

# Coordinated Work Schedules and the Gender Wage Gap

German Cubas, Chinhui Juhn and Pedro Silos\*

July 2020

## Abstract

Using U.S. time diary data we construct occupation-level measures of coordinated work schedules based on the concentration of hours worked during peak hours of the day. A higher degree of coordination is associated with higher wages but also a larger gender wage gap. In the data women with children allocate more time to household care and are penalized by missing work during peak hours. An equilibrium model with these key elements generates a gender wage gap of 8.9 percent or approximately 40 percent of the wage gap observed among married men and women with children. As in the data, most of the gender wage gap is within occupations: the value predicted by the model is 7.2 percent. If the need for coordination is equalized across occupations and set to a relatively low value (i.e. Health care support), the gender gap within occupations would fall by more than half to 2.0 percent.

*Key words:* Labor Supply, Occupations, Coordination, Work Schedules, Time Use, Gender Wage Gap.

*JEL Classifications:* J2, J3, E2.

---

\*Affiliation: University of Houston, University of Houston, and Temple University, respectively. Corresponding author: German Cubas, University of Houston, 3623 Cullen Boulevard Room 204 Houston, TX 77204-5019, USA. E-mail address: germancubas@gmail.com. We thank Julio Garin, Gueorgui Kambourov, Matthias Doepke, Michele Tertilt, and Ryan Michaels, as well as seminar participants at CAFRAL-Reserve Bank of India, Cal State-Fullerton, Drexel, Fudan University, Disparities in the Labor Market-FED Board, Iecon-FCEA, LACEA-LAMES, Midwest Macro, NASMES, SED, SOLE, Universidad Católica de Uruguay, University of Georgia, Universidad de Montevideo, Families and the Macroeconomy-Mannheim, Rutgers, LSE, U.S. Census Bureau, Seoul National University, University of Oklahoma, CMSG (Montreal) 2019, INSPER, and FGV-EESP. Saumya Rana provided excellent research assistance.

# 1 Introduction

Balancing work and family is a challenge in modern societies. Household production not only limits the total number of hours that can be devoted to market work, it may also conflict with *when* hours can be supplied. For example, as long as parents cannot perfectly substitute child care responsibilities across different hours of the day, there will be temporal restrictions on when parents can supply labor.

From the perspective of the employer, *when* work happens may be important if there is joint production and firms need to coordinate workers. The need for coordination may be task and occupation-specific. The nature of production in some occupations may require workers to be at work at the same time to perform a joint task. In other occupations, workers may be assigned tasks which can largely be performed on their own and precisely when that work is completed is less important. The need for coordination raises productivity of hours supplied when others are present. To the extent that women have more household care responsibilities than men, and therefore have greater difficulty committing to be present at any particular hour, this mechanism generates a gender wage gap. In this paper we study the timing of labor supply and its interaction with household care needs during the day. Compared to the extensive literature on labor supply along the quantity dimension, this is an under-explored area. We fill this gap by making empirical, theoretical, and quantitative contributions.

Using the American Time Use Survey (ATUS), we document novel facts regarding the timing of work for men and women. We find that parents perform household care (child care plus adult care) throughout the day— even during peak hours— suggesting that parents are indeed unable to postpone household produc-

tion to non-work times. A comparison between men and women, even among full-time workers, shows that women provide more household care and work less throughout the day relative to their male counterparts. The gap in hours is small but our point is that even small gaps can generate productivity losses depending on the timing.

We also employ the ATUS to measure coordinated work schedules at the occupation level. For each occupation, we record at what time of the day individuals report being at work. We associate more bunching (work schedules concentrated at particular times) with stronger coordination needs, because bunching implies that individuals are at work at the same time. We find that the degree of bunching of work hours varies across occupations and, consistent with the notion of coordination, our measure is positively correlated with other occupational characteristics such as “face to face discussions” and “establishing and maintaining interpersonal relationships” reported in the O\*NET database.

We then use individual level data from the Current Population Survey (CPS) to study the relationship between wages and our occupational level measure of coordination. We find that our measure of coordination commands a wage premium: a one standard deviation higher ratio leads to approximately 11 percent higher wages. In addition, it generates a gender wage gap: women who work in coordinated occupations are paid a higher wage but relatively less than men (by about 5 percent). Interestingly, we find that married men with full-time working spouses (who presumably have greater household care responsibilities) also experience a wage penalty in high coordination occupations relative to men with non-working spouses.

Motivated by these facts, we develop a theory of occupational choice and time

allocation during the day to household care and market work. In the model a gender wage gap is generated by the interaction of three key elements. First, women assign a higher value to household care— an assumption which we justify as a reflection of current social norms. Since household care activities performed at different times are less than perfect substitutes, women end up allocating more time to household care when everyone else is working, which is costly. This penalty rises with the occupational coordination needs so women are less likely to select into occupations with higher coordination needs.

We parameterize the model with the data used in the empirical analysis. We restrict the sample to married men and women with children who are full-time workers. The model generates a gender wage gap of 8.9 percent (approximately 40 percent of the observed gender gap). We decompose the gender wage gap into the between and within occupation components. As in the data, most of the gender wage gap is within occupations. The within component predicted by the model is 7.2 percent which accounts for 30 percent of the one observed in the data.

To understand the extent to which occupational differences in coordination are responsible for the observed gender gap we conduct a counterfactual exercise where coordination needs are equal across all occupations and set to the level of “Healthcare Support”— an occupation with a relatively low level of coordination. In this case, the overall gender wage gap in the model falls to 6.4 percent. The gender wage gap within occupations decreases by 72 percent to 2.0 percent. In another counterfactual, we reduce the difference in the value that men and women place on household care. We can think of this experiment as a way to evaluate changes in social norms that drive a reduction in the gender gap in household care responsibilities. As a result, the gender wage gap within occupations decreases by

50 percent to 3.6 percent. Finally, we focus our study on the effects of the ability to substitute household care during the day. Our baseline calibration points to an economy in which household care activities are fairly substitutable but imperfectly so. They may reflect parenting styles or just constraints on the time of the day in which some activities take place (for example meetings with school teachers). We thus analyze a counterfactual economy in which women can now more easily distribute the household care to off-peak times so they do not incur a productivity loss. As a result, the gender wage gap within occupations decreases by 31 percent to 5 percent.

A large literature in macroeconomics and labor economics relates family arrangements and the labor supply of its family members. Important contributions are [Doepke and Tertilt \(2016\)](#), [Bick and Fuchs-Schündeln \(2018\)](#) and [Albanesi and Olivetti \(2009\)](#). Our paper is also closely connected to the literature which examines the role of frictions on workers' labor supply responses. These frictions could arise from fixed wage-hours packages offered by employers which result in non-linear payment schedules. Important contributions are [Prescott, Rogerson, and Wallenius \(2009\)](#), [Rogerson and Wallenius \(2009\)](#) as well as [Rosen \(1976\)](#), [Blundell, Brewer, and Francesconi \(2008\)](#), [Altonji and Paxson \(1988\)](#) and [Altonji and Paxson \(1992\)](#). Recent papers have emphasized the role of coordination as the driving force behind non-convex budget sets. The wage-hours combinations available to workers may be sparse due to the needs for coordination. This need may arise at the firm level or even at a more aggregate, economy-wide level. For example, [Guner, Kaya, and Sánchez-Marcos \(2014\)](#) study how the Spanish work schedule with long lunch breaks affects parental time allocation. Moreover, [Guner, Kaya, and Sánchez Marcos \(2019\)](#) find that the inflexibility of work schedules partially

explains the low fertility observed in some rich countries. Other recent papers study the labor supply responses to changes in, for instance, taxes or other economic conditions. They find stark differences between responses with non-linear payment schedules and those predicted by linear payment schedules and an absence of coordination. Examples include [Chetty, Friedman, Olsen, and Pistaferri \(2011\)](#), [Rogerson \(2011\)](#), and [Labanca and Pozzoli \(2018\)](#). We contribute to this literature by exploring how coordination requirements influence labor supply as well as another important margin – occupational choice. Instead of examining labor supply responses to tax changes, we examine how these hours requirements driven by coordination needs conflict with the demands of household production and consequently lead to the gender wage gap.<sup>1</sup>

Our work is also closely related to the literature which relates occupation-specific characteristics to the gender wage gap. [Goldin \(2014\)](#) argues that much of the remaining gender wage gap can be explained by the lack of flexible work arrangements. Along these lines, a number of papers have shown that the gender gap is particularly large in jobs which demand long hours ([Erosa, Fuster, Kamboorov, and Rogerson \(2017\)](#), [Gicheva \(2013\)](#) [Cha and Weeden \(2014\)](#), [Cortes and Pan \(2016b\)](#), [Cortes and Pan \(2016a\)](#), [Duchini and Effenterre \(2017\)](#) and [Wasserman \(2019\)](#)).<sup>2</sup> Compared to these studies, our focus is on flexible timing, rather than the flexibility to set the number of hours. We show that while the demand for long hours and our measure of coordination are positively correlated, the correlation is

---

<sup>1</sup>Our occupational choice model integrates the timing of work with the timing of household care in a unified framework where family responsibilities play a key role. This feature differentiates our work from previous work which study the timing and synchronization of works schedules. Examples of these studies are [Hamermesh \(1999\)](#) and [Cardoso, Hamermesh, and Varejao \(2012\)](#), [Weiss \(1996\)](#) and [Eden \(2017\)](#).

<sup>2</sup>The requirement for long hours has been also associated with less flexible work schedules. Thus our work also relates to [Wiswall and Zafar \(2017\)](#), [Goldin and Katz \(2011\)](#), and [Flabbi and Moro \(2012\)](#).

far from perfect and both contribute to the gender wage gap.<sup>3</sup>

A recent paper, [Mas and Pallais \(2017\)](#), elicit workers' willingness to pay for flexible schedules using a field experiment. These authors find that while the average willingness to pay for flexibility is low, there is also a long right tail in the willing to pay distribution suggesting compensating differential for inflexibility still could be large at the margin.<sup>4</sup> Another recent paper, [Chen, Chevalier, Rossi, and Oehlsen \(2019\)](#), estimates the value of flexibility among drivers of the ride-sharing platform Uber. Drivers have almost total flexibility when to supply labor, to the point of being able to react on an hourly basis to unexpected shocks to their reservation wage. The authors estimate the surplus from that flexibility to be large, and hence their results are roughly in line with our findings.

The paper is organized as follows. Section 2 describes our data, the temporal patterns of work and household care in the ATUS, as well as our measure of hours bunching which proxies for coordination requirements. Section 3 reports our reduced form regression results using individual level CPS data. Section 4 presents the model. Section 5 illustrates the model mechanics with simple examples. Section 6 describes the calibration and our counterfactual experiments. Section 7 concludes.

---

<sup>3</sup>A recent paper by [Denning, Jacob, Lefgren, and vom Lehn \(2019\)](#) finds that the positive relationship between hours worked and earnings is virtually absent within occupations and it is only observed across occupations. This finding suggests that the hours gap between men and women cannot account for the within-occupation gender wage gap if this hours penalty is applied. In our paper we show that differences in the within-occupation gender wage gap can be large even when the gender hours gap is small.

<sup>4</sup>They also find that workers particularly dislike working evening and weekend shifts which at first appears to be counter to our story. Occupations which require evening and weekend shifts (such as security guards) may appear to be flexible in terms of our bunching measure but this may just be a reflection of a 24 hour production cycle. To address this issue, we rerun our regressions controlling for the share of workers who are shift workers in the occupation. We find our results are robust to adding these additional controls.

## 2 Time Allocation by Gender, and Coordinated Work Schedules

### 2.1 Data

We base our analysis on the 2003-2014 ATUS. One respondent per household is drawn from the Current Population Survey samples and the interviews are conducted 2 to 5 months after the last CPS interview. The ATUS respondent is asked to fill out a time diary over the previous day, recording their activities and starting and ending times. There are 17 aggregate activities and we focus on two activities, “work and work-related activities” and “caring for and helping household members”.<sup>5</sup> For each individual we calculate minutes spent on these activities for each hour of the day using information on starting and ending times. The ATUS also contains demographic and labor force information including labor force status and usual hours worked. We restrict our sample to adults who are 18 to 65 years old. Our main sample of time-diary respondents consists of 106,620 observations. For comparing time use of men and women we focus on full-time workers (those whose usual weekly hours are greater than or equal to 35).<sup>6</sup> The full-time worker sample consists of 66,023 observations. We do not make restrictions based on self-employment status and also include multiple job holders. However, to construct the ratio of hours worked in the 8 to 5 time interval (which we label *ratio8to5*) at

---

<sup>5</sup>We do not include the aggregate category, “household activities”, which includes housework. If we include “household activities”, the gender gap is considerably larger. In most of our analysis we take a conservative route by restricting our attention to the aggregate category “caring for and helping household members” which only includes child care and elder care reported as the primary activity. In Table 3 we also explore a more expanded definition of child care such as “socializing and communicating” when a child is present.

<sup>6</sup>The fact that women are more likely to work part-time and part-time workers are paid a lower hourly wage is well-established. We focus on full-time workers in our study to push home our point that schedules and when work happens matters for hourly wages in addition to the number of hours worked.



the occupation level we include only full-time workers who worked a minimum of 35 hours in their main job. For the regression analysis where we explore the impact of occupation-level *ratio8to5* on wages, we include all individuals in the CPS, including those who are not time-use survey respondents. For this case the sample sizes are considerably larger, with the sample consisting of 263,313 individuals who are full-time workers aged 18 to 65 with non-missing weekly wages. Since the time use surveys are conducted 3 months after the main CPS interviews we use variables such as age and work status that are collected at the time of the time use survey whenever possible. Some of the information, however, such as education, is available only in the main CPS data. Appendix [A.1](#) contains more detail regarding construction of our data.

## 2.2 Timing of Work and Household Care

In this section we describe patterns of time use over the course of a single day for full-time workers by gender, marital status and parental status. These patterns show how time allocated to market work is constrained by the demands of family time and how those constraints differ for men and women. Figure [1](#) explores *when* work happens. The figure graphs the average number of minutes worked by one-hour time bins for full-time workers. The figure shows that most (74 percent) work occurs during the 8 a.m. to 5 p.m. interval with a break between 12 p.m. to 1 p.m.<sup>7</sup> Figure [2](#) graphs the average number of minutes worked by marital and parental status. The top panel shows work for married individuals, men and women, with at least one own child in the household, who work full-time. The bottom panel shows work for singles with no children. Even among full-time workers, women

---

<sup>7</sup>Average minutes worked per hour is well below 60 which may reflect the fact that we are averaging over all 7 days of the week including weekends. We do not intend to eliminate weekends as work also takes place on those days. In addition, work over weekends varies across occupations.

work less than men, with the gap being largest among those married with children. Table 1 further explores the gender differences in work for this group. The table shows that women work approximately 0.9 hours less on weekdays and 0.7 hours less on weekends. Column (5) controls for usual weekly hours worked reported in the activity summary file. Column (6) only includes workers who reported usual weekly hours less than 50. Both of these restrictions reduce the gap in hours worked but even among full-time workers who work less than 50 hours, married women with children work almost 0.5 hours less on weekdays relative to their male counterparts.

Figure 3 graphs the temporal pattern of household care among full time workers who are married with children and singles without children. The differences in the temporal pattern of work and household care, however, are notable. Both women and men with children report household care with noticeable bumps up in the early morning and evening hours. The temporal pattern of care for full-time workers with children is negatively related to the temporal pattern of work, with the fewest minutes devoted to care activities during the 8 to 5 interval. However, even during the 8 to 5 interval, household care does not fall to zero. Table 2 shows that among married men and women with children, women engage in nearly 0.5 hours more household care during weekdays and 0.3 hours more on weekends. Different controls reduce the gap but the table shows that women significantly allocate more time to household care than men.

Table 3 provides further detail regarding differences in hours of child care provided by mothers and fathers. First we examine detailed care categories adopting a method introduced by Stewart (2010). Stewart (2010) defines three broad categories of child care: “routine”, “enriching care”, and “other.” Included in routine care is

physical care and looking after children. “Enriching care” includes activities such as reading to children and playing sports with children. “Other” includes more nebulous activities such as “organizing and planning for household children,” “attending children’s events,” and “picking up and dropping off children.” Table A.1 provides the full list of activities included in each of the three broad categories.

Table 3 compares the hours of each type of care performed by non-working married mothers, full-time married mothers, full-time single mothers, and full-time married fathers, respectively. The top panel reports hours during weekdays while the bottom panel reports hours during weekends. The table also separates out households where at least one child is under the age of six (school age). Looking at hours of routine care in families with young children, we see (not surprisingly) that non-working mothers provide the most care, 1.4 hours, while full-time married mothers and full-time single mothers provide 1.0 and 0.8 hours respectively. Full-time married fathers provide considerably less, 0.4 hours. What is surprising is that non-working and full-time working mothers provide the same amount of care in the “other” category – all three groups provide 0.4 hours on a typical weekday. There are differences when we examine households with only older children but main point is that the child care provided by non-working and full-time working mothers is not as different as one might have thought, especially when it comes to the non-routine care categories. This type of child care does not constitute a lot of hours but the table shows that certain activities cannot be easily outsourced.

To summarize, we showed that married women with children who are full-time workers report fewer hours of work in the time diary data relative to their male counterparts– a phenomenon we call “missing hours.” The “missing hours”

occur throughout the day and is distinct from women being less likely to work long hours. Correspondingly, married women with children also perform more household care than men. The extra household care is unlikely to be routine child care since we are considering full-time working women. Instead, the extra hours are likely to consist of a catch-all “other” category which includes such activities as organizing and planning, driving children, attending doctor’s appointments and children’s activities. These activities add up to a small number of hours but are likely to entail costly work interruptions.

### 2.3 Measure of Coordinated Work Schedules

Building on the previous section, we construct our measure of coordinated work schedules for different occupations. Call the time intervals between 12 a.m. and 8 a.m., between 8 a.m. and 5 p.m. and, between 5 p.m. and 12 a.m.  $A$ ,  $B$  and  $C$ , respectively.  $A_{ij}$ ,  $B_{ij}$ , and  $C_{ij}$  then refer to the sum of minutes worked by individual  $i$  in occupation  $j$  in those respective intervals. We sum over individuals to get occupation-level equivalents

$$A_j = \sum_{i=1}^{M_j^A} w_i A_{ij}, \quad B_j = \sum_{i=1}^{M_j^B} w_i B_{ij}, \quad C_j = \sum_{i=1}^{M_j^C} w_i C_{ij}$$

where  $w_i$  refers to the survey weight of the individual and,  $M_j^A$ ,  $M_j^B$  and  $M_j^C$  are the number of individuals in occupation  $j$  in intervals  $A$ ,  $B$  and  $C$ , respectively.

Our measure of coordinated work schedules at the occupation level is the ratio of minutes worked in the 8 to 5 interval relative to total minutes worked.

$$ratio_{8to5_j} = \frac{B_j}{A_j + B_j + C_j}.$$

We include only full-time workers in calculating this ratio. A higher ratio indicates that a greater amount of work in the occupation occurs during the standard 8 to 5 work day. We also standardize this measure by subtracting the mean and dividing by the standard deviation. We view a higher ratio as indicating the need for greater coordination, with more hours worked concentrated during peak hours. We construct ratios by detailed 2002 Census occupations, resulting in 493 non-missing ratios (see Table A.4). Appendix A.1 provides further details on the construction of the ratios.

We highlight some occupations in Figure 4. Among occupations with more educated workers, “Lawyers” and “Financial Analysts” have standardized ratios of 0.588 and 0.663, respectively. “Writers and Authors” have a relatively low ratio of 0.157. “Physicians and Surgeons” have the lowest ratio of -0.010. In occupations with relatively less educated workers “Nursing, Psychiatric, and Home Health Aides” has a very low ratio of -1.284. “Cashiers” have a ratio of -0.781. On the other hand, “Secretaries and Administrative Assistants” have a high ratio of 1.052.

How is our measure related to other occupational characteristics? Table 4 reports correlations of our measure, *ratio8to5*, with other occupational characteristics reported in the O\*NET data base.<sup>8</sup> The table shows that our measure points to the need for coordination with others in the workplace. Our measure is positively correlated with “establishing and maintaining interpersonal relationships” and “face to face discussions.” On the other hand, it is negatively correlated with “assisting and caring for others.”

---

<sup>8</sup>We downloaded from O\*NET 24.2 (downloaded in March 2020). O\*NET reports scores on the importance of occupational characteristics for detailed 2018 Standard Occupation Code (SOC). We used the Census crosswalk between 2018 SOC codes and 2010 Census Occupation codes and used the 2018 American Community Survey to take weighted averages to more aggregate 2010 Census occupation codes. There were also a number of changes between 2002 and 2010 Census codes. We use the number of full-time workers aged 18-65 in the American Time Use Survey (ATUS) as weights to aggregate O\*NET measures to the 2002 Census occupation codes.

One can view our measure as a rather arbitrary way to think about the concentration of working hours during a day as the peak hours are fixed to be between 8 and 5. As an alternative one could think of how concentrated the hours are during the day without pre-establishing the times of the day. We have also explored an alternative measure of concentration based on the Herfindahl index.

Let  $work_j^k$  be the total weighted time spent working in each day of the week-hour time bin  $k$  in occupation  $j$ ,

$$work_j^k = \sum_{i=1}^{M_j} work_{ijk} \cdot w_i$$

where  $i$  denotes individual in occupation  $j$  and  $w_i$  denotes the weight of individual  $i$ .

Let  $share_j^k$  be the fraction of the total time spent in each occupation in each time bin and each day.

$$share_j^k = \frac{work_j^k}{\sum_k work_j^k}$$

Our concentration index measure is the Herfindahl index defined as:

$$cr_j = \sum_k (share_j^k)^2$$

Table 4 shows that our coordination measure, *ratio8to5*, and the Concentration Index measure are highly positively correlated, with the correlation equaling 0.743. The table also reports the correlation of our measure and the measure of “Male Overwork” used by Cortes and Pan (2016b). “Male Overwork” is defined as the fraction of male workers who report working more than 50 hours per week.

This ratio is calculated for men with at least some college education. The correlation between these two measures is 0.129, indicating that while our measure is positively related to the demand for long hours, it is by no means perfectly correlated. Thus, our measure captures another important aspect of hours requirements on the job such as the requirement to be present when others are present.

Another aspect worth exploring is the extent to which our measure of coordination is correlated with other skill requirements at the occupational level, such as social skills (Deming (2017)), and abstract, routine, and manual skills (Acemoglu and Autor (2011)).<sup>9</sup> The bottom rows of Table 4 show that indeed our measure is strongly positively correlated with social skills and abstract cognitive skills while it is negatively correlated with both manual and routine skills. In the next section, we explore the extent to which the returns to our measure of coordination is impacted when we add these skill measures as additional controls.

### 3 Coordinated Work Schedules and the Gender Wage Gap

In this section we analyze how our measure of coordinated work schedules is priced in the labor market, and how it impacts the gender wage gap. Specifically, we estimate the following regression at the individual level:

---

<sup>9</sup>For “Social skills” we follow Deming (2017) and use four measures: “Social perceptiveness: being aware of others’ reactions and understanding why they react as they do,” “Coordination: adjusting action in relation to other’s actions,” “Negotiation: bringing others together and trying to reconcile differences,” and “Persuasion: persuading others to change their minds and behavior.” We create a composite score for “Social Skills” by averaging the 4 individual scores. We also construct 4 other composite measures of skill requirements closely following Acemoglu and Autor (2011) and Denning, Jacob, Lefgren, and vom Lehn (2019). See Appendix A.1 for details.

$$\ln W_i = \beta_0 + \beta_1 * female_i + \beta_2 ratio8to5_j + \beta_3 female_i * ratio8to5_j + \beta_4 X_i + \varepsilon_i \quad (1)$$

where  $\ln W_i$  is the log of individual weekly earnings,  $female_i$  is the female dummy,  $ratio8to5_j$  is the ratio of hours worked in the 8 to 5 interval which varies at the occupation level  $j$ ,  $X_i$  are other observable characteristics including a dummies for race and education and a quartic function in age. We also control for (log) hours worked last week so that the coefficients we report reflect gaps in the hourly wage.<sup>10</sup> Our sample includes only full-time workers.  $\beta_1$  measures the impact of the female dummy,  $\beta_2$  measures the impact of working in occupations with a more concentrated work day, and  $\beta_3$  captures how being female interacts with working in these occupations.

Table 5 reports the results of the regression. The top panel reports the results for all full-time workers. Column (1) presents the baseline results. Women earn on average 22 percent less than men. Individuals in occupations with higher  $ratio8to5$  earn higher wages, with a one standard deviation higher ratio leading to approximately 11 percent higher wages. The interaction term indicates that women suffer about a 5 percent higher penalty in these occupations. In column (2) we control for occupation-level education which reduces the size of the wage premium associated with these occupations and also the female-specific penalty. In column (3) we control for the fraction of male workers in the occupation who report working more than 50 hours per week– the measure of “overwork” used by [Cortes and Pan \(2016b\)](#). In column (4) we include O\*NET skill measures such as social, ab-

---

<sup>10</sup>Specification with constructed log hourly wages where we divide weekly earnings by usual weekly hours yielded very similar results.



stract, manual, and routine skills. The coefficient on the concentration measure is still significant although the addition of skill measures reduces the female-specific penalty somewhat.

The bottom two panels report results separately by marital and parental status. Panel B reports results for single men and women. Notably the interaction terms are all insignificant pointing to the fact that there is no penalty for women associated with coordinated work schedules. Panel C reports results for married men and women with children. The female interaction terms are larger and significant which suggests that the results pooling over all workers reported in the top panel were largely due to the married with children group. Notably even when we include "overwork" and O\*NET skill measures as additional controls, the coefficient on the interaction term is -4 percent and still significant at the 5 percent level.

These regressions indicate that workers in occupations where most adhere to a standard 8 to 5 schedule are paid a higher wage. However, the gender gap in these occupations is larger. This pattern is particularly pronounced when we restrict our sample to married men and women with children, strongly suggesting that conflicts related to work and family time play an important role.

One objection to our interpretation of the results is that employers may be practicing statistical discrimination against married women with children and the level of discrimination is particularly severe in occupations with coordinated schedules. This alternative interpretation, while closely related, suggests that it is not necessarily the temporal constraints that women face due to household care responsibilities that are at play. To further investigate this alternative explanation, we examine different groups of married men (with children) who are full-time workers, differentiated by the work status of their wives.<sup>11</sup>

---

<sup>11</sup>Appendix Table A.2 and Table A.3 examine work hours and household care of married fathers

In Table 6 we investigate whether these constraints imposed by care responsibilities translate into wage penalties. Table 6 reports the results of a regression in a similar format as Table 5 but we now make comparisons among men only. The sample includes all married men with children matched to a spouse in the CPS data. The variables “Wife PT” and “Wife FT” are indicators equal to 1 if the wife works part-time or the wife works full-time respectively. The omitted category is “Wife Not Working.” The coefficients indicate that married men with full-time working wives earn approximately 5 percent less than married men with non-working wives indicating either selection or specialization effects. The coefficients of interest however are the interaction terms which indicate that a one standard deviation higher ratio leads to a 3-4 percent higher penalty for men with part-time working wives, and a 5-6 percent penalty for men with full-time working wives. Table 6 shows that the phenomenon is not unique to comparisons between men and women but is more general and applies where there is balancing between work and household care. It’s possible that the direction of causality is the opposite— that spouses with less earning power engage in more household care. Regardless, our argument is that there is a systematic wage penalty associated with doing household care related to our coordination measure. While we focus on the gender wage gap in our paper, the important message here is that the work-family conflict we identify is more widely applicable to all parents with care responsibilities.

In the appendix, we conduct various robustness exercises in support of our main results. One concern with our measure is whether it is confounded with the prevalence of evening and night shifts. Nurses, for example, work shifts and are at work during all hours of the day and the occupation would have low coordina-

---

by work status of the spouse. The tables show that fathers with full-time working spouses work 0.25 fewer hours on a weekday and perform somewhere between 0.07 to 0.12 more hours of household care on a typical weekday relative to fathers with non-working spouses.

tion requirements according to our measure. However, this may just be reflecting a 24-hour production cycle. To address this issue, in Table A.4 we add the fraction of workers who report to be shift workers based on the 2004 Work Schedule Supplement as an additional control. Our results are robust to these additional controls. Table A.5 in the appendix also reports regression results using our alternative measure of concentrated hours based on the Herfindahl Index. These results are qualitatively very similar.

To complement our reduced-form analysis, in what follows we build a model with the essential elements suggested by our empirical work and conduct counterfactual exercises.

## 4 The Model

**Environment** The economy is populated by a continuum of male and female workers of equal masses which sum to 1. Everyone lives for one period and values consumption of a market good, denoted by  $c$ , and a home good denoted by  $h$ . People rank bundles of the two goods according to a Cobb-Douglas utility function:

$$u(c, h) = (c)^{\nu^s} (h)^{1-\nu^s}, \quad (2)$$

where  $\nu^s$  represents the weight of market goods in utility for gender  $s$  with  $s = f, m$ .

Three aspects of the preferences are worth noting. First, males and females differ in the relative value they give to the home good. This asymmetry should not be taken literally as a fundamental difference in preferences. It is a convenient way to capture observed differences in hours of household care between males and

females. This difference may reflect social norms, differences in bargaining power, discrimination, etc., but an explicit modeling of these features is outside the scope of the paper. A second and related aspect is that the decision unit is the individual and not the household. The reason for doing so is data limitations. Specifically, observations in the ATUS are at the individual level, and there is no information on spousal time allocation. Third, as in our empirical part,  $h$  represents household care activities that are normally not outsourced (even for full-time workers) and thus we abstract from other household care activities including leisure. In order to isolate the effect of coordinating activities during the day, we want to focus on those activities that are directly performed by the worker.<sup>12</sup>

Workers have one unit of time, a fraction of which can be supplied in a labor market that features  $J$  occupations and which are labeled using the integer  $j$ . Occupations are mutually exclusive; workers can only work in one occupation. Workers receive a wage  $w_j$  per unit of time they supply in occupation  $j$ . Earnings from the supply of labor is how workers finance purchases of the market good  $c$ .

Time is divided into two sub-periods of equal length. We label the first period as “prime” (or 1), and the second period as “home” (or 2). We associate the first period in the model with the 8 a.m. to 5 p.m. period in the data.<sup>13</sup> Workers do not exclusively choose how to split their unit of time between working in the market and home care; they also choose how much to allocate to either activity during each sub-period. We denote by  $h^i$  and  $l^i$ , respectively, the home care and

---

<sup>12</sup>There is evidence that women also allocate more hours than men to household care activities that we are abstracting from (e.g. preparing meals). To the extent that these activities conflict with work schedules our results provide a lower bound for the mechanism we propose in explaining the gender gap.

<sup>13</sup>That our prime period starts at the beginning of the “day”, as opposed to the middle (as in the data) is an innocuous assumption. It is convenient and nothing of substance changes if we assume that the prime period starts in the middle of the day. Moreover, the “prime” period in the model need not be equal to half of the total time endowment. The model is flexible and can be adapted to however one defines business hours to be in the data.

work choices in sub-period  $t$ . Since the total time used must add up to one, the following identity must hold:

$$h_{j,1}^i + l_{j,1}^i + h_{j,2}^i + l_{j,2}^i = 1. \quad (3)$$

Since either sub-period represents half of total time, the following must also be true:

$$h_{j,t}^i + l_{j,t}^i = 0.5, \quad (4)$$

for each sub-period  $t$ .<sup>14</sup>

Our model abstracts from the labor market participation margin as well as the possibility of working part-time. We recognize that these decisions are not independent from fertility (also not modelled) and that there is a dynamic component to them. Abstracting from these margins does not mean we think they are not relevant to study the gender wage gap. Our goal is to quantify in isolation the new mechanism we propose. We find this mechanism explains a sizeable portion of the observed gender wage gap but not its totality.

Thus, our focus is on modeling the choice of hours during the day conditional on being a full time worker when caring for children conflicts with the work schedule. The empirical evidence in Section 2 shows that, conditional on being full time workers, the distribution of working hours during the day is not uniform. Workers bunch hours at particular times of the day and the degree of bunching is higher in certain occupations. This evidence, coupled with data from O\*NET (see Table 4), suggests that in some occupations the need to coordinate workers' schedules

---

<sup>14</sup>To be clear, that we define each subperiod to be equal to 0.5 in length is a normalization. It is akin to defining the total time endowment to be equal to 1.

is stronger. For example, some occupations rely more on team production where workers' tasks are complementary, while in others individuals work mostly on their own. This difference in the production technology translates into a friction on an individual's supply of labor. If an individual's tasks are complementary with others' in the same occupation, not supplying labor when others do has a productivity penalty. For example, missing a team project meeting has a productivity penalty. This penalty is likely to differ across occupations. Returning to our model, while we do not explicitly model the production technologies that lead to coordination needs, we assume that not supplying labor during prime time has a penalty. More specifically, a reduced form way of capturing the importance of coordinating workers' schedules is given by a reduction in the effective hours of work when labor is not supplied during prime time:

$$l_j^i = l_{j,1}^i + l_{j,2}^i - (0.5 - l_{j,1}^i)^{\alpha_j} \quad \text{with } \alpha_j \geq 0 \quad \text{for } j = 1, \dots, J. \quad (5)$$

The parameter  $\alpha_j$  drives the penalty for not supplying labor during prime time in occupation  $j$ .

This specification allows for large productivity losses in some occupations when a worker postpones working time to the second period ("home"). The penalty is large in occupations with a low  $\alpha_j$ , while in those with a high  $\alpha_j$  the loss is minimal. The maximum amount of time any worker (male or female) can work in the prime period is 0.5. For a given amount of work, supplying more home care time during period 1 leads to a lower productivity per hour. The extent of the productivity loss is occupation- but not gender-specific. Although  $\alpha$  is exogenous, and thus our model is silent about the source of these differences, one interpretation is that workers coordinate because productivity rises when everyone is present. By

convention, this coordination takes place during the period we call prime time.

The production of home goods employs hours both within prime and home time according to a Constant Elasticity of Substitution (CES) technology:

$$h^i = \left[ (h_1^i)^\rho + (h_2^i)^\rho \right]^{\frac{1}{\rho}}, \quad (6)$$

where  $\rho$  is the parameter that governs the elasticity of substitution between the supply of home care time across the two time periods. If  $\rho < 1$ , home care in different periods are imperfect substitutes.

On the production side, there is a set of  $J$  intermediate goods producers indexed by  $j$ . We associate the production of an intermediate good with an occupation. Each produces an amount  $X_j$  of the intermediate good. Production employs a linear technology in effective units of labor  $N_j$ ; that is,  $X_j = A_j N_j$ , where  $A_j$  is a total factor productivity parameter.<sup>15</sup> Markets are competitive and the producer faces prices for her good  $p_j$  and wages  $w_j$ .

The producer of intermediate good  $j$  solves the following maximization problem:

$$\max_{N_j} p_j X_j - N_j w_j \quad (7)$$

subject to the available technology  $X_j = A_j N_j$ . The solution to the problem is  $p_j = w_j / A_j$ . Intermediate goods producers sell to a final goods producer. The technology for producing a certain amount  $Y$  of the final good from a vector of quantities of intermediate services  $\{X_1, \dots, X_J\}$  is described by,

$$Y = \sum_{j=1}^J \left\{ \kappa_j X_j^\beta \right\}^{\frac{1}{\beta}}. \quad (8)$$

---

<sup>15</sup>The role of the total factor productivity parameters is only to help deliver the empirical distribution of earnings across occupations. Replicating that distribution is necessary to obtain a plausible between-occupations gender wage gap.

where  $\beta$  governs the elasticity of substitution between the intermediate goods and  $\kappa_j$  the share of each one in final production.

The final good producer solves the following maximization problem:

$$\max_{\{X_1, \dots, X_J\}} \sum_{j=1}^J \left\{ \kappa_j X_j^\beta \right\}^{\frac{1}{\beta}} - \sum_{j=1}^J p_j X_j. \quad (9)$$

Note that in equilibrium  $X_j = A_j N_j$  and  $p_j = w_j / A_j$ , so that this maximization problem implicitly defines labor demand functions  $\left\{ N_j = N_j^d(w_j, N_{-j}) \right\}_{j=1}^J$

**Individual's Decision Problem** Prior to choosing an occupation, each individual draws a vector of taste parameters for occupations,  $\Omega_i$ , from gender-specific distributions  $F(\theta_{j,s})$ . Thus, each individual  $i$  is represented by the vector

$$\Omega_i = \{ \theta_{i,1}, \dots, \theta_{i,J} \}$$

. Each element of the vector,  $\theta_{i,j}$ , represents the taste for occupation  $j$  and are independent across occupations. These shocks are important in matching the empirical sorting of workers into occupations. These shocks represent the various forces we leave out but which nonetheless determine the size and gender composition of occupations (comparative advantages, experience, etc.).

The amount of effective labor supplied by a worker of gender  $s$  in occupation  $j$  is  $l_j^s$ . Effective labor is compensated at a rate  $w_j$  per unit.

The value of occupation  $j$  for an individual of gender  $s$  is:



$$V_j^s(\theta_j^s) = \theta_j^s \left\{ \max_{c^s, l_{j,1}^s, l_{j,2}^s, h_{j,1}^s, h_{j,2}^s} \{u(c^s, h^s)\} \right\} \quad (10)$$

$$s.t. \quad (11)$$

$$c^s = l_j^s w_j \quad (12)$$

$$h_{j,2}^s + l_{j,2}^s = 0.5 \quad (13)$$

$$h_{j,1}^s + l_{j,1}^s + h_{j,2}^s + l_{j,2}^s = 1 \quad (14)$$

$$l_j^s = l_{j,1}^s + l_{j,2}^s - (0.5 - l_{j,1}^s)^{\alpha_j} \quad \text{with } \alpha_j \geq 0 \quad (15)$$

$$h_j^s = \left[ (h_{j,1}^s)^\rho + (h_{j,2}^s)^\rho \right]^{\frac{1}{\rho}} \quad (16)$$

Each individual chooses from the set of  $J$  occupations the one that yields the highest utility.

$$\hat{j}^s = \operatorname{argmax} \{W_1^s, \dots, W_J^s\} \quad (17)$$

where  $W_{\hat{j}}^s$  for an individual  $i$  of gender  $s$  is defined as

$$W_{\hat{j}}^s = \{V_{\hat{j}}^s | \Omega_i\}. \quad (18)$$

The occupational choice determines an endogenous distribution of male and female workers across occupations. Let  $\mu_j^s$  denote the mass of gender  $s$  workers in occupation  $j$ , then  $\sum_{j=1}^J (\mu_j^f + \mu_j^m) = 1$ . Define  $\mu_j = \mu_j^f + \mu_j^m$  as the size of occupation  $j$ .

**Aggregation and Equilibrium** Given wages, individuals solve the optimization problem yielding value functions  $\{V_j^s\}_{j=1}^J$ .

For an occupation  $j$ , its population satisfies  $\mu_j^s = \operatorname{Prob}(W_j^s > W_{-j}^s)$  where we

define the vector  $W_{-j}^s$  to be equal to  $\{W_1^s, \dots, W_{j-1}^s, W_{j+1}^s, \dots, W_J^s\}$ .

For occupation  $j$ , the total labor input is defined as,

$$N_j = \frac{\mu_j^m}{\mu_j} (l_{j,1}^m + l_{j,2}^m - (0.5 - l_{j,1}^m)^{\alpha_j}) + \frac{\mu_j^f}{\mu_j} (l_{j,1}^f + l_{j,2}^f - (0.5 - l_{j,1}^f)^{\alpha_j}). \quad (19)$$

In addition, in equilibrium:

$$w_j = \kappa_j A_j^\beta N_j^{\beta-1} \sum_{j=1}^J [\kappa_j X_j^\beta]^{\frac{1}{\beta}-1}. \quad (20)$$

Given individual's occupational and hours choices our model predicts *ratio8to5*'s for working hours for each occupation which we denote as *ratio8to5<sub>j</sub>*. Following the definition of these indicators presented above, its model counterpart is given by:

$$ratio8to5_j = \frac{\mu_j^m}{\mu_j} \frac{l_{j,1}^m}{(l_{j,1}^m + l_{j,2}^m)} + \frac{\mu_j^f}{\mu_j} \frac{l_{j,1}^f}{(l_{j,1}^f + l_{j,2}^f)}. \quad (21)$$

where  $\mu_j$  is the fraction of workers in occupation  $j$ , and  $\mu_j^m$  and  $\mu_j^f$  are the fraction of males and females in occupation  $j$ , respectively.

Before we take this model to the data and examine the role of coordination frictions in accounting for the gender gap, we illustrate the model's mechanisms using a simpler version than the one described above.

## 5 Model Mechanics in a Simple Case

We restrict attention to an economy with only two occupations. We provide a numerical example choosing illustrative values of the parameters to uncover the

main mechanisms. We analyze three environments which differ in the degree of heterogeneity among workers, detailed below. There is a set of parameters that are common across these economies. We assume a Cobb-Douglas technology for the final good and earnings in each occupation represent an equal share in final aggregate income, i.e  $\kappa_1 = \kappa_2 = 0.5$ . The parameters that govern the productivity penalty due to the coordination of workers are  $\alpha_1 = 0.8$  and  $\alpha_2 = 2.8$ . In other words, in occupation 1 coordination is much more important. Table 7 summarizes the results of each of the experiments that are described below.

**Economy 1: Homogeneous Agents without Gender Differences** This economy features a mass of size 1 of workers who have the same weight for market consumption:  $v_m = v_f = 0.8$ . The parameter driving the elasticity of substitution between home care time at the two time periods of the day (between  $h_1$  and  $h_2$ ),  $\rho$ , is set to 0.6. The results are shown in Panel A of Table 7.

Consumption goods and household care are substitutes. More market consumption implies more market time and less time allocated to household care. The equilibrium features sorting into occupations, with a larger mass of workers choosing occupation 2. Because of the higher  $\alpha$ , productivity losses due to coordination are smaller in occupation 2. As a result, occupation 2 is more attractive. Despite the higher cost, the final goods technology rules out an equilibrium in which no one chooses occupation 1. Wages adjust to leave workers indifferent between the two occupations. The higher wage results in a higher supply of labor in occupation 1. Hence,  $l_1 + l_2$  is larger. However, they have to pay a higher penalty and as a result effective hours are equal across occupations. To summarize, workers in occupation 1 supply more market work and less household care. The opposite is true in occupation 2. Why is the bunching ratio higher in occupation

1? Because workers, in an attempt to minimize the hours penalty, bunch hours to a larger extent in the prime period. Prime time cannot be exclusively devoted to work, however, because home care cannot be substituted perfectly across the two sub-periods. Finally, since workers in occupation 1 devote relatively more hours to work in prime time they end up devoting relatively more hours of household care during home time ( $h_2$ )

**Economy 2: Gender Differences in Household Care Responsibilities** We now consider the case of an economy where males and females are differentiated by the weight in market consumption  $\nu$ . Half of the workers have  $\nu = 0.9$  (male) and half have  $\nu = 0.7$  (female), i.e. females have stronger preferences for household care. The results are shown in Panel B of Table 7.

Due to their different preferences, females and males do not sort randomly into the two occupations. Females have a relatively higher preference for household care and thus they populate only occupation 2, the high  $\alpha$  occupation. Occupation 2 allows females to supply household care without paying too high an hours penalty. In addition, since household care hours are complementary during the day, more total household care time means a higher supply of household care hours both within prime and home time, i.e. household care hours need to be smoothed during the day. Occupation 2 allows them to do that at a relatively lower cost. Males have a comparative advantage in occupation 1. Because they want to supply more labor, they downplay the importance of the penalty when choosing their occupation. As a result, a higher proportion of males work in occupation 1.

To summarize, workers in occupation 2 spend a bit more time in home care (because the wage is lower). Consequently, raw hours, effective hours worked, and earnings, are all lower. Therefore, in equilibrium there is a gender gap in earnings

per hour of 3 percent.<sup>16</sup> All females are in occupation 2 representing 89 percent of all workers in that occupation. Because their time allocation is different, males and females earn different amounts per hour with an wage gap of 0.5 percent. Thus, in this example most of the gender wage gap is due to earnings per hour differentials between occupations (as opposed to within occupations).

**Economy 3: Gender Differences in Household Care Responsibilities and Tastes for Occupations** We now consider the case of economy 2, but we incorporate gender differences in tastes for each occupation which results in 50 percent of workers being female in each occupation. The results are shown in Panel C of Table 7.

Conditional in working on occupation 1, females want to work more than if they are in occupation 2 since they want to minimize the coordination cost. However, they will work less than males since they want to supply relatively more time to household care. As a result they will end up paying a higher cost in terms of effective hours and thus their earnings per hour are going to be lower than males. This is also the case for males and females in occupation 2, but the effects are lower given that  $\alpha$  is higher. For this reason, the gender earnings gap per hour is higher in occupation 1. In equilibrium, this example features a gender gap in earnings per hour of 5 percent in occupation 1 and no gender earnings gap in occupation 2. The aggregate gender earnings gap for this economy is also 3 percent. While the aggregate earnings gap is the same as in economy 2, the gender gap in this economy is entirely driven by earnings differences within occupations due to the fact that women have fewer effective hours.<sup>17</sup>

---

<sup>16</sup>Throughout the paper the terms gender gap in earnings per hour and gender wage gap are used interchangeably.

<sup>17</sup>Note that in this particular example the share of workers in each occupation is 50 percent so all the differences in earnings per hour come from differences in effective hours and not from

As in the other economies, conditional on being in occupation 1, workers want to supply more time in prime time to minimize the coordination cost, and as in the other cases, the bunching ratio is higher in occupation 1. Therefore, the example reflects the negative correlation between the bunching ratio and the gender earnings gap we find in the empirical part of the paper.

## 6 Quantitative Analysis

To assess the quantitative predictions of the model, we calibrate the model using aggregates from the US labor market. We restrict the analysis to 22 major SOC occupations (not including the military).<sup>18</sup> We also restrict the sample to married men and women with children in the household. Among other variables of interest, solving the model yields bunching ratios, *ratio8to5*, for work and home care, as well as earnings for men and women in each occupation.

### 6.1 Calibration

We assume that the distribution of tastes is Frechet with a common dispersion parameter.<sup>19</sup> Thus, we assume that for an occupation  $j$  and a gender  $s$  taste shocks are drawn from,<sup>20</sup>

$$F(\theta_{j,s}) = Prob(\theta_{j,s} \leq \theta_0) = exp(-T_{j,s}\theta_0^{-\zeta}) \quad (22)$$

differences in the wage rates across occupations.

<sup>18</sup>We use the number of full-time workers aged 18-65 in the American Time Use Survey (ATUS) as weights to aggregate our detailed Census 2002 occupation level measures to 2002 major SOC categories.

<sup>19</sup>This assumption is typical in discrete choice models and made for tractability.

<sup>20</sup>Because the paper is not concerned with the distribution of tastes within occupations, setting a common dispersion parameter is irrelevant. We could assume either a different common dispersion parameter or a different dispersion parameter by occupation and gender. Doing so would yield different values for the (female) Frechet parameters driving the mean for the model to be consistent with the empirical female shares across occupations.

The calibration chooses values for a total of 114 parameters:

$$\left( \{\alpha_j\}_{j=1}^{22}, \{\kappa_j\}_{j=1}^{22}, \{T_{j,m}\}_{j=1}^{22}, \{T_{j,f}\}_{j=1}^{22}, \{A_j\}_{j=1}^{22}, \rho, v^f, v^m, \beta \right).$$

We follow [Hsieh, Hurst, Jones, and Klenow \(2019\)](#) and set the value of  $\beta$  to  $2/3$  which implies an elasticity of substitution across occupations equal to 3. Because the dimension of the parameter vector is large, we set the vector  $\{\kappa_1, \dots, \kappa_{22}\}$  equal to the vector of observed labor shares: the vector of the share of earnings of occupation  $j$  in total earnings.<sup>21</sup> Of course, with a CES production function the model-implied labor shares differ from those in the data (because with a CES the value of  $\kappa_j$  is not equal to the labor share of occupation  $j$ ). We provide a comparison of the model-implied and empirical labor shares below and show that the differences are not too large. The remaining parameter values are chosen to minimize the distance between the moments in the data and the ones generated by the model. The moments we pick to match are the following: the bunching ratios, *ratio8to5*, the fraction of females relative to males within an occupation, the fraction of employment in each occupation, the average earnings per hour for each occupation, the fraction of working time for males and females, and the ratio of the average bunching ratio of work to the average bunching ratio of home care. The value of the last moment is largely influenced by  $\rho$ . A high value of  $\rho$  implies a low home care ratio (little home care takes place during prime time).<sup>22</sup>

Table 8 shows the values for the occupation-specific moments we match. Table 9 illustrates the model fit by showing the correlation between the targeted moments in the data and in the model as well as the mean absolute deviation in percentage

---

<sup>21</sup>Calibrating the remaining 91 parameters is in itself a challenging computational problem.

<sup>22</sup>Because we only model two activities and we normalize the length of each period to be 0.5, the model can't deliver either work or home care bunching ratios in levels. Therefore we target the ratio.

terms between the moments in the data and in the model. The model fit is quite good. The parameter values we obtain are shown in Table 10. The most interesting set of parameters are the  $\alpha$ 's. Their distribution is rather skewed and their correlation with the bunching ratios is -0.5. In other words, the bunching ratio across occupations is mainly determined by the  $\alpha$  but not completely (otherwise the two would be perfectly negatively correlated). The share of females in an occupation also plays an important role. The work bunching ratio of females is higher than that of males, so if an occupation is 90 percent female (as is, for example, Health-care Support) it must have a larger  $\alpha$  than an occupation with the same bunching ratio but say only 30 percent females. The skewness is an artifact of coordination costs being virtually zero for a large  $\alpha$ .<sup>23</sup> It is also worth noting that we estimate a relatively low value of  $\rho$  (0.48) which implies that time allocations to household care in different periods are less than perfect substitutes for each other.

As a way to validate the model, in Table 11 we re-run the regressions reported in Section 3 but we now estimate them for 22 occupations using individual data and model-generated data. The first column displays the coefficients on the female dummy, the bunching ratio, and the interaction between the two using data.<sup>24</sup> The second column shows the analogous coefficients from our model-simulated data. Note that the regression coefficients were not a targeted moment in the calibration. The bunching ratio coefficient is 0.29 in the model and it is larger than that in the data because there are fewer elements affecting earnings per hour in the model.<sup>25</sup> The coefficient on the interaction between the bunching ratio

---

<sup>23</sup>There is little information about coordination costs for an  $\alpha$  that exceeds 50 as in the case of "Protective Services", it basically has the same effect of an  $\alpha$  that is larger than 5. This is a special occupation and it could be that our moment-matching function is not correctly identifying the value of  $\alpha$  for it.

<sup>24</sup>Note that the coefficients will not exactly match those in Table 5 due to the fact that our occupation measure is aggregated to 22 groups.

<sup>25</sup>The values of the coefficient differ because of the heterogeneity over many dimensions (age, education, etc.) across individuals within occupations, whereas in the model the heterogeneity is



and the female dummy is -0.04. What drives the positive relationship between the gender gap and the bunching ratio in the model? The coordination cost is higher the lower the  $\alpha$ , which translates into a higher bunching ratio. Since females supply more home care, and home care is not perfectly substitutable across hours of the day, they supply fewer market hours during the prime period. As a result, their effective hours drop and their compensation reflects the lost hours.

As a way to further validate the model, we examine its performance on other non-targeted moments. For example the model implies that high- $\alpha$  occupations (lower coordination costs), the ratio of males to females labor supply is lower. The reason is that females supply more labor in low  $\alpha$  occupations because it is costly not doing so. The data seems to be in line with this model's prediction. The correlation of the ratio of males to females labor supply across occupations between data and model is 0.26. In the model, females' bunching ratios are higher than males' bunching ratios. The reason is that it's costly to supply labor outside of the prime time, so females proportionally supply more labor during that period. This decreases their work bunching ratios. The relative ratio of males' work bunching ratios to females' work bunching ratio is 0.89 in the model, while it's 0.90 in the data.

## 6.2 The Baseline Economy

Solving the model for the set of calibrated parameter values delivers an equilibrium that features an allocation of males and females over occupations and a vector of occupation-specific wage rates compensating a unit of labor. The equilibrium also generates a gender wage gap in each occupation and an economy-wide gender wage gap. The economy-wide gender wage gap can be decomposed into a

---

only between males and females.

between- and a within- occupation components. More specifically, let the earnings ratio between males and females for the whole economy be defined as  $egap = \frac{e_m}{e_f}$ , where  $e_m$  and  $e_f$  represent the mean earnings of males and females across occupations, respectively. That is,

$$egap = \frac{e_m}{e_f} = \frac{\sum_{j=1}^J \gamma_{m,j} e_{m,j}}{\sum_{j=1}^J \gamma_{f,j} e_{f,j}}, \quad (23)$$

where  $\gamma_{m,j}$  and  $\gamma_{f,j}$  are the proportions of males and females in occupation  $j$  over total males and females in the population.

Thus,

$$egap = \frac{\sum_{j=1}^J \gamma_{m,j} e_{f,j}}{\sum_{j=1}^J \gamma_{f,j} e_{f,j}} \frac{\sum_{j=1}^J \gamma_{m,j} e_{m,j}}{\sum_{j=1}^J \gamma_{m,j} e_{f,j}}. \quad (24)$$

The first term of the right hand side of the equation represents the *between* component whereas the second represents the *within* component. In the tables we report each component as a log-ratio. <sup>26</sup>

Table 12 reports the results. The first row contains the decomposition in the data. The overall gender wage gap is 23.2 percent. The within component is 24.1 percent while the between component is -0.9 percent. This is broadly consistent with Goldin (2014) who finds that the bulk of the gender wage gap exists within occupations and only a small component is due to the between portion.

In the baseline model (second row) the gender wage gap is 8.9 percent, this moment was not targeted. The model predicts a within component of 7.2 percent which accounts for 30 percent of the within component in the data. The model also generates a between component of 1.7 percent. The endogenous channel in our model– the interaction between preferences and coordination costs– has impli-

---

<sup>26</sup>There is not a unique way to perform this decomposition. For example you could fix the share of males in the occupations instead of females. The magnitudes can slightly change but the results are qualitatively the same.

cations for the both the within and between components. Although this channel influences mostly the within component it also affects the between component because it affects how women sort into occupations. While it explains a substantial component of the within component it does not account for the majority, indicating that there are other forces in the economy that affect the gender wage gap within an occupation.

### **6.3 Counterfactual Experiments**

In this section we conduct counterfactual experiments to assess the impact of various parameters on the gender wage gap. The key parameters of interest are the  $\alpha$ 's which reflect coordination costs, the  $\nu$ 's which reflect preferences for consumption and for household care, and  $\rho$  which determines the elasticity of substitution between household care at different times of the day.

#### **6.3.1 Coordination of Schedules and the Gender Wage Gap**

In the first experiment we set  $\alpha$  to be equal across occupations. We set  $\alpha$  at a relatively high value of 2.72 (reflecting low coordination costs) which is the value estimated for "Health Care Support." One motivation for such an experiment is the introduction of a new technology such as on-line connections and internet technology. The effect is lower costs of coordinating with other workers. Since in this experiment women still have a higher preference for household care (lower  $\nu$ ), everything else equal, they work less and allocate more hours to home production relative to men. However, the costs of doing so are lower.

The gender gap falls from 8.9 percent (baseline) to 6.3 percent. As shown in the third row of Table 12 the within component falls from 7.3 percent to 2.0 percent.

The within component falls substantially because with a relatively high  $\alpha$ , the penalty for not working during prime time is lower. As a result, despite women's larger supply of household care, their earnings per hour are now much closer to those of males. Figure 5 shows the within component of the gender gap (vertical axis) when this counterfactual is repeated for different values of  $\alpha$  (horizontal axis). Low values of  $\alpha$  such as that for "Management," for example, imply a large within component of around 10 percent. As  $\alpha$  becomes larger the coordination costs become negligible and the within occupation gender gap approaches zero. Figure 5 shows that there is little difference between moderately high  $\alpha$ 's and very high  $\alpha$ 's— that is, once  $\alpha$  reaches a value of 5 and greater, the within-occupation gender gap essentially disappears.

The between component rises when we equalize  $\alpha$ 's across occupations. Both males and females move to occupations with initially low  $\alpha$ 's because the coordination penalty is now lower. These occupations are even more attractive to women so the female share rises in these occupations. This effect by itself increases the between component, because low- $\alpha$  occupations tend to pay more. To assess the size of this effect, in Table 12 we separately report the gender wage gap between occupations holding earnings and occupation sizes fixed at their baseline values. This column, which we label "Sorting," isolates the effect of rising female share in initially low  $\alpha$  occupations. In this case the between occupation gender gap is 0.2. However, in equilibrium, earnings and occupation sizes also change. Low- $\alpha$  occupations get larger and their earnings rise (because the coordination costs are now smaller in these occupations). Because the fraction of men is larger in high-earnings occupations, and these occupations increase in size and earnings because now  $\alpha$  is higher, the between component of the gender gap rises.

### 6.3.2 A Change in Female Household Care Hours

In this experiment we reduce the difference between male and female preferences for household care. One possible interpretation is that a change in social norms equalizes the household care responsibilities of males and females. We reduce the gap in the  $\nu$ 's by 50 percent by reducing  $\nu_m$  to 0.535 and raising  $\nu_f$  to 0.465. The within component falls from 7.2 percent to 3.6 percent. The reason for the fall is that an increase in  $\nu_f$  increases the amount of work during prime time. This lowers the penalty that females face.

An alternative way of looking at this counterfactual is shown in Figure 6. The horizontal axis measures the distance between  $\nu$ 's (a value of 0.14 is equal to the baseline and a value of 0 means  $\nu_m = \nu_f$ ). On the vertical axis we measure the within component of the gender gap. As the distance between the  $\nu$ 's drops, the within component goes to zero. The rate at which it drops to zero depends on the occupation. As occupations are defined by their  $\alpha$ , we plot the within component against the within component for occupations with a small value of  $\alpha$ , 0.6; a middle value, 1.5; and a high value, 12. When  $\alpha$  is large, i.e. coordination costs are low, the within component is virtually zero even when women supply substantially more home care than men. For an occupation such as "Architecture and Engineers" with ( $\alpha = 0.64$ ), then the within gender gap is low only when preferences between males and females are similar.

Interestingly, the between component rises. As a result of the  $\nu$ 's changing, women are now more likely to move into low  $\alpha$  occupations. This sorting effect alone reduces the between occupation gender gap from 1.7 in the baseline case to 0.4. However, in equilibrium, earnings and occupation sizes change. In this case, because women now prefer to work more, their labor supply rises. This happens

in all occupations, but the effect is bigger in occupations which are relatively more populated by women. As a result, wage rates in female-intensive occupations fall (responding to the larger supply) leading to an increase in the between component from 1.7 to 3.0.

### **6.3.3 A Change in the Ability to Smooth Household Care During the Day**

In our model, the value of  $\rho$  determines the elasticity of substitution between household care time during the two parts of the day. A high value of  $\rho$  means that it is relatively easy to substitute household care activities throughout the day. In our baseline calibration  $\rho = 0.48$  which indicates household care activities are fairly substitutable but imperfectly so. Although the timing of these activities may be difficult to change (reflecting an imperfect degree of substitution), someone other than the parent could be responsible for undertaking them. For example, curricular education normally takes place in a school during normal business hours, but parents outsource that activity to school teachers and staff. As shown in Section [2.2](#) we focus on care (i.e. doctor's appointments, school meetings, homework supervision) which may be hard to outsource. What exactly determines the degree of substitution is not clear. One interpretation is that there are constraints on the time of the day in which some activities take place. For example, an appointment with a school teacher normally takes place before 5pm. An alternative interpretation is that they reflect parenting styles of modern societies, a recent phenomenon that has been extensively studied for instance by [Doepke and Zilibotti \(2019\)](#).

In order to study the effect of changes in the ability to substitute household care time during the day, we perform a counterfactual exercise in which we increase  $\rho$  to 0.65. As in our baseline case, women put more value on household care activities and allocate more time to household care relative to men. The main difference

is that compared to the baseline case women can now more easily distribute the household care to off-peak times so they do not incur a productivity loss. As a result, the within gender wage gap decreases from 7.2 percent to 5.0 percent as predicted. The increase in  $\rho$  has little effect on sorting. However, there is again a substantial increase in the between occupation gender gap in equilibrium. Productivity and earnings rise in low  $\alpha$  occupations. Since men initially had higher representation in these occupations, the between occupation component of the gender wage gap rises.

## 7 Final Remarks

Although women have made remarkable gains in the labor market over the past five decades, there is still a substantial gap in their earnings relative to men. Most of the unexplained gap is associated with earnings gaps that arises within occupations. In this paper we explore a mechanism which can explain why the gender gap differs across occupations.

Central to our analysis is the joint decision of workers to allocate time to market work and to household care. Using time-diary data we document that married women with children who report being full-time workers work less on the job and do more household care than their male counterparts. We also document that occupations vary in the degree to which total hours worked in the occupation are concentrated during peak hours of the day— a measure which we interpret as reflecting the degree of coordinated work schedules in the occupation. Our measure of an (in)flexible work schedule is therefore distinct from other papers in the literature which focus on the quantity of hours worked. We find that while men and single women receive a wage premium in occupations with concentrated

schedules, married women with children much less of one. Conditional on being in an occupation, less working time (more household care time) at peak hours of the day entails a productivity loss and thus earnings are lowered for women relative to men. We calibrate our model to US data and show that the greater demand for household care time by women together with the coordination of work time required in different occupations generates a gender wage gap of 8.9 percent which corresponds to approximately 40 percent of the observed gender earnings gap among married men and women with children. As in the data, most of the gender wage gap is within occupations. The value predicted by the model is 7.2 percent which accounts for 30 percent of the one observed in the data. If occupation-level coordination was set equal to the level of “Health Care Support”—an occupation with relatively low coordination, the within-occupation gender gap due to women’s higher demand for household time falls by more than half to 2.0 percent.



## References

- Acemoglu, D., and D. Autor (2011): *Skills, Tasks and Technologies: Implications for Employment and Earnings* vol. 4 of *Handbook of Labor Economics*, chap. 12, pp. 1043–1171. Elsevier, 1 edn.
- Albanesi, S., and C. Olivetti (2009): “Production, Market Production and the Gender Wage Gap: Incentives and Expectations,” *Review of Economic Dynamics*, 12(1), 80–107.
- Altonji, J. G., and C. H. Paxson (1988): “Labor Supply Preferences, Hours Constraints, and Hours-Wage Trade-Offs,” *Journal of Labor Economics*, 6(2), 254–276.
- Altonji, J. G., and C. H. Paxson (1992): “Labor Supply, Hours Constraints, and Job Mobility,” *Journal of Human Resources*, 27(2), 256–278.
- Bick, A., and N. Fuchs-Schündeln (2018): “Taxation and Labour Supply of Married Couples across Countries: A Macroeconomic Analysis,” *Review of Economic Studies*, 85(3), 1543–1576.
- Blundell, R., M. Brewer, and M. Francesconi (2008): “Job Changes and Hours Changes: Understanding the Path of Labor Supply Adjustment,” *Journal of Labor Economics*, 26(3), 421–453.
- Cardoso, A. R., D. S. Hamermesh, and J. Varejao (2012): “The Timing of Labor Demand,” *Annals of Economics and Statistics*, (105-106), 15–34.
- Cha, Y., and K. A. Weeden (2014): “Overwork and the Slow Convergence in the Gender Gap in Wages,” *American Sociological Review*, 79(3), 457–484.
- Chen, M. K., J. A. Chevalier, P. E. Rossi, and E. Oehlsen (2019): “The Value of

- Flexible Work: Evidence from Uber Drivers,” *Journal of Political Economy*, forthcoming.
- Chetty, R., J. N. Friedman, T. Olsen, and L. Pistaferri (2011): “Adjustment Costs, Firm Responses, and Micro vs. Macro Labor Supply Elasticities: Evidence from Danish Tax Records,” *The Quarterly Journal of Economics*, 126(2), 749–804.
- Cortes, P., and J. Pan (2016a): “Prevalence of Long Hours and Skilled Women’s Occupational Choices,” Discussion paper, Boston University, Questrom School of Business.
- (2016b): “When Time Binds: Returns to Working Long Hours and the Gender Wage gap among the Highly Skilled,” Discussion paper, Boston University, Questrom School of Business.
- Deming, D. J. (2017): “The Growing Importance of Social Skills in the Labor Market,” *The Quarterly Journal of Economics*, 132(4), 1593–1640.
- Denning, J. T., B. A. Jacob, L. Lefgren, and C. vom Lehn (2019): “The Return to Hours Worked Within and Across Occupations: Implications for the Gender Wage Gap,” Discussion paper.
- Doepke, M., and M. Tertilt (2016): *Families in Macroeconomics* vol. 2 of *Handbook of Macroeconomics*, chap. 0, pp. 1789–1891. Elsevier.
- Doepke, M., and F. Zilibotti (2019): *Love, Money, and Parenting: How Economics Explains the Way We Raise Our Kids*. Princeton University Press.
- Duchini, E., and C. V. Effenterre (2017): “Do women want to work more or more regularly? Evidence from a natural experiment,” Discussion paper.
- Eden, M. (2017): “The Week,” Discussion paper, Brandeis University.

- Erosa, A., L. Fuster, G. Kambourov, and R. Rogerson (2017): "Hours, Occupations, and Gender Differences in Labor Market Outcomes," NBER Working Papers 23636, National Bureau of Economic Research, Inc.
- Flabbi, L., and A. Moro (2012): "The effect of job flexibility on female labor market outcomes: Estimates from a search and bargaining model," *Journal of Econometrics*, 168(1), 81–95.
- Gicheva, D. (2013): "Working Long Hours and Early Career Outcomes in the High-End Labor Market," *Journal of Labor Economics*, 31(4), 785 – 824.
- Goldin, C. (2014): "A Grand Gender Convergence: Its Last Chapter," *American Economic Review*, 104(4), 1091–1119.
- Goldin, C., and L. F. Katz (2011): "The Cost of Workplace Flexibility for High-Powered Professionals," *The Annals of the American Academy of Political and Social Science*, 638(1), 45–67.
- Guner, N., E. Kaya, and V. Sánchez-Marcos (2014): "Gender gaps in Spain: policies and outcomes over the last three decades," *SERIEs: Journal of the Spanish Economic Association*, 5(1), 61–103.
- Guner, N., E. Kaya, and V. Sánchez Marcos (2019): "Labor Market Frictions and Lowest Low Fertility," IZA Discussion Papers 12771, Institute of Labor Economics (IZA).
- Hamermesh, D. S. (1999): "The Timing of Work Over Time," *The Economic Journal*, 109, 37–66.
- Hsieh, C., E. Hurst, C. I. Jones, and P. J. Klenow (2019): "The Allocation of Talent and U.S. Economic Growth," *Econometrica*, 87(5), 1439–1474.

- Labanca, C., and D. Pozzoli (2018): "Coordination of Hours within the Firm," Working Papers 7-2018, Copenhagen Business School, Department of Economics.
- Mas, A., and A. Pallais (2017): "Valuing Alternative Work Arrangements," *American Economic Review*, 107(12), 3722–3759.
- Prescott, E. C., R. Rogerson, and J. Wallenius (2009): "Lifetime Aggregate Labor Supply with Endogenous Workweek Length," *Review of Economic Dynamics*, 12(1), 23–36.
- Rogerson, R. (2011): "Individual and Aggregate Labor Supply with Coordinated Working Times," *Journal of Money, Credit and Banking*, 43, 7–37.
- Rogerson, R., and J. Wallenius (2009): "Micro and macro elasticities in a life cycle model with taxes," *Journal of Economic Theory*, 144(6), 2277–2292.
- Rosen, H. S. (1976): "Taxes in a Labor Supply Model with Joint Wage-Hours Determination," *Econometrica*, 44(3), 485–507.
- Stewart, J. (2010): "The Timing of Maternal Work and Time with Children," *Industrial and Labor Relations Review*, 64(1), 181–200.
- Wasserman, M. (2019): "Hours Constraints, Occupational Choice, and Gender: Evidence from Medical Residents," Discussion paper.
- Weiss, Y. (1996): "Synchronization of Work Schedules," *International Economic Review*, 37(1), 157–179.
- Wiswall, M., and B. Zafar (2017): "Preference for the Workplace, Investment in Human Capital, and Gender\*," *The Quarterly Journal of Economics*, 133(1), 457–507.

# Figures

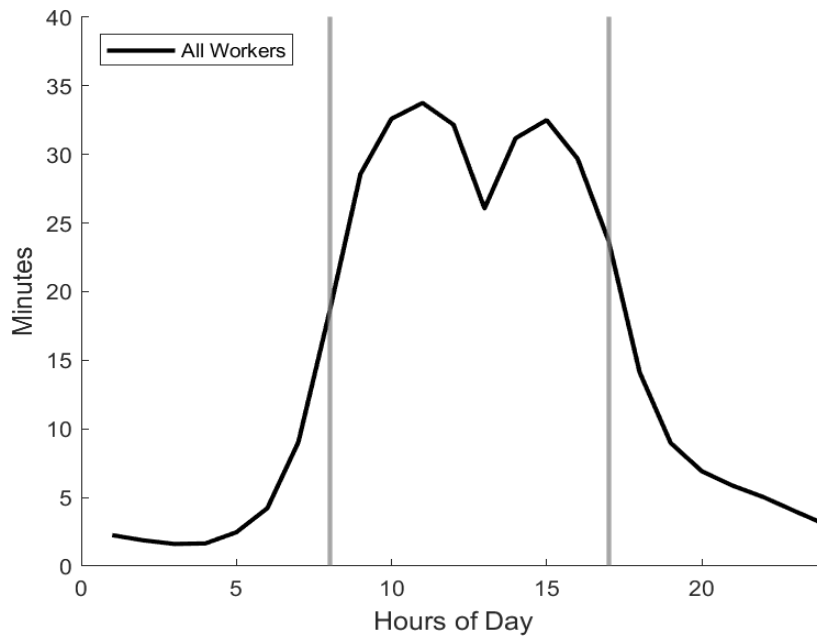


Figure 1: Work among Full-time Workers

Notes: Data are from the 2003-2014 American Time Use Surveys (ATUS). The figure is based on 18-65 year old ATUS respondents who report to be full-time workers in the activity summary file. The figure reports average minutes spent by hour of the day on “work and work-related activities” on the diary day. Both weekdays and weekends are included. Individual observations are weighted by ATUS weights for multi-year data files.

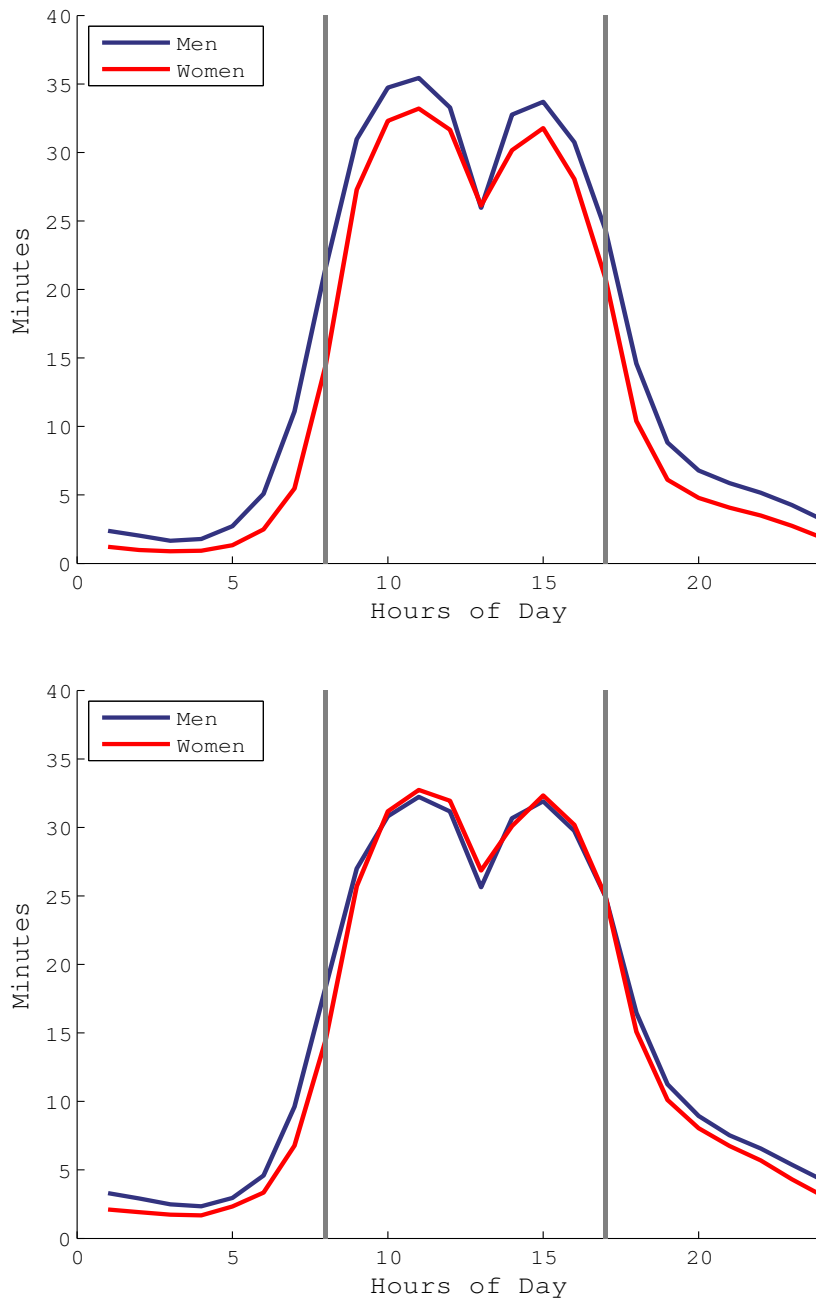


Figure 2: Work among Full-time Workers

Notes: Data are from the 2003-2014 American Time Use Surveys (ATUS). The figure is based on 18-65 year old ATUS respondents who report to be full-time workers in the activity summary file. The figure reports average minutes spent by hour of the day on “work and work-related activities” on the diary day. Both weekdays and weekends are included. Individual observations are weighted by ATUS weights for multi-year data files. The top panel includes workers who are married with spouse present with at least one own child in the household. The bottom panel includes workers who are single and without children.

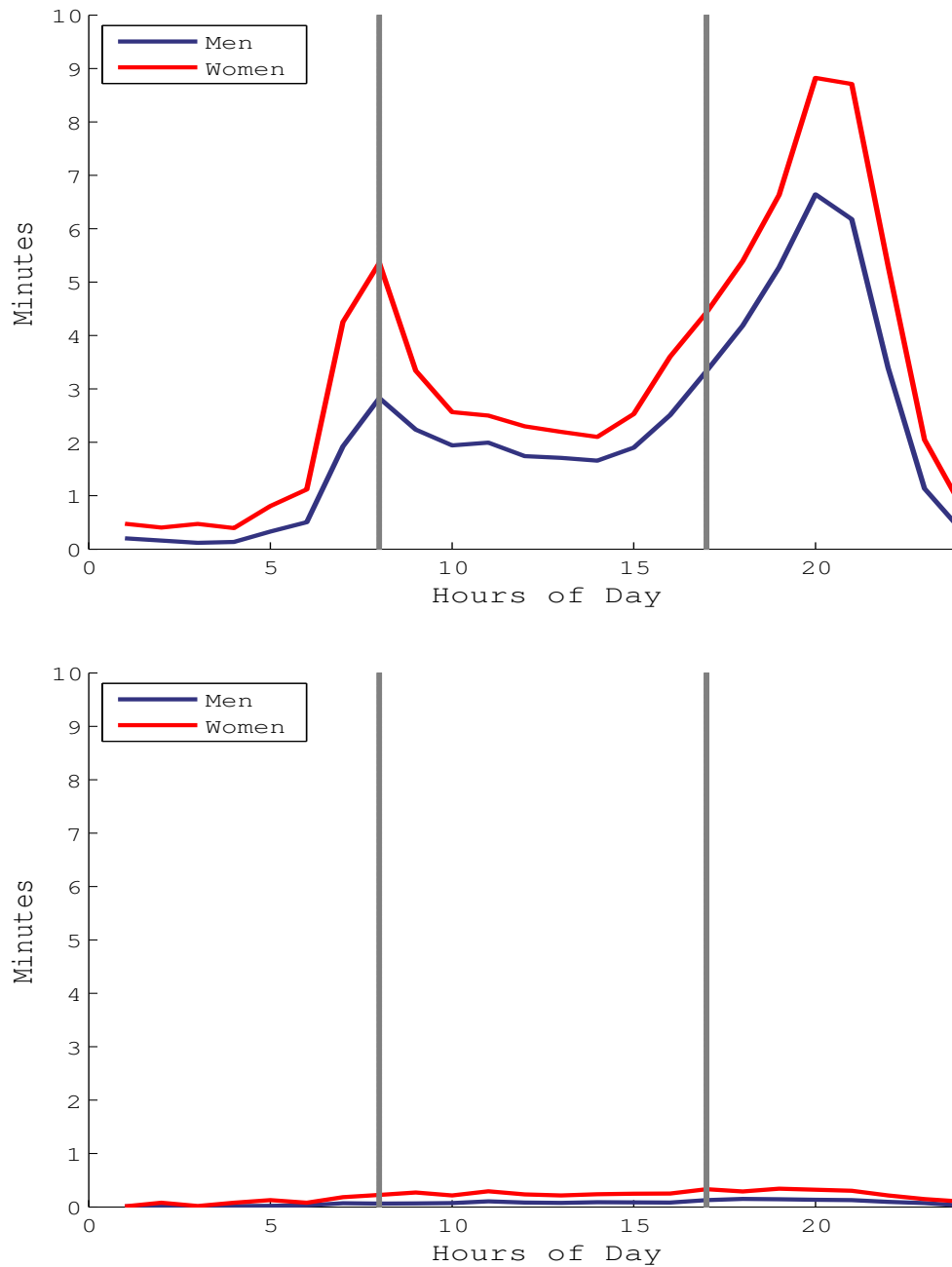


Figure 3: Household Care among Full-time Workers

Notes: Data are from the 2003-2014 American Time Use Surveys (ATUS). The figure is based on 18-65 years old ATUS respondents who report to be full-time workers in the activity summary file. The figure reports average minutes spent by hour of the day on “caring for and helping household members” on the diary day. Both weekdays and weekends are included. Individual observations are weighted by ATUS weights for multi-year data files. The top panel includes workers who are married with spouse present with at least one own child in the household. The bottom panel includes workers who are single and without children.

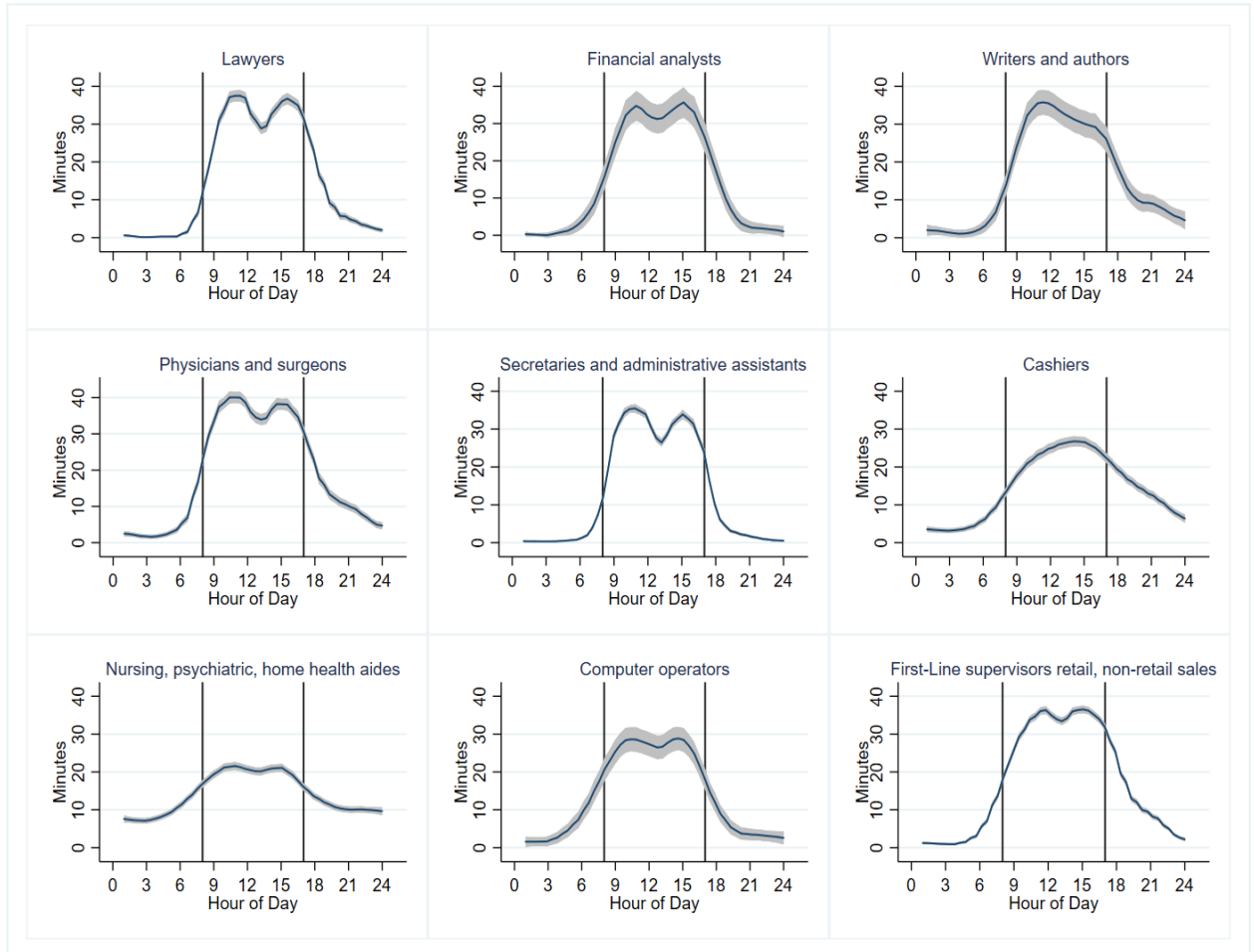


Figure 4: Timing of Work in Selected Occupations

Notes: Data are from the 2003-2014 American Time Use Surveys (ATUS). The figure is based on 18-65 years old ATUS respondents who report to be full-time workers in the activity summary file. Respondents are linked to detailed 2002 Census occupation codes of their main job. The figures show smoothed values from local polynomial regressions of minutes spent by hour of the day on “work and work-related activities.” Shaded areas display confidence intervals. Both weekdays and weekends are included. Individual observations are weighted by ATUS weights for multi-year data files. The figure highlights select detailed 2002 Census occupations: Lawyers (2100), Financial analysts (840), Writer and authors (2850), Physicians and surgeons (3060), Secretaries and administrative assistants (5700), Cashiers (4720), Nursing, psychiatric and home health aides (3600), Computer operators (5800), First-line supervisors, retail and non-retail sales (4700).



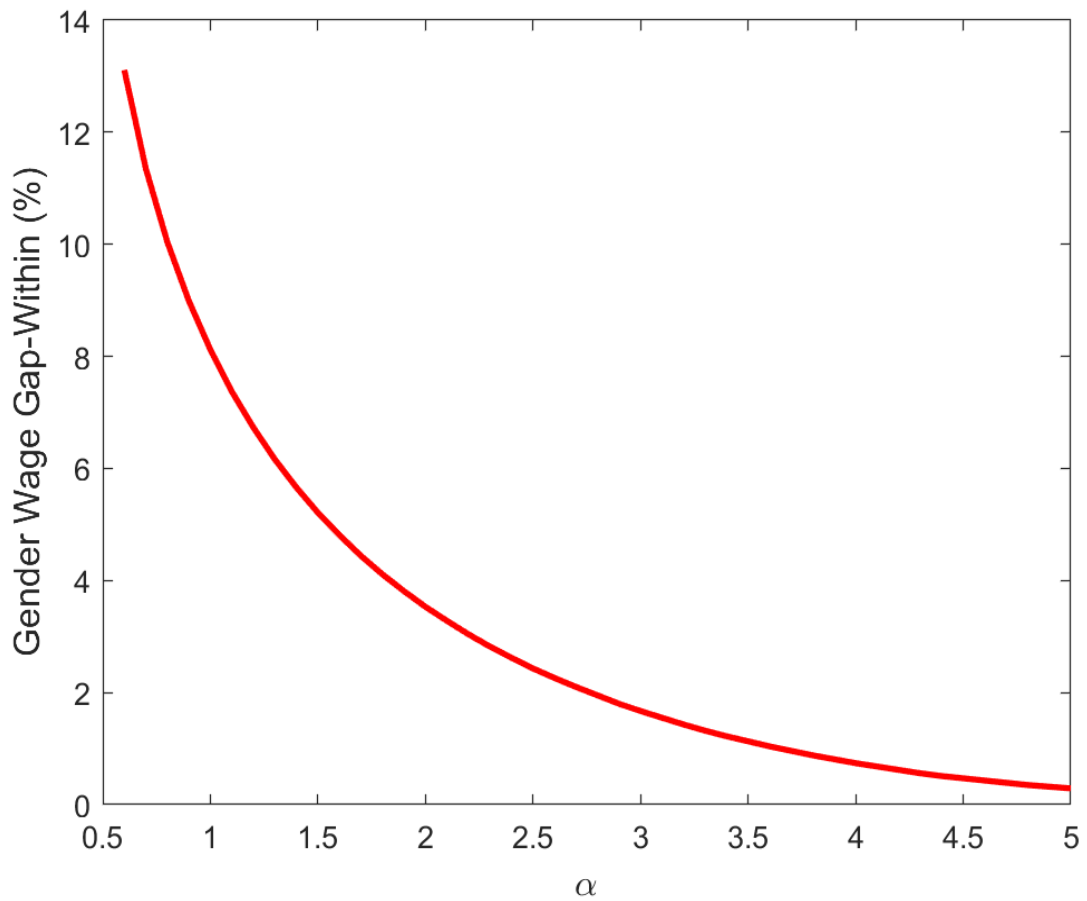


Figure 5: Gender Earnings Gap Within Occupations: The Effect of  $\alpha$

Notes: The figure shows the value of the within component of the gender wage gap (y-axis), as defined in Section 6.2, for the whole economy when the parameter  $\alpha$  (x-axis) is equal for every occupation and takes values from 0.6 (the minimum estimated value for our baseline economy) to 5 (as shown in the counterfactual of Section 6.3.1).

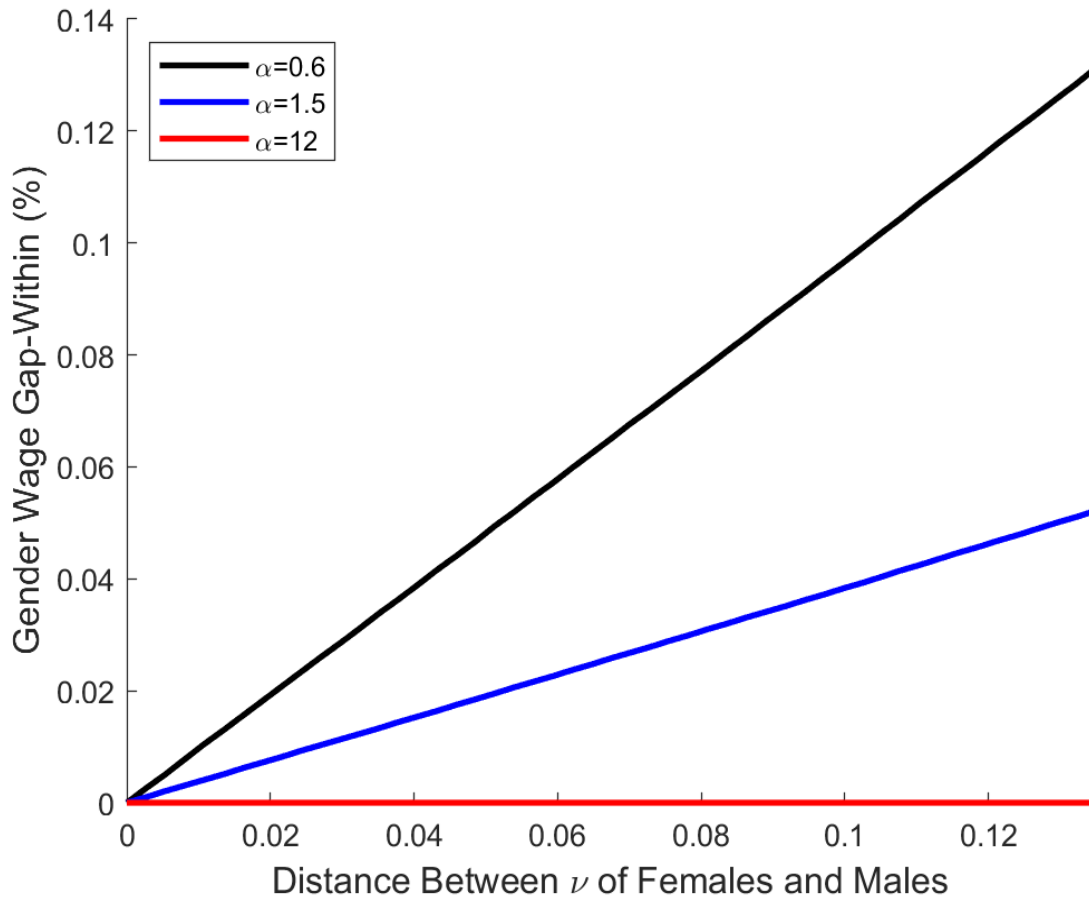


Figure 6: Gender Earnings Gap Within Occupations: The Effect of  $\nu$

Notes: The figure shows the value of the within component of the gender wage gap (y-axis), as defined in Section 6.2, for the whole economy when we change the difference between females and males in the value of parameter  $\nu$  (x-axis) (as shown in Section 6.3.2). The value of 0.14 on the x-axis is the difference in the value of the parameter  $\nu$  for females and males obtained in the calibration of the baseline economy, that is  $\nu_f = 0.43$  and  $\nu_m = 0.57$ . The figure shows the value of the within earnings gap (y-axis) as we decrease the value of  $\nu_m$  and increase the value of  $\nu_f$ . In this way, the distance between  $\nu$ s decreases and, a value of 0 on the x-axis indicates that  $\nu_m = \nu_f$ .

## Tables

Table 1: Work among Full-time Workers, Married with Children

	Weekday	Weekend	Weekday			
Female Gap in Work Hours	-0.898*** (0.0694)	-0.749*** (0.0674)	-0.901*** (0.0692)	-0.911*** (0.0702)	-0.703*** (0.0698)	-0.490*** (0.0768)
Observations	12113	12344	12113	12113	12113	8393
Day of Week and Year			X	X	X	X
Education, Age and Race				X	X	X
Usual Weekly Hours					X	X
Usual Weekly Hours less than 50						X
Average Hours, Men	7.904	2.163				
Average Hours, Women	7.006	1.414				
Average Hours, Total	7.611	1.906				

Notes: Data are from the 2003-2014 American Time Use Surveys (ATUS). The table is based on 18-65 year old ATUS respondents who report working full-time in the activity summary file. We keep those who are married with spouse present and have at least one own child in the household. The dependent variable is total hours spent on "work and work-related activities" on the diary day. Each column reports the coefficient on the "female" dummy. Column (5) controls for usual weekly hours worked reported in the activity summary file. Column (6) only includes workers who reported usual weekly hours of less than 50. Individual observations are weighted by ATUS weights for multi-year data files.

Table 2: Household Care among Full-time Workers, Married with Children

	Weekday	Weekend	Weekday			
Female Gap in Household Hours	0.436*** (0.0276)	0.264*** (0.0332)	0.436*** (0.0276)	0.349*** (0.0270)	0.319*** (0.0272)	0.266*** (0.0327)
Observations	12113	12344	12113	12113	12113	8393
Day of Week and Year			X	X	X	X
Education, Age and Race				X	X	X
Usual Weekly Hours					X	X
Usual Weekly Hours less than 50						X
Average Hours, Men	0.821	1.002				
Average Hours, Women	1.257	1.267				
Average Hours, Total	0.963	1.093				

Notes: Data are from the 2003-2014 American Time Use Surveys (ATUS). The table is based on 18-65 year old ATUS respondents who report working full-time in the activity summary file. We keep those who are married with spouse present and have at least one own child in the household. The dependent variable is total hours spent on "caring for and helping household members" on the diary day. Each column reports the coefficient on the "female" dummy. Column (5) controls for usual weekly hours worked reported in the activity summary file. Column (6) only includes workers who reported usual weekly hours of less than 50. Individual observations are weighted by ATUS weights for multi-year data files.

Table 3: Household Care Activities of Parents by Marital and Work Status (Hours)

Panel A: Weekday				
Activity	Females			Males
	Married NW	Married FT	Single FT	Married FT
<b>With Children Aged Less Than 6</b>				
Routine	1.4	1.0	0.8	0.4
Enrichment	0.6	0.4	0.3	0.3
Other	0.4	0.4	0.4	0.1
<b>With Children Aged 6-18 Only</b>				
Routine	0.4	0.2	0.2	0.1
Enrichment	0.6	0.4	0.3	0.3
Other	0.4	0.2	0.3	0.1
Panel B: Weekend				
Activity	Females			Males
	Married NW	Married FT	Single FT	Married FT
<b>With Children Aged Less Than 6</b>				
Routine	1.0	0.9	0.7	0.4
Enrichment	0.4	0.4	0.3	0.3
Other	0.1	0.1	0.1	0.1
<b>With Children Aged 6-18 Only</b>				
Routine	0.2	0.1	0.1	0.1
Enrichment	0.5	0.4	0.4	0.3
Other	0.1	0.1	0.1	0.1

Note: Data are from the 2003-2014 American Time Use Surveys (ATUS). The table shows the average hours allocated to household care activities by parents. Panel A is on weekdays and B on weekends. The three aggregate categories of activities are "Routine," "Enrichment" and "Other." "Other" includes activities such as "Organization and planning," "Attending household children's events," "Picking up/dropping off household children," and "Meetings and school conferences," among others. See Appendix for detailed activities that are included in each category. Married NW refers to married women with spouse present who are not working, Married FT refers to men and women who are married with spouse present and working full-time, Single FT refers to single women who are working full-time. Individual observations are weighted by ATUS weights for multi-year data files.

Table 4: Correlations between Importance of Occupational Characteristics and Ratio8to5

#Cat.	Name: O*NET Characteristic	Corr. Coeff.
1	Assisting and caring for others	-0.1898*
2	Coaching and developing others	0.0476
3	Developing_and_Building_Teams	0.0533
4	Establishing_and_Maintaining_Interpersonal_Relationships	0.2961*
5	Face-to-Face_Discussions	0.2349*
7	Social orientation	0.0487
8	Training_and_Teaching_Others	-0.0714
10	Guiding_Directing_and_Motivating_Subordinates	0.0509
	Concentration Index	0.7430*
	Male Overwork	0.1290*
#Cat.	Name: O*NET Skill Measures	Corr. Coeff.
1	Social Skills	0.2146*
2	Abstract Skills	0.3638*
3	Manual Skills	-0.4369*
4	Routine Skills	-0.3748*

Notes: Data are from the 2003-2014 American Time Use Surveys (ATUS). The table shows correlations between our standardized Ratio8to5 and O\*NET occupational characteristics for 430 detailed Census 2002 occupations. Ratio8to5 is the ratio of total hours worked by all full-time workers during the hours 8 a.m. to 5 p.m. relative to total hours worked in each occupation category in the ATUS time diary data. The O\*NET characteristics are “Assisting and Caring for Others” (Work Activities 1-27); “Coaching and Developing Others” (Work Activities 2-28); “Developing and Building Teams” (Work Activities 3-29); “Establishing and Maintaining Interpersonal Relationships” (Work Activities 4-30); “Face-to-Face Discussions” (Work Context 7-31); “Social Orientation” (Work Styles 9-32); “Training and Teaching Others” (Work Activities 6-33); “Guiding, Directing, and Motivating Subordinates (Work Activities 5-34). O\*NET skill measures are those used by [Deming \(2017\)](#) for “Social Skills,” and [Acemoglu and Autor \(2011\)](#) and [Denning, Jacob, Lefgren, and vom Lehn \(2019\)](#) for “Abstract,” “Routine,” and “Manual.” See the Appendix for details on the variables used and for matching across O\*NET Standard Occupation Codes (SOC) and 2002 Census occupation codes. The bottom rows show correlations between Ratio8to5 and our concentration index and between Ratio8to5 and “Male Overwork.” The concentration index is the Herfindahl index of the share of hours worked in each day of the week/hour of day interval. “Male Overwork” is the share of male workers with at least some college education in the occupation who worked more than 50 hours per week. Occupational level measures are weighted by the number of 18-65 year old full-time workers in the occupation. Individual observations are weighted by ATUS weights for multi-year data files. (\*) denotes significance at the 5% level.

Table 5: Gender Gap in Log Weekly Earnings by Coordination Measure Ratio8to5

	(1) baseline	(2) (1)+agg. education	(3) (2)+ overwork	(4) (3)+ ONET
Panel A: All				
female	-0.218*** (0.0194)	-0.254*** (0.0129)	-0.244*** (0.0129)	-0.213*** (0.0118)
ratio8to5	0.113*** (0.0170)	0.0644*** (0.0136)	0.0631*** (0.0138)	0.0691*** (0.0132)
femaleXratio8to5	-0.0490* (0.0264)	-0.0457** (0.0180)	-0.0436** (0.0190)	-0.0279* (0.0154)
Observations	263245	263245	263179	256738
Panel B: Single Without Children				
female	-0.135*** (0.0157)	-0.169*** (0.0117)	-0.165*** (0.0118)	-0.132*** (0.0113)
ratio8to5	0.102*** (0.0146)	0.0623*** (0.0132)	0.0613*** (0.0131)	0.0617*** (0.0105)
femaleXratio8to5	-0.0216 (0.0207)	-0.0254 (0.0162)	-0.0242 (0.0168)	-0.0094 (0.0141)
Observations	73536	73536	73516	71602
Panel C: Married With Children				
female	-0.263*** (0.0229)	-0.298*** (0.0159)	-0.286*** (0.0162)	-0.256*** (0.0136)
ratio8to5	0.109*** (0.0189)	0.0652*** (0.0142)	0.0649*** (0.0151)	0.0722*** (0.0149)
femaleXratio8to5	-0.0626* (0.0327)	-0.0595** (0.0221)	-0.0582** (0.0236)	-0.0401** (0.0191)
Observations	110230	110230	110206	107642

Notes: Standard errors in parentheses. \*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .001$ . Data are from the 2003-2014 ATUS-CPS files. CPS data includes all individuals in the final interview month selected to participate in the ATUS and members of their households. Individuals are linked to detailed 2002 Census occupation codes of their main job. The sample in Panel A includes all 18-65 years old workers who reported usual weekly hours  $\geq 35$  and had positive weekly earnings. Panel B includes only those who are single and without children in the household. Panel C includes only those who are married with spouse present and with at least one own child in the household. The table reports the coefficients from regression of log weekly earnings on the main job on the female dummy, Ratio8to5, and the interaction term. We control for log weekly hours on the main job to focus on the hourly wage gap. Regression results using constructed hourly wages (weekly earnings divided by usual weekly hours) yield very similar results. Additional controls include a quartic in age, dummies for different levels of educational attainment, race dummies, and year dummies. Column (2) includes the average education level in the occupation as an additional control. Column (3) also includes the share of male workers with at least some college education in the occupation who work more than 50 hours per week. Column (4) also includes occupation-level skill measures such as "social skills," "abstract skills," "routine skills," and "manual skills" constructed from the O\*NET. Ratio8to5 is defined for 493 detailed 2002 Census occupations. We were able to match 430 occupations to the O\*NET skill measures. Standard errors are clustered at the occupation level. ATUS base weights are used to weight each individual observation.

Table 6: Log Weekly Earnings of Males by Working Status of Spouse and Coordination Measure Ratio8to5 – Married with Children

	(1) baseline	(2) (1)+agg. education	(3) (2)+ overwork	(4) (3)+ ONET
ratio8to5	0.146*** (0.0233)	0.108*** (0.0185)	0.109*** (0.0189)	0.104*** (0.0172)
Spouse PT	0.0128 (0.0086)	0.0065 (0.0082)	0.0068 (0.0082)	0.0045 (0.0082)
Spouse FT	-0.0465*** (0.0088)	-0.0521*** (0.0088)	-0.0509*** (0.0083)	-0.0500*** (0.0082)
Spouse PT X ratio8to5	-0.0296** (0.0117)	-0.0356** (0.0110)	-0.0357** (0.0111)	-0.0259** (0.0110)
Spouse FT X ratio8to5	-0.0550*** (0.0113)	-0.0561*** (0.0113)	-0.0572*** (0.0112)	-0.0476*** (0.0110)
Observations	68281	68281	68267	66655

Note: Standard errors in parentheses. \*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .001$ . Data are from the 2003-2014 ATUS-CPS files. CPS data includes all individuals in the final interview month selected to participate in the ATUS and members of their households. Individuals are linked to detailed 2002 Census occupation codes of their main job. The sample includes 18-65 years old married men with spouse present, who have at least one own child in the household, and who reported usual weekly hours  $\geq 35$  and had positive weekly earnings. "Spouse PT" is an indicator of a male worker who has a part-time working spouse. Similarly, "Spouse FT" refers to a male with a full-time working spouse. The table reports the main effect relative to men with a non-working spouse and the interaction with Ratio8to5. We control for log weekly hours on the main job to focus on the hourly wage gap. Regression results using constructed hourly wages (weekly earnings divided by usual weekly hours) yield very similar results. Additional controls include a quartic in age, dummies for different levels of educational attainment, race dummies, and year dummies. Column (2) includes the average education level in the occupation as an additional control. Column (3) also includes the share of male workers with at least some college education in the occupation who work more than 50 hours per week. Column (4) also includes occupation-level skill measures such as "social skills," "abstract skills," "routine skills," and "manual skills" constructed from the O\*NET. Ratio8to5 is defined for 493 detailed 2002 Census occupations. We were able to match 430 occupations to the O\*NET skill measures. Standard errors are clustered at the occupation level. ATUS base weights are used to weight each individual observation.



Table 7: A Simple Case with Gender Differences

Occupation	% Workers	Bunching Ratio	Earnings	$l_1 + l_2$	$l$	% Females	E. Gap
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: No Gender Differences							
1	0.48	0.59	0.42	0.82	0.80		
2	0.52	0.51	0.38	0.80	0.80		
Panel B: Gender-Specific $\nu$							
1	0.44	0.55	0.46	0.91	0.90	0	
2	0.56	0.52	0.35	0.73	0.73	89	1.005
Gender Earnings Gap	1.031						
Panel C: Gender-Specific $\nu$ and Tastes							
1	0.50	0.60	0.40	0.81	0.79	50	1.047
2	0.50	0.51	0.40	0.81	0.80	50	1.005
Gender Earnings Gap	1.026						

Note: This table shows the results of the numerical exercises described in Section 5. Panel A refers to the case with no gender differences, i.e. homogeneous agents. Panel B is the case with gender differences in the preferences for household care, governed by parameter  $\nu$ . Panel C describes the same case of Panel B but we add gender specific taste shocks. Panel D describes the case of a reduction in the elasticity of substitution in household care time during the day. Column (1) refers to the different occupations considered, 1 and 2. Column (2) describes the share of total workers in each occupation. Column (3) is the 8to5ratio as defined in Section 4. Column (4) contains the total earnings in equilibrium in each occupation. Column (5) contains the total number of working hours in each occupation. Column (6) presents the total number of effective hours, Column (7) the share of females in each occupation, and Column (8) the gender gap in earnings per hour in each occupation. Finally, in Panel B, C, and D, the table reports the ratio of earnings per hour of males over females for the whole economy, denoted as the gender earnings gap.

Table 8: Moments

Occupation no.	Occupation	Labor Share	<i>8to5ratio</i>	Av. Earn. Per Hour	% Fem.
1	Management	0.185	0.807	1.00	0.31
2	Business and financial operations	0.062	0.856	0.90	0.52
3	Computer and mathematical	0.053	0.837	1.08	0.22
4	Architecture and engineering	0.042	0.825	1.03	0.08
5	Life, physical, and social science	0.014	0.830	0.96	0.34
6	Community and social service occupations	0.016	0.778	0.67	0.54
7	Legal	0.021	0.863	1.09	0.46
8	Education, training, and library	0.069	0.834	0.72	0.72
9	Arts, design, entertainment, sports, and media	0.014	0.817	0.82	0.33
10	Healthcare practitioners and technical	0.068	0.723	0.88	0.70
11	Healthcare support	0.009	0.710	0.42	0.87
12	Protective service	0.030	0.592	0.73	0.12
13	Food preparation and serving related	0.012	0.604	0.37	0.46
14	Building and grounds cleaning and maintenance	0.017	0.715	0.40	0.31
15	Personal care and service	0.008	0.667	0.42	0.73
16	Sales and related	0.091	0.788	0.72	0.34
17	Office and administrative support	0.085	0.826	0.54	0.72
18	Farming, fishing, and forestry	0.004	0.627	0.33	0.24
19	Construction and extraction	0.055	0.791	0.62	0.01
20	Installation, maintenance, and repair	0.042	0.764	0.65	0.03
21	Production	0.057	0.648	0.52	0.23
22	Transportation and material moving	0.045	0.659	0.51	0.11

Note: The table presents the occupational level moments we use in our calibration. Labor shares are calculated by dividing the total earnings of workers in each occupation by the total mass of earnings in the sample. The *8to5ratio* is our measure of coordination using time use data obtained as we explain in the text. We also report the average earnings per hour of workers in each of the occupations (*Av.Earn.PerHour*) and the share of females in the total number of workers in each occupation (*%Fem.*).

Table 9: Model Fit

---

Panel A: Occupational-level Moments

---

Moment	Correlation Coeff. Model-Data
<i>8to5ratio</i>	1.00
Average Earnings Per Hour	1.00
% Females	0.98
Occupational Shares	0.98

---

Panel B: Economy-wide Moments

---

Moment	Data	Model
Ratio Hours Worked Male-Female	1.2	1.23
<i>ratio8to5</i> Work/ <i>ratio8to5</i> Household Care	2.03	2.22

---

Panel C: Overall Measure of Fit

---

Average Absolute % Deviation (Model-Data) 5.3%

Note: The table shows the model fit by comparing the value of the targeted moments in the data and in the model. For the occupational-level moments we show their values in the data and in the model (Panel A). For the economy-wide targeted moments we show in Panel B, for each targeted moment, the correlation across occupations between the value of the moments in the data and in the model. The last line of the table gives an overall measure of fit (average absolute percentage deviation between model and data).

Table 10: Parameter Values

Panel A: Occupational-specific Parameters						
Occupation no.	Occupation	$\kappa$	$\alpha$	$A$	$T_f$	$T_m$
1	Management	0.185	0.98	0.89	8.05	1.78
2	Business and financial operations	0.062	0.75	1.81	5.86	0.53
3	Computer and mathematical	0.053	0.64	2.12	1.51	0.65
4	Architecture and engineering	0.042	0.64	2.26	0.49	0.65
5	Life, physical, and social science	0.014	0.77	3.87	0.77	0.18
6	Community and social service occupations	0.016	1.46	2.91	2.45	0.25
7	Legal	0.021	0.63	3.41	1.19	0.17
8	Education, training, and library	0.069	1.24	1.51	15.55	0.14
9	Arts, design, entertainment, sports, and media	0.014	0.87	3.58	0.87	0.21
10	Healthcare practitioners and technical	0.068	2.50	1.41	11.31	0.04
11	Healthcare support	0.009	2.72	2.60	4.21	0.02
12	Protective service	0.030	68.64	1.70	0.65	0.68
13	Food preparation and serving related	0.012	6.92	1.96	3.12	0.52
14	Building and grounds cleaning and maintenance	0.017	2.00	2.00	2.94	0.81
15	Personal care and service	0.008	3.31	2.59	2.80	0.11
16	Sales and related	0.091	1.21	1.05	7.33	1.35
17	Office and administrative support	0.085	1.37	1.28	34.97	$5 \times 10^{-5}$
18	Farming, fishing, and forestry	0.004	3.90	3.17	0.53	0.26
19	Construction and extraction	0.055	0.82	1.41	0.17	1.88
20	Installation, maintenance, and repair	0.042	1.07	1.59	0.28	1.33
21	Production	0.057	3.20	1.05	4.23	1.89
22	Transportation and material moving	0.045	2.69	1.13	1.52	1.71

Panel B: Rest of Parameters	
$\rho$	0.48
$v_f$	0.43
$v_m$	0.57

Note: Panel A shows the values of the parameters that are specific to the different occupations and Panel B the values obtained for the utility function,  $v_m$  and  $v_f$ , for males and females, respectively. In addition, Panel B presents the value obtained for the parameter that governs the elasticity of substitution of the technology for household care,  $\rho$ .

Table 11: Regressions: Model vs. Data

	Data	Model
female	-0.272*** (0.004)	-0.06
ratio8to5	0.086*** (0.002)	0.29
femaleXratio8to5	-0.015*** (0.004)	-0.04

Standard errors in parentheses. \*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$ . Note: This table shows the estimates of the regression using individual data for married workers with children (column Data) for 22 occupations and the estimates of the same regression using data generated by the model in its baseline calibration (column Model). The dependent variable is earnings per hour.

Table 12: Gender Earnings Gap (%)

	Overall	Between	Between (Sorting)	Within
Data	23.2	-0.9	-	24.1
Baseline	8.9	1.7	-	7.2
Equal $\alpha$ ( $\alpha = 2.72$ )	6.4	4.4	0.2	2.0
50% Drop in $\nu_m - \nu_f$	6.6	3.0	0.4	3.6
Increase in $\rho$	9.7	4.7	1.2	5.0

Note: The table shows the overall gender wage gap (Overall) and its decomposition into the portion explained by the differences in the gender wage gap across occupations (Between) and the portion explained by differences in earnings between males and females within occupations (Within). The column labeled Between (Sorting) shows a between gender gap when earnings across occupations and occupation sizes are fixed at their Baseline values. The table shows the values in the data, in the baseline economy and in two counterfactual economies: (i) when the parameter  $\alpha$  is the same across occupations and equal to 2.72 (the one corresponding to Healthcare support), (ii) when the difference between the values for  $\nu_m$  and  $\nu_f$  decreases by 50%, and (iii) when  $\rho$  – the parameter that drives the elasticity of substitution between child care across the two time periods – rises from about 0.48 to 0.65.

# Appendix (Not for Publication)

## A.1 Data and Variables Description

### A.1.1 ATUS sample

We base our analysis on the 2003-2014 American Time Use Surveys (ATUS). One respondent per household is drawn from the Current Population Survey samples and the interviews are conducted 2 to 5 months after the last CPS interview. The ATUS respondent is asked to fill out a time diary over the previous day, recording their activities and starting and ending times. There are 17 aggregate activities and we focus on two activities, “work and work-related activities” and “caring for and helping household members”. For each individual we calculate minutes spent on these activities for each hour of the day using information on starting and ending times. The ATUS also contains demographic and labor force information including labor force status and usual hours worked of all household members. We match spouses using the household roster to incorporate labor force status and hours of the spouse. Our main sample of ATUS time diary respondents consist of 106,620 adults who are 18 to 65 years old. In comparing time use of men and women we focus on full-time workers (those whose usual weekly hours worked was greater or equal to 35), resulting in 66,023 observations.<sup>27</sup> We make no other restrictions—notably we include self-employed workers and multiple-job holders. In comparisons of time use across gender, we examine separately married men and women with at least one child, and single men and women with no children. We define “married” as those who are married with spouse present. Spouse is based on marriage and not co-habitation. Presence of children is based on the presence

---

<sup>27</sup>We exclude approximately 3.3 percent of workers who report that their “hours vary”.

of own children under 18 as opposed to children in the household under 18.

### **A.1.2 Construction of *ratio8to5***

To construct the ratio of hours worked in the 8 to 5 time interval at the occupation level we make further restrictions to the ATUS sample above. We keep 18-65 year old full-time workers who worked full-time (minimum of 35 hours) in their main job, which results in a sample of 62,811 observations. We construct at the detailed 2002 Census occupation code level, the sum of total hours worked during the 8 to 5 time interval as well as total hours worked overall among our sample of time-use respondents. Individual hours are weighted by the person-specific ATUS final weight. The ratio of the two sums is our coordination measure at the occupation level. The raw ratios are reported in Appendix Table [A.4](#). We calculate 493 non-missing ratios at the 2002 Census occupation code level. As the Appendix Table [A.4](#) shows, there are many occupations with very small numbers of full-time workers. Therefore, we weight correlations of our measure with other O\*NET characteristics using the total number of full-time workers who are 18-65 (at the occupation level) as weights. We also weight each individual by their ATUS final weight. We have also conducted robustness checks keeping only those occupations with at least 100 observations from the ATUS sample. This resulted in 144 detailed occupations. Regression results based on this reduced set of occupations were even stronger. Results available upon request.

### **A.1.3 Construction of the Concentration Index**

We also constructed Herfindahl indices to measure concentration of hours worked at the occupation-level. This measure has the advantage of not picking any given time of the day as the “peak” in an arbitrary fashion and additionally incorporates

information across days of the week as well as hours of the day. Let  $k$  delineate day of the week by hour of the day bin and let  $work_j^k$  be the number of hours worked in bin  $k$  by 18-65 year old full-time workers in occupation  $j$ .  $work_j$  equals the total number of hours worked by 18-65 year old full-time workers in occupation  $j$ . Individual hours are weighted by the person-specific ATUS final weight.  $share_j^k$  is  $k$ 's share of total hours worked in occupation  $j$  analogous to market share of a firm in a given industry. The concentration ratio (Herfindahl index) for occupation  $j = \sum_k (share_j^k)^2$ . We only keep occupations which have observations across all 7 days of the week, which results in 322 occupations.

#### A.1.4 O\*NET Measures

In order to relate our coordination measure with other occupation-level skill and job characteristic measures, we downloaded O\*NET skill and job characteristics measures from O\*NET 24.2 (downloaded in March 2020). The O\*NET database contains information on abilities, skills, tasks and work activities associated with detailed occupations. We downloaded 5 measures in the "Work Activities" category that appeared to us to require coordination with other workers: "Assisting and caring for others," "Coaching and developing others," "Developing and building teams," "Establishing and maintaining interpersonal relationships," "Training and teaching others," and "Guiding, directing, and motivating subordinates." We also downloaded a measure in the "Work Context" category: "Face-to-face discussions" as well as a measure in the "Work Styles" category: "Social orientation." In addition to these measures, we also downloaded skill measures used by [Deming \(2017\)](#), [Acemoglu and Autor \(2011\)](#) and [Denning, Jacob, Lefgren, and vom Lehn \(2019\)](#).



- For “Social skills” we follow [Deming \(2017\)](#) and use four measures: “Social perceptiveness: being aware of others’ reactions and understanding why they react as they do,” “Coordination: adjusting action in relation to other’s actions,” “Negotiation: bringing others together and trying to reconcile differences,” and “Persuasion: persuading others to change their minds and behavior.” We create a composite score for “Social Skills” by averaging the 4 individual scores.
- We also construct 4 other composite measures of skill requirements closely following [Acemoglu and Autor \(2011\)](#) and [Denning, Jacob, Lefgren, and vom Lehn \(2019\)](#).
- For “Abstract Analytical Skills” we average the following 3 measures: “Interpreting the Meaning of Information for Others: translating or explaining what information means and how it can be used,” “Thinking Creatively: developing, designing, or creating new applications, ideas, relationships, systems, or products, including artistic contributions,” and “Analyzing Data or Information: identifying the underlying principles, reasons, or facts of information by breaking down information or data into separate parts.”
- For “Manual Skills” we averaged the following 4 measures: “Spend Time Using Your Hands to Handle, Control, or Feel Objects, Tools, or Controls: how much does this job require using your hands to handle, control, or feel objects, tools or controls,” “Manual Dexterity: the ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects,” “Operating Vehicles, Mechanized Devices, or Equipment: running, maneuvering, navigating, or driving vehicles or mechanized equipment, such as forklifts, passenger vehicles, aircraft, or water

craft,” and “Spatial Orientation: the ability to know your location in relation to the environment or to know where other objects are in relation to you.”

- For “Routine Skills” we averaged the following 5 measures: “Controlling Machines and Processes: using either control mechanisms or direct physical activity to operate machines or processes (not including computers or vehicles),” “Spend Time Making Repetitive Motions: how much does this job require making repetitive motions,” “Pace Determined by Speed of Equipment: how important is it to this job that the pace is determined by the speed of equipment or machinery,” “Importance of Being Exact or Accurate: how important is being very exact or highly accurate in performing this job,” and “Importance of Repeating Same Tasks: how important is repeating the same physical activities or mental activities over and over, without stopping, to performing this job.”

O\*NET measures are reported for detailed 2018 Standard Occupation Code (SOC). We downloaded the Census crosswalk between 2018 SOC codes and 2010 Census Occupation codes <https://www.census.gov/topics/employment/industry-occupation/guidance/code-lists.html>. The number of detailed occupations is smaller in the 2010 Census occupation codes than in the 2018 Census occupation codes. We utilize the 2018 American Community Survey to take weighted averages to more aggregate 2010 Census occupation codes. There were also a number of changes between 2002 and 2010 Census codes. We use the number of 18-65 full-time workers aged 18-65 in the American Time Use Survey (ATUS) as weights to aggregate O\*NET measures to the 2002 Census occupation codes. We end up with 430 detailed occupations from the O\*NET which we merge with the data from the ATUS.

### **A.1.5 Shift Work**

We use the 2004 Current Population Survey May Work Schedules and Work at Home Supplement to calculate the fraction of workers in detailed occupations who are shift workers. We define as shift workers those who worked “Evening shift,” “Night shift,” “Rotating shift,” “Split shift,” “Irregular schedule,” or “Some other shift.” We keep only 18-65 olds whose usual hours worked in their main job is  $\geq 35$ . We also use CPS weights to calculate the share of workers in the occupation who are shift workers.

### **A.1.6 Share of Males who Work Long Hours**

We use all individuals in the Current Population Surveys 2003-2014 including those who are not ATUS respondents to calculate the share of males who work long hours. More specifically, we select males who are 18-65 years old who have at least some college education. We calculate by detailed 2002 Census occupation category the share in this population who worked 50 or more hours. CPS weights are used in calculating these shares. We end up with 490 non-missing measures at the detailed occupation level.

## A.2 Tables

Table A.1: Classification of ATUS Activities among Routine Care, Enrichment Care, and Other

---

<b>Routine Childcare</b>	
030101	Physical care of household children
030109	Looking after children as a primary activity
030301	Providing medical care to household children
<b>Enriching childcare (children of all ages)</b>	
030102	Reading to/with household children
030103	Playing with household children, not sports
030104	Arts and crafts with household children
030105	Playing sports with household children
030106	Talking with/listening to household children
030107	Helping/teaching household children (not related to education)
030201	Homework (household children)
030203	Home schooling of household children
<b>Enriching childcare (children ages 2+)</b>	
1201	Socializing and communicating
120307	Playing games
120309	Arts and crafts as a hobby
120310	Collecting as a hobby
120311	Hobbies, except arts & crafts and collecting
120401	Attending performances
120402	Attending museums
120403	Attending movies/films
1301	Participating in sports, exercise, or recreation
1302	Attending sporting/recreational events
<b>Other childcare</b>	
030108	Organization and planning for household children
030110	Attending household children's events
030111	Waiting for/with household children
030112	Picking up/dropping off household children
030199	Caring for and helping household children, not elsewhere classified
030202	Meetings and school conferences (household children)
030204	Waiting associated with household children's education
030299	Activities related to household children's education, not elsewhere classified
030302	Obtaining medical care for household children
030303	Waiting associated with household children's health
030399	Activities related to household children's health, not elsewhere classified
170301	Travel related to caring for and helping household children (2003 and 2004)
180301	Travel related to caring for and helping household children
180302	Travel related to household children's education
180303	Travel related to household children's health

---

Note: These categorizations are used by [Stewart \(2010\)](#). A child must be present during enriching care activities. For children ages 2+, enriching child care includes leisure activities during which the child was present (see text for further details).

Table A.2: Working Hours Gap Relative to Fathers with a Non-working Spouse

	Weekday	Weekend	Weekday			
Fathers with Part-time Spouse	-0.121 (0.116)	-0.0290 (0.121)	-0.104 (0.116)	-0.163 (0.117)	-0.185 (0.115)	-0.247* (0.144)
Fathers with Full-time Spouse	-0.253** (0.0928)	0.00497 (0.0967)	-0.249** (0.0926)	-0.269** (0.0945)	-0.245** (0.0927)	-0.160 (0.114)
Observations	7769	7784	7769	7769	7769	4766
Day of Week and Year			X	X	X	X
Education, Age and Race				X	X	X
Usual Weekly Hours					X	X
Usual Weekly Hours less than 50						X
Average Hours, Fathers with Non-working Spouse	8.040	2.164				
Average Hours, Fathers with Part-time Spouse	7.919	2.135				
Average Hours, Fathers with Full-time Spouse	7.788	2.169				

Notes: Data are from the 2003-2014 American Time Use Surveys (ATUS). The table is based on 18-65 year old ATUS male respondents who report working full-time in the activity summary file. We keep those who are married with spouse present and have at least one own child in the household. The dependent variable is total hours spent on “work and work-related activities” on the diary day. Each column reports the coefficient on the “part-time spouse” dummy and the “full-time spouse” dummy with the omitted group being “non-working spouse”. Column (5) controls for usual weekly hours worked reported in the activity summary file. Column (6) only includes workers who reported usual weekly hours of less than 50. Individual observations are weighted by ATUS weights for multi-year data files.

Table A.3: Household Care Hours Gap Relative to Fathers with a Non-working Spouse

	Weekday	Weekend	Weekday			
Fathers with Part-time Spouse	0.0702 (0.0429)	0.0642 (0.0551)	0.0739* (0.0429)	0.0885** (0.0424)	0.0925** (0.0422)	0.0650 (0.0594)
Fathers with Full-time Spouse	0.0715** (0.0342)	-0.103** (0.0439)	0.0707** (0.0342)	0.112*** (0.0341)	0.108** (0.0339)	0.115** (0.0469)
Observations	7769	7784	7769	7769	7769	4766
Day of Week and Year			X	X	X	X
Education, Age and Race				X	X	X
Usual Weekly Hours					X	X
Usual Weekly Hours less than 50						X
Average Hours, Fathers with Non-working Spouse	0.776	1.036				
Average Hours, Fathers with Part-time Spouse	0.846	1.101				
Average Hours, Fathers with Full-time Spouse	0.847	0.934				

Notes: Data are from the 2003-2014 American Time Use Surveys (ATUS). The table is based on 18-65 years old ATUS male respondents who report working full-time in the activity summary file. We keep those who are married with spouse present and have at least one own child in the household. The dependent variable is total hours spent on "caring for and helping household members" on the diary day. Each column reports the coefficient on the "part-time spouse" dummy and the "full-time spouse" dummy with the omitted group being "non-working spouse". Column (5) controls for usual weekly hours worked reported in the activity summary file. Column (6) only includes workers who reported usual weekly hours of less than 50. Individual observations are weighted by ATUS weights for multi-year data files.

Table A.4: Ratio8to5 by Occupation

Occupations	# FT Workers	ratio8to5	ratio8to5_Std	% Females
1 Tank Car, Truck, and Ship Loaders	5	0.000	-4.979	0.000
2 Miscellaneous Mathematical Science Occupations	2	0.000	-4.979	0.000
3 Media and Communication Equipment Workers, All Other	1	0.000	-4.979	1.000
4 Textile Bleaching and Dyeing Machine Operators and Tenders	2	0.092	-4.360	0.370
5 Food Preparation and Serving Related Workers, All Other	2	0.160	-3.898	0.523
6 Postal Service Mail Sorters, Processors, and Processing Machine Operators	55	0.243	-3.336	0.474
7 Fishers and Related Fishing Workers	7	0.304	-2.927	0.087
8 Plating and Coating Machine Setters, Operators, and Tenders, Metal and Plastic	11	0.319	-2.823	0.000
9 Electrical and Electronics Repairers, Industrial and Utility	8	0.328	-2.765	0.000
10 Locomotive Engineers and Operators	25	0.340	-2.685	0.012
11 Railroad Brake, Signal, and Switch Operators	7	0.340	-2.680	0.000
12 Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic	7	0.384	-2.386	0.000
13 Bartenders	83	0.401	-2.271	0.573
14 Derrick, Rotary Drill, and Service Unit Operators, Oil, Gas, and Mining	17	0.404	-2.247	0.000
15 Ushers, Lobby Attendants, and Ticket Takers	2	0.423	-2.121	0.504
16 Metal Furnace and Kiln Operators and Tenders	12	0.431	-2.065	0.000
17 Motion Picture Projectionists	1	0.432	-2.063	0.000
18 Door-to-Door Sales Workers, News and Street Vendors, and Related Workers	39	0.437	-2.026	0.778
19 Paper Goods Machine Setters, Operators, and Tenders	27	0.438	-2.019	0.326
20 Gaming Services Workers	37	0.455	-1.906	0.596
21 Respiratory Therapists	72	0.467	-1.825	0.496
22 Shoe and Leather Workers and Repairers	4	0.468	-1.816	0.000
23 Material Moving Workers, All Other	17	0.473	-1.786	0.059
24 Residential Advisors	21	0.473	-1.785	0.774
25 Food and Tobacco Roasting, Baking, and Drying Machine Operators and Tenders	8	0.478	-1.749	0.279
26 Tool Grinders, Filers, and Sharpeners	9	0.481	-1.727	0.000
27 Emergency Medical Technicians and Paramedics	72	0.484	-1.709	0.221
28 Bailiffs, Correctional Officers, and Jailers	245	0.484	-1.706	0.209
29 Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	67	0.492	-1.656	0.197
30 Service Station Attendants	31	0.493	-1.651	0.165
31 Fire Fighters	160	0.494	-1.641	0.038
32 Musicians, Singers, and Related Workers	52	0.505	-1.565	0.225
33 Manufactured Building and Mobile Home Installers	5	0.511	-1.526	0.293
34 Molders and Molding Machine Setters, Operators, and Tenders, Metal and Plastic	30	0.517	-1.484	0.266
35 Agricultural and Food Science Technicians	15	0.518	-1.480	0.357
36 Mining Machine Operators	27	0.518	-1.478	0.015
37 Maintenance Workers, Machinery	29	0.519	-1.471	0.019
38 Helpers-Extraction Workers	7	0.520	-1.469	0.000
39 Electronic Equipment Installers and Repairers, Motor Vehicles	17	0.524	-1.437	0.000
40 Hotel, Motel, and Resort Desk Clerks	38	0.530	-1.398	0.776
41 Logging Workers	28	0.533	-1.381	0.000
42 Security Guards and Gaming Surveillance Officers	350	0.533	-1.378	0.181
43 Bridge and Lock Tenders	2	0.533	-1.377	0.404
44 Dispatchers	129	0.536	-1.357	0.403
45 Police and Sheriff's Patrol Officers	392	0.536	-1.356	0.111
46 Communications Equipment Operators, All Other	6	0.539	-1.339	0.755
47 Lay-Out Workers, Metal and Plastic	4	0.540	-1.333	0.000
48 Postal Service Clerks	94	0.540	-1.331	0.422
49 Miscellaneous Plant and System Operators	18	0.540	-1.328	0.196

Continued on next page

Occupations	# FT Workers	ratio8to5	ratio8to5_Std	% Females
50 Supervisors, Protective Service Workers, All Other	49	0.542	-1.314	0.185
51 Stationary Engineers and Boiler Operators	63	0.546	-1.292	0.062
52 Nursing, Psychiatric, and Home Health Aides	810	0.547	-1.284	0.881
53 Crushing, Grinding, Polishing, Mixing, and Blending Workers	48	0.549	-1.270	0.046
54 Taxi Drivers and Chauffeurs	122	0.552	-1.252	0.193
55 First-Line Supervisors/Managers of Fire Fighting and Prevention Workers	37	0.558	-1.210	0.038
56 Cleaning, Washing, and Metal Pickling Equipment Operators and Tenders	5	0.559	-1.204	0.267
57 Personal and Home Care Aides	264	0.560	-1.197	0.819
58 Dining Room and Cafeteria Attendants and Bartender Helpers	55	0.560	-1.194	0.504
59 Forging Machine Setters, Operators, and Tenders, Metal and Plastic	4	0.566	-1.158	0.000
60 Statistical Assistants	14	0.567	-1.151	0.555
61 Waiters and Waitresses	282	0.568	-1.141	0.734
62 Chemical Technicians	41	0.568	-1.140	0.172
63 Bakers	63	0.571	-1.121	0.465
64 Food Cooking Machine Operators and Tenders	18	0.571	-1.120	0.448
65 Dishwashers	55	0.575	-1.093	0.265
66 Tire Builders	14	0.580	-1.060	0.100
67 Baggage Porters, Bellhops, and Concierges	32	0.582	-1.049	0.098
68 Packaging and Filling Machine Operators and Tenders	141	0.582	-1.043	0.473
69 First-Line Supervisors/Managers of Police and Detectives	85	0.585	-1.027	0.226
70 Food Servers, Nonrestaurant	48	0.587	-1.012	0.512
71 Metal Workers and Plastic Workers, All Other	226	0.587	-1.011	0.187
72 Boilermakers	11	0.587	-1.010	0.000
73 Biological Technicians	14	0.591	-0.989	0.399
74 Ship and Boat Captains and Operators	11	0.592	-0.980	0.070
75 Industrial Truck and Tractor Operators	290	0.594	-0.965	0.045
76 Production Workers, All Other	471	0.596	-0.949	0.388
77 First-Line Supervisors/Managers of Food Preparation and Serving Workers	241	0.597	-0.947	0.642
78 Stock Clerks and Order Fillers	489	0.598	-0.942	0.445
79 Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	17	0.598	-0.936	0.945
80 Machine Feeders and Offbearers	21	0.599	-0.933	0.420
81 Air Traffic Controllers and Airfield Operations Specialists	29	0.599	-0.929	0.241
82 Food Service Managers	417	0.600	-0.928	0.432
83 Gaming Cage Workers	7	0.600	-0.925	0.879
84 Aircraft Mechanics and Service Technicians	71	0.600	-0.922	0.020
85 Printing Machine Operators	93	0.606	-0.883	0.134
86 Railroad Conductors and Yardmasters	29	0.607	-0.875	0.030
87 Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic	2	0.611	-0.853	0.000
88 Counter Attendants, Cafeteria, Food Concession, and Coffee Shop	26	0.612	-0.842	0.676
89 Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	10	0.613	-0.839	0.453
90 Motor Vehicle Operators, All Other	12	0.616	-0.815	0.222
91 Engine and Other Machine Assemblers	13	0.618	-0.807	0.119
92 Helpers, Construction Trades	32	0.619	-0.795	0.029
93 Cashiers	566	0.621	-0.781	0.778
94 Electrical, Electronics, and Electromechanical Assemblers	90	0.622	-0.775	0.515
95 Machinists	200	0.622	-0.774	0.059
96 Miscellaneous Entertainment Attendants and Related Workers	33	0.623	-0.770	0.516
97 Coin, Vending, and Amusement Machine Servicers and Repairers	26	0.623	-0.770	0.203
98 Janitors and Building Cleaners	821	0.624	-0.761	0.275
99 Milling and Planing Machine Setters, Operators, and Tenders, Metal and Plastic	2	0.625	-0.756	0.000
100 Cooks	524	0.627	-0.743	0.403

Continued on next page



Occupations	# FT Workers	ratio8to5	ratio8to5_Std	% Females
101 Telemarketers	35	0.627	-0.742	0.642
102 Parking Lot Attendants	24	0.629	-0.728	0.032
103 Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic	12	0.630	-0.725	0.081
104 Telephone Operators	27	0.630	-0.724	0.655
105 First-line Supervisors/Managers of Gaming Workers	64	0.630	-0.723	0.297
106 Registered Nurses	1369	0.633	-0.701	0.912
107 Health Diagnosing and Treating Practitioners, All Other	3	0.634	-0.694	0.596
108 Laborers and Freight, Stock, and Material Movers, Hand	641	0.634	-0.693	0.166
109 Miscellaneous Assemblers and Fabricators	462	0.635	-0.691	0.371
110 Prepress Technicians and Workers	20	0.637	-0.677	0.607
111 Transportation Attendants	26	0.637	-0.674	0.529
112 Structural Iron and Steel Workers	34	0.639	-0.663	0.000
113 Reservation and Transportation Ticket Agents and Travel Clerks	55	0.639	-0.663	0.600
114 Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	22	0.641	-0.650	0.304
115 Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders	17	0.642	-0.639	0.146
116 Chemical Processing Machine Setters, Operators, and Tenders	34	0.645	-0.621	0.181
117 Cutting Workers	49	0.645	-0.620	0.241
118 First-Line Supervisors/Managers of Production and Operating Workers	499	0.650	-0.590	0.194
119 Cooling and Freezing Equipment Operators and Tenders	2	0.650	-0.587	0.000
120 Textile, Apparel, and Furnishings Workers, All Other	12	0.651	-0.583	0.461
121 Farmers and Ranchers	217	0.653	-0.566	0.328
122 Cleaners of Vehicles and Equipment	118	0.654	-0.564	0.165
123 Packers and Packagers, Hand	184	0.655	-0.556	0.505
124 Office Machine Operators, Except Computer	18	0.657	-0.542	0.627
125 Industrial and Refractory Machinery Mechanics	262	0.657	-0.542	0.025
126 Laundry and Dry-Cleaning Workers	81	0.657	-0.542	0.609
127 Food Batchmakers	44	0.658	-0.531	0.593
128 Bus Drivers	181	0.662	-0.505	0.569
129 Tool and Die Makers	49	0.663	-0.501	0.012
130 Photographers	57	0.664	-0.493	0.401
131 Signal and Track Switch Repairers	3	0.668	-0.463	0.000
132 Graders and Sorters, Agricultural Products	49	0.670	-0.450	0.677
133 Driver/Sales Workers and Truck Drivers	1420	0.672	-0.436	0.060
134 Inspectors, Testers, Sorters, Samplers, and Weighers	382	0.673	-0.434	0.395
135 Miscellaneous Agricultural Workers	340	0.673	-0.429	0.194
136 Clinical Laboratory Technologists and Technicians	183	0.674	-0.426	0.729
137 Refuse and Recyclable Material Collectors	36	0.674	-0.425	0.043
138 Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders	11	0.678	-0.395	0.421
139 Licensed Practical and Licensed Vocational Nurses	252	0.682	-0.374	0.911
140 Chefs and Head Cooks	115	0.682	-0.370	0.194
141 Animal Breeders	1	0.684	-0.356	0.000
142 Lodging Managers	75	0.685	-0.351	0.534
143 Food Preparation Workers	161	0.686	-0.345	0.600
144 Shipping, Receiving, and Traffic Clerks	267	0.686	-0.341	0.305
145 Other Life, Physical, and Social Science Technicians	56	0.688	-0.332	0.555
146 Other Extraction Workers	22	0.688	-0.328	0.014
147 Clergy	231	0.690	-0.317	0.189
148 Crane and Tower Operators	21	0.690	-0.316	0.064
149 Crossing Guards	15	0.693	-0.299	0.521
150 Pile-Driver Operators	1	0.694	-0.291	0.000
151 Supervisors, Transportation and Material Moving Workers	121	0.694	-0.288	0.206

Continued on next page

Occupations	# FT Workers	ratio8to5	ratio8to5_Std	% Females
152 Weighers, Measurers, Checkers, and Samplers, Recordkeeping	43	0.694	-0.287	0.398
153 Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic	4	0.695	-0.284	0.000
154 Farm, Ranch, and Other Agricultural Managers	163	0.696	-0.279	0.173
155 Optometrists	15	0.698	-0.263	0.306
156 Couriers and Messengers	94	0.700	-0.252	0.153
157 Petroleum Engineers	14	0.700	-0.247	0.107
158 Transportation Inspectors	18	0.701	-0.245	0.227
159 Bus and Truck Mechanics and Diesel Engine Specialists	174	0.701	-0.243	0.004
160 Rolling Machine Setters, Operators, and Tenders, Metal and Plastic	10	0.701	-0.243	0.129
161 Religious Workers, All Other	37	0.703	-0.232	0.683
162 Gaming Managers	16	0.704	-0.225	0.219
163 Podiatrists	6	0.704	-0.221	0.000
164 Agricultural Inspectors	9	0.705	-0.214	0.318
165 First-Line Supervisors/Managers of Correctional Officers	24	0.707	-0.204	0.309
166 Broadcast and Sound Engineering Technicians and Radio Operators	37	0.708	-0.198	0.093
167 Announcers	22	0.708	-0.195	0.380
168 First-Line Supervisors/Managers of Housekeeping and Janitorial Workers	123	0.708	-0.193	0.443
169 Heavy Vehicle and Mobile Equipment Service Technicians and Mechanics	117	0.709	-0.189	0.008
170 Jewelers and Precious Stone and Metal Workers	20	0.709	-0.188	0.514
171 Geological and Petroleum Technicians	11	0.709	-0.186	0.381
172 Recreation and Fitness Workers	101	0.710	-0.184	0.675
173 Marine Engineers and Naval Architects	6	0.711	-0.173	0.000
174 Helpers-Production Workers	23	0.711	-0.172	0.266
175 Aircraft Pilots and Flight Engineers	51	0.713	-0.161	0.035
176 Avionics Technicians	8	0.713	-0.161	0.063
177 Combined Food Preparation and Serving Workers, Including Fast Food	60	0.714	-0.152	0.639
178 Entertainers and Performers, Sports and Related Workers, All Other	9	0.715	-0.151	0.507
179 Ambulance Drivers and Attendants, Except Emergency Medical Technicians	4	0.719	-0.124	0.000
180 Personal Care and Service Workers, All Other	27	0.720	-0.116	0.524
181 Millwrights	34	0.720	-0.112	0.007
182 Dancers and Choreographers	5	0.720	-0.112	0.667
183 Power Plant Operators, Distributors, and Dispatchers	24	0.724	-0.088	0.066
184 Butchers and Other Meat, Poultry, and Fish Processing Workers	123	0.725	-0.081	0.253
185 Sawing Machine Setters, Operators, and Tenders, Wood	20	0.725	-0.079	0.020
186 Water and Liquid Waste Treatment Plant and System Operators	52	0.728	-0.058	0.094
187 Woodworking Machine Setters, Operators, and Tenders, Except Sawing	21	0.729	-0.057	0.376
188 Materials Engineers	24	0.730	-0.046	0.106
189 Massage Therapists	25	0.730	-0.046	0.883
190 Textile Knitting and Weaving Machine Setters, Operators, and Tenders	4	0.731	-0.038	0.503
191 Septic Tank Servicers and Sewer Pipe Cleaners	6	0.732	-0.034	0.000
192 Animal Trainers	16	0.733	-0.029	0.469
193 Explosives Workers, Ordnance Handling Experts, and Blasters	3	0.733	-0.025	0.000
194 Operating Engineers and Other Construction Equipment Operators	217	0.734	-0.023	0.025
195 Computer Operators	85	0.734	-0.018	0.411
196 Painting Workers	87	0.734	-0.016	0.107
197 Physicians and Surgeons	503	0.735	-0.010	0.313
198 Tailors, Dressmakers, and Sewers	34	0.736	-0.008	0.871
199 Biomedical Engineers	7	0.736	-0.005	0.000
200 Other Transportation Workers	5	0.736	-0.003	0.040
201 Editors	105	0.737	-0.001	0.549
202 Paving, Surfacing, and Tamping Equipment Operators	10	0.737	0.004	0.000

Continued on next page

Occupations	# FT Workers	ratio8to5	ratio8to5_Std	% Females
203 Nuclear Engineers	7	0.739	0.011	0.000
204 Sheet Metal Workers	73	0.739	0.012	0.029
205 Television, Video, and Motion Picture Camera Operators and Editors	17	0.739	0.016	0.032
206 First-Line Supervisors/Managers of Retail Sales Workers	1575	0.740	0.018	0.409
207 First-Line Supervisors/Managers of Farming, Fishing, and Forestry Workers	31	0.741	0.029	0.076
208 Pumping Station Operators	12	0.744	0.047	0.000
209 Molders, Shapers, and Casters, Except Metal and Plastic	14	0.744	0.049	0.401
210 Structural Metal Fabricators and Fitters	7	0.745	0.052	0.000
211 Health Diagnosing and Treating Practitioner Support Technicians	204	0.746	0.062	0.798
212 Counter and Rental Clerks	45	0.749	0.079	0.366
213 Producers and Directors	89	0.749	0.085	0.341
214 Electrical Power-Line Installers and Repairers	74	0.750	0.086	0.008
215 Computer Control Programmers and Operators	33	0.751	0.098	0.009
216 Welding, Soldering, and Brazing Workers	276	0.752	0.103	0.028
217 Cementing and Gluing Machine Operators and Tenders	7	0.755	0.119	0.532
218 Athletes, Coaches, Umpires, and Related Workers	72	0.756	0.131	0.457
219 Diagnostic Related Technologists and Technicians	144	0.759	0.147	0.735
220 Computer Support Specialists	229	0.759	0.150	0.242
221 Writers and Authors	82	0.760	0.157	0.526
222 Semiconductor Processors	2	0.760	0.158	0.318
223 News Analysts, Reporters and Correspondents	58	0.760	0.159	0.454
224 Hazardous Materials Removal Workers	11	0.761	0.164	0.233
225 Other Teachers and Instructors	238	0.762	0.167	0.623
226 Administrative Services Managers	64	0.762	0.168	0.351
227 Artists and Related Workers	68	0.765	0.189	0.545
228 Postsecondary Teachers	669	0.765	0.190	0.458
229 Conveyor Operators and Tenders	4	0.766	0.197	0.050
230 Sales Engineers	29	0.767	0.205	0.134
231 Dredge, Excavating, and Loading Machine Operators	31	0.767	0.206	0.004
232 Maids and Housekeeping Cleaners	435	0.767	0.206	0.914
233 Electric Motor, Power Tool, and Related Repairers	26	0.768	0.209	0.082
234 Pharmacists	110	0.768	0.210	0.469
235 Highway Maintenance Workers	67	0.768	0.210	0.005
236 Logisticians	38	0.768	0.212	0.322
237 Switchboard Operators, Including Answering Service	13	0.768	0.213	0.676
238 First-Line Supervisors/Managers of Landscaping, Lawn Service, and Groundskeeping Workers	124	0.769	0.219	0.041
239 Retail Salespersons	831	0.774	0.253	0.514
240 Order Clerks	58	0.775	0.260	0.583
241 Roofers	60	0.776	0.261	0.012
242 Commercial Divers	3	0.777	0.271	0.000
243 Directors, Religious Activities and Education	36	0.777	0.271	0.485
244 First-Line Supervisors/Managers of Construction Trades and Extraction Workers	421	0.777	0.272	0.039
245 Secondary School Teachers	728	0.778	0.277	0.573
246 Cabinetmakers and Bench Carpenters	36	0.779	0.282	0.043
247 Engineering Technicians, Except Drafters	232	0.780	0.288	0.181
248 Tax Preparers	30	0.781	0.295	0.618
249 General and Operations Managers	604	0.781	0.298	0.328
250 First-Line Supervisors/Managers of Mechanics, Installers, and Repairers	212	0.782	0.304	0.065
251 Animal Control Workers	6	0.783	0.314	0.375
252 Aerospace Engineers	55	0.784	0.318	0.202
253 Sales Representatives, Services, All Other	265	0.785	0.322	0.320

Continued on next page

Occupations	# FT Workers	ratio8to5	ratio8to5_Std	% Females
254 Industrial Production Managers	181	0.785	0.323	0.153
255 Construction Managers	464	0.786	0.332	0.046
256 Riggers	5	0.787	0.338	0.000
257 Child Care Workers	446	0.787	0.338	0.940
258 Chiropractors	30	0.789	0.354	0.264
259 Other Installation, Maintenance, and Repair Workers	86	0.790	0.357	0.067
260 Sailors and Marine Oilers	6	0.790	0.359	0.266
261 Conservation Scientists and Foresters	15	0.791	0.365	0.256
262 First-Line Supervisors/Managers of Office and Administrative Support Workers	905	0.791	0.367	0.682
263 Miscellaneous Health Technologists and Technicians	59	0.792	0.370	0.620
264 Chief Executives	922	0.792	0.373	0.287
265 Real Estate Brokers and Sales Agents	361	0.793	0.378	0.584
266 Construction Laborers	434	0.793	0.378	0.040
267 First-Line Supervisors/Managers of Non-Retail Sales Workers	681	0.793	0.382	0.274
268 Sewing Machine Operators	102	0.794	0.384	0.717
269 Nonfarm Animal Caretakers	60	0.794	0.389	0.734
270 Managers, All Other	2083	0.795	0.391	0.346
271 Shoe Machine Operators and Tenders	1	0.795	0.392	1.000
272 Computer Scientists and Systems Analysts	462	0.796	0.396	0.270
273 Mail Clerks and Mail Machine Operators, Except Postal Service	52	0.796	0.396	0.477
274 Electricians	420	0.796	0.398	0.015
275 Payroll and Timekeeping Clerks	103	0.797	0.406	0.898
276 Transportation, Storage, and Distribution Managers	157	0.798	0.410	0.170
277 Physician Assistants	46	0.798	0.411	0.774
278 Miscellaneous Personal Appearance Workers	57	0.799	0.421	0.935
279 Database Administrators	69	0.799	0.422	0.358
280 Architects, Except Naval	118	0.800	0.426	0.241
281 Roustabouts, Oil and Gas	2	0.800	0.426	0.000
282 Tax Examiners, Collectors, and Revenue Agents	44	0.801	0.434	0.387
283 Maintenance and Repair Workers, General	203	0.802	0.437	0.040
284 Agents and Business Managers of Artists, Performers, and Athletes	20	0.803	0.446	0.233
285 Fish and Game Wardens	2	0.803	0.448	0.000
286 Opticians, Dispensing	21	0.803	0.450	0.513
287 Interviewers, Except Eligibility and Loan	54	0.804	0.456	0.751
288 Upholsterers	21	0.805	0.459	0.009
289 First-Line Supervisors/Managers of Personal Service Workers	70	0.806	0.464	0.669
290 Special Education Teachers	233	0.806	0.467	0.874
291 Detectives and Criminal Investigators	92	0.806	0.469	0.119
292 Network Systems and Data Communications Analysts	227	0.806	0.470	0.229
293 Dentists	68	0.806	0.470	0.247
294 Engineering Managers	66	0.807	0.473	0.081
295 Customer Service Representatives	888	0.807	0.475	0.650
296 Engineers, All Other	214	0.807	0.475	0.131
297 Cement Masons, Concrete Finishers, and Terrazzo Workers	40	0.807	0.476	0.008
298 Appraisers and Assessors of Real Estate	53	0.808	0.478	0.385
299 Job Printers	18	0.808	0.483	0.053
300 Management Analysts	394	0.809	0.484	0.398
301 Public Relations Managers	41	0.809	0.486	0.556
302 Miscellaneous Media and Communication Workers	28	0.809	0.488	0.673
303 Grounds Maintenance Workers	404	0.809	0.490	0.057
304 Medical Records and Health Information Technicians	60	0.810	0.493	0.770

Continued on next page

Occupations	# FT Workers	ratio8to5	ratio8to5_Std	% Females
305 Model Makers and Patternmakers, Wood	1	0.811	0.499	1.000
306 Telecommunications Line Installers and Repairers	112	0.812	0.505	0.029
307 Insulation Workers	15	0.812	0.506	0.022
308 Pressers, Textile, Garment, and Related Materials	16	0.812	0.509	0.783
309 Heating, Air Conditioning, and Refrigeration Mechanics and Installers	198	0.813	0.512	0.011
310 Education Administrators	541	0.813	0.516	0.621
311 Fire Inspectors	13	0.813	0.517	0.012
312 Chemists and Materials Scientists	78	0.813	0.517	0.346
313 Construction and Building Inspectors	62	0.814	0.519	0.167
314 Social and Community Service Managers	220	0.814	0.519	0.619
315 Earth Drillers, Except Oil and Gas	8	0.814	0.523	0.000
316 Human Resources Managers	201	0.815	0.527	0.644
317 Counselors	377	0.815	0.527	0.710
318 Procurement Clerks	22	0.816	0.531	0.546
319 Helpers—Installation, Maintenance, and Repair Workers	10	0.817	0.539	0.118
320 Civil Engineers	203	0.817	0.540	0.123
321 Designers	369	0.817	0.540	0.546
322 Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	5	0.817	0.542	0.281
323 Environmental Engineers	25	0.817	0.543	0.139
324 Pipelayers, Plumbers, Pipefitters, and Steamfitters	276	0.818	0.551	0.007
325 Hairdressers, Hairstylists, and Cosmetologists	221	0.819	0.552	0.916
326 Sales Representatives, Wholesale and Manufacturing	718	0.819	0.554	0.277
327 Carpenters	637	0.819	0.555	0.009
328 Radio and Telecommunications Equipment Installers and Repairers	105	0.819	0.556	0.073
329 Medical Assistants and Other Healthcare Support Occupations	315	0.820	0.561	0.859
330 Private Detectives and Investigators	39	0.820	0.563	0.508
331 Wholesale and Retail Buyers, Except Farm Products	96	0.820	0.564	0.569
332 Bookbinders and Bindery Workers	15	0.821	0.571	0.126
333 Medical and Health Services Managers	354	0.823	0.584	0.714
334 Carpet, Floor, and Tile Installers and Finishers	82	0.823	0.585	0.051
335 Industrial Engineers, including Health and Safety	137	0.824	0.585	0.245
336 Environmental Scientists and Geoscientists	63	0.824	0.586	0.195
337 Lawyers	657	0.824	0.588	0.345
338 Atmospheric and Space Scientists	8	0.825	0.593	0.158
339 Office and Administrative Support Workers, All Other	303	0.825	0.594	0.781
340 Tellers	156	0.825	0.595	0.879
341 Drywall Installers, Ceiling Tile Installers, and Tapers	76	0.825	0.596	0.006
342 Data Entry Keyers	230	0.825	0.598	0.799
343 Medical, Dental, and Ophthalmic Laboratory Technicians	43	0.826	0.600	0.399
344 Automotive Service Technicians and Mechanics	366	0.826	0.601	0.008
345 Computer and Information Systems Managers	351	0.826	0.601	0.240
346 Parking Enforcement Workers	2	0.827	0.606	0.434
347 Urban and Regional Planners	20	0.827	0.609	0.285
348 Network and Computer Systems Administrators	162	0.828	0.614	0.192
349 Electrical and Electronics Engineers	225	0.828	0.617	0.140
350 Funeral Directors	15	0.828	0.618	0.078
351 Rail-Track Laying and Maintenance Equipment Operators	5	0.829	0.620	0.000
352 Human Resources Assistants, Except Payroll and Timekeeping	37	0.829	0.622	0.849
353 Elementary and Middle School Teachers	1678	0.829	0.623	0.849
354 Marketing and Sales Managers	591	0.830	0.630	0.387
355 Other Business Operations Specialists	182	0.831	0.633	0.726

Continued on next page

Occupations	# FT Workers	ratio8to5	ratio8to5_Std	% Females
356 Psychologists	93	0.831	0.634	0.700
357 Miscellaneous Social Scientists and Related Workers	23	0.831	0.636	0.606
358 Chemical Engineers	57	0.832	0.641	0.153
359 Computer, Automated Teller, and Office Machine Repairers	151	0.832	0.644	0.179
360 Personal Financial Advisors	211	0.834	0.654	0.293
361 Public Relations Specialists	70	0.834	0.656	0.608
362 Physical Therapists	86	0.834	0.659	0.768
363 Financial Analysts	59	0.835	0.663	0.334
364 Social Workers	541	0.835	0.664	0.794
365 Brickmasons, Blockmasons, and Stonemasons	55	0.836	0.668	0.014
366 Computer Software Engineers	728	0.836	0.668	0.189
367 Purchasing Managers	137	0.836	0.671	0.431
368 Meter Readers, Utilities	31	0.836	0.671	0.038
369 Barbers	25	0.837	0.676	0.208
370 Astronomers and Physicists	17	0.838	0.682	0.177
371 Compliance Officers, Except Agriculture, Construction, Health and Safety, and Transportation	125	0.838	0.684	0.459
372 Painters, Construction and Maintenance	221	0.838	0.684	0.062
373 Drafters	102	0.838	0.684	0.208
374 Other Education, Training, and Library Workers	61	0.838	0.684	0.772
375 Other Healthcare Practitioners and Technical Occupations	45	0.838	0.686	0.483
376 Lifeguards and Other Protective Service Workers	40	0.840	0.693	0.560
377 Precision Instrument and Equipment Repairers	37	0.840	0.696	0.160
378 Agricultural Engineers	2	0.840	0.697	0.363
379 Miscellaneous Community and Social Service Specialists	140	0.841	0.703	0.705
380 Woodworkers, All Other	13	0.841	0.706	0.394
381 Plasterers and Stucco Masons	20	0.842	0.707	0.022
382 Economists	22	0.842	0.710	0.276
383 Veterinarians	33	0.843	0.714	0.418
384 Reinforcing Iron and Rebar Workers	6	0.843	0.718	0.000
385 Parts Salespersons	61	0.844	0.725	0.099
386 Production, Planning, and Expediting Clerks	154	0.844	0.725	0.453
387 Operations Research Analysts	70	0.845	0.728	0.477
388 Automotive Body and Related Repairers	77	0.845	0.728	0.030
389 Cost Estimators	72	0.845	0.730	0.098
390 Subway, Streetcar, and Other Rail Transportation Workers	10	0.845	0.732	0.000
391 Information and Record Clerks, All Other	46	0.846	0.735	0.882
392 Purchasing Agents, Except Wholesale, Retail, and Farm Products	165	0.846	0.737	0.471
393 Securities, Commodities, and Financial Services Sales Agents	194	0.848	0.750	0.410
394 Property, Real Estate, and Community Association Managers	281	0.849	0.754	0.562
395 Purchasing Agents and Buyers, Farm Products	7	0.849	0.755	0.130
396 Receptionists and Information Clerks	477	0.849	0.756	0.912
397 Financial Specialists, All Other	33	0.849	0.756	0.690
398 Textile Cutting Machine Setters, Operators, and Tenders	4	0.849	0.758	0.843
399 Computer Hardware Engineers	47	0.850	0.764	0.101
400 Mechanical Engineers	192	0.850	0.765	0.066
401 Accountants and Auditors	1027	0.851	0.768	0.578
402 Biological Scientists	74	0.851	0.770	0.504
403 Natural Sciences Managers	15	0.852	0.779	0.430
404 Home Appliance Repairers	22	0.854	0.789	0.000
405 Glaziers	19	0.854	0.793	0.000
406 Automotive Glass Installers and Repairers	9	0.855	0.796	0.000

Continued on next page

Occupations	# FT Workers	ratio8to5	ratio8to5_Std	% Females
407 Travel Agents	31	0.855	0.798	0.816
408 Etchers and Engravers	4	0.855	0.799	0.522
409 Photographic Process Workers and Processing Machine Operators	24	0.856	0.804	0.702
410 Physical Scientists, All Other	88	0.856	0.805	0.543
411 Technical Writers	54	0.856	0.806	0.509
412 Financial Managers	728	0.857	0.812	0.538
413 Budget Analysts	41	0.857	0.812	0.617
414 Bill and Account Collectors	113	0.858	0.818	0.721
415 Loan Counselors and Officers	250	0.858	0.820	0.481
416 Advertising Sales Agents	109	0.859	0.823	0.476
417 Advertising and Promotions Managers	39	0.859	0.824	0.723
418 Control and Valve Installers and Repairers	13	0.859	0.825	0.039
419 Loan Interviewers and Clerks	91	0.860	0.833	0.718
420 Claims Adjusters, Appraisers, Examiners, and Investigators	218	0.861	0.837	0.666
421 Preschool and Kindergarten Teachers	346	0.861	0.840	0.972
422 Medical Scientists	83	0.862	0.843	0.617
423 Correspondence Clerks	3	0.863	0.850	1.000
424 Cargo and Freight Agents	3	0.863	0.850	0.367
425 Sales and Related Workers, All Other	100	0.863	0.852	0.565
426 Human Resources, Training, and Labor Relations Specialists	483	0.864	0.856	0.737
427 Teacher Assistants	336	0.864	0.862	0.911
428 Furniture Finishers	7	0.865	0.864	0.307
429 Miscellaneous Construction and Related Workers	14	0.866	0.870	0.000
430 Computer Programmers	283	0.866	0.870	0.256
431 Recreational Therapists	10	0.866	0.871	0.872
432 Insurance Sales Agents	290	0.867	0.881	0.441
433 Small Engine Mechanics	21	0.867	0.882	0.000
434 Office Clerks, General	345	0.869	0.891	0.863
435 Meeting and Convention Planners	42	0.870	0.897	0.889
436 Insurance Claims and Policy Processing Clerks	160	0.872	0.911	0.813
437 Surveying and Mapping Technicians	48	0.872	0.911	0.142
438 Therapists, All Other	57	0.872	0.914	0.816
439 Electronic Home Entertainment Equipment Installers and Repairers	25	0.872	0.915	0.000
440 Miscellaneous Vehicle and Mobile Equipment Mechanics, Installers, and Repairers	33	0.873	0.921	0.000
441 Market and Survey Researchers	71	0.873	0.923	0.767
442 Surveyors, Cartographers, and Photogrammetrists	23	0.874	0.927	0.187
443 Miscellaneous Legal Support Workers	115	0.874	0.928	0.786
444 Billing and Posting Clerks and Machine Operators	204	0.875	0.932	0.887
445 Postal Service Mail Carriers	212	0.877	0.944	0.316
446 Speech-Language Pathologists	56	0.877	0.947	0.980
447 Insurance Underwriters	65	0.881	0.972	0.571
448 Security and Fire Alarm Systems Installers	31	0.881	0.973	0.000
449 Credit Analysts	22	0.884	0.996	0.449
450 Fence Erectors	13	0.886	1.005	0.000
451 Dietitians and Nutritionists	41	0.888	1.018	0.969
452 Eligibility Interviewers, Government Programs	52	0.888	1.022	0.748
453 Dental Hygienists	36	0.891	1.042	0.977
454 Bookkeeping, Accounting, and Auditing Clerks	614	0.892	1.049	0.927
455 Secretaries and Administrative Assistants	1565	0.893	1.052	0.962
456 Agricultural and Food Scientists	23	0.895	1.071	0.356
457 Dental Assistants	85	0.896	1.073	0.988

Continued on next page

Occupations	# FT Workers	ratio8to5	ratio8to5_Std	% Females
458 Librarians	117	0.896	1.077	0.791
459 Archivists, Curators, and Museum Technicians	19	0.898	1.087	0.616
460 Pest Control Workers	29	0.899	1.098	0.000
461 Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders	6	0.899	1.099	0.341
462 Nuclear Technicians	3	0.907	1.151	0.121
463 Financial Examiners	5	0.908	1.154	0.253
464 Models, Demonstrators, and Product Promoters	10	0.909	1.165	0.857
465 Actors	8	0.909	1.165	0.330
466 File Clerks	106	0.909	1.165	0.836
467 Radiation Therapists	5	0.910	1.170	0.444
468 Elevator Installers and Repairers	9	0.912	1.180	0.095
469 Occupational Therapists	48	0.912	1.183	0.882
470 Paralegals and Legal Assistants	195	0.913	1.192	0.872
471 Court, Municipal, and License Clerks	49	0.913	1.192	0.797
472 Statisticians	25	0.915	1.206	0.719
473 Credit Authorizers, Checkers, and Clerks	35	0.918	1.222	0.892
474 Locksmiths and Safe Repairers	11	0.919	1.228	0.018
475 Library Technicians	9	0.920	1.234	0.770
476 Word Processors and Typists	70	0.920	1.240	0.963
477 Physical Therapist Assistants and Aides	34	0.922	1.250	0.746
478 Funeral Service Workers	9	0.925	1.268	0.100
479 Sociologists	5	0.925	1.271	1.000
480 Library Assistants, Clerical	32	0.931	1.315	0.804
481 Paperhangers	5	0.936	1.344	0.647
482 Mathematicians	1	0.938	1.355	0.000
483 Transit and Railroad Police	6	0.944	1.400	0.000
484 Audiologists	7	0.944	1.401	0.766
485 Fabric and Apparel Patternmakers	2	0.944	1.402	0.417
486 Brokerage Clerks	6	0.949	1.433	0.416
487 Occupational Therapist Assistants and Aides	5	0.951	1.443	1.000
488 Mining and Geological Engineers, Including Mining Safety Engineers	10	0.952	1.454	0.024
489 Actuaries	12	0.954	1.464	0.306
490 Tour and Travel Guides	9	0.960	1.506	0.560
491 New Accounts Clerks	11	0.970	1.576	1.000
492 Proofreaders and Copy Markers	5	0.986	1.682	0.875
493 Desktop Publishers	2	1.000	1.778	0.423

Notes: Data are from the 2003-2014 American Time Use Surveys (ATUS). The sample is all 18-65 years old ATUS respondents who report to be full-time workers in the activity summary file. Respondents are linked to detailed 2002 Census occupation codes of their main job. # FT Workers is the number of full-time workers by occupation. % Females is the percentage of females in each occupation. ratio8to5 is the ratio of total hours spent on "work and work-related activities" during the hours 8 a.m. to 5 p.m. relative to total hours spent on "work and work-related activities" on the diary day. Both weekdays and weekends are included. In calculating Ratio8to5, individual observations are weighted by ATUS weights for multi-year data files. "ratio8to5\_std" reports standardized values with mean zero and standard deviation equal to 1.



Table A.5: Gender Gap in Log Weekly Earnings: Controlling for the Effect of Shift Work

	(1) baseline	(2) (1)+agg. education	(3) (2)+ overwork	(4) (3)+ ONET + fracshift
Panel A: All				
female	-0.218*** (0.0194)	-0.254*** (0.0129)	-0.244*** (0.0129)	-0.212*** (0.0119)
ratio8to5	0.113*** (0.0170)	0.0644*** (0.0136)	0.0631*** (0.0138)	0.0494** (0.0215)
femaleXratio8to5	-0.0490* (0.0264)	-0.0457** (0.0180)	-0.0436** (0.0190)	-0.0266* (0.0155)
Observations	263245	263245	263179	256689
Panel B: Single Without Children				
female	-0.135*** (0.0157)	-0.169*** (0.0117)	-0.165*** (0.0118)	-0.131*** (0.0114)
ratio8to5	0.102*** (0.0146)	0.0623*** (0.0132)	0.0613*** (0.0131)	0.0301* (0.0174)
femaleXratio8to5	-0.0216 (0.0207)	-0.0254 (0.0162)	-0.0242 (0.0168)	-0.0079 (0.0141)
Observations	73536	73536	73516	71586
Panel C: Married With Children				
female	-0.263*** (0.0229)	-0.298*** (0.0159)	-0.286*** (0.0162)	-0.255*** (0.0138)
ratio8to5	0.109*** (0.0189)	0.0652*** (0.0142)	0.0649*** (0.0151)	0.0642** (0.0262)
femaleXratio8to5	-0.0626* (0.0327)	-0.0595** (0.0221)	-0.0582** (0.0236)	-0.0403** (0.0194)
Observations	110230	110230	110206	107618

Notes: Standard errors in parentheses. \*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .001$ . Data are from the 2003-2014 ATUS-CPS files. See Table 5 for details. In Column (4) occupation-level share of shift workers are also included along with skill measures constructed from the O\*NET. We use the 2004 Current Population Survey May Work Schedules and Work at Home Supplement to calculate the fraction of workers in detailed occupations who are shift workers. We define as shift workers those who worked "Evening shift," "Night shift," "Rotating shift," "Split shift," "Irregular schedule," or "Some other shift." We keep only 18-65 olds whose usual hours worked in their main job is  $\geq 35$ .

Table A.6: Gender Gap in Log Weekly Earnings by Concentration Index

	(1) baseline	(2) (1)+agg. education	(3) (2)+ overwork	(4) (3)+ ONET
Panel A: All				
female	-0.246*** (0.0136)	-0.285*** (0.0127)	-0.275*** (0.0130)	-0.230*** (0.0126)
cratio	0.0955*** (0.0153)	0.0634*** (0.0123)	0.0700*** (0.0127)	0.0578*** (0.0123)
femaleXcratio	-0.0577** (0.0232)	-0.0548*** (0.0161)	-0.0558** (0.0171)	-0.0284** (0.0142)
Observations	255110	255110	255110	250069
Panel B: Single Without Children				
female	-0.147*** (0.0129)	-0.188*** (0.0130)	-0.183*** (0.0138)	-0.140*** (0.0131)
cratio	0.0906*** (0.0134)	0.0635*** (0.0121)	0.0667*** (0.0118)	0.0560*** (0.0102)
femaleXcratio	-0.035* (0.0198)	-0.0382** (0.0155)	-0.0381** (0.0158)	-0.0176 (0.0135)
Observations	70966	70966	70966	69508
Panel C: Married With Children				
female	-0.303*** (0.0170)	-0.342*** (0.0166)	-0.329*** (0.0163)	-0.284*** (0.0146)
cratio	0.0933*** (0.0168)	0.0648*** (0.0129)	0.0735*** (0.0146)	0.0592*** (0.0137)
femaleXcratio	-0.0770** (0.0273)	-0.0723*** (0.0189)	-0.0748*** (0.0208)	-0.0430** (0.0169)
Observations	106930	106930	106930	104875

Notes: Standard errors in parentheses. \*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .001$ .

Data are from the 2003-2014 ATUS-CPS files. CPS data includes all individuals in the final interview month selected to participate in the ATUS and members of their households. Individuals are linked to detailed 2002 Census occupation codes of their main job. The construction of the *cratio* variable is explained in A.1.3. We only keep occupations which have observations across all 7 days of the week, which results in 322 occupations. Standard errors are clustered at the occupation level. ATUS base weights are used to weight each individual observation.

### A.3 The Effect of Taste Shocks

Table A.7: Regressions: Model vs. Data

	Data	Model
female	-0.272*** (0.004)	-0.06
ratio8to5	0.086*** (0.002)	0.29
femaleXratio8to5	-0.015*** (0.004)	-0.04

Standard errors in parentheses. \*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$ . Note: This table shows the estimates of the regression using individual data for married workers with children (column Data) and 22 occupations and the estimates of the same regression using data generated by the model when the taste distributions of males and females are equal (column Model). The dependent variable is earnings per hour.

Table A.8: Gender Earnings Gap (%)

	Overall	Between	Between (Sorting)	Within
Data	23.2	-0.9	-	24.1
Baseline	8.9	1.6	-	7.3
Equal Taste Distrib.	10	3.1	3.8	6.9

Note: The table shows the overall gender wage gap (Overall) and its decomposition into the portion explained by the differences in the gender wage gap across occupations (Across) and the portion explained by differences in earnings between males and females within occupations (Within). The column labeled Between (Sorting) shows a between gender gap when earnings across occupations and occupation sizes are fixed at their Baseline values. The table shows the values in the data, in the baseline economy and in a counterfactual economy where there are no differences in tastes for occupations between males and females.

In this counterfactual we set the taste distributions for males and females to be the same. Specifically we set  $T_{i,m} = T_{i,f} = 1$  for  $i = 1, \dots, 22$ . Tables A.7 reports the regression for the model-simulated data. None of the coefficients change substantially relative to the baseline case (and are identical up to two decimals). Equating

the taste distributions has the effect of inducing females to switch to high  $\alpha$  occupations (these occupations have low gender gaps). The gender gap (see A.8) rises to 10 percent, from 8.9 percent in the baseline case. This rise is entirely caused by a rise in the between component. The reallocation that moves women out of high  $\alpha$  occupations lowers females' average earnings. The within drops somewhat (-0.4 percent) because high earnings (mostly low  $\alpha$ ) occupations now become smaller in size.

#### A.4 Unitary Elasticity of Substitution in Final Production

Table A.9: Regressions: Model vs. Data

	Data	Model
female	-0.272*** (0.004)	-0.06
ratio8to5	0.086*** (0.002)	0.17
femaleXratio8to5	-0.015*** (0.004)	-0.04

Standard errors in parentheses. \*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$ . Note: This table shows the estimates of the regression using the data for married workers with children (column Data) and 22 occupations, and the estimates of the same regression using data generated by the model in its baseline calibration but assuming a Cobb-Douglas aggregate technology (column Model). The dependent variable is earnings per hour.

This counterfactual describes the outcome of reducing the elasticity of substitution across occupations from its baseline value of 3 to 1 (Cobb-Douglas). This change increases the dispersion in wage rates across occupations (because quantities can't adjust as easily as with a larger elasticity). Within an occupation little changes and as a result the link between the bunching ratio and earnings weakens somewhat. This is reflected in a smaller coefficient of the regression between

Table A.10: Gender Earnings Gap (%)

	Overall	Between	Between (Sorting)	Within
Data	23.2	-0.9	-	24.1
Baseline	26.3	19	-	7.3
Equal $\alpha$ ( $\alpha = 2.72$ )	21.6	19.6	17.5	2.0
50% Drop in $v_m - v_f$	24.5	20.9	16.4	3.6
Increase in $\rho$	26.5	21.4	18.6	5.0

Note: The table shows the overall gender wage gap (Overall) and its decomposition into the portion explained by the differences in the gender wage gap across occupations (Across) and the portion explained by differences in earnings between males and females within occupations (Within). The column labeled Between (Sorting) shows a between gender gap when earnings across occupations and occupation sizes are fixed at their Baseline values. The table shows the values in the data, in the baseline economy and in two counterfactual economies: (i) when the parameter  $\alpha$  is the same across occupations and equal to 2.72 (the one corresponding to Healthcare support), (ii) when the difference between the values for  $v_m$  and  $v_f$  decreases by 50%, and (iii) when  $\rho$  – the parameter that drives the elasticity of substitution between child care across the two time periods – rises from about 0.48 to 0.65.

earnings and the ratio (see A.9). The coefficient drop from 0.29 in the baseline case to 0.17. It is nonetheless still large, showing that the relationship between the coordination frictions and the gender gap is robust to changes in the aggregate technology. The interaction and female coefficients barely change.

Regarding the gender gap, there is large increase in the overall wage gender gap (from 8.9 percent to 26.3 percent). This increase is entirely due to the between component (the within component does not change). The between component rises because slight negative correlation between an occupation's share of females and earnings becomes even more negative. The changes in the within component across the different counterfactuals are about the same as in the high elasticity of substitution case. The changes in the between component are the same propor-

tionally; the only difference is that the between component is higher in all the counterfactuals.