percent (exp[0.39]=1.48), as compared to their female counterparts who worked non-overwork full-time hours (between 35 and 50 hours) in the previous time point. For men, neither of the overwork categories reaches significance. This finding suggests that long work hours disproportionately increase the likelihood of women's exiting male-dominated occupations, but not that of men's. All else being equal, the gendered effect of long work hours will reinforce occupational sex segregation.

The lower overwork category, however, does not show the same gendered effect. Working between 50 and 60 hours does not increase women's odds of leaving male-dominated occupations. This suggests that despite the disproportion amount of caregiving and household responsibility that they take in the family, many women in

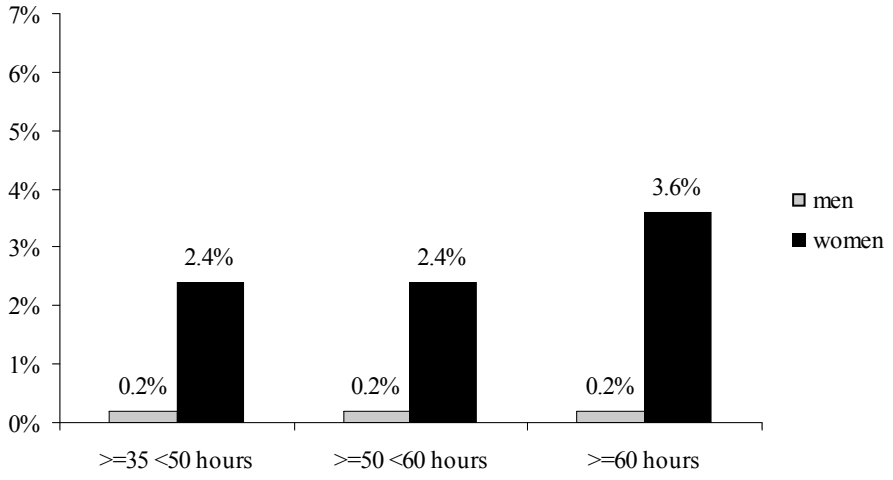
male-dominated occupations behave similarly to their male counterparts, competing on work hours to meet the workplace expectation. Only an extreme amount of work hours produces the gendered outcomes.

The magnitude of the overwork effects can be better illustrated by the predicted probability in Figure 4.1. The Y-axis represents the predicted probability of exiting male-dominated occupations of a hypothetical man and woman who have the mean characteristics on all other factors that are included in the model (see Table 4.2). The calculation of the predicted probabilities is based on Model 1 in Table 4.4, and the values are presented as a percent by being multiplied by 100. Note that the mobility rates here are lower than the national-level mobility rates because they are constructed conservatively (e.g., excluding involuntary quitters or those who reported "do not want to work") to accurately estimate the causal effect of overwork. The far left group indicates the rates of leaving male-dominated occupations for the reference group (workers who worked full-time hours), and the next two groups indicate the rates for workers who worked 50 hours or more and 60 hours or more in the previous time point. Thus, the figure effectively illustrates how the rates of exiting male-dominated occupations change as men's and women's weekly work hours increase.

Not surprisingly, Figure 4.1 shows that the rates of leaving male-dominated occupations are higher for women than for men across work hour categories. Also, as demonstrated in Model 1, men's rates of exiting male-dominated occupations do not vary by hours they worked in the previous time point. In contrast, women's rates of leaving male-dominated occupations increase substantially from 2.4 percent to 3.6 percent as their work hours increase from full-time hours to 60 hours or more. Put differently, working 60 hours or more increases probability of women leaving male-dominated occupations by approximately 50 percent, compared to women who

previously worked full-time hours, holding all other factors constant at the mean values.

Quitting and mobility are, of course, rare events. As a result, the baseline probabilities are low, and the effects seem small when presented in predicted probabilities. Although rare, these events result in important social and economic consequences for individuals. These events lead to longer term "scar effects," generating long-term earnings loss and negatively affecting workers' subsequent career trajectories (Gangl 2006). The effects also cumulate to generate aggregate-level inequalities, such as glass ceiling or occupational sex segregation. The findings here show that overwork is an important determinant of these events that have these broader implications. In the next section, I investigate whether the gendered effects of overwork are primarily driven by caregiving responsibilities.



Source: Survey of Income and Program Participation (1995-2003).
Notes: Estimates are derived from Model 1 in Table 4.4. All other variables are set to their mean values.

Figure 4.1. The predicted probability (×100) of leaving male-dominated occupations

Is Caregiving Responsible for the Gendered Attrition from Male-Dominated Occupations?

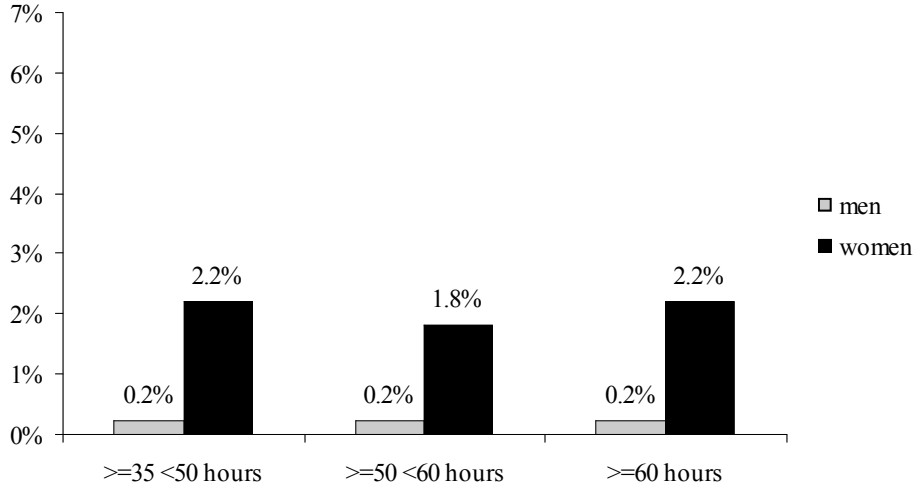
Do caregiving responsibilities in part explain the gendered effect of overwork? To answer this question, I fit a model that allows interaction effects between indicator of parent and work hour variables (see Model 2 in Table 4.4). This model assesses whether having a child increases the odds of overworking women leaving male-dominated occupations, but not for their male-counterparts. The results show that motherhood status significantly increases the odds of women moving out of male-dominated occupations, but fatherhood status has no effect on the mobility on the odds of overworking men. As shown by the interaction effect between working 60 hours or more and having children, having children increases overworking women's odds of leaving male-dominated occupations by 2.4 times, compared to their non-mother counterparts. Notably, the main effect of working 60 hours or more becomes insignificant after interaction effects are introduced. This means that the non-mothers' odds of leaving male-dominated occupations are not affected by long work hours. This is consistent with the argument that caregiving responsibilities are the key factor that drives the gendered overwork effect.

By contrast, men's odds of exiting male-dominated occupations are not affected by their parental status. The interaction effects between overwork and having children are negative, but the standard errors for these interaction terms are massive, and so I do not interpret these coefficients.[14] However, the stark contrast in patterns by gender, together with the non-significant result for childless women, indicates that caregiving responsibilities are the primary factor that determines this gendered pattern.

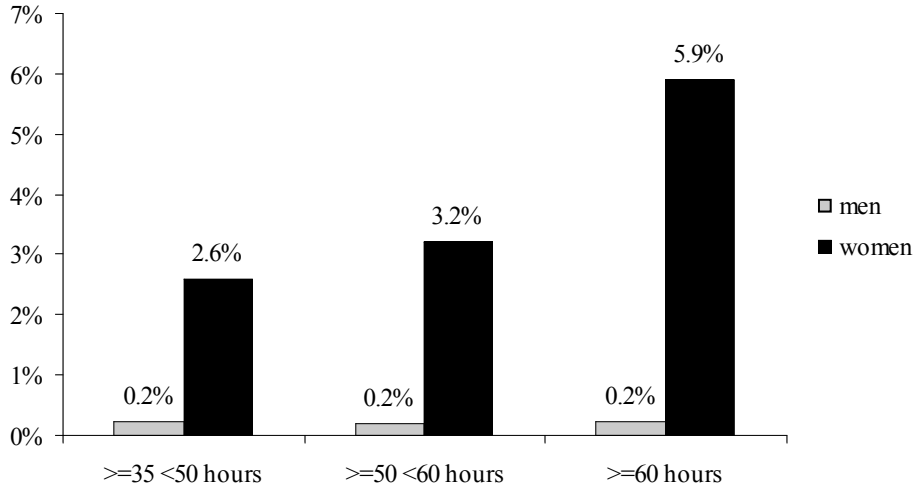
[14] When the gender differences in the interaction effects between overwork and having children variables are tested in the pooled model, which includes both men and women in the sample and use three way interaction terms (i.e., overwork × have children × women), the gender effects are significantly positive for both the "between 50 and 60 hours" and "60 hours or more" categories ($p<0.05$).

The magnitudes of these effects are illustrated by changes in predicted probabilities (multiplied by 100) in Figure 4.2. Panel (a) of Figure 4.2 depicts the relationship between overwork and the probability of leaving male-dominated occupations for workers without children, and Panel (b) of Figure 4.2 shows the relationship for workers with children. Again, all other factors that are included in the model are set to their mean values. Panels (a) and (b) of Figure 4.2 provide the evidence consistent with the argument that the gendered effect of overwork on the attrition from male-dominated occupations is driven by caregiving responsibilities that are largely borne by mothers. In panel (a) of Figure 4.2, long work hours do not increase the rates of exiting male-dominated occupations for both non-mothers and non-fathers. Even when non-mothers worked 60 hours or more in the previous time point, their rates of leaving male-dominated occupations (2.2 percent) are virtually identical with the rates for women who worked non-overwork full-time hours. This suggests that non-mothers' mobility chances are not affected by the overwork phenomenon. The exit rates for men continue to show no systematic changes in response to their weekly work hours.

In contrast, panel (b) of Figure 4.2 shows that for mothers, their rates of exiting male-dominated occupations increase dramatically as their weekly work hours increase. When mothers worked non-overwork full-time hours, their exit rate from male-dominated occupations is 2.6 percent. These exit rates increase as their weekly work hours increase. When mothers worked 50 hours or more, the rate increases to 3.2 percent, and it increases further to approximately 6 percent when mothers worked 60 hours or more in the previous time point. In comparison of the exit rates between mothers and non-mothers, the exit rate for mothers who worked 50 hours or more is about 1.8 times greater, and the exit rate for mothers who worked 60 hours or more is



(a) Workers without children



(b) Workers with children

Source: Survey of Income and Program Participation (1995-2003).
Notes: Estimates are derived from Model 2 in Table 4.4. All other variables are set to their mean values.

Figure 4.2. The predicted probability (×100) of leaving male-dominated occupations by parental status

about 2.2 times greater than those for their non-mother counterparts, whose exit rates are 1.8 percent and 2.2 percent, respectively. The changes in the rates between non-mothers and mothers represent the magnitude of the interaction effects between weekly hours and parental status examined earlier.

When we compare the exit rate of mothers who worked full-time hours (2.6 percent) to the exit rate of their non-mother counterparts (2.2 percent), they are not substantially different from each other. This suggests that caregiving responsibilities alone do not increase the rates of exiting male-dominated occupations for women; rather, it is the joint effect of overwork and the gendered expectation about caregiving responsibilities. The fact that fathers exit rates do not systematically vary by weekly hours category supports the argument that the overwork effect on the gendered attrition from male-dominated occupations is driven by caregiving responsibilities.[15]

Although not directly related to predictions made earlier, the effect of the part-time hour variable is worth examining. Part-time workers ("≤ 35 hours") are more likely to quit or move to more female-dominated occupations (see Table 4.4). As shown in Model 1, the odds of part-time men leaving male-dominated occupations are 45 percent greater, and the odds of part-time women are 26 percent greater, compared to their counterparts who worked non-overwork full-time hours in the previous time point. This is consistent with prior research that suggests that employment for part-time workers are less stable than that for full-time workers (Tilly 1996). Previous research also suggests that women often reduce their work hours before they quit their jobs (Hochschild 1997; Williams 2000). The interaction effects between having

[15] I also examine whether the gendered mobility patterns are driven by different skills that male-dominated and female-dominated occupations require (the results are not shown). I do so by estimating the overwork effects while further adjusting for occupational skills and requirements (the previous and current jobs, separately) that were used for the occupational-level analysis (see Table 4.1 for list of the variables). Adding these additional variables does not change the results substantively.

children and the part-time hour variables in Model 2 show that parental status does not differentiate this part-time effect by gender.[16]

Sensitivity Analyses

A series of sensitivity analyses give additional support to the findings. First, I investigate the relationship between overwork and the probability of leaving male-dominated occupations separately for those who quit and those who move to more female dominated occupations (see Table 4.5). Models 1 and 2 in Table 4.5 examine the effects of overwork with models using the same set of covariates that are included in Model 2 in Table 4.4, but separating the dependent variable into quitting and moving to more female dominated occupations. Separating the two factors generates results broadly consistent with the ones from previous models, and it also suggests that overwork has a greater impact on mothers' quitting paid labor more than on their moving to female-dominated occupations (4 months later).

The model further reveals that working 60 hours or more and caregiving responsibility jointly increase the odds of women quitting (see Model 1 in Table 4.5). The odds of mothers who work 60 hours or more are 8.3 times greater than their childless counterparts. Considering the main effect and the interaction effect together, the odds of quitting for mothers who worked 60 hours or more are 2.3 times greater than those of non-mothers who worked full-time hours (exp(-1.27+2.12)=2.34). While in the predicted direction, the interaction effect for women working between 50 and 60 hours per week does not reach the conventional significance level. Fatherhood status, by contrast, does not significantly increase the odds of quitting for men who worked long hours. On the contrary, fathers who work between 50 and 60 hours per week are

[16] It is also worth noting that dummy variables for non-whites (blacks, other race) often show positive coefficients (see Tables 4.4 and 4.5), indicating that racial minority workers are more likely to leave male-dominated occupations, perhaps due to workplace discrimination and lack of social support.

Table 4.5. Random effects logistic regression coefficients for the effects of overwork on the log odds of quitting and moving to female-dominated occupations separately

	Model 1 (Quitting)		Model 2 (Moving to female-dominated occupations)	
	Men	Women	Men	Women
Usual work hours per week (≥ 35 hours < 50 hours is omitted):				
<35 hours (part-time)	0.24**	0.18	0.40**	0.23*
	(0.09)	(0.18)	(0.06)	(0.11)
≥ 50 hours < 60 hours	0.01	-0.18	0.07	-0.18
	(0.14)	(0.35)	(0.08)	(0.21)
≥ 60 hours	-0.07	-1.27	0.15	0.23
	(0.19)	(0.82)	(0.11)	(0.29)
Have children	-0.00	0.46**	-0.06	0.03
	(0.10)	(0.17)	(0.06)	(0.11)
× <35 hours	0.21	-0.15	0.01	0.09
	(0.15)	(0.24)	(0.09)	(0.15)
× ≥ 50 < 60 hours	-0.53*	0.76	-0.06	0.27
	(0.26)	(0.48)	(0.12)	(0.31)
× ≥ 60 hours	0.14	2.12*	-0.09	0.70+
	(0.29)	(0.95)	(0.15)	(0.42)
Married	-0.31**	0.48**	-0.06	0.01
	(0.09)	(0.14)	(0.05)	(0.08)
Age	-0.27**	-0.20**	-0.04	-0.07*
	(0.03)	(0.05)	(0.02)	(0.03)
Age squared	0.00**	0.00**	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Race ("white" is omitted)				
Black	0.29**	0.49**	0.07	-0.00
	(0.11)	(0.19)	(0.07)	(0.12)
Hispanic	0.24*	0.30	0.02	0.03
	(0.11)	(0.21)	(0.07)	(0.15)
Other race	0.34+	-0.05	0.21*	-0.30
	(0.18)	(0.28)	(0.10)	(0.19)
Education ("less than high school" is omitted)				
High school graduate	0.00	-0.74**	0.30**	0.11
	(0.10)	(0.20)	(0.07)	(0.14)
Some college	0.21+	-0.53*	0.49**	0.17
	(0.11)	(0.21)	(0.08)	(0.15)
College graduate	-0.06	-0.74**	0.79**	0.20
	(0.17)	(0.27)	(0.09)	(0.18)
Advanced degree	-0.03	-0.77+	0.80**	0.20
	(0.25)	(0.40)	(0.13)	(0.25)
Years of work experience	-0.09**	-0.04+	-0.02*	0.01
	(0.01)	(0.02)	(0.01)	(0.02)
Years of work experience squared	0.00**	0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Years of job tenure	-0.09**	-0.12**	-0.06**	-0.09**
	(0.01)	(0.02)	(0.01)	(0.02)
Years of job tenure squared	0.00**	0.00**	0.00**	0.00**
	(0.00)	(0.00)	(0.00)	(0.00)

Table 4.5 (Continued)

Monthly earnings ($US)	-0.01**	-0.02**	-0.00**	-0.02**
	(0.00)	(0.01)	(0.00)	(0.00)
Union	-0.10	-0.04	-0.41**	-0.22+
	(0.10)	(0.21)	(0.07)	(0.14)
Government	-0.02	-0.82**	-0.05	0.21
	(0.15)	(0.32)	(0.10)	(0.17)
More than two jobs	-0.18	0.00	1.40**	1.66**
	(0.11)	(0.20)	(0.05)	(0.10)
Industry [a]		Included		
Occupations [b]		Included		
Year [c]		Included		
Log likelihood	-6078.7	-1824.0	-14268.4	-4066.3
$\hat{\rho}$ [d]	0.39	0.37	0.24	0.35
Number of persons	21,480	4,189	21,934	4,439
Number of observations	124,325	18,818	126,501	19,613

Source: Survey of Income and Program Participation 1996 and 2001 (1995-2003)
Note: Standard errors are presented in parentheses.
[a b c] The coefficients of dummy variables for the industry, occupation, and year are estimated in all models but are not shown here. Full results are available upon request.
[d] $\hat{\rho}$ (intra-class correlation) = $\frac{\hat{\psi}}{(\hat{\psi}+\hat{\phi})}$, where $\hat{\psi}$ is the estimate of the variance of the random intercept of persons,
[+] p<.1, * p<.05, ** p<.01 (two-tailed).

less likely to quit, compared to childless men who work between 50 and 60 hours per week (the odds of fathers are 41 percent greater than those of non-fathers).

Model 2 in Table 4.5 examines how overwork affects the mobility of men and women from male-dominated to other occupations. The results are consistent with the findings above. Having children and working long hours jointly increase the odds of women moving to more female-dominated occupations, while they do not significantly affect men's odds. Although still substantial, the extent to which caregiving responsibility generates mobility to more female-dominated occupations appears to be smaller than in Model 1. Having children doubles the odds of mothers moving to more female-dominated occupations when they work 60 hours or more per week compared to their childless counterparts (exp[0.7] = 2.01). Considering the main effect together, the odds of mothers who work 60 hours or more per week are 2.5 times greater, compared to non-mothers who worked between 35 and 50 hours per

week (exp[0.23+0.7]=2.53). In contrast, fathers' mobility is not significantly affected by long work hours.

In sum, these analyses provide more convincing evidence that long work hours are more likely to make women quit and also make them leave male-dominated occupations to move to more female-dominated ones because their caregiving responsibility limits their availability for paid labor.

A second set of robustness checks evaluates whether the findings are consistent throughout by applying different cutoff points (see Table 4.6): specifically, defining male-dominated occupations as those with 35 percent and 40 percent women, instead of 30 percent. While applying a 30 percent cutoff point is a more conservative way to define male-dominated occupations, applying 35 percent or 40 percent cutoff points has the advantage of including some professional occupations that are otherwise excluded.[17] Including more of these occupations in the sample can check the stability of the effect of overwork. Models 1 and 2 in Table 4.6 confirm the findings previously shown. That is, the interaction effect of overwork and having children for women remain the same even after different cutoff points are applied to define male-dominated occupations. Consistent with the findings from previous analyses (see Tables 3.4 and 3.5), additional analyses here also provide evidence that supports the main argument that women are more likely to move out of male-dominated occupations because of conflict between the norm of overwork and the demands of caregiving responsibility.

The interaction effects between having children and working between 50 and 60 hours per week in Models 1 and 2 indicate that mothers who previously worked in

[17] Applying a 25 percent cutoff point gives similar results, but since only a small number of women remain in the sample with a 25 percent cutoff point, some of the estimates become unstable. In addition, applying a 30 percent or higher cutoff point has an advantage of including some professional occupations that are excluded otherwise.

Table 4.6. Random effects logistic regression coefficients for the effects of overwork on the log odds of moving out of male-dominated occupations, using different cutoff points

	Model 1 (35 percent cutoff point)		Model 2 (40 percent cutoff point)	
	Men	Women	Men	Women
Usual work hours per week (≥ 35 hours < 50 hours is omitted):				
<35 hours (part-time)	0.32**	0.29**	0.32**	0.30**
	(0.05)	(0.07)	(0.05)	(0.07)
≥ 50 hours < 60 hours	-0.02	-0.17	-0.02	-0.16
	(0.07)	(0.13)	(0.07)	(0.12)
≥ 60 hours	0.11	0.03	0.07	-0.02
	(0.09)	(0.19)	(0.09)	(0.17)
Have children	-0.03	0.13+	-0.01	0.13+
	(0.05)	(0.07)	(0.05)	(0.07)
× <35 hours	0.12	-0.07	0.12	-0.07
	(0.08)	(0.10)	(0.08)	(0.10)
× ≥ 50 < 60 hours	-0.17	0.47*	-0.20+	0.42*
	(0.11)	(0.19)	(0.11)	(0.18)
× ≥ 60 hours	-0.04	0.29	-0.10	0.16
	(0.13)	(0.28)	(0.13)	(0.27)
Other demographic and job characteristics variables [a]	Included			
Log likelihood	-19222.3	-8753.4	-19230.5	-9583.7
$\hat{\rho}$ [b]	0.23	0.28	0.26	0.26
Number of persons	159,462	36,933	167,508	41,633
Number of observations	26,496	8,036	27,592	8,888

Source: Survey of Income and Program Participation 1996 and 2001 (1995-2003)
Note: Standard errors are presented in parentheses.
[a] The models adjust for the effects of the same set of control variables used in Model 2 (Table 4.4). Full results are available upon request.
[b] $\hat{\rho}$ (intra-class correlation) = $\frac{\hat{\psi}}{(\hat{\psi}+\hat{\phi})}$, where $\hat{\psi}$ is the estimate of the variance of the random intercept of persons,
+ p<.1, * p<.05, ** p<.01 (two-tailed).

male-dominated occupations are more likely to leave the occupation than their childless counterparts when they work between 50 and 60 hours per week. However, the interaction effect for men does not reach the 5 percent significance level. Not surprisingly, the overwork effect for women decreases when higher cutoff points are applied, and the interaction effects of children and long work hours appear weaker. Also, the estimated effects do not reach the significance level for women who work 60 hours or more per week.

In contrast, the results suggest that having children *decreases* the odds of men's moving out of male-dominated occupations. Using the 40 percent cutoff point, the odds of men who work between 50 and 60 hours and have children are 19 percent smaller than those of men without children, net of all other adjusting factors (see Model 2 in Table 4.6). For the 35 percent cutoff point, the direction of the effect is also negative, although the effect does not reach conventional significance levels. This suggests that the American ideal of fatherhood, which mainly consists of the provider role (Townsend 2002), may prevent men from quitting their jobs or moving to more female-dominated occupations.

Lastly, I confirm that the overwork effect found here is specific to male-dominated occupations. I argue that the effect of overwork on the attrition of women is more specific to male-dominated occupations because the overwork norm is stronger in male-dominated occupations than in other occupations. A close examination of the means of average work hours in each occupation in fact suggests the prevalence of overwork in male-dominated occupations (not shown). About 78 percent men and 73 percent women in male-dominated occupations work in occupations in which the mean of occupational work hours is above the median of all occupations. Overwork is more common in male-dominated occupations than in other occupations, and furthermore, the penalty imposed on workers when they do not meet the norm is greater in these occupations (Epstein et al. 1999; Roth 2006; Stone 2007).

In Table 4.7, I evaluate whether the overwork effect is specific to male-dominated occupations. I applied Model 2 in Table 4.4 to the sample of those who work other occupations (% women $\geq$ 30) and estimated log odds of these workers quitting or moving to male-dominated occupations (% women <30). As expected, the results do not show the significant effect of overwork on increasing the odds of mobility of mothers in these occupations. Specifically, Model 1 in Table 4.7 indicates

Table 4.7. Random effects logistic regression coefficients for the effects of overwork on the log odds of moving out of female-dominated occupations (% women ≥30)

	Model 1	
	Men	Women
Usual work hours per week (≥ 35 hours < 50 hours is omitted):		
<35 hours (part-time)	0.23**	0.24**
	(0.05)	(0.05)
≥ 50 hours < 60 hours	-0.02	-0.10
	(0.08)	(0.11)
≥ 60 hours	0.02	0.16
	(0.10)	(0.15)
Have children	0.02	0.19**
	(0.05)	(0.05)
× <35 hours	0.13+	0.06
	(0.08)	(0.06)
× ≥ 50 < 60 hours	-0.03	0.24
	(0.11)	(0.16)
× ≥ 60 hours	-0.03	0.13
	(0.15)	(0.23)
Other demographic and job characteristics variables [a]	Included	
Log likelihood	-17665.4	-23768.3
$\hat{\rho}$ [b]	0.27	0.25
Number of persons	117,527	221,979
Number of observations	20,776	35,145

Source: Survey of Income and Program Participation 1996 and 2001 (1995-2003)
Note: Standard errors are presented in parentheses.
[a] The models adjust for the effects of the same set of control variables used in Model 2 (Table 4.4). Full results are available upon request.

that the interaction term between having children and having worked 60 hours or more is not significant for either men or women: mothers who work 60 hours or more are no more likely to leave these occupations than childless women. The overwork effect appears to be more specific to women in male-dominated occupations.

In summary, the findings presented here suggest that long work hours significantly increase the odds of moving out of male-dominated occupations for women in male-dominated occupations, while they do not affect the occupational mobility of men in male-dominated occupations. The overwork effect for women is mostly driven by women with children, indicating that caregiving responsibility is the key factor differentiating the effects of overwork for men and women. The workplace

norm that requires constant presence at work creates conflicts with the norm that requires constant presence in the family and results in the departure of many women from male-dominated occupations.

CHAPTER 5

OVERWORK AND GENDER EARNINGS INEQUALITY

In this chapter, I investigate whether overwork is an important source of gender earnings inequality. To explore this question, I conduct two sets of analyses. First, I examine the earnings consequences of gender-typed occupational mobility that is driven by overwork. In the previous chapter, I have shown that overwork is an important cause of women's mobility out of male-dominated occupations. Then, what is the earnings consequence of this mobility? While occupational sex segregation has many implications for many dimensions of gender inequality, one of the immediate consequences is on the gender earnings gap (e.g., Petersen and Morgan 1995). In this chapter, I examine whether women (also men) who leave male-dominated occupations because of overwork experience earnings loss after moving to more female-dominated occupations.

The second analysis turns to the aggregate-level inequality structure. This examines whether the overwork phenomenon affects trends in the gender earnings gap in the past three decades. The purpose of this analysis is to show that the increased pay for overwork, coupled with women's under-representation in overwork, contributes to slow convergence in the gender earnings gap. In so doing, I also engage the important puzzle of why the trend of a narrowing gender earnings gap has slowed in recent years (Blau and Kahn 2006). I employ wage decomposition, which allows me to demonstrate whether the slowdown in the pace of earnings convergence is explained by changes in price for overwork, the gender gap in overwork, or both.

OVERWORK, MOBILITY, AND EARNINGS

Data and Variables

For the first analysis, I use the same data as in the previous chapter, SIPP, IPUMS, and O*NET 3.1 database (see Chapter 4). In this analysis, the sample is restricted to respondents who are between 18 and 64 years old, who are employed, and who have earnings. Also, because the focus of this study is to see whether workers who experience mobility from male-dominated to female-dominated occupations experience earnings loss, the analyses examine those who previously worked in male-dominated occupations. The distinction between male-dominated occupations and other occupations is based on the 30 percent cut-off point, as in the previous chapter. The final sample consists of 133,511 observations (person-month) from 25,809 men, and 20,223 observations from 4,994 women. The sample size for men is larger than that for women because of the lower representation of women in male-dominated occupations.

The dependent variable is the natural logarithm of monthly earnings.[18] Earnings are adjusted to 2000 dollars using the Personal Consumption Expenditures Deflator (Bureau of Economic Analysis 2005). The means and standard deviations of monthly earnings are presented in Table 5.1 by gender. Not surprisingly, men's earnings are higher than women's earnings in my sample: men's average monthly earnings are $2,949, and women's earnings are $2,486.

The key independent variables measure whether a respondent experiences mobility out of male-dominated occupations in response to long work hours. I measure this effect with the following variables. First, I use an indicator of mobility out of

[18] I use monthly earnings, instead of hourly earnings, because monthly earnings are collected for both hourly and salary workers, whereas hourly earnings are asked only for hourly workers. In the models, I include categorical variables that measure usual weekly work hours to capture any non-linearity between work hours and earnings (see below).

Table 5.1. Means and standard deviations of individual and occupational characteristics

Variable	Men		Women	
	Mean	Std. Dev.	Mean	Std. Dev.
Monthly earnings (2000 $100 US)	29.49	23.39	24.86	19.54
Monthly earnings (log)	3.14	0.77	2.93	0.88
Exit from male-dominated occupations	0.03		0.07	
Usual work hours per week, 4 month lagged (≥ 35 hours < 50 hours is omitted):				
< 35 hours (part-time)	0.18		0.27	
≥ 50 hours <60 hours	0.13		0.07	
≥ 60 hours	0.07		0.03	
Married	0.66		0.52	
Have child	0.45		0.43	
Age	38.89	11.12	38.73	10.60
Age squared	1636.37	891.92	1612.14	846.66
Education ("less than high school is omitted"):				
High school graduate	0.37		0.34	
Some college	0.32		0.31	
College graduate	0.12		0.20	
Advanced degree	0.04		0.06	
Years of job tenure	8.03	8.58	6.99	7.44
Years of job tenure squared	138.25	255.63	104.19	201.10
Union	0.20		0.13	
Government	0.13		0.16	
Have two or more jobs	0.08		0.09	
Usual work hours per week (≥ 35 hours < 50 hours is omitted):				
< 35 hours (part-time)	0.18		0.27	
≥ 50 hours <60 hours	0.13		0.07	
≥ 60 hours	0.07		0.02	
Occupational skill measures				
Verbal	-0.16	0.90	0.06	0.90
Dexterity	2.25	0.67	2.06	0.59
Nurturance	-0.27	0.69	-0.08	0.74
Strength	0.66	1.00	0.18	0.93
Disamenities	0.47	0.68	0.03	0.62
Math	-0.12	0.90	0.06	0.90
Analytical	-0.14	0.90	-0.02	0.95
Authority	-0.14	0.87	-0.03	0.88
Technical	0.54	0.87	0.17	0.76
Index of occupational specific skills	2.60	1.14	2.55	1.22
Other occupational characteristics:				
Percent of self-employed workers	3.82	2.55	3.59	2.67
Average years of work experience	18.76	3.01	17.97	3.22
Average years of job tenure	7.45	2.87	7.30	2.79
Median of monthly earnings (2000 U.S. 100 dollars)	24.78	9.17	24.99	10.33
Percent of non-white workers	24.61	10.68	25.18	10.74

Table 5.1 (Continued)

Percent of married workers	60.27	12.41	57.87	13.31
Percent of workers with children	43.49	6.53	42.89	5.99
Percent of workers with college degree	4.34	10.14	6.18	11.53
Industry ("manufacturing" is omitted)				
Agriculture, forestry, and fisheries	0.04		0.03	
Mining, construction	0.17		0.02	
Manufacturing	0.25		0.30	
Transportation, communication, and other public utilities	0.13		0.10	
Wholesale trade	0.07		0.07	
Retail trade	0.09		0.14	
Finance, insurance, and real estate	0.02		0.03	
Business and repair services	0.08		0.09	
Personal services	0.01		0.01	
Entertainment and recreation services	0.01		0.01	
Public administration	0.07		0.09	
Occupation ("professional and managerial" is omitted):				
Technical, sales, and administrative support	0.13		0.27	
Service	0.06		0.08	
Farming, forestry, and fishing	0.04		0.03	
Precision production, craft, and repair	0.33		0.13	
Operators, fabricators, and laborers	0.30		0.29	
Year ("1996" is omitted)				
1997	0.18		0.17	
1998	0.16		0.16	
1999	0.16		0.16	
2000	0.03		0.03	
2001	0.10		0.11	
2002	0.14		0.14	
2003	0.14		0.14	
Number of observations	133511		20223	
Number of persons	25809		4994	

Source: Survey of Income and Program Participation 1996 and 2001 (1995-2003)

male-dominated occupations: if a respondent who previously worked in a male-dominated occupation now works in a more female-dominated occupation, it is coded 1; if a respondent still works in a male-dominated occupation, it is coded 0. In my sample, 3 percent men and 7 percent women move from male-dominated to female-dominated occupations.

A second set of variables measure whether a respondent worked long hours in his or her previous job. As in the previous chapter, I measure this with a series of dummy variables indicating a respondent's weekly hours in the main jobs are less than 35 hours per week ("part-time"); 50 hours or more but less than 60 hours per week ("between 50 and 60 hours"); 60 hours or more per week ("60 hours or more"). The category that indicates respondents' work hours of 35 hours or more but less than 50 hours ("full-time") serves as the reference category. These variables are lagged by 4 months. The last two categories measure the overwork effect. Table 5.1 shows that more men than women overworked in their previous jobs: 20 percent men and 10 percent women previously worked 50 hours or more in my sample. The primary interest in this analysis is in the effect of mobility driven by overwork, and this is estimated by the interaction effects between exit from male-dominated occupation and overwork. The interaction terms consist of 751 men, or 0.6 percent of the sample; 119 women, or 0.7 percent of the sample.

In addition to these key variables, I include other time varying covariates in the models which are known to affect the relationship between mobility and earnings. They include age, marital status, parental status, education, years of job tenure, union coverage, public sector, weekly work hours in the current job (measured by categorical variables), occupation, industry, and year. I use the same scales for these variables that I used in the previous chapter (see Table 5.1 for complete list and Chapter 4 for variable descriptions).

Method

I use fixed effects regression models to evaluate whether mobility driven by overwork decreases men's and women's earnings. Fixed effects models are commonly used to examine the consequence of an event on earnings. They adjust for both

observed and unobserved characteristics that are stable over time. The residual variance is attributed to longitudinal change within respondents. The general form of the model is written as follows:

$$y_{ij} = x_{ij}\beta + \alpha_i + \varepsilon_{it} \quad (1)$$

where y_{it} is the natural logarithm of monthly earnings of worker i at month j; x_{it} is a vector of time varying covariates for person i at month t; β is a vector of regression coefficients; α_i, represents unobserved stable characteristics of person i; ε_{it}, represents the random error term, which is assumed to be normally distributed with zero mean and constant variance.

Fixed Effects Analysis of Earnings

The fixed effects models in Table 5.2 evaluate whether mobility driven by overwork from male-dominated to female-dominated occupations is associated with a decrease in earnings. Model 1 presents this effect with standard covariates of individual characteristics that are typically used for the earnings regressions. For Model 2, I add occupational characteristics measures as covariates. The results support the hypothesis that overwork-based mobility generates earnings loss for women. For men, by contrast, it leads to either no change or a slight increase in earnings.

In Model 1, the interaction effect of mobility to more female-dominated occupations and working 60 hours or more per week in the previous jobs indicates a significant negative effect on earnings for women. Women who work 60 hours or more per week and leave male-dominated occupations tend to experience about 2.5 percent earnings loss in their next jobs, compared to women who work similar hours but stay in male-dominated occupations. However, if women move to female-dominated occupations, and the mobility is not driven by overwork (i.e., previously worked full-time hours), they do not experience significant earnings loss, as the main

Table 5.2. Fixed effects regression models estimating the log of monthly earnings, all workers

	Model 1 Men	Women	Model 2 Men	Women
Usual work hours per week, 4 month lagged (≥ 35 hours < 50 hours is omitted):				
<35 hours (part-time)	-0.03**	-0.08**	-0.03**	-0.08**
	(0.00)	(0.01)	(0.00)	(0.01)
≥ 50 hours < 60 hours	0.02**	0.02	0.02**	0.01
	(0.01)	(0.02)	(0.01)	(0.02)
≥ 60 hours	0.02**	0.05	0.02**	0.05
	(0.01)	(0.03)	(0.01)	(0.03)
Exit from male-dominated occupations	-0.09**	-0.02	-0.07**	0.00
	(0.01)	(0.03)	(0.02)	(0.04)
× <35 hours (part-time)	0.10**	0.24**	0.11**	0.23**
	(0.02)	(0.04)	(0.02)	(0.04)
× ≥ 50 hours < 60 hours	0.10**	-0.09	0.09**	-0.10
	(0.03)	(0.09)	(0.03)	(0.09)
× ≥ 60 hours	-0.03	-0.25*	-0.03	-0.27*
	(0.04)	(0.11)	(0.04)	(0.11)
Married	0.01	0.00	0.01	0.00
	(0.01)	(0.03)	(0.01)	(0.03)
Have child	0.01	-0.02	0.01	-0.01
	(0.01)	(0.03)	(0.01)	(0.03)
Age	0.10**	0.02	0.10**	0.02
	(0.01)	(0.02)	(0.01)	(0.02)
Age squared	-0.00**	-0.00	-0.00**	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Education ("less than high school" is omitted)				
High school graduate	0.12**	0.23**	0.12**	0.23**
	(0.02)	(0.09)	(0.02)	(0.09)
Some college	0.13**	0.22*	0.13**	0.24*
	(0.03)	(0.10)	(0.03)	(0.10)
College graduate	0.38**	0.43**	0.37**	0.44**
	(0.04)	(0.12)	(0.04)	(0.12)
Advanced degree	0.39**	0.42*	0.39**	0.43*
	(0.06)	(0.17)	(0.06)	(0.17)
Years of job tenure	-0.00	0.01	-0.00	0.01
	(0.00)	(0.00)	(0.00)	(0.00)
Years of job tenure squared	0.00**	-0.00	0.00**	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Union	0.08**	0.01	0.08**	0.01
	(0.01)	(0.02)	(0.01)	(0.02)
Government sector	-0.04*	-0.27**	-0.04+	-0.26**
	(0.02)	(0.06)	(0.02)	(0.06)
Two or more jobs	-0.13**	-0.11**	-0.13**	-0.11**
	(0.01)	(0.02)	(0.01)	(0.02)
Usual work hours per week (≥ 35 hours < 50 hours is omitted):				
<35 hours (part-time)	-0.12**	-0.12**	-0.12**	-0.12**
	(0.00)	(0.01)	(0.00)	(0.01)
≥ 50 hours < 60 hours	0.11**	0.11**	0.11**	0.11**

Table 5.2 (Continued)

	(0.01)	(0.02)	(0.01)	(0.02)
≥ 60 hours	0.18**	0.13**	0.18**	0.13**
	(0.01)	(0.03)	(0.01)	(0.03)
Industry [a]	✓	✓	✓	✓
Occupations [b]	✓	✓	✓	✓
Year [c]	✓	✓	✓	✓
Occupational skill measures [d]			✓	✓
Constant	0.80**	2.12**	5.19**	6.32**
	(0.15)	(0.47)	(0.16)	(0.49)
Number of observations	133511	20223	133511	20220 [d]
Number of persons	25809	4994	25809	4993

Source: Survey of Income and Program Participation 1996 and 2001 (1995-2003)
Note: Standard errors are presented in parentheses.
[a b c] The coefficients of dummy variables for the industry, occupation, and year as well as the effects of occupational skill measures are estimated in all models but are not shown here. Full results are available upon request.
[d] The number of observations differ for women in Model 3 due to 3 cases missing on one of the occupational skill measures (the average years of job experience in the occupation).
[+] $p<.1$, * $p<.05$, ** $p<.01$ (two-tailed).

effect of exiting male-dominated occupations indicates. Also, the wage penalty for women who previously worked 50 hours or more is not significant, as indicated by the interaction effect between exiting male-dominated occupations and having worked 50 hours or more. This is consistent with the findings from the prior chapter, indicating that only excessive long hours generate different labor market outcomes for men and women. The greater earnings loss for women who worked excessively long hours may be associated with employer-worker match (Bartel and Borjas 1981; Jovanovic 1979). Women's mobility driven by overwork is likely to occur because of having difficulty reconciling work and caregiving responsibilities, which may lead to poor job match, hence decrease workers' subsequent earnings. The main effects of both overwork categories for women indicate positive coefficients, suggesting that among stayers, earnings of overworkers are more likely to be higher than those of non-overworkers.

Men's earnings do not show a similar pattern: men who leave male-dominated occupations in response to overwork do not experience earnings loss. On the contrary, the interaction effect of leaving male-dominated occupations and 50 hours or more

suggests that these men's earnings increase by 2 percent. The increased earnings may reflect improved job match for these men. Unlike overworking women, overworking are under a fewer structural constraints in the mobility process. On the contrary, normative expectation of breadwinning prevents these men to change jobs due to familial reasons, and therefore, their mobility is more likely to be job-related reasons, improving job match. The earnings increase may also be because overworking men who move to female-dominated occupations are experiencing the relative advantages of being male in female-dominated occupations. These "glass escalator" effect (Williams 1989:256) is no longer significant for men who worked even more hours, 60 hours or more per week. However, at the very least, these men do not experience significant earnings loss, unlike their female-counterparts.

We have seen in the previous chapter that overwork prompts gender typed mobility by increasing women's odds of exiting male-dominated occupations, but not men's odds. Together with the previous findings, the findings in this chapter suggest that overwork increases the attrition of women from male-dominated occupations, and when this happens, it results in greater earnings loss for women than for men.

Unlike quitting driven by overwork, quitting driven by non-overwork factors does not result in earnings increase for men; instead, these men's earnings are lower by 9 percent than earnings of those who stay in male-dominated occupations, as the main effect of exiting male-dominated occupations indicates. This suggests that the glass escalator effect only exists for overworking men who quit male-dominated occupations, and non-overworking men experience earnings loss by moving from male-dominated to female-dominated occupations.[19] Women who previously worked

[19] While job match theory predicts that job-related mobility should result in earnings increase because job mobility is a process of improving employer-worker match (e.g., Jovanovic 1979). This is not strictly applicable to this study because earnings gain here are compared to those who stay in male-dominated occupations (including job switchers within male-dominated occupations), not their prior earnings.

full-time hours do not experience significant earnings loss by this mobility process. Note, however, that although men working full-time hours tend to experience greater earnings loss than their female-counterparts when they move to female-dominated occupations, the earnings penalty for these men is still lower (b = -.09) than that of women experience overwork-based mobility (b = -.25).

Those who previously worked part-time hours reveal an interesting mobility effect. The main effect of working part-time hours in the prior job suggests that both part-time men and women experience wage penalties, even though they stay in the male-dominated occupations, but part-time women experience greater penalties: part-timers' earnings are lower by 3 percent for men and by 8 percent for women, compared to those of full-time workers. Interestingly, however, mobility to female-dominated occupations *increases* earnings for both part-time men and women. Specifically, when part-time men move to more female-dominated occupations, their earnings increase by 10 percent, and when part-time women does, by 24 percent. The earnings increase for part-time workers may be due to greater earnings penalties for part-time work in male-dominated occupations than in other occupations (Epstein et al. 1999; Hochschild 1997; Stone 2007). For this reason, once part-timers move out of male-dominated occupations, they may experience earnings gain even if they still work part-time hours. If part-time workers quit male-dominated occupations because of "underwork," and this is resolved in the subsequent occupation, their earnings gain may reflect changes from part-time to full-time workers.

While results in Model 1 confirm the hypothesis that overworkers' exiting from male-dominated occupations contributes to gender earnings inequality, the results do not tell us *why* women experience greater earnings loss than men. One explanation may be gender differences in occupational skill requirements in the destination occupations (e.g., Polachek 1975; Zellner 1975). One could argue that

although both men and women quit male-dominated occupations, women tend to move to occupations that require lower-level skills than men do, thereby generating greater earnings loss.

I evaluate this argument in Model 2. I use additional variables that adjust for occupational skill requirements and other important occupational characteristics, each measured at the detailed (3-digit) occupation level (See Table 4.2 for a complete list).

The results from Model 2 show that accounting for occupational skills helps to explain some, but not all, of the gender differences in the mobility effect. After adjusting for occupational characteristics, the wage penalty decreases from 9 percent to 7 percent, for men who previously worked full-time hours. However, more than half of the penalty remains. The glass escalator effect for overworking men moving to female-dominated occupations also reduces slightly, but remains strong and positive (see the interaction between mobility and 50 hours or more).

Adjusting for detailed occupational characteristics decreases the magnitudes of the effects for most key mobility variables, but the earnings loss increases for women who worked 60 hours or more before leaving exiting male-dominated occupations (from 25 percent to 27 percent).

The findings in Model 2 suggest that differences in skills in the destination occupations help to explain why we see earnings loss from this mobility process, but a substantial portion remains unexplained. Sources for this unexplained mobility penalty could be gender difference in worker-employer match of the subsequent job (Jovanovic 1979), job-level segregation (Petersen and Morgan 1995), cultural devaluation for women's work (Kilbourne et al. 1994), and wage discrimination. One could argue that gender differences in unobserved qualifications (e.g., commitment to work or unobserved skills) can explain the greater earnings loss for women (e.g., Hakim 1991; Tam 1997). However, given that women tend to experience more

discrimination, lack of social support, and sexual harassment than their male counterparts (Jacobs 1989; Long 2001; Williams 1989), women in the observational data in the sample may be in fact more committed and competent than their male peers.

Does the segregation effect, measured by women's representation in destination occupations, explain the remaining penalty effect? To explore this question, in Table 5.3, I separate workers who move to female-dominated occupations into two groups: (1) workers who move to occupations in which women's representation is between 30 and 70 percent of the occupation, and (2) workers who move to occupations in which women's representation is 70 percent or more. For each variable, which is modeled separately, the reference category consists of those who stay in male-dominated occupations. Model 1 in Table 5.3 estimates the effect of moving from male-dominated occupations to occupations with percent of women between 30 and 70; Model 2 estimates the effect of mobility from male-dominated occupations to occupations with 70 percent or more women. In my sample, 2.8 percent of men and 4.5 percent of women move to the occupations with percent of women between 30 and 70 ("less than 70"); 0.6 percent men and 3.6 percent of women moved to the occupations with percent of women 70 or more ("70 or more").

The results from Table 5.3 show that the wage penalty for mobility driven by overwork is greater for women as women's representation in destination occupations increase. The overwork driven mobility, indicated by the interaction effect of exiting male-dominated occupations and 60 hours or more (in prior jobs) in Model 1 of Table 5.3, is negative but not significant ($p>.05$). In Model 2, the same interaction effect is significant, and the magnitude of the negative effect is larger (43 percent earnings loss) than previously shown in Table 5.2 (25 to 27 percent). Earnings are lower in female-dominated occupations than in male-dominated occupations even after adjusting for many known factors, which may in part explain why the penalty of

Table 5.3. Fixed effects regression models estimating the log of monthly earnings, by gender type of current occupations

	Model 1 Men	Women	Model 2 Men	Women
Usual work hours per week, 4 month lagged (≥ 35 hours < 50 hours is omitted):				
<35 hours (part-time)	-0.03**	-0.07**	-0.03**	-0.07**
	(0.00)	(0.01)	(0.00)	(0.01)
≥ 50 hours < 60 hours	0.02**	0.01	0.02**	0.02
	(0.01)	(0.02)	(0.01)	(0.02)
≥ 60 hours	0.02**	0.04	0.02**	0.06*
	(0.01)	(0.03)	(0.01)	(0.03)
Exit from male-dominated occupations to occupations with % women ≥30 <70	-0.03**	0.00		
	(0.02)	(0.04)		
× <35 hours (part-time)	0.10**	0.23**		
	(0.02)	(0.05)		
× ≥ 50 hours < 60 hours	0.09**	-0.02		
	(0.03)	(0.10)		
× ≥ 60 hours	-0.03	-0.19		
	(0.04)	(0.13)		
Exit from male-dominated occupations to occupations with % women ≥70			-0.13**	-0.08+
			(0.04)	(0.05)
× <35 hours (part-time)			0.13*	0.28**
			(0.05)	(0.07)
× ≥ 50 hours < 60 hours			0.19*	-0.23
			(0.10)	(0.15)
× ≥ 60 hours			-0.02	-0.43*
			(0.11)	(0.21)
Married	0.01	0.01	0.01	0.00
	(0.01)	(0.03)	(0.01)	(0.03)
Have child	0.01	-0.03	0.01	-0.02
	(0.01)	(0.03)	(0.01)	(0.03)
Age	0.10**	0.02	0.09**	0.03+
	(0.01)	(0.02)	(0.01)	(0.02)
Age squared	-0.00**	-0.00	-0.00**	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Education ("less than high school" is omitted)				
High school graduate	0.11**	0.24**	0.12**	0.23**
	(0.02)	(0.09)	(0.02)	(0.09)
Some college	0.12**	0.25*	0.12**	0.22*
	(0.03)	(0.11)	(0.03)	(0.10)
College graduate	0.35**	0.48**	0.36**	0.45**
	(0.04)	(0.12)	(0.04)	(0.12)
Advanced degree	0.37**	0.48**	0.31**	0.44**
	(0.06)	(0.17)	(0.06)	(0.17)
Years of job tenure	-0.00	0.01+	0.00	0.00
	(0.00)	(0.01)	(0.00)	(0.01)
Years of job tenure squared	0.00**	-0.00	0.00*	-0.00

Table 5.3 (Continued)

	(0.00)	(0.00)	(0.00)	(0.00)
Union	0.08**	0.01	0.08**	-0.00
	(0.01)	(0.02)	(0.01)	(0.02)
Government sector	-0.03	-0.23**	-0.06**	-0.31**
	(0.02)	(0.06)	(0.02)	(0.06)
Two or more jobs	-0.13**	-0.12**	-0.12**	-0.09**
	(0.01)	(0.02)	(0.01)	(0.02)
Usual work hours per week (≥ 35 hours < 50 hours is omitted):				
<35 hours (part-time)	-0.12**	-0.11**	-0.11**	-0.10**
	(0.00)	(0.01)	(0.00)	(0.01)
≥ 50 hours < 60 hours	0.11**	0.11**	0.11**	0.11**
	(0.01)	(0.02)	(0.01)	(0.02)
≥ 60 hours	0.18**	0.11**	0.18**	0.13**
	(0.01)	(0.03)	(0.01)	(0.03)
Industry [a]	✓	✓	✓	✓
Occupations [b]	✓	✓	✓	✓
Year [c]	✓	✓	✓	✓
Constant	0.85**	2.18**	0.92**	1.90**
	(0.15)	(0.47)	(0.15)	(0.46)
Number of observations	132765	19550	129985	19396
Number of persons	25529	4647	24818	4691

Source: Survey of Income and Program Participation 1996 and 2001 (1995-2003)
Note: Standard errors are presented in parentheses.
[a b c] The coefficients of dummy variables for the industry, occupation, and year as well as the effects of occupational skill measures are estimated in all models but are not shown here. Full results are available upon request.
[+] $p<.1$, * $p<.05$, ** $p<.01$ (two-tailed).

mobility due to overwork is greater when women move to occupations where women's representation is higher.

Both Models 1 and 2 in Table 5.3 show the glass escalator effect for men who move to female-dominated occupations, but the earnings gain is greater for men who move to occupations in which women's representation is the highest (Model 2). This means that being in more female-dominated occupations give men more earnings advantage. As shown in the previous models, however, this glass escalator effect only applies to men who previously worked long hours. Men who worked full-time hours lose by moving to female-dominated occupations, and the penalty is greater for men who move to occupations in which women's representation is 70 percent or more, than

for men who move to female occupations in which women's representation is lower than 70 percent (3 percent vs. 13 percent).

Lastly, I investigate whether the wage penalty for mobility driven by overwork differs by workers' parental status. In keeping with the findings from the previous chapter, I expect that after quitting, mothers are also more likely to face the most constraints in finding their next jobs, because of discrimination toward mothers and gendered expectations to fulfill the caregiving role (Correll et al. 2007; Gerson 1986), and experience greatest earnings penalties in their next jobs.

Models 1 and 2 in Table 5.4 support this argument. I estimate the model separately for workers with children (Model 1) and for workers without children (Model 2).[20] Comparison of two models indicates that the coefficient of the interaction effects of exiting male-dominated occupations and working 60 hours or more in the previous job is significantly negative only for mothers, indicating a 38 percent earnings decrease, but not childless women. Childless women's earnings are not significantly different from similar women who stay in male-dominated occupations. This suggests that the greater earnings loss for women who experience mobility to female-dominated occupations is partly explained by the motherhood penalty effect (Budig and England 2001; Correll et al. 2007).

Both fathers and childless men continue to show an earnings increase when they move to female-dominated occupations after overworking. An earnings increase is slightly larger for childless men (12 percent) than fathers (9 percent).

In summary, the results in this chapter show that mobility due to overwork generates substantial earnings loss for women, but men tend to experience a relative

[20] Alternatively, the interaction effect between the variables of interest and the indicator of having children can be estimated in the pooled model. However, because the key variable is already an interaction effect between mobility and work hours in previous jobs, this will generate three-way interaction terms, which decrease the accuracy of the results due to the small variance in each subcategory (especially for women) and also complicate the interpretation.

Table 5.4. Fixed effects regression models estimating the log of monthly earnings, by parental status

	Model 1 (Workers with children)		Model 2 (Workers without children)	
	Men	Women	Men	Women
Usual work hours per week, 4 month lagged (≥ 35 hours < 50 hours is omitted):				
<35 hours (part-time)	-0.03**	-0.09**	-0.03**	-0.06**
	(0.01)	(0.02)	(0.01)	(0.02)
≥ 50 hours < 60 hours	0.01	0.02	0.02**	-0.00
	(0.01)	(0.03)	(0.01)	(0.02)
≥ 60 hours	0.03**	0.02	0.01	0.06
	(0.01)	(0.05)	(0.01)	(0.04)
Exit from male-dominated occupations	-0.08**	0.04	-0.09**	-0.05
	(0.02)	(0.04)	(0.02)	(0.04)
× <35 hours (part-time)	0.09*	0.25**	0.12**	0.23**
	(0.03)	(0.06)	(0.03)	(0.06)
× ≥ 50 hours < 60 hours	0.09+	-0.11	0.12**	-0.07
	(0.04)	(0.13)	(0.04)	(0.12)
× ≥ 60 hours	-0.07	-0.38*	-0.00	-0.04
	(0.06)	(0.15)	(0.06)	(0.17)
Married	0.01	0.01	0.00	-0.03
	(0.02)	(0.04)	(0.01)	(0.04)
Have child	-0.03*	0.01	0.02	0.04
	(0.01)	(0.04)	(0.02)	(0.06)
Age	0.08**	0.03	0.10**	0.02
	(0.01)	(0.04)	(0.01)	(0.03)
Age squared	-0.00**	-0.00	-0.00**	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Education ("less than high school" is omitted)				
High school graduate	0.11**	0.30*	0.16**	0.16
	(0.03)	(0.13)	(0.04)	(0.13)
Some college	0.08+	0.29+	0.20**	0.13
	(0.04)	(0.17)	(0.04)	(0.14)
College graduate	0.35**	0.16	0.46**	0.39*
	(0.06)	(0.20)	(0.06)	(0.17)
Advanced degree	0.22*	0.21	0.49**	0.37
	(0.09)	(0.26)	(0.09)	(0.24)
Years of job tenure	-0.00	0.01+	-0.00	0.00
	(0.00)	(0.01)	(0.00)	(0.01)
Years of job tenure squared	0.00	-0.00	0.00*	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Union	0.06**	0.02	0.08**	-0.02
	(0.01)	(0.03)	(0.01)	(0.03)
Government sector	-0.03	-0.12	-0.06*	-0.36**
	(0.03)	(0.09)	(0.03)	(0.08)
Two or more jobs	-0.13**	-0.17**	-0.13**	-0.09**
	(0.01)	(0.03)	(0.01)	(0.03)
Usual work hours per week (≥ 35 hours < 50 hours is omitted):				

<35 hours (part-time)	-0.10**	-0.15**	-0.13**	-0.07**
	(0.01)	(0.02)	(0.01)	(0.02)

Table 5.4 (Continued)

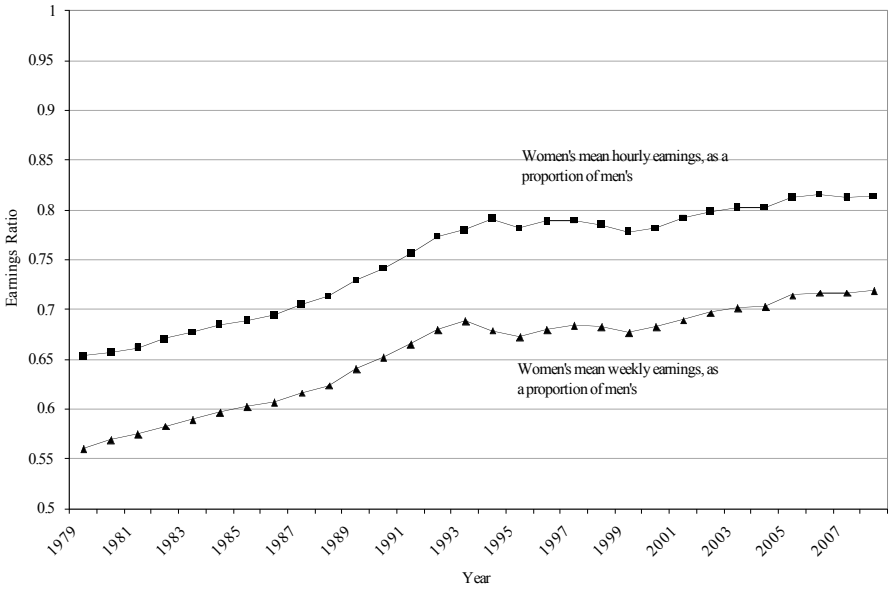
≥ 50 hours < 60 hours	0.12**	0.15**	0.11**	0.09**
	(0.01)	(0.03)	(0.01)	(0.02)
≥ 60 hours	0.19**	0.13**	0.17**	0.12**
	(0.01)	(0.05)	(0.01)	(0.04)
Industry [a]	✓	✓	✓	✓
Occupations [b]	✓	✓	✓	✓
Year [c]	✓	✓	✓	✓
Constant	1.32**	1.77*	0.66**	2.36**
	(0.24)	(0.75)	(0.20)	(0.65)
Number of observations	59733	8680	73778	11543
Number of persons	11744	2285	16427	2983

Source: Survey of Income and Program Participation 1996 and 2001 (1995-2003)
Note: Standard errors are presented in parentheses.
[a b c] The coefficients of dummy variables for the industry, occupation, and year are estimated in all models but are not shown here. Full results are available upon request.
[+] $p<.1$, * $p<.05$, ** $p<.01$ (two-tailed).

advantage through this mobility process. A part of this disparity is due to segregation: women tend to move to occupations in which women's representation is greater. Greater earnings loss for women associated with this mobility is driven by mothers: the same mobility generates greater penalty for mothers, but earnings loss becomes nonsignificant for non-mothers. As in the previous chapter, this analysis suggests that mothers are mostly likely to leave male-dominated occupations when they work long hours, and when they do, this mobility generates the largest decline in earnings.

OVERWORK AND THE SLOW CONVERGENCE IN THE GENDER EARNINGS GAP

In this final analysis, I turn to aggregate trends in earnings to evaluate the effect of overwork on the slow pace of earnings convergence between men and women. The pace of narrowing the gender gap in earnings slowed during the 1990s (Blau and Kahn 2006). Figure 5.1 confirms this pattern in a more comprehensive



Source: Current Population Survey, Merged Outgoing Rotation Group, 1979-2008

Figure 5.1. The trend of the gender earnings ratio

range of years. I include both part-time and full-time workers, unlike many prior studies. The upper line indicates women's hourly weekly earnings, presented as a proportion of men's, and the lower line indicates women's mean weekly earnings, also presented as a proportion of men's. Both gender earnings ratios show that the gender gap in earnings narrowed over the study period. However, most of the changes occurred during the 1980s, and we see very little change after the mid-1990s. The upper line shows that in mean hourly earnings, women earned 65 percent of men's earnings in 1979, but the gap narrowed by 1994, in which women earned 79 percent of men's earnings. The rate of this improvement did not continue afterwards: the gender hourly earnings ratio improved only by 2 percentage points by 2008, in which women earned 81 percent of men's earnings. Weekly earnings also indicates a similar pattern, although the overall gender weekly earnings ratio shows more inequality than gender hourly earnings ratio does. Women earned 56 percent of their male counterparts in

1979, 67 percent in 1994, and 71 percent in 2008, which also suggests that the rate of narrowing the gender earnings gap has stalled since the mid 1990s.

In the structural sense, there are two ways that overwork can affect the trend in the gender earnings gap. One stems from the changes in the number of men and women who overwork ("compositional change"). The gender earnings gap can widen as the gender gap in work hours increases. The other way is through the changes in returns to overwork ("price factor change"). Even if the gap in work hours remains constant, the gender gap in earnings can widen when returns to overwork increase, given that there are more men who overwork than women.

In this chapter, I assess both potential sources of change and show that overwork contributes to increased gender earnings inequality through the second process, an increased compensation for overwork. I begin with examining important trends: the trend of the gender gap in earnings and returns to overwork. I then use wage decomposition to analytically separate the two ways in which overwork contributes to slowing the narrowing of the gender earnings gap.

Data

I use the data from Merged Outgoing Rotation Groups of the Current Population Survey (hereafter CPS), which are commonly used for the analysis of earnings. In CPS, in contrast to the SIPP, earnings data are available for a longer time period, and the variables are more consistently constructed throughout the survey years. I first use all available years' data (from 1979 to 2008) from CPS to show the trend of the gender earnings gap and the returns to work hours. I then apply the decomposition method to data from 1979 and 2007 to investigate whether the increased price of overwork contributes to widening the gender earnings gap.[21] Lastly,

[21] I do not use the 2008 data because it is in the middle of the late 2000s recession, which started in Dec

I compare the decomposition results from 1979, 1994, and 2007 to assess whether the overwork phenomenon can partly explain why convergence of the gender gap slowed in the latter period. The analytic sample is limited to workers aged 18 to 64 with positive earnings (N = 4,494,906 for the trend analysis; N= 440,632 for the decomposition analysis). I use sampling weights provided by CPS files for all analyses.

Methods

To show how the compensation of long work hours have changed over the years, I use ordinary least square regression analysis to estimate the returns to overwork (i.e., weekly hours 50 or more), net of various individual characteristics. Unlike in other analyses, I use only one overwork variable in the final analysis for simplicity. After examining how the returns to overwork have changed over time, I apply the decomposition method developed by Juhn, Murphy, and Pierce (1991) to analytically separate the effect of overwork into two parts: composition and price effects (also see Blau and Kahn 2006).

I begin with a male wage equation, which assumes that prices for men for the observed characteristics would prevail without discrimination. The model takes the general form as follows:

$$y_{it} = x_{it}b_t + \sigma_t\theta_t, \qquad (1)$$

where y_{it} is the log of earnings for individual i in year t; x is a row vector of independent variables; b is a column vector of regression coefficients; σ is the residual standard deviation of male earnings for that year, which measures the male residual earnings inequality; θ is a standardized residual, with mean zero and variance 1 for

2007. The macro economic conditions indicate overall strong economy in years used for the analysis.

each year. The difference in the gender earnings gap between two time points, denoted by 0 and 1, can be decomposed into four components (for details see Blau and Kahn 2006; Juhn et al. 1991):

$$\text{Observed x effect} = (\Delta x_1 - \Delta x_0) b_1 \quad (2)$$

$$\text{Observed price effect} = \Delta x_o (b_1 - b_0) \quad (3)$$

$$\text{Unobserved quantity effect} = (\Delta \theta_1 - \Delta \theta_0) \sigma_1 \quad (4)$$

$$\text{Unobserved price effect} = \Delta \theta_0 (\sigma_1 - \sigma_0) \quad (5)$$

In these equations, Δ denotes the average male-female difference for the variable it precedes. The observed x effect is the portion of the variance explained by changes in the gender gap in the quantity of observed qualifications (x), which include the decrease or increase in the gender gap in overwork between the two time points. The observed price effect indicates changes in the gender earnings gap due to the changes in the price of each qualification x in the male equation. For example, it estimates the changes in the returns to overwork between two time points. Even if the average of hours worked for men and women remains the same in two time points, if the labor market pays higher wage per hour for overworkers, the earnings gap can widen, given that more men than women work long hours.

The unobserved quantity and price effects measure the effect of unobserved variables on the changes in the earnings gap. The unobserved quantity effect explains the composition effect, as in (2): it measures the contribution of changing gender gaps in the relative positions (i.e., percentile rankings) in the men's residual wage distribution. The unobserved price effect explains the price factor for the unobservables, as in (3): it measures the changes in the gender gap in earnings due to the changes in men's residual wage distribution, under the assumption that women's

percentile rankings in the male residual wage distribution did not change. The primary interest in this chapter are in (2) and (3) for observed effects. These estimates bring evidence to see whether the stalling of the gender gap in earnings has been driven by (a) the increase in the gender gap in work hours or (b) the increase in price for overwork.

To apply the variance decomposition technique, I use the standard wage equation that estimates the log of hourly earnings with weekly hours variables and covariates, which I describe below.

Variables

The dependent variable is the log of real hourly earnings expressed in 2008 pennies.[22] I use real earnings, instead of logged earnings, for some trend analyses to provide more meaningful interpretations. Top-coded earnings are multiplied by 1.4, the most commonly accepted multiplier in labor economics (e.g., Card and DiNardo 2002). As shown in Table 5.5, men's hourly earnings are substantially higher than women's earnings, although the gap has narrowed. In 1979, men's average hourly earnings were about 22.0, dollars, and women's earnings were 14.3 dollars, or 65 percent of men's earnings. In 1994, men's hourly earnings decreased to about 20.0 dollars, whereas women's earnings improved substantially to 15.8 dollars, or 79 percent of men's earnings. Women's earnings continue to increase, and the gap narrows further, but at a slower pace. In 2007, men's and women's hourly earnings were about 22.2 dollars and 18 dollars (81 percent of men's earnings).

To estimate the effect of long work hours, I use a set of dummy variables indicating individual weekly work hours, as in previous chapters: less than 35 hours

[22] Alternative is to use weekly earnings adjusting for weekly work hours in addition to the indicators for overwork and part-time, but using hourly earnings gives cleaner interpretation. Hourly earnings are presented in pennies to carry fewer decimal points.

Table 5.5. Means and standard deviations of variables used for the wage decomposition analysis

Variable	Men		Women	
	Mean	Std. Dev.	Mean	Std. Dev.
Hourly earnings (2008 US Dollars in pennies)				
in 1979	2199.18	1263.91	1438.73	977.79
in 1994	2004.95	1476.00	1588.17	1355.55
in 2007	2218.04	2237.67	1803.40	1508.76
Overwork				
in 1979	0.15		0.03	
in 1994	0.18		0.06	
in 2007	0.17		0.07	
Part-time				
in 1979	0.06		0.24	
in 1994	0.08		0.24	
in 2007	0.08		0.21	
Age	37.80	12.05	38.12	12.24
Age squared	1573.95	959.19	1602.61	973.51
Race:				
Black	0.10		0.13	
Hispanic	0.12		0.09	
Other race	0.04		0.04	
Education:				
Less than high school	0.34		0.35	
High school graduates	0.26		0.30	
Some college	0.17		0.18	
College graduates	0.09		0.08	
Potential experience	18.69	12.24	18.78	12.50
Potential experience squared	499.15	534.24	509.11	536.56
Region:				
Midwest	0.25		0.25	
South	0.35		0.35	
West	0.21		0.20	
Metropolitan residency	0.80		0.81	
Public	0.15		0.20	
N	230083		210549	

Source: Current Population Survey, 1979, 1994, 2007

(part-time), 35 hours or more but less than 50 hours (full-time), and 50 hours or more (overwork). The full-time hour category serves as the reference category. Table 5.5 suggests that the percentage of overworkers has increased for both men and women between 1979 and 2007, but men are overrepresented in the overwork category

throughout the years. In 1979, 15 percent of men and 3 percent of women worked 50 hours or more per week; in 2007, 17 percent of men and 7 percent of women did.

In the models, earnings are also predicted from individual characteristics, such as race, gender, age, age squared, marriage, education, potential years of work experience (i.e., age – years of schooling – 6), experience squared, region, metropolitan residency, and whether the job is in the public sector (see list in Table A.2 in the appendix for the variables used for the trend analysis, and Table 5.5 for variables used for the decomposition analysis).[23]

Although marriage is an important determinant of men's and women's wages, I include it only in the regression models for the trend analysis that estimates the returns to overwork, but not in the wage equation for the decomposition result. The JMP decomposition assumes the common labor market for men and women, applying the price for men to both men and women. However, marital status has a drastically different impact on men's and women's earnings: it has a positive association with men's earnings (Korenman and Neumark 1991) and a negative association with women's earnings. Without adjusting for children variables (which are not available in the data), marital status may be highly correlated with parental status, which has shown a wage penalty effect for women (Budig and England 2001; Correll et al. 2007; Waldfogel 1997).[24] Because of this gender difference, if I include marital status in the model and apply the male wage equation to women, it would assume that marriage has a positive effect on women's earnings as well, and this would severely underestimate

[23] Years of work experience and years of job tenure are important determinants of earnings, but such information is not provided by CPS. Despite the several drawbacks of SIPP described earlier, SIPP asks respondents' actual work experience once at the beginning of the panel through the "topical module." Work experience variables include actual years of long-term work experience (length of employment more than 6 months) and an indicator whether it is mostly in part-time positions (see Table A.4 in the Appendix). I use data from available years in SIPP (1996 and 2004) and apply the decomposition technique to confirm the robustness of the results on the overwork effect using CPS, and also examine more accurate effects of work experience and job tenure. I discuss the results from this analysis below.
[24] CPS does not collect information on parental status before 1984 and between 1993 and 1999.

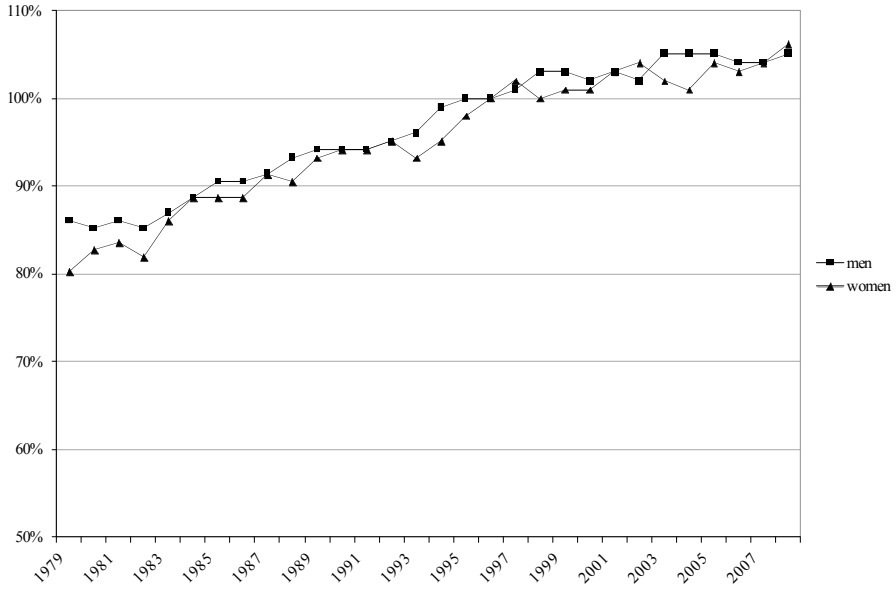
the price effect of marital status on the gender gap in earnings. Therefore, I omit marital status in the model and allow its effect, as well as parental status, to be captured by the unexplained terms.

Also, while occupations and industries are known to be important factors to determine the gender earnings gap, I do not include them in the models because occupation and industry codes are not compatible across all years. Nonetheless, the sorting process to occupations and industries itself may in fact be influenced by discrimination or gender stereotyping. Occupations and industries also reflect the hierarchical structure of the market, which is also stratified by work hours (the overwork norm is stronger in higher rank better-paying jobs). Therefore, the models allow these factors to be endogenous.

The Trend Analysis of Earnings and Overwork

The pace of narrowing the gender gap in earnings slowed during the 1990s as shown earlier in Figure 5.1. The "slow convergence" of the gender earnings gap has been a puzzle for many scholars, who have attempted to identify causes that drive this pattern (e.g., Blau and Kahn 2006). The increased norm of overwork suggests that the major contribution to this phenomenon may be the tendency for the labor market to value employees who work long hours. On the other hand, as shown in Figures 3.1 and 3.3, the gender gap in the mean of weekly work hours has narrowed, and the gender gap in the proportion of overworkers also has remained relatively stable. Here, I explore whether changes in the price for overwork contributed to stalling the closing of the gender gap in earnings. I first examine changes in returns to overwork in Figure 5.2, presented as hourly earnings of overworkers as a percent of full-time workers (see Table A.2 in the appendix for the list of variables included in the model). The effects

are all significant at the 5 percent level, except for years 1994 to 1996, where the effects are close to 0.



Source: Current Population Survey, Merged Outgoing Rotation Group, 1979-2008
Note: The effects are adjusted by demographic and job-related factors (see Table A.2 for a complete list of variables)

Figure 5.2. The mean of overworkers' hourly earnings, as a percent of full-time workers

The result shows that returns to per hour earnings for those who worked 50 hours or more has increased dramatically over the years. Per hour earnings for overworkers are lower than those for full-time workers from 1979 to 1996, but after 1996, overworkers earned higher per hourly earnings than full-time workers, by up to 6 percent. In 1979, overworking men earned 86 percent, and overworking women 80 percent of their full-time worker counterparts' earnings; in 1989 overworking men and women earned 94 and 93 percent of their full-time worker counterparts, respectively. In 1999, for example, overworking men's and women's per hour earnings were greater by 3 percent and 1 percent, compared to men and women who worked full-time hours.

By 2008, this premium increased further, to 6 percent and 5 percent for men and women, respectively.

We see overworkers' per hour earnings are lower than those of full-time workers because the model uses hourly earnings for both salary workers and hourly workers, and this way tends to underestimate the returns to overwork for salary workers, whose earnings do not increase proportion to hours they work.[25] Strikingly, however, despite the aspect of the model that penalizes salary workers' estimated hourly rates, returns to overwork continue to increase and exceed those for full-time workers after mid-1990s. The result suggests that the price that the labor market pays for overwork has increased for both men and women.

The wage premium for overwork does not appear to significantly differ by gender. However, the increased wage premium may negatively affect the gender earnings gap because there are more men than women who overwork all throughout the years (Figure 3.3). To assess this conjecture on the price effect of overwork, in the next section, I decompose changes in the gender gap into two parts: changes due to the composition effect and changes due to the price effect.

JMP Decomposition of the Gender Earnings Gap

Table 5.6 shows the decomposition of changes in the gender hourly earnings gap between 1979 and 2007. The decomposition results are based on regression models, in which the log of hourly earnings is regressed on work hour variables, workers' age, age squared, race, education, potential years of work experience, potential experience squared, region, and sector.

[25] As the overwork norm becomes stronger, one may expect that the tendency in which workers over-report their work hours may increase. If this is true, estimated wage premium from the observation data understates the "true" wage premium for overwork.

Table 5.6. Decomposition of changes in the gender hourly earnings Gap, 1979-2007

Decomposition Components	1979-2007
Change in Differential	-0.213
Observed Prices	
All b's	0.009
Overwork	0.020
Part-time	0.000
Age variables	0.006
Race variables	0.001
Education variables	-0.012
Experience variables	-0.003
Region variables	0.000
Metropolitan residency	0.000
Public sector	-0.003
Observed x's	
All x's	-0.049
Overwork	0.002
Part-time	-0.015
Age variables	-0.058
Race variables	-0.005
Education variables	-0.008
Experience variables	0.031
Region variables	0.001
Metropolitan residency	0.002
Public sector	0.001
Unexplained Differential	-0.173
Unobserved Prices	0.025
Unobserved Quantities	-0.198
N	290067

Source: Current Population Survey, 1979, 2007
Notes: See Table A2 for the regression results.

The results show that the gender earnings gap decreased by .213 log points, or about 19 percent between 1979 and 2007. The results support the argument that the overwork phenomenon contributes to widening the gender earnings gap between 1979 and 2007. While both the composition and price factor of overwork contribute to widening the gap, the price effect contributes more than the quantity effect.

Specifically, the increased price for overwork widens the gender earnings gap by .020 log points, the size of which is equivalent to 9.4 percent of the total changes in

the gap. The changes in the gender gap in the proportion of overworkers also increase the gap between 1979 and 2007, but smaller in magnitude, by .002 log points, or 0.9 percent of the total changes.

Other observed characteristics, both composition and price factors, contribute to narrowing the gender earnings gap or widening the gap, but these effects are smaller than the price effect for overwork. This suggests that the normative effect of work hours, which reflects the norm of "ideal worker," is indeed an important countervailing force that hinders progress toward gender equality.

The narrowing of the gender gap in the proportion of part-time workers contributes to decreasing the gender gap in earnings. The observed gap effect for part-time indicates that it decreases the gender gap by .015 log points, or about 7 percent of the changes in total differential. The part-time wage penalty has no effect on changes in the gender gap in earnings.

In addition, the decomposition results suggest that most changes are due to the improvement in women's unobserved labor market qualifications, as shown in the unobserved quantity effect, indicating a decrease of the gender gap by .198 log points, or about 93 percent of the total decline. Also, changes in the gender gap in observed characteristics, including women's upgraded human capital, contribute to decreasing the gender earnings gap by .049 log points, which is 23 percent of the total changes. In contrast, the results suggest that changes in price contribute to widening the gender earnings gap. The effect of observed price increases the gender gap slightly, by .009 log points, or 4.2 percent of the total changes in the gap.

Next, I examine whether the increasing norm of overwork explains why the rate of the narrowing of the gender gap slowed after mid-1990s, compared to earlier years. To this end, I compare two sets of decomposition analyses for two different time periods, from 1979 to 1994, in which we see much improvement in closing the

Table 5.7. Decomposition of changes in the gender hourly earnings gap, 1979-1994 and 1994-2007

Decomposition Components	1979-94	1994-2007	(1994-2007)-(1979-94)
Change in Differential	-0.178	-0.035	0.143
Observed Prices			
All b's	0.010	0.009	-0.001
Overwork	0.017	0.005	-0.012
Part-time	-0.001	0.001	0.002
Age variables	-0.001	0.007	0.008
Race variables	0.000	0.001	0.001
Education variables	-0.001	-0.005	-0.004
Experience variables	0.000	-0.002	-0.002
Region variables	-0.001	0.001	0.002
Metropolitan residency	0.000	0.000	0.000
Public sector	-0.004	0.002	0.006
Observed x's			
All x's	-0.031	-0.029	0.002
Overwork	0.000	0.000	0.000
Part-time	-0.008	-0.007	0.001
Age variables	-0.043	-0.016	0.027
Race variables	-0.003	-0.001	0.002
Education variables	-0.003	-0.011	-0.008
Experience variables	0.025	0.006	-0.019
Region variables	0.001	0.000	-0.001
Metropolitan residency	0.001	0.000	-0.001
Public sector	0.000	0.000	0.000
Unexplained Differential	-0.157	-0.016	0.141
Unobserved Prices	0.021	0.008	-0.013
Unobserved Quantities	-0.177	-0.024	0.153
N	287106	304091	440632

Source: Current Population Survey, 1979, 1994, 2007
Notes: See Table A2 for the regression results.

gap, and in 1994 to 2007, from which the rate of closing stalled. Table 5.7 shows the decompositions of the changes in these two time periods.

The results show that the closing of the gender earnings gap has slowed over the two time periods. Table 5.7 shows that the gender gap in hourly earnings narrowed by .178 log points, or a 16 percent decrease between 1979 and 1994; the gap narrowed

only by .035 log points, or a 3 percent decrease, between 1994 and 2007 (also see Figure 4.1).

Consistent with results in Table 5.6, the price factor of overwork contributes to widening the gender gap in both earlier and later periods, but to a greater extent in earlier years than in later years. In 1979 to 1994, price for overwork serves to increase the gender gap in hourly earnings by .017 log points, the magnitude of which is about 9.6 percent of the total changes. The absolute value of the price effect for overwork in the later period is smaller than that of the earlier period: between 1994 and 2007, the price for overwork contributes to increasing the gender gap in earnings by .005 log points. As shown in the last column in Table 5.7, the extent to which increased price for overwork widens the gender gap is greater by .012 log points in the earlier period than in the later period.

This suggests that the price effect of overwork widens the gender gap more in earlier years than later years, and so the price effect of overwork does not explain why the pace of closing the gap is slower in later period than in earlier years. However, the increased price for overwork does play a crucial role in widening the gender earnings gap in later period as well. Note that the size of the effect relative to total changes is greater in later period than in earlier period (9.6 percent in earlier period, and 13.8 percent in later period).

Between 1979 and 1994, even though increased price for overwork affects the gender earnings gap unfavorably, we still see a greater improvement in closing the gender gap. This is because other factors, women's improvement in other observed characteristics, such as work hours, education, and demographic characteristics, cancel out the effect of increased price for overwork.

Changes in the gender gap in overwork rarely affect changes in the gender gap in earnings in both time periods, as difference in the observed x effects for overwork

between the two time periods indicates no change. Other observed factors also do not contribute much to the slower rates of closing the gap in later period. The gender gap in qualifications in all observed characteristics explains the slowed pace by .002 log points, or 1.4 percent of the total difference.

Then, what does explain the slower rate of closing the gap after the mid-1990s? The results indicate that what drives the pattern is the unobserved quantity effect. The difference in unobserved quantity effect between earlier and later years is .153 log points, which is more than the actual change (.143 log points). This finding is similar to that of Blau and Kahn (2006), who applies the JMP decomposition technique to two time periods, 1980s and 1990s. The possible source of the unobserved quantity effect may be due to the following factors (also see, Blau and Kahn 2006).

First, women's unobserved labor market characteristics may have improved at a faster rate in earlier than in later period. In my analysis, changes in occupational sex segregation are not considered in the model, but may have important influence in changes in the gender gap. Given that prior research suggests that the desegregation rates have also slowed in recent years (e.g., Charles and Grusky 2004; Weeden 2004), I expect that a significant portion of the variance may be explained by the segregation effect.

Second, the extent to which women face labor market discrimination may have decreased at a faster rate in earlier than in later period. The selection into the labor force may also partly explain the unobserved quantity effect: women who contributed to increased labor force participation rates in earlier years may have had better qualifications than women who joined labor force in later years. Blau and Kahn (2006) conduct further analysis confirming that the selection partly, but not entirely, contributes to the unobserved quantity effect.

Lastly, I assess how using proxy measures for work experience and omitting job tenure variables affect the findings. As noted earlier, one drawback of using CPS is that it lacks the information of years of work experience. On the other hand, SIPP offers better measures for work experience and also provides a measure for years of job tenure, despite its limited availability (see footnote 23). Table A.5 shows the JMP decomposition results, using SIPP data in 1996 and 2004, which is roughly comparable to the decomposition results for 1994-2007 in Table 5.7.[26] The results indicate a similar effect of overwork, but suggest that using potential work experience leads to biased estimates of the effect of work experience. The price effect for overwork contributes to widening the gender earnings gap by .005 points, 20 percent of the total change, while the quantity effect for overwork does not have any impact. Note that the price effect for overwork using CPS for 1994-2007 was .005 log points and 14 percent of the total change. The effects for work experience are different from the previous results. Unlike the results using CPS in Table 5.7, the quantity effect for work experience is negative, suggesting that women's improvement in work experience contributed to narrowing the gender earnings gap between 1996 and 2004. Furthermore, the price effect for work experience is also different: the results using SIPP suggest that an increased wage premium for work experience in fact widens the gender earnings gap, unlike the results from the CPS data. Although not strictly comparable due to the shift of the study period in the analysis samples, this disparity of the work experience effects in two datasets suggests that the potential work experience variable of CPS does not estimate accurately either compositional and price effect of work experience. In addition, job tenure is an important factor in

[26] Another difference of models using SIPP, as compared to earlier ones, is that they use an indicator of whether employees are a member of a union, which is an important determinant of earnings.

narrowing the gender earnings gap substantially through both price and quantity effects.

In summary, the results of the JMP decomposition suggest that the increased price for overwork contributes to widening the gender earnings gap throughout the years. This confirms that overwork is an important factor that increases gender inequality. However, the results do not explain why we see that the closing of the gap has slowed in more recent years, suggesting that the changes are mostly explained by the fact that women's unobserved labor market qualifications improved at faster rate in earlier period. Future research should explore the sources of "slowing convergence."

CHAPTER 6

SPOUSAL OVERWORK AND MEN'S AND WOMEN'S EMPLOYMENT

So far, I have shown that overwork affect women's careers by affecting their job mobility and earnings. In this chapter, I more actively engage the role of the family by investigating how spousal overwork negatively affects women's careers. Specifically, I show that having a husband who works long hours significantly increases women's likelihood of quitting, while having a wife who works long hours does not appear to increase men's odds of quitting. This way, I show that the influence of overwork is not limited to women who are themselves in a workplace that expects long work hours, but can affect women in all occupations and classes through their husbands' overwork.

I also examine whether the gendered pattern is more prominent among workers in professional and managerial occupations, in which the norm of overwork and the intensive parenting culture is the strongest. Consistent with the previous chapter, I also emphasize the motherhood penalty and examine whether the spousal overwork effect is magnified among parents. The empirical findings show men and women respond differently to their spouses' overwork, and support my broader argument, overwork reintroduces "separate spheres," consisting breadwinning men and homemaking women, to many formerly dual-earner households.

DATA AND MEASURES

Sample

I use the 1996 panel of the Survey of Income and Program Participation (SIPP), a longitudinal household survey dataset collected by the U.S. Census Bureau. The 1996 panel covers the years 1995 through 2000. Overwork has recently become more

common, and the late-1990s' labor market indicators show favorable economic conditions (Hipple 1999); using data from this period helps avoid the influence of external factors associated with an economic downturn.

The 1996 panel of the SIPP interviewed individuals every four months over a 48-month period. As discussed in Chapter 4, I use data only from the fourth month to avoid "seam bias" (Weinberg 2003).

The panel structure allows me to observe changes in men's and women's employment status. In addition, although the SIPP is an individual-level dataset, it provides variables that identify households and relations among household members. Using these identifiers, I reshaped the data into a person-spouse structure, which allows me to include variables of spousal characteristics in the model. I restrict the sample to dual-earner married couples because the question of interest deals with employment decisions in response to spousal overwork status. I also restrict the sample to individuals who were in the labor force at the first time point and were in economically active ages (18 to 64 years). The final sample includes 150,205 observations (person-months) from 23,593 respondents. Among them, 49,139 observations (8,484 persons) are for professional workers; 101,066 observations (17,648 persons) are for nonprofessional workers.

Dependent Variables

Quitting. The dependent variable is a dichotomous variable that measures whether an individual's employment status changed from working to not working. To estimate the likelihood of quitting in response to spousal overwork, I allow a time lag between one's quitting and the independent variables. I applied a four-month time lag because employment data are available once every four months. I exclude workers who quit for job displacement, illness, and disability to prevent the possibility that

employment decisions were driven by non-voluntary, external factors. I also exclude individuals who reported their reason for not working as "not interested in working" to ensure that the relationship is not driven by workers with low work commitment.[27] All other voluntary quitters, including those who quit for schooling, retirement, or job-related, personal, or familial reasons are considered quitters. I include schooling and retirement because more women than men may leave jobs and go to school or retire early in response to conflict between work and family.[28]

Independent Variables

Spousal overwork. The independent variable of theoretical interest is a set of categorical variables that measures weekly work hours of a respondent's spouse. The measures do not consider hours that spouses spend outside of their workplace. The model includes two dummy variables that indicate whether the work hours of a respondent's spouse in their main jobs are (1) 50 hours or more but less than 60 hours per week ("50 hours or more") or (2) 60 hours or more per week ("60 hours or more").[29] The baseline category is "spouse works less than 50 hours per week."[30] I use categorical variables because the effect of spousal work hours on women's employment may increase in a nonlinear fashion. Although a continuous measure for

[27] Including these quitters in the baseline category does not change the findings.
[28] Supplementary analysis of a more restricted age group (25 to 49 years), which is less likely to be affected by schooling in early years or retirement in later years, confirms the same findings. The gender gap in quit rates is slightly larger among these workers than is shown in Table 6.1 (2.26 versus 2.09 percent).
[29] Of all workers in the sample, 90 percent reported that their main job is their only job. Although SIPP offers the work hours variable from the second job (where relevant), I use work hours only from the main job because a close examination of the data suggests that respondents frequently reported the same values for the first and the second job. Nonetheless, considering the hours in a second job does not change the findings.
[30] Separating part-time hours ("less than 35 hours") from the baseline category does not change the findings. Because interpretation of the effect of overwork is more straightforward in the current specification, I do not further disaggregate the baseline category.

spousal work hours could be used with its quadratic term to capture the nonlinearity, this would make interpreting the results less intuitive (see footnote 32).

Using categorical variables to measure spousal overwork has advantages, but it may leave the possibility that the observed gendered effects are influenced by a gender difference in average work hours *within* categories. That is, although men and women are in the same overwork category ("50 hours or more" or "60 hours or more"), men may work longer hours than women in the same category. The data indicate small gender differences in average work hours within categories. Men's average work hours are greater than those of women by .2 hours in the "50 hours or more" category and .4 hours in the "60 hours or more" category. Although the differences are small, one could argue that women are more responsive to their husbands' overwork because of these differences. Employing multiple categories allows me to assess this possibility. For the "50 hours or more" category, the average work hours is less than the average work hours for the "60 hours or more" category. So, if we find the effect for men in the latter but not the former category, we could suspect that the effects are driven by gender differences of work hours within the category. The results, however, do not support this alternative explanation.

Have children. I use a dummy variable that indicates whether respondents have children under age 18 to determine whether spousal overwork has a greater effect for workers who have children. This can be tested by the interaction effect between spousal overwork and children. I consider only respondents' own children under age 18 who are living with them to estimate the immediate effect of childcare responsibility.

I include other variables shown to affect the relationship between spousal overwork and employment decisions. I include workers' age and its squared term to capture the nonlinear effect of age on employment: while younger workers are more

likely than older workers to quit their jobs, older workers tend to quit more as they move closer to retirement age. I measure race by the three indicator variables that identify respondents' race as Black, Hispanic, and other races; Whites are the reference category.

I also include variables that measure workers' skill accumulation because research shows that one is less likely to quit a job if the degree of job investment is high (Bielby and Bielby 1992). I use schooling and job experience to measure workers' skills. Five categorical measures for educational attainment ("less than high school," "high school graduate," "some college," "college graduate," and "advanced degree") capture its nonlinear effect. I use years of experience and its squared term to measure job-specific skills. I include earnings of respondents and their spouses because the decision on employment change may be sensitive to both husbands' and wives' earnings. I use hourly earnings with an inflation adjustment to 2000 dollars adjusted by the Personal Consumption Expenditures Deflator (Bureau of Economic Analysis 2005). Because respondents' work hours may reflect their labor market attachment and the time pressure they experience, I employ a series of dummy variables that indicate the number of hours respondents usually worked per week ("less than 35 hours," "35 hours to 50 hours," "50 hours to 60 hours," and "60 hours or more").[31]

To reflect the range of flexibility in different occupations' work arrangements, I use four dummy variables for occupations based on the one-digit-level 1990 census

[31] An alternative way of examining the effect of overwork might consider couples' joint work hours. However, this cannot estimate the effect of spousal overwork net of one's own work hours, nor can it identify gender differences in these effects. Furthermore, prior research suggests that in response to conflict between work and family, women often go part-time before eventually quitting, which cannot be captured by aggregated work hours. Alternatively, one could model the interaction effects between one's own (3 categorical variables) and spousal work hours (2 categorical variables), but this generates too many interaction terms, which not only make the interpretation difficult but also decrease the accuracy of the results due to small degrees of freedom in each sub-category.

occupational codes (see the list in Table 6.1). The "managerial and professional specialty" category serves as the reference category. Similarly, because jobs in some industries are less stable than others (e.g., service industry jobs have more turnover than jobs in professional industries), I include 11 industry dummy variables based on the 1990 one-digit census industry codes. The "professional and related services" category serves as the baseline.

In some models, I include other spousal job characteristics in addition to earnings, because economic theory suggests that spousal human capital variables can affect respondents' employment decisions (Becker 1985). For example, respondents' employment decisions may be affected when spouses' jobs bring in more of the family income, or when spouses' human capital investment in their jobs is greater than respondents' investments (e.g., jobs that require more years of educations or more job-specific skills). To adjust for these effects, some models include variables that measure spouses' education, years of work experience, years of job tenure, occupation, and industry. I use the same coding as those used for corresponding respondents' characteristics.

METHOD

I use logistic regression models to estimate the effect of spousal overwork on the log odds of men's and women's quitting work net of adjustment factors. Because the data include multiple records per individual as a result of the panel structure, I introduce a random intercept term to address the dependence among observations within the same individuals. The models take the following general form:

$$\log \frac{p_{ij}}{1 - p_{ij}} = x_{ij}\beta + \alpha_i + \varepsilon_{it}, \qquad (1)$$

where p_{ij} is the probability of quitting by the next time point (four months later), x_{ij} is a row vector of variables for individual i at time j, and β is a column vector of regression coefficients. Residuals are composed of two parts: α_i represents random intercepts for persons, assumed to be uncorrelated with x_{ij} and normally distributed with a mean of zero and constant variance; ε_{ij} is a random disturbance term.

I estimated the models presented here in STATA 10 using the xtlogit procedure, which employs an adaptive Gauss-Hermite quadrature to calculate the parameters. This procedure works particularly well for models with binary outcomes and small-to-moderate clusters (Rabe-Hesketh, Skrondal, and Pickles 2002). Estimating models using this procedure is appropriate for the data used in this study because the number of observations for each person is relatively small (maximum cluster size is 11; average cluster size is 8.6). I estimate the effects separately by gender.

RESULTS

Descriptive Results

Table 6.1 shows means and standard deviations of variables used for this study by workers' professional status. First, we see that more women than men quit their jobs. Among professional workers, 0.7 percent of men quit their jobs, compared with 2 percent of women. Because quit rates here are based on job quitting only for selected reasons, the rates are lower than those for all job quitters. The percent of respondents who reported quitting jobs is higher among nonprofessional workers for both men and women (0.9 percent of men and 3 percent of women). In both samples, quit rates are higher for women than for men, which suggests that women's labor force status is more changeable.

Table 6.1. Means and standard deviations for the variables used in the analysis by professional status and gender

Variables	Professional		Non-Professional	
	Men	Women	Men	Women
Quitting (%, after 4 month)	0.70	1.95	0.94	3.41
Spouse's usual work hours per week (%):				
< 50 hours	88.15	70.61	93.56	77.67
≥ 50 hours <60 hours	8.53	19.04	4.77	14.63
≥ 60 hours	3.32	10.36	1.66	7.70
Have children	0.55	0.56	0.58	0.58
Age	42.50	39.98	40.88	38.92
	(9.52)	(9.19)	(10.05)	(9.75)
Race:				
White	0.88	0.86	0.77	0.76
Black	0.05	0.06	0.10	0.08
Hispanic	0.03	0.04	0.10	0.11
Other race	0.04	0.04	0.04	0.05
Education:				
Less than high school	0.01	0.01	0.12	0.11
High school graduate	0.10	0.13	0.39	0.40
Some college	0.22	0.26	0.35	0.37
College graduate	0.37	0.38	0.11	0.11
Advanced degree	0.30	0.22	0.02	0.01
Years of work experience	22.12	17.44	21.69	15.97
	(10.06)	(8.84)	(10.50)	(9.48)
Years of job tenure	10.12	8.01	8.81	6.15
	(9.00)	(7.42)	(8.66)	(6.64)
Usual work hours per week:				
<35 hours (part-time)	0.17	0.33	0.16	0.40
≥ 35 hours < 50 hours				
≥ 50 hours <60 hours	0.23	0.11	0.13	0.03
≥ 60 hours	0.13	0.04	0.07	0.01
Hourly earnings (in 2000 $U.S.)	24.18	17.55	15.20	10.86
	(22.09)	(13.87)	(14.70)	(10.09)
Spousal hourly earnings (in 2000 $U.S.)	16.20	21.24	11.94	16.03
	(13.81)	(21.58)	(10.89)	(15.10)
Occupation:				
Technical, sales, and administrative support			0.28	0.62
Service			0.12	0.21
Farming, forestry, and fishing			0.04	0.01
Precision production, craft, and repair			0.28	0.03
Operators, fabricators, and laborers			0.29	0.12
Industry:				
Agriculture, forestry, and fisheries	0.01	0.00	0.03	0.02
Mining, construction	0.04	0.01	0.12	0.01
Manufacturing	0.19	0.07	0.27	0.16
Transportation, communication, and other public utilities	0.07	0.03	0.12	0.05

Table 6.1 (Continued)

Wholesale trade	0.03	0.01	0.08	0.03
Retail trade	0.05	0.05	0.12	0.19
Finance, insurance, and real estate	0.06	0.07	0.04	0.09
Business and repair services	0.06	0.04	0.06	0.04
Personal services	0.01	0.01	0.02	0.05
Entertainment and recreation services	0.02	0.02	0.01	0.01
Professional and related services	0.35	0.61	0.07	0.30
Public administration	0.11	0.07	0.08	0.05
Spousal education:				
Less than high school	0.01	0.03	0.10	0.12
High school graduate	0.16	0.19	0.37	0.36
Some college	0.30	0.29	0.35	0.33
College graduate	0.34	0.29	0.15	0.13
Advanced degree	0.18	0.21	0.04	0.05
Spousal years of work experience	17.27	21.86	16.16	21.74
	(8.95)	(10.15)	(9.42)	(10.48)
Spousal years of job tenure	7.14	9.79	6.65	8.84
	(7.01)	(8.89)	(6.97)	(8.68)
Spousal occupation:				
Professional and managerial	0.55	0.47	0.27	0.21
Technical, sales, and administrative support	0.34	0.20	0.42	0.19
Service	0.07	0.06	0.16	0.09
Farming, forestry, and fishing	0.00	0.02	0.01	0.03
Precision production, craft, and repair	0.01	0.14	0.03	0.22
Operators, fabricators, and laborers	0.02	0.12	0.10	0.25
Spousal industry:				
Agriculture, forestry, and fisheries	0.01	0.02	0.01	0.03
Mining, construction	0.01	0.08	0.01	0.11
Manufacturing	0.08	0.21	0.15	0.26
Transportation, communication, and other public utilities	0.04	0.09	0.04	0.11
Wholesale trade	0.02	0.06	0.03	0.07
Retail trade	0.10	0.08	0.16	0.11
Finance, insurance, and real estate	0.08	0.06	0.09	0.04
Business and repair services	0.04	0.05	0.04	0.06
Personal services	0.02	0.01	0.04	0.02
Entertainment and recreation services	0.02	0.02	0.01	0.01
Professional and related services	0.52	0.23	0.37	0.10
Public administration	0.06	0.10	0.05	0.08
Number of observations	22,562	26,577	52,615	48,451
Number of persons	3,946	4,538	9,015	8,633

Source: Survey of Income and Program Participation 1996 (1995-2000)
Note: Standard deviations are presented in parentheses where relevant.

Table 6.1 also reveals a clear gender difference in spousal overwork. Men tend to be represented more in the spousal overwork categories than do women. In particular, 12 percent of professional men's wives work 50 hours or more per week, compared with 29 percent of professional women's husbands. This suggests that women in professional occupations are less likely than their male counterparts to receive spousal support. The gender gap also exists for nonprofessional workers, although a smaller percentage of their spouses overwork than that of professional workers' spouses. Specifically, 7 percent of wives and 23 percent of husbands of nonprofessional workers work 50 hours or more per week.

The Effect of Spousal Overwork on Men's and Women's Employment for All Workers

Models in Table 6.2 evaluates whether having a spouse who works long hours increases women's likelihood of quitting but not men's. Results support this hypothesis. First, Model 1 estimates the effect of spousal overwork on the log odds of quitting, net of one's important demographic and job-related characteristics. Because neoclassical economic theory suggests that spousal income is an important factor in family-level economic decisions, I include spouse's hourly earnings in the model. Results show that having a husband who works 60 hours or more per week significantly increases women's odds of quitting by 42 percent (exp[.352] = 1.42). However, having a wife who works 60 hours or more per week does not significantly affect men's log odds of quitting. This supports the argument that spousal long work hours contribute to the gender gap in employment status by increasing women's, but not men's odds of quitting. The effect of having a spouse who works 50 hours or more per week is not significant at the 5 percent level for either men or women. This suggests that the results support the argument developed earlier, showing the expected

Table 6.2. Random effects logistic regression models for the effects of spousal overwork on the log odds of quitting for all men and women

	Model 1		Model 2	
	Men	Women	Men	Women
Spouse's usual work hours per week ("less than 50 hours" is omitted):				
≥ 50 hours < 60 hours	0.332	0.105	0.330	0.091
	(0.172)	(0.067)	(0.175)	(0.068)
≥ 60 hours	0.145	0.352**	0.122	0.337**
	(0.286)	(0.080)	(0.290)	(0.081)
Have children	-0.076	0.540**	-0.070	0.540**
	(0.105)	(0.063)	(0.106)	(0.063)
Age	-0.190**	-0.142**	-0.183**	-0.129**
	(0.046)	(0.023)	(0.047)	(0.026)
Age squared	0.003**	0.002**	0.003**	0.002**
	(0.001)	(0.000)	(0.001)	(0.000)
Race ("white" is omitted):				
Black	0.299	0.159	0.240	0.194
	(0.156)	(0.100)	(0.157)	(0.101)
Hispanic	0.205	0.168	0.106	0.170
	(0.165)	(0.088)	(0.171)	(0.089)
Other race	0.263	0.054	0.239	-0.006
	(0.229)	(0.129)	(0.231)	(0.129)
Education ("less than high school" is omitted):				
High school graduate	-0.181	-0.442**	-0.115	-0.409**
	(0.153)	(0.093)	(0.160)	(0.097)
Some college	-0.220	-0.396**	-0.122	-0.414**
	(0.161)	(0.097)	(0.174)	(0.103)
College graduate	-0.290	-0.500**	-0.148	-0.675**
	(0.195)	(0.114)	(0.214)	(0.128)
Advanced degree	-0.499*	-0.627**	-0.452	-0.927**
	(0.241)	(0.155)	(0.265)	(0.169)
Years of work experience	-0.099**	-0.080**	-0.095**	-0.077**
	(0.020)	(0.010)	(0.020)	(0.010)
Years of work experience squared	0.002**	0.002**	0.002**	0.002**
	(0.000)	(0.000)	(0.000)	(0.000)
Years of job tenure	-0.055**	-0.118**	-0.058**	-0.112**
	(0.014)	(0.011)	(0.014)	(0.011)
Years of job tenure squared	0.002**	0.003**	0.002**	0.003**
	(0.000)	(0.000)	(0.000)	(0.000)
Usual hours worked per week ("≥35 hours <50 hours" omitted):				
<35 hours (Part-time)	0.515**	0.469**	0.505**	0.454**
	(0.098)	(0.052)	(0.099)	(0.052)
≥ 50 hours < 60 hours	-0.664**	-0.126	-0.642**	-0.139
	(0.157)	(0.128)	(0.158)	(0.128)
≥ 60 hours	-0.142	0.320	-0.132	0.316
	(0.171)	(0.172)	(0.171)	(0.172)
Hourly earnings (in 2000 $U.S.)	0.000	0.002	0.001	0.001
	(0.002)	(0.002)	(0.002)	(0.002)
Spousal hourly earnings (in 2000 $U.S.)	0.003	0.004**	0.002	0.003**
	(0.002)	(0.001)	(0.003)	(0.001)

Table 6.2 (Continued)

Occupation [a]	✓	✓	✓	✓
Industry [a]	✓	✓	✓	✓
Other spousal job related variables [b]			✓	✓
Constant	-1.522	-0.735	-1.284	-1.002*
	(0.801)	(0.389)	(0.839)	(0.433)
Log likelihood	-3440.4	-9027.9	-3421.5	-8980.9
$\hat{\rho}$ [c]	0.33	0.24	0.32	0.23
Number of observations	75,177	75,028	75,177	75,028
Number of persons	11,816	11,777	11,816	11,777

Source: Survey of Income and Program Participation 1996 (1995-2000).
Note: Standard errors are presented in parentheses.
[a] The coefficients of dummy variables for the industry and occupation are estimated in all models but are not shown here. Full results are available upon request.
[b] The coefficients of the variables that measure spousal characteristics other than earnings are estimated in Model 2 but are not shown here. These characteristics include education, years of work experience, years of job tenure, occupations and industries. Full results are available upon request.
[c] $\hat{\rho}$ (intra-class correlation) = $\frac{\hat{\psi}}{(\hat{\psi}+\hat{\phi})}$, where $\hat{\psi}$ is the estimate of the variance of the random intercept of persons (α_i), and $\hat{\phi}$ is the estimate of the variance of the random disturbance term (ε_{ij}). Likelihood ratio tests of $\hat{\rho}$=0 for all $\hat{\rho}$s are significant at 0.001 level.

* p<.05, ** p<.01 (two-tailed).

gender difference in the spousal overwork effect when spouses work excessively long hours, namely, 60 hours or more.

Next, Model 2 shows that this gendered pattern is consistently found even after additional adjusting factors are introduced in the model. The models adjust for additional spousal characteristics such as educational attainment, years of work experience, years of job tenure, occupation, and industry. Even after this comprehensive range of factors is added, spousal overwork consistently remains significant. More specifically, women whose husbands work more than 60 hours per week are 40 percent more likely to quit in the next time point than women whose husbands work less than 50 hours per week, holding a wide range of factors constant. In contrast, wives' overwork does not influence men's odds of quitting significantly. This suggests that the overwork phenomenon is by no means a gender-neutral process;

rather, it is a gendered process that results in women's exclusion from the labor market.[32]

While the results reveal the gendered aspect of spousal overwork, which increases women's odds of quitting, an alternative explanation is that wives' quitting, or their anticipated quitting, leads to husbands' long hours. Although the research design, which gives a time lag between spousal overwork and respondents' quitting, helps ensure the causal direction of the effects, one could argue that men's overwork is a result of women's intention to quit, to which their husbands respond by increasing their work hours. Yet, previous studies using qualitative data provide strong evidence that husbands' overwork is an important factor leading many women to quit (e.g., Bunting 2004; Hochschild and Machung [1989] 2003; Stone 2007).

I also address this alternative explanation by conducting two supplementary analyses that assess the causal direction of the spousal overwork effects (analyses not shown). First, I included a variable that measures change in spousal work hours over the four months prior to the time point at which I measure spousal overwork, which is eight months prior to the time a respondent's quitting is observed. I further checked with an eight-month lag variable, which stretches the covered period to a year, to ensure the robustness of the results. If husbands overwork because their wives intend to quit, one would expect that the wives of husbands who recently increased their work hours would be more likely to quit than the wives of husbands with constant or declining work hours. This measure cannot capture the effect driven by longer-term plans (e.g., a couple decided a wife would quit work more than a year in advance, so

[32] Using the measure of continuous hours with its squared term leads to the substantively same conclusion. For women, the odds of quitting decrease as the husband's work hours increase until husbands' weekly work hours reach 15, and increase afterwards with an increasing rate. For men, by contrast, neither the wife's work hours nor its squared term is significant ($p>.05$).

the husband works increased hours for more than a year), but the analyses should cover the effect from decisions made during the one-year period.

In the second analysis, I included a proxy measure of one's labor market attachment, namely the difference between potential years of work experience (age – schooling – 6) and actual years of work experience. I then allow this labor market attachment variable to interact with the spousal overwork variables. I assume that workers with lower labor market attachment have greater differences between potential and actual years of work experience. If women with lower attachment encouraged their husbands to increase work hours so that they could leave the labor force, and this reverse causal pathway drives the effects entirely, then we should see these interaction terms negative and no longer see the positive effects of spousal overwork for women once the interaction terms are taken into account.

Neither of these analyses, however, changes the main conclusion of this chapter. The spousal overwork effect remains strong in the first analysis. In the second analysis, the added interaction terms are not significant at the 5 percent level for both men and women, and the main effect of "60 hours or more" for women remains significant ($p < .01$) . Although the results do not completely discount the reverse causal path argument, given the data unavailability for a direct measure of workers' intentions, they provide more convincing evidence that husbands' overwork results in wives' increased quitting, rather than the other way around.

The Effect of Spousal Overwork on Men's and Women's Employment for Professional Workers

Having shown that the average effect of spousal overwork significantly increases women's odds of quitting but not men's, I now turn to analyses of

Table 6.3. Random effects logistic regression models for the effects of spousal overwork on the log odds of quitting for professional workers

	Model 3		Model 4	
	Men	Women	Men	Women
Spouse's usual work hours per week (less than 50 hours is omitted):				
≥ 50 hours < 60 hours	-0.182	0.134	-0.359	-0.336
	(0.326)	(0.126)	(0.408)	(0.233)
≥ 60 hours	-0.061	0.410**	-0.012	-0.425
	(0.473)	(0.147)	(0.532)	(0.309)
Have children	-0.233	0.699**	-0.266	0.428**
	(0.202)	(0.129)	(0.209)	(0.145)
× (≥ 50 < 60 hours)			0.548	0.704*
			(0.668)	(0.277)
× (≥ 60 hours)			-0.235	1.176**
			(1.146)	(0.351)
Other variables [a]	✓	✓	✓	✓
Log likelihood	-841.0	-2400.2	-840.7	-2392.0
$\hat{\rho}$ [b]	0.07	0.28	0.07	0.29
Number of observations	22,562	26,577	22,562	26,577
Number of persons	3,946	4,538	3,946	4,538

Source: Survey of Income and Program Participation 1996 (1995-2000).
Note: Standard errors are presented in parentheses.
[a] Age, race, education, work experience, job tenure, work hours, earnings, and industry (equivalent to Model 1). Full results are available upon request.
[b] $\hat{\rho}$ (intra-class correlation) = $\frac{\hat{\psi}}{(\hat{\psi}+\hat{\phi})}$, where $\hat{\psi}$ is the estimate of the variance of the random intercept of persons (α_i), and $\hat{\phi}$ is the estimate of the variance of the random disturbance term (ε_{ij}). Likelihood ratio tests of $\hat{\rho}$=0 for all $\hat{\rho}$s are significant at 0.001 level only in models for women. The use of logistic regression without applying random intercept to models for men does not substantively change the results.
* *p*<.05, ** *p*<.01 (two-tailed).

professional workers to investigate moderating effects of workers' professional and parental status (Table 6.3).

Model 3 in Table 6.3 shows the effect of having an overworking spouse on the log odds of quitting, adjusting for factors known to affect employment decisions, such as respondents' human capital, demographic factors, and spousal earnings (equivalent to Model 1).[33] Results suggest that having a spouse who works long hours

[33] I do not adjust for additional spousal characteristics here, because only a small number of professional men have overworking wives, and including an excess number of variables makes estimates for some variables unstable. Nonetheless, using additional controls does not change the results for professional women.

significantly increases also professional women's odds of quitting, but it does not increase professional men's odds. The odds of quitting increase by 51 percent by the next time point for professional women whose husbands work 60 hours or more per week. By contrast, for professional men, the effects are negative and not significant.

Model 4 examines whether having children increases the effect of spousal overwork on the odds of quitting for professional men and women.[34] As expected, results confirm that having children significantly increases professional women's, but not professional men's, odds of quitting, in response to their spousal overwork. The interaction effects between having children and both spousal overwork variables are positive and significant for professional women, whereas neither of the interaction terms is significant for professional men. Specifically, professional mothers' odds of quitting increase by 2 times when their husbands work 50 hours or more, and 3.2 times when their husbands work 60 hours or more, as compared to their childless counterparts. With main effects and interaction terms considered together, for professional mothers whose husbands work 50 hours or more per week, the odds of quitting are greater by 44 percent (exp[–.336 + .704] = 1.44), compared with professional mothers whose husbands work less than 50 hours per week. This effect is strikingly greater for professional mothers whose husbands work 60 hours or more per week: their odds of quitting are 112 percent greater than those of professional mothers whose husbands work less than 50 hours per week.

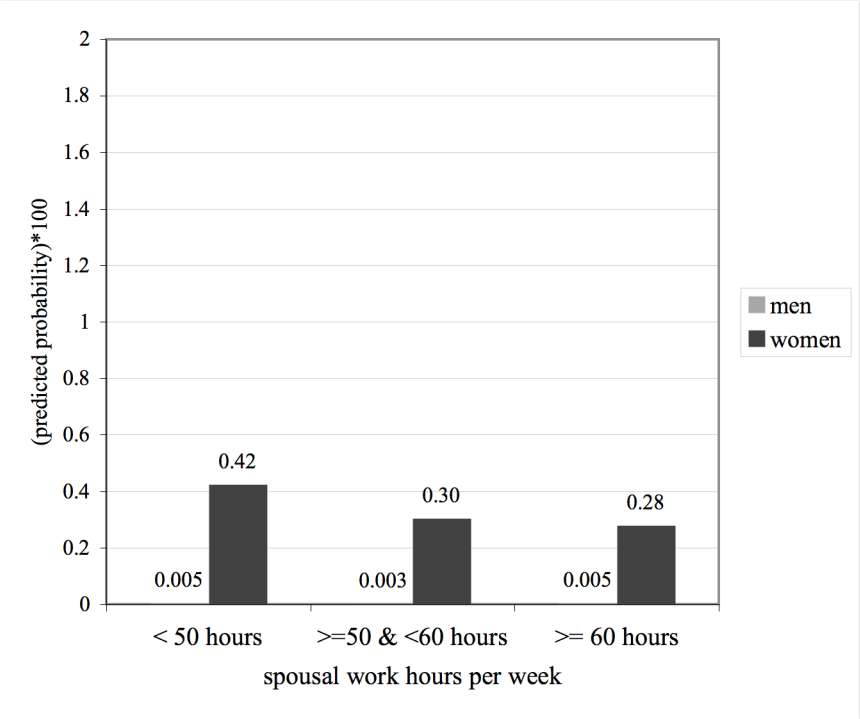
With the addition of the interaction variables, main effects of spousal overwork for women become negative and nonsignificant, suggesting that spousal overwork does not significantly increase the odds of quitting for childless professional women. This suggests that women's caregiving responsibility is the key factor that increases professional women's odds of quitting in response to their husbands' overwork. By

[34] The child effect is consistently found for both overwork variables in analysis including all workers

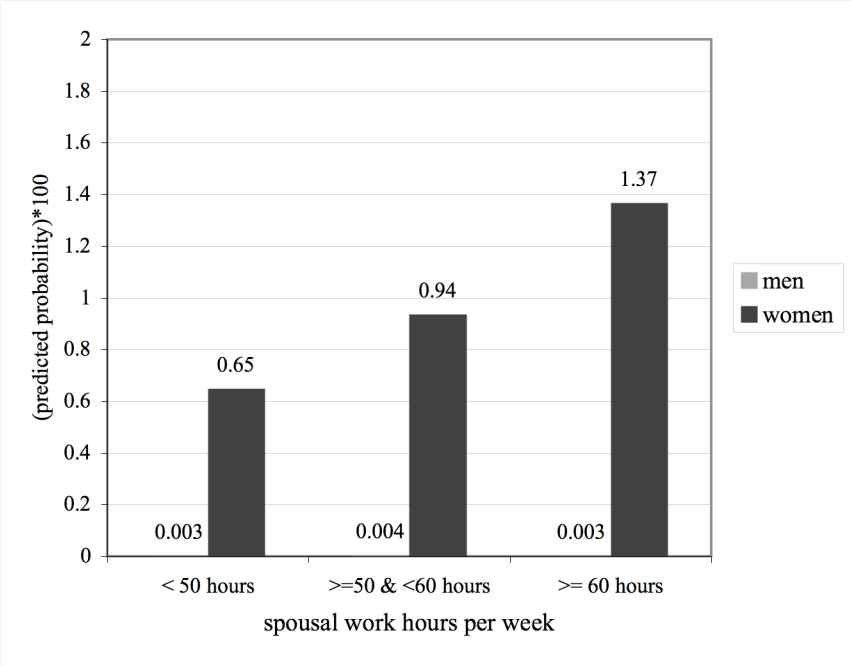
contrast, as expected, having children does not significantly affect professional men's odds of quitting.

Figure 6.1 illustrates this relationship. The Y-axis represents the predicted probability (presented as a percent) of quitting of a hypothetical man and woman who have the average characteristics on all covariates (see Table 6.1). The far-left group indicates quit rates of the reference group (less than 50 hours per week), and the next two groups indicate quit rates of workers whose spouses work 50 hours or more, or 60 hours or more per week, respectively. Panel A depicts the relationship for professional workers without children, and Panel B shows the relationship for professional workers with children.

The two panels show that spousal overwork does not affect professional men's quitting. Professional men's quit rates are close to zero in both panels and do not vary by their wives' overwork. Panel A also shows no systematic relationship for childless professional women. By contrast, Panel B reveals that professional mothers' quit rates systematically increase as their husbands' work hours increase. In particular, quit rates of professional mothers whose husbands work less than 50 hours per week are .65 percent, and they increase to .94 percent when husbands work 50 hours or more. Quit rates further increase to 1.37 percent when husbands work 60 hours or more per week. This is 110 percent higher than the quit rate of professional mothers with non-overworking husbands. The panels effectively illustrate that caregiving responsibilities drive the gendered effect of spousal overwork. The effects may seem small when presented in predicted probabilities, because quitting is a rare event. Although rare, quitting has a dramatic impact on one's economic and social life (Stone 2007), and the findings show that spousal overwork is an important determinant of mothers' quitting.



(a) Professional workers without children



(b) Professional workers with children

Source: Survey of Income and Program Participation (1995-2000).
Note: Estimates are derived from Model 4 in Table 6.3 (N=49,139). All other variables are set to their mean values

Figure 6.1. The predicted probability (×100) of quitting of professional workers

The Effect of Spousal Overwork on Men's and Women's Employment for Non-Professional Workers

Finally, I examine the effects of spousal overwork for nonprofessional workers (Table 6.4). Consistent with previous results, nonprofessional women's odds of quitting increase when their husbands overwork. The gendered pattern is less prominent, however, for nonprofessional workers than for professional workers, as expected.

Model 5 in Table 6.4 shows that having a husband who works 60 hours or more per week increases nonprofessional women's odds of quitting by 38 percent. Consistent with the prediction, the corresponding coefficients indicate that nonprofessional women's odds seem lower than those of professional women (see Table 6.3 for comparisons), but this difference is not statistically significant when tested using interaction effects of spousal overwork and professional status from the pooled model.

Results for nonprofessional men, however, sharply contrast with those for professional men. Unlike professional men, having wives who work 50 hours or more per week significantly increases nonprofessional men's odds of quitting by 71 percent, although the effect is not detected for men whose wives work 60 hours or more. A test of the differences between professional and nonprofessional men using the interaction term from the pooled model indicates marginal significance for the "50 hours or more" variable ($p < .10$). This suggests that nonprofessional men's odds of quitting are greater than those of professional men, which supports the prediction that the gendered pattern of spousal overwork is weaker among nonprofessional workers. The difference between professional and nonprofessional men is consistent with prior research that suggests prioritizing husbands' careers is less common when men hold nonprofessional occupations (Pyke 1996).

Table 6.4. Random effects logistic regression models for the effects of spousal overwork on the log odds of quitting for non-professional workers

	Model 5		Model 6	
	Men	Women	Men	Women
Spouse's usual work hours per week (less than 50 hours is omitted):				
≥ 50 hours < 60 hours	0.538**	0.095	0.648**	-0.197
	(0.199)	(0.080)	(0.248)	(0.152)
≥ 60 hours	0.211	0.324**	0.435	0.038
	(0.351)	(0.097)	(0.404)	(0.185)
Have children	-0.043	0.486**	-0.011	0.386**
	(0.121)	(0.074)	(0.125)	(0.081)
× (≥ 50 < 60 hours)			-0.287	0.413*
			(0.412)	(0.178)
× (≥ 60 hours)			-0.772	0.405
			(0.839)	(0.216)
Other variables [a]	✓	✓	✓	✓
Log likelihood	-2587.5	-6612.3	-2586.8	-6608.3
$\hat{\rho}$ [b]	0.33	0.25	0.33	0.25
Number of observations	52,615	48,451	52,615	48,451
Number of persons	9,015	8,633	9,015	8,633

Source: Survey of Income and Program Participation 1996 (1995-2000).
Note: Standard errors are presented in parentheses.
[a] Age, race, education, work experience, job tenure, work hours, earnings, and industry (equivalent to Model 1). Full results are available upon request.
[b] $\hat{\rho}$ (intra-class correlation) = $\frac{\hat{\psi}}{(\hat{\psi}+\hat{\phi})}$, where $\hat{\psi}$ is the estimate of the variance of the random intercept of persons (α_i), and $\hat{\phi}$ is the estimate of the variance of the random disturbance term (ε_{ij}). Likelihood ratio tests of $\hat{\rho}$=0 for all $\hat{\rho}$s are significant at 0.05 level.

* *p*<.05, ** *p*<.01 (two-tailed).

Further investigation reveals an important difference between nonprofessional men and women. Whereas mothers drive most of the spousal overwork effect for nonprofessional women, childless men drive the positive effect of spousal overwork for nonprofessional men. When the "overwork × have children" interaction terms are added to the model (Model 6), the main effect of having wives who work 50 hours or more becomes even greater, which suggests that the odds of childless nonprofessional men quitting increase further, by 91 percent. However, the interaction terms of the spousal overwork variables and having children are negative and remain

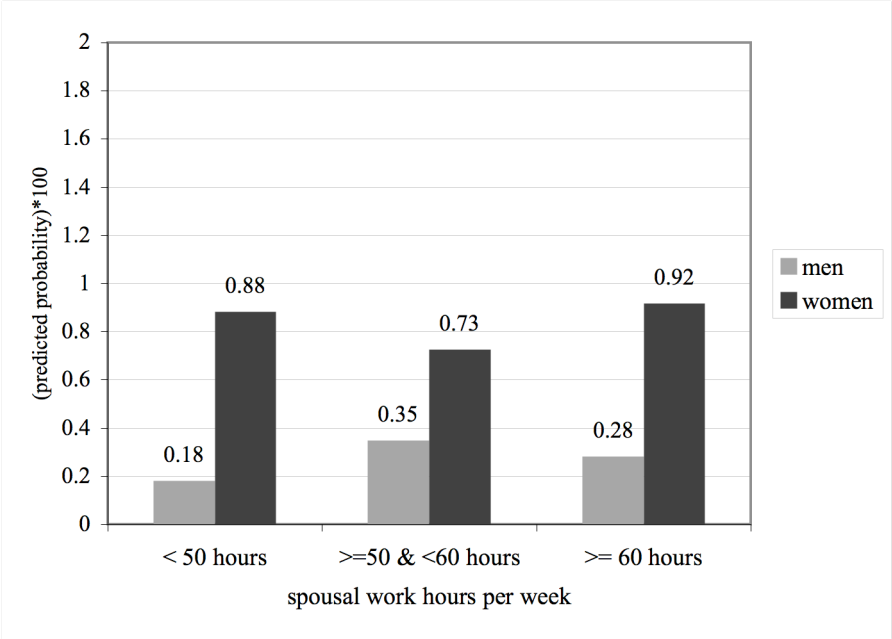
nonsignificant, which suggests that being a father does not affect the spousal overwork effect for nonprofessional men.

By contrast, having children magnifies the spousal overwork effect for nonprofessional women. The odds of quitting increase significantly, by 51 percent (exp[.413] = 1.51) for nonprofessional mothers whose husbands work 50 hours or more, compared to their non-mother counterparts. With main effects and the interaction terms considered together, nonprofessional mothers' odds of quitting increase significantly, by 24 percent (exp[-.197+.413] = 1.24), when their husbands work 50 hours or more per week, compared to when their husband work less than 50 hours; childless nonprofessional women are not affected by their husbands' overwork, as the nonsignificance of the main effect of "50 hours or more" suggests. Similarly, nonprofessional mothers' odds of quitting increase by 56 percent when their husbands work 60 hours or more per week ($p < .10$). Their childless counterparts' odds do not increase significantly.

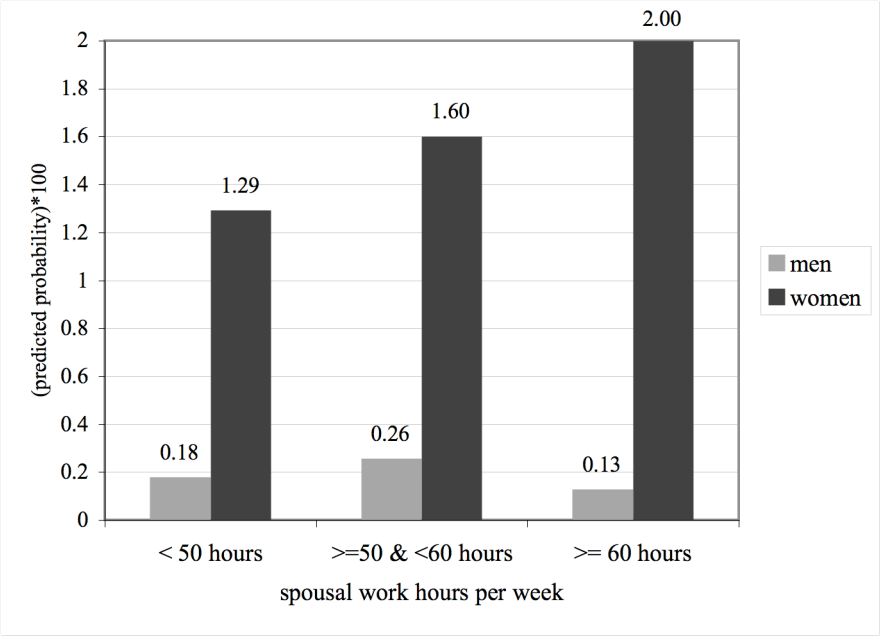
Although professional status does not significantly differentiate the spousal overwork effect among childless women, the odds of quitting are lower for nonprofessional mothers than for professional mothers: the interaction "60 hours or more" and "having children" is significantly greater for professional than for nonprofessional women ($p < .05$). This suggests that having children increases the odds of quitting significantly more for professional than for nonprofessional women.[35]

This relationship is illustrated by the predicted probability of quitting in Figure 6.2. Worker characteristics are all set to the average level for nonprofessional men and women (see Table 6.1). The calculation of the predicted probability is based on Model 6 and presented as a percent.

[35] A formal test is conducted using the three-way interaction term ("professional × overwork × have children") from the pooled dataset.



(a) Non-professional workers without children



(b) Non-professional workers with children

Source: Survey of Income and Program Participation (1995-2000).
Note: Estimates are derived from Model 4 in Table 6.3 (N=49,139). All other variables are set to their mean values

Figure 6.2. The predicted probability (×100) of quitting of non-professional workers

Nonprofessional workers have higher quit rates than do professional workers, but the nonprofessional workers' gendered pattern is less prominent. Professional men's quit rates are close to zero and do not show any association with their wives' work hours (Figure 6.1), however, nonprofessional men's quit rates are more substantial (Figure 6.2). Furthermore, quit rates are higher among nonprofessional men whose wives work 50 hours or more per week, compared with those whose wives work less than 50 hours. More specifically, quit rates are .18 percent for childless, nonprofessional men whose wives work less than 50 hours per week, and .35 percent for similar men whose wives work 50 hours or more. Panel B, however, indicates that this relationship is mitigated among nonprofessional men with children. Nonprofessional fathers' quit rate is .18 percent when their wives work less than 50 hours per week, and .26 percent when their wives work 50 hours or more per week. This suggests that fatherhood constrains the spousal overwork effect for nonprofessional men. Perhaps because of the strong normative pressure of breadwinning (Townsend 2002), nonprofessional men with children are less responsive to their wives' overwork.

This mitigating effect of fatherhood stands in contrast to nonprofessional women's quit rates. While childless, nonprofessional women's quit rates do not vary systematically by their husbands' work hours (Figure 6.2A), those of nonprofessional mothers increase significantly in response to their husbands' long work hours (Figure 6.2B). Quit rates of nonprofessional mothers whose husbands work fewer than 50 hours per week are 1.29 percent and 1.6 percent for mothers whose husbands work 50 hours or more per week. Quit rates are even higher, 2 percent, for women whose husbands work 60 hours or more. This is a 55 percent higher quit rate that that of nonprofessional mothers with non-overworking husbands. Although substantial, the increase is smaller than the corresponding number for professional women (110

percent), which suggests that the spousal overwork effect is more dramatic for professional mothers than for nonprofessional mothers.

In summary, results support the hypothesis that spousal overwork increases women's likelihood of quitting but does not affect men's employment status. As predicted, this gendered pattern is more prominent among professional workers. Professional men, in contrast to nonprofessional men, are not affected by their wives' overwork. When differences in the overall effects between professional and nonprofessional men are tested, they are marginally significant, which suggests that professional status significantly lowers the odds of quitting for men. Furthermore, the results suggest that having children drives most of the effect of spousal overwork for women, but fatherhood status does not significantly affect men's quitting. Also, having children significantly increases the odds of quitting to a greater extent for professional than for nonprofessional women when their husbands work long hours. Findings provide strong evidence that long work hours contribute to gender inequality, and caregiving responsibility is the key condition generating unequal outcomes of spousal overwork for men and women.

The findings in this chapter show one important way in which overwork excludes women from the labor market. Although the norm of overwork may not be intentionally constructed to disadvantage women, the norm is built upon the breadwinning model and results in systematically unequal outcomes for many women who do not have as much spousal support as their male counterparts. This suggests that, because of gendered assumptions, overwork reintroduces the separate spheres arrangement into many formerly dual-earner households.

CHAPTER 7

CONCLUSION

Work hours have become an important topic in social science. Economists tend to explain work hours as a function of workers' wages. In their approach, workers optimize work hours to maximize income while they maintain their maximum productivity (Altonji and Paxson 1986, 1988; Rebitzer and Taylor 1995). Sociologists tend to focus on how work hours are structurally as well as individually determined, emphasizing the normative aspects of work hours (Jacobs and Gerson 2004; Perlow 2001; Schor 1993; Sharone 2004). More recently, studies of work hours have expanded, in particular, since the negative effects of increased work hours were first revealed (e.g., Schor 1993). This dissertation departs from these prior approaches by exploring the gendered aspects and consequences of overwork. Theoretically, this dissertation reveals the gendered conditions that the overwork norm is based upon and demonstrates the disparate impacts of the overwork norm on women's labor market outcomes. Although seemingly gender-neutral, the findings of this dissertation suggest that overwork reproduces gender inequality.

In Chapter 3, I show that overwork has been increasingly common among both men and women, especially among workers in professional and managerial occupations. Importantly, I found a great divide in "backstage support" (Hochschild and Machung 2003 [1989]) for men and women. Men are more likely to have wives who stay home or work part-time hours, while women rarely have stay-at-home husbands or husbands who work part-time hours. Instead, the husbands are more likely to work long hours. The gender divide of spousal support is exacerbated among overworkers. Overworking women show the highest rates, relative to other women, of

having husbands who work 50 hours or more per week, whereas overworking men show the highest rates of having stay-at-home wives.

After establishing the gender difference in spousal support, in Chapters 4 to 6, I conduct three empirical analyses to show whether and how overwork increases gender inequality. Chapter 4 identifies the process through which occupational sex segregation is reinforced. The occupational-level analysis confirms that long work hours are associated with women's lower representation in male-dominated occupations. Because overwork conflicts with societal expectations about childrearing, women, especially mothers are less likely to maintain careers in male-dominated fields where overwork is more strongly expected. The results first show the aggregate level pattern in which overwork is associated with women's lower representation. The results then show the individual mobility process in which women in male-dominated occupations are more likely to move out of male-dominated occupations in response to overwork. The findings of this chapter provide strong evidence that overwork in male-dominated occupations is an important factor that increases women's exit rates from male-dominated occupations.

In Chapter 5, I examine the earnings consequences of gender-typed occupational mobility driven by overwork shown in Chapter 4. The results show that women who left male-dominated occupations in response to long work hours experienced earnings loss after moving to more female-dominated occupations. In contrast, for men, moving to more female-dominated occupations as a result of overwork leads to either no change or a slight increase in earnings. This suggests that while overwork results in downward earnings mobility for women, men often experience a "glass escalator," having relative advantages in female-dominated occupations, as opposed to "glass ceiling," the term of which describes the disadvantages of women in male-dominated occupations (Williams 1989). In this

chapter, I also engage the important puzzle of why the trend of a narrowing gender earnings gap has slowed. I employ a wage decomposition method, which allows me to formally test whether the slowdown in the rate of the gender earnings gap is in part explained by the increased price for overwork. The results show that the increasing returns to overwork contributes to widening the gender gap in earnings over the years.

In Chapter 6, I pay special attention to the role of family in showing the gendered effect of overwork by examining how spousal overwork affects men's and women's employment differently among dual-earner married couples. The findings from this chapter show that when the husband works long hours, the wife is more likely to quit, but wives' long work hours do not affect men's employment status. This suggests that, because of the gendered assumption of worker and workplace, the overwork phenomenon contributes to reintroducing the separate spheres arrangement to many formerly dual-earner households.

Findings from Chapter 6 also reveal an interesting class-specific nature of this phenomenon. A gendered pattern of spousal overwork is more prominent among professional men and women: professional men do not respond to their wives' overwork, but some childless non-professional men are more likely to quit when their wives work long hours. This suggests that the "stalled revolution" may be more prominent among professional couples. This differentiated effect between professional and non-professional workers may be attributed to a normative expectation or a broader cultural ideology about prioritizing professional men's careers and a more intensive form of child-rearing in upper-middle class families (Lareau 2003; Pyke 1996). Interestingly, however, the findings also suggest that the class-specific nature can be mitigated by a more powerful cultural ideal of "fatherhood." Since the key component of American fatherhood consists of having a job (Townsend 2002), having

children more strongly prevents both professional and non-professional men from quitting, even when their wives work long hours.

The three analyses in this dissertation reveal that caregiving responsibilities are the primary factor that generates gendered consequences of overwork, and mothers are most likely to be disadvantaged under the overwork norm. Overwork increases mothers' likelihood of exiting male-dominated occupations the most, and when this mobility occurs, mothers experience greatest earnings loss. Furthermore, husbands' long work hours also increase mothers' likelihood of quitting, but not men's or childless women's. Considering that 71 percent of women who have children under age 18 work in the labor market, making up 31 percent of the female labor force (Bureau of Labor Statistics 2006), this striking gendered effect for mothers has important implications for gender inequality.

Three analyses in this dissertation make an important contribution to the literature of gendered organizations, a concept theorized by Acker (1992) and widely utilized to explain women's structural disadvantages in the labor market (e.g., Britton 1997; Pierce 1995; Williams 1989). Drawing on this theoretical perspective, this study develops the argument that overwork is a workplace norm that is built upon gendered assumptions about worker and workplace. Because the norm assumes "ideal workers," rather than real workers, it results in disproportionately disadvantageous career outcomes for women, who are less likely to fit into this notion of workers. This dissertation provides empirical evidence for this theoretical argument by showing that the overwork norm contributes to high attrition rates of women from male-dominated occupations, where long work hours are common; widens gender earnings inequality; and increases women's quitting rates when their husbands work long hours.

This dissertation also helps us to understand why women's representation is especially lowest among most prestigious jobs. Although increasing numbers of

women are entering male-dominated occupations, such as science, technology, engineering, and math, the attrition rates of these women remain high (Committee on Maximizing the Potential of Women in Academic Science and Engineering 2006). The "leaking pipeline" of women in these fields may be due to a number of structural factors that hinder the career progress of women in these fields, such as workplace discrimination, lack of social support, and family obligations (Committee on Maximizing the Potential of Women in Academic Science and Engineering 2006; Long 2001; Xie and Shauman 2003). In keeping with this prior research, this study provides evidence of one mechanism through which the attrition occurs. The long work hours demanded by many of these occupations increase women's attrition, and only a small proportion of women make it to the higher rank positions.

While occupational sex segregation is viewed as a source of gender inequality, Reskin (1988) argue that the real cause of gender inequality is that men establish rules to preserve their advantage. In this sense, promoting occupational integration by individual women increasing their work hours, or creating an environment that facilitates women's long hours of work would not be an ultimate solution to gender inequality. If overwork is a rule created in order to bar women from the top of the organizational hierarchy, once women work hours similar to men, men may create another rule that makes it difficult for women to reach the top positions. Similarly, as long as workplace and family remain gendered, different forms of workplace norms of practices continue to emerge and hinder women's progress. Therefore, more fundamental solutions would be degendering the institutions and, further, eradicating gender hierarchy and gender beliefs that devalue women and their work.

Importantly, overwork not only disadvantages women who work in the occupations that demand for long work hours, but also women whose husbands overwork. By highlighting the importance of spousal overwork, this study empirically

demonstrates how the overwork phenomenon contributes to the "stalled revolution" (Hochschild and Machung 2003 [1989]), in which progress toward a gender egalitarian society is hindered by men's limited contributions to household work and childcare.

This dissertation also has an important implication for work-family conflict at the policy-level. While work-family conflict is in fact a structural problem, resulting from the institutional and organizational arrangements built upon the separate spheres assumption, the workplace has not reorganized to better accommodate the contemporary workforce and families, and instead, work-family conflict is mostly expected to be resolved at the individual level (Moen and Yu 2000; Stone 2007; Williams 2000). However, when individuals are held accountable for finding the solution to work-family conflict, solutions are likely to be impacted by existing gender beliefs. Given that the family is gendered as well as the workplace, the decisions tend to be made in ways in which women's career outcomes are negatively affected. The ultimate solution would be the degendering of the society, eliminating the deeply rooted gender beliefs embedded in social institutions in various forms. However, as short-term solutions, policies at the national level, such as flexible work policies, on-cite childcare, extending leave policies, could help to change the labor market assumptions more realistically so that it accurately reflects conditions in which the contemporary workforce is situated. In addition, given the inertia of workplace that is resistant to changes, additional institutional pressures through employment discrimination lawsuits and/or activists' movement should help to better implement these policies.

While the results support the hypotheses and offer important implications, this dissertation has several limitations. First, while I have argued that the gendered assumption of the workplace, which applies the male-breadwinning model to all

workers, and a normative conception of gender prevailing in the family are the two key factors that drive the gendered outcomes of overwork, these two underlying mechanisms were not directly tested in this study. In this sense, one may argue that the high attrition rates of women in male-dominated occupations, or higher quitting rates of women in response to their husbands' long work hours, is due to unadjusted unobserved characteristics such as work commitment. However, if women experience cognitive bias, discrimination, lack of social support, and sexual harassment more than their male counterparts (Jacobs 1989; Long 2001; Roth 2003; Williams 1989), those who are selected into male-dominated occupations, and thus are observed in my data, may in fact be more committed and competent than their male peers. This selection process implies that the models here may underestimate the overwork effect on gender inequality.

One may still argue that the findings may be explained by women's "choice." For example, a recent popular discussion suggests that women may "opt-out" of the labor market in favor of their caregiving roles over their professional careers (e.g., Belkin 2003). Because the data do not provide direct measures of workers' values, I cannot completely discount this alternative explanation. However, a large body of qualitative studies suggests that women's choices are largely made under structural constraints. While women who hold traditional values do exist, prior studies suggests that a larger proportion of women leave the labor force because of the normative expectation surrounding caregiving responsibilities and their husbands' limited contributions to childcare and housework (e.g., Bunting 2004, Crittenden 2002, Gerson 1986, Hochschild 1997, Hochschild & Machung 2003, Roth 2006, Stone 2007). Given the findings from previous studies, I do not believe that the overwork effects found in this study are driven by women who support traditional values. Instead, the gendered effects of overwork observed in this study should be understood

as a consequence of gendered structures and practices of the workplace and the gender norm that constrains women's career choice, rather than women's own preferences resulting from their traditional values or lower work commitment.

Similarly, while the cultural and normative expectations in the workplace and family consists of a key mechanism through which overwork leads to gendered outcomes shown in this dissertation, testing the effect of "culture" or "norms" is beyond the scope of this study. Future studies employing a cross-national or comparative framework could address this by investigating how the spousal effect differs in countries that have a different norm of "appropriate work hours," or that show different levels of gender egalitarianism at the national level. Different institutional environments may mediate the overwork effect as well. The national level policy that regulates the legal work hours or the degree to which work-family policies are implemented may influence the extent to which overwork affects women's careers.

Finally, the findings are based upon workers' main jobs, which may not accurately reflect the work life of workers who hold more than one job. Also, the findings in Chapter 6 are based on dual-earner married couples, may not capture the reality of unmarried couples or single parent families. Both characteristics are more common among lower-wage workers and racial minorities. Workers from these families are more likely to hold multiple jobs, have lower control over their work schedules, and have less access to work-family policies (England and Edin 2007; Presser 2005). This suggests that work-family conflict may be more intense for these families. How these structural constraints may impact the effects found in this study should be explored by future research.

Over the past decade, we have seen signs of slowing progress toward gender equality: slow convergence in the gender wage gap, the leveling off of women's labor market participation rates, and a slowdown in the rate of occupational desegregation

(Blau and Kahn 2006; Bureau of Labor Statistics 2006b; Catalyst 2006; Charles and Grusky 2004). The causes of this slowed progress can perhaps be found in new forms and new sources of gender inequality reestablished in contemporary institutions and organizations (Ridgeway 1997). This dissertation identifies a gendered process in which various forms of gender inequalities are reproduced in today's labor market. Linking one important element of organizations, overwork, and gender inequality, this dissertation enhances our understanding of the social processes through which gender inequality is reproduced by the interactions between work and family.

APPENDIX

Table A.1. Regression coefficients for the effect of average work hours on log odds of women's occupational representation

Variables	Model A1
Average hours worked	0.34*
	(0.16)
Average hours worked squared	-0.01**
	(0.00)
Verbal	1.06*
	(0.41)
Finger dexterity	0.27
	(0.20)
Nurturance	0.10
	(0.33)
Strength	0.19
	(0.24)
Disamenities	-2.61**
	(0.31)
Math	-0.52
	(0.29)
Analytical	0.40
	(0.34)
Authority	-0.24
	(0.25)
Technical	-0.15
	(0.22)
Index of occupational specific skills	-0.43*
	(0.18)
Percent of unionized workers	-0.01
	(0.01)
Percent of government-sector workers	-0.00
	(0.01)
Percent of self-employed workers	-0.01
	(0.02)
Average years of work experience	-0.09**
	(0.03)
Average years of job tenure	0.07
	(0.04)
Median monthly earnings (2000 100 U.S. dollars)	-0.05*
	(0.02)
Percent of non-whites	0.00
	(0.01)
Percent of married workers	0.01
	(0.01)
Percent of workers with children under 18	0.01
	(0.01)
Percent of college graduates	-0.01
	(0.01)
Percent of service industry jobs	-0.01
	(0.00)
Constant	-1.48**

Table A.1 (Continued)

	(0.11)
Number of observations	496
R-squared	0.56

Source: Survey of Income and Program Participation 1996 and 2001 (1995-2003); Integrated Public Use Microdata Series 1990; and O*NET 3.1.
Note: Standard errors are presented in parentheses.
$^{+}$ $p<.1$ * $p<.05$, ** $p<.01$ (two-tailed).

Table A.2. Means and standard deviations for variables used for the estimation of returns to overwork

Variable	Men		Women	
	Mean	Std. Dev.	Mean	Std. Dev.
Hourly earnings (2008 US Dollars in pennies)	2115.68	1568.67	1605.83	1181.44
Overwork	0.17		0.06	
Part-time	0.08		0.23	
Age	37.56	11.86	37.77	11.97
Age squared	1551.17	941.57	1570.27	948.39
Married	0.73		0.74	
Race:				
Black	0.10		0.13	
Hispanic	0.11		0.09	
Other race	0.04		0.04	
Education:				
Less than high school	0.34		0.35	
High school graduates	0.26		0.30	
Some college	0.17		0.18	
College graduates	0.09		0.08	
Potential experience	18.42	12.02	18.46	12.25
Potential experience squared	483.69	522.56	490.59	522.68
Region:				
Midwest	0.25		0.25	
South	0.34		0.35	
West	0.21		0.20	
Metropolitan residency	0.81		0.81	
Public	0.15		0.20	
N	2325190		2169770	

Source: Current Population Survey, 1979-2008

Table A.3. Regression Analysis of Hourly Earnings

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	1979		1994		2007	
	Men	Women	Men	Women	Men	Women
Overwork	-0.148**	-0.218**	-0.002	-0.048**	0.046**	0.041**
	(0.005)	(0.014)	(0.005)	(0.010)	(0.006)	(0.010)
Part-time	-0.333**	-0.218**	-0.330**	-0.219**	-0.337**	-0.212**
	(0.010)	(0.004)	(0.009)	(0.005)	(0.010)	(0.006)
Age	0.070**	0.059**	0.076**	0.108**	0.053**	0.085**
	(0.003)	(0.004)	(0.004)	(0.006)	(0.004)	(0.005)
Age^2	-0.000**	-0.000**	-0.000**	-0.001**	-0.000**	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Black	-0.164**	-0.048**	-0.171**	-0.085**	-0.197**	-0.078**
	(0.006)	(0.005)	(0.007)	(0.006)	(0.008)	(0.007)
Hispanic	-0.149**	-0.061**	-0.150**	-0.078**	-0.145**	-0.089**
	(0.007)	(0.008)	(0.008)	(0.008)	(0.007)	(0.007)
Other race	-0.170**	-0.062**	-0.122**	-0.046**	-0.064**	-0.054**
	(0.014)	(0.013)	(0.010)	(0.010)	(0.011)	(0.011)
Less than high school	0.047**	0.049**	0.082**	0.051**	0.100**	0.062**
	(0.006)	(0.007)	(0.010)	(0.011)	(0.010)	(0.012)
High school graduates	0.064**	0.102**	0.139**	0.130**	0.182**	0.151**
	(0.008)	(0.010)	(0.012)	(0.015)	(0.013)	(0.015)
Some college	0.163**	0.198**	0.324**	0.269**	0.442**	0.362**
	(0.013)	(0.015)	(0.019)	(0.024)	(0.019)	(0.022)
College graduates	0.168**	0.301**	0.404**	0.354**	0.554**	0.444**
	(0.016)	(0.020)	(0.025)	(0.032)	(0.025)	(0.029)
Experience	-0.016**	-0.027**	-0.019**	-0.052**	-0.008**	-0.040**
	(0.002)	(0.003)	(0.003)	(0.004)	(0.003)	(0.004)
$Experience^2$	-0.000**	-0.000**	-0.000**	-0.000	-0.000**	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Midwest	0.056**	0.003	-0.045**	-0.090**	-0.034**	-0.048**
	(0.004)	(0.005)	(0.005)	(0.006)	(0.007)	(0.007)
South	-0.026**	-0.063**	-0.085**	-0.126**	-0.043**	-0.069**
	(0.004)	(0.005)	(0.005)	(0.005)	(0.007)	(0.007)
West	0.086**	0.052**	-0.001	-0.004	0.043**	0.046**
	(0.005)	(0.005)	(0.006)	(0.006)	(0.008)	(0.008)
Metropolitan	0.114**	0.119**	0.122**	0.148**	0.119**	0.132**
	(0.004)	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)
Public	-0.058**	0.068**	0.023**	0.084**	-0.003	0.029**
	(0.004)	(0.004)	(0.005)	(0.005)	(0.007)	(0.005)
Constant	5.872**	5.878**	5.470**	4.853**	5.891**	5.232**
	(0.045)	(0.053)	(0.065)	(0.085)	(0.061)	(0.072)
R-squared	0.34	0.26	0.38	0.34	0.34	0.31
Observations	76319	60222	76326	74239	77438	76088

Source: Current Population Survey, 1979, 1994, 2007
Note: Standard errors are presented in parentheses.
* $p<.05$, ** $p<.01$ (two-tailed).

Table A.4. Means and standard deviations for variables used for the decomposition analysis, Survey of Income and Program Participation

Variable	Men		Women	
	Mean	Std. Dev.	Mean	Std. Dev.
Hourly earnings (2008 US Dollars), all years				
in 1996	2038.87	2043.19	1557.72	1734.65
in 2004	2302.08	2498.00	1806.10	1843.96
Overwork				
in 1996	0.24		0.10	
in 2004	0.22		0.10	
Part-time				
in 1996	0.11		0.27	
in 2004	0.10		0.24	
Age	39.14	12.27	39.52	12.41
Black	0.10		0.13	
Hispanic	0.12		0.09	
Other race	0.05		0.05	
Less than high school	0.29		0.27	
High school graduates	0.33		0.37	
Some college	0.17		0.18	
College graduates	0.09		0.09	
Experience	20.91	12.38	18.63	11.42
Experience mostly part-time	0.14		0.24	
Job tenure	7.83	8.57	6.89	7.59
Public	0.15		0.20	
Union	0.18		0.15	
Midwest	0.25		0.25	
South	0.35		0.35	
West	0.22		0.20	
Metropolitan residency	0.78		0.77	
Missing on metropolitan residency	0.02		0.02	
N	40214		39679	

Source: Survey of Income and Program Participation, 1996, 2004

Table A.5. Decomposition of changes in the gender hourly earnings gap, 1996-2004, survey of income and program participation

Decomposition Components	1996-2004
Change in Differential	-0.025
Observed Prices	
All b's	0.019
Overwork	0.005
Part-time	0.006
Age variables	0.003
Race variables	0.000
Education variables	-0.001
Experience variables	0.008
Job tenure variables	-0.001
Region variables	0.000
Metropolitan residency	0.000
Public sector	0.000
Union	0.000
Observed x's	
All x's	-0.032
Overwork	0.000
Part-time	-0.003
Age variables	-0.001
Race variables	-0.002
Education variables	-0.011
Experience variables	-0.006
Job tenure variables	-0.007
Region variables	-0.002
Metropolitan residency	0.000
Public sector	0.001
Union	-0.003
Unexplained Differential	-0.012
Unobserved Prices	-0.002
Unobserved Quantities	-0.010
N	79893

Source: Survey of Income and Program Participation, 1996, 2004

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