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Where Are the Workers? From Great Resignation to Quiet Quitting

Dain Lee, Jinhyeok Park, and Yongseok Shin

Abstract

To better understand the tight post-pandemic labor market in the US, we decompose the decline in aggregate hours worked into extensive margin changes (fewer people working) and intensive margin changes (workers working fewer hours). Although the preexisting trend of lower labor force participation, especially by young men without a bachelor's degree, accounts for some of the decline in aggregate hours, the intensive margin accounts for more than half of the decline between 2019 and 2022. The decline in hours among workers was larger for men than women. Among men, the decline was larger for those with a bachelor's degree than those with less education, for prime-age workers than older workers, and also for those who already worked long hours and had high earnings. The reduction in workers' hours can explain why the labor market is even tighter than what is expected at the current levels of unemployment and labor force participation.

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1. INTRODUCTION

Throughout 2022, US labor markets remained stubbornly tight despite the Federal Reserve raising interest rates rapidly in an effort to cool demand and tame inflation. The latest unemployment rate stood at 3.4 percent as of April 2023. The demand for workers is still unusually strong, with the vacancy rate at 5.8 percent in March 2023, although it has fallen from the historically high levels of 2022.[1] The tightness of the labor market has often been attributed to the decline in the labor force participation rate (see the references in Section 2.3). Indeed, the participation rate as of April 2023 is 0.7 percentage points below its pre-pandemic level in early 2020. But is this the whole story?

The aggregate hours worked of an economy can fall because fewer people work (extensive margin) or because those who work reduce their hours (intensive margin). In this article, we decompose the change in aggregate hours worked since 2007 into extensive and intensive margin changes and compare their relative importance.

Our main findings are as follows. First, the negative impact of the 2007-08 Great Recession on aggregate hours worked and the ensuing slow recovery through 2019 materialized almost exclusively along the extensive

1. The vacancy rate is defined as the number of job openings divided by the sum of employment and job openings.

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margin. However, of the 3 percent decline in annual hours worked *per person* (including those who do not work) between 2019 and 2022, more than half is accounted for by the intensive margin. That is, focusing only on the extensive margin (lower employment and participation rates) will underestimate the total decline in labor supply by more than half.

Second, the decline in labor force participation is a continuation of a trend that existed before the pandemic. The most striking fact is the lower participation of young male cohorts without a bachelor's degree, whose participation rate is up to 7 percentage points below that of older cohorts at the same age. The Great Recession seems to be casting a very long shadow, even on those who were in their teens when it happened.

Third, the decline in hours worked *per worker* (excluding those who do not work) between 2019 and 2022 was larger for men than for women. Among male workers, the decline was larger for those with a bachelor's degree than those with less education and for prime-age workers than older workers. Furthermore, the hours declined by more for workers who already worked longer hours and had higher earnings.

Finally, circumstantial and direct evidence indicates that the hours reduction among workers is voluntary. In addition, although the reduction may have been caused by the pandemic situation, it is expected to persist.

Two labor market phenomena were popularized following the pandemic: the Great Resignation in 2021 and Quiet Quitting in 2022, both of which appear in the title of this article. Although some of the people who quit as part of the Great Resignation did exit from the labor force (extensive margin), many others simply found a new job, possibly with an employer offering more flexible work arrangements and less demanding hours (intensive margin) as well as better pay.[2] Those who engage in quiet quitting do not actually quit or leave the labor force but instead stop placing excessive value on work and seek better work-life balance, including fewer hours (intensive margin). Our analysis helps us understand the role of both phenomena in the tightening of the labor market.

The rest of the article is organized as follows. Section 2 covers the trends in unemployment, vacancies, and labor force participation and discusses how the participation rates changed over time across various demographic groups. In Section 3, we decompose the changes in annual hours worked into the extensive and the intensive margins and compare their relative importance across demographic groups. We further discuss the significant decline in hours along the intensive margin between 2019 and 2022 in a broader context. Section 4 offers a summary and discusses the policy implications of our findings.

2. UNEMPLOYMENT AND LABOR FORCE PARTICIPATION

2.1 Trends in Unemployment and Vacancies

The left panel of Figure 1 shows the seasonally adjusted unemployment rate since 2007 as well as the impact of the Great Recession and the slow recovery that followed. In contrast, the recovery from the pandemic lockdown was swift, with the unemployment rate falling from the April 2020 peak of 14.7 percent to below 4 percent in 20 months.[3] The right panel plots the vacancy rate against the unemployment rate, which is known as the Beveridge curve. The vacancy numbers are from the Job Openings and Labor Turnover Survey by the Bureau of Labor Statistics (BLS). The panel shows an overall negative relationship between vacancies and unemployment, and it confirms that the vacancy rates of 2022 are historically high, even when the low unemployment rate is factored in. In the past, when unemployment rates were below 4 percent, vacancy rates were around 4 percent.[4] The US labor market at the end of 2022 was even tighter than what is expected at the near-record-low unemployment rate.[5]

2.2 Trends in Labor Force Participation

Whereas the demand for labor bounced back stronger during and after the pandemic, the supply of labor slackened. Figure 2 shows the participation rate, which is the percentage of the civilian noninstitutional population 16 years and older who is working or actively looking for work. The left panel shows the aggregate participation rate and the participation rates by gender (all seasonally adjusted). The dashed lines are the respective pre-pandemic average between 2017 and 2019. The aggregate participation rate fell steadily after the Great Recession until 2014, from 66 percent in July 2007 to 62.9 percent in January 2014. Although the downward

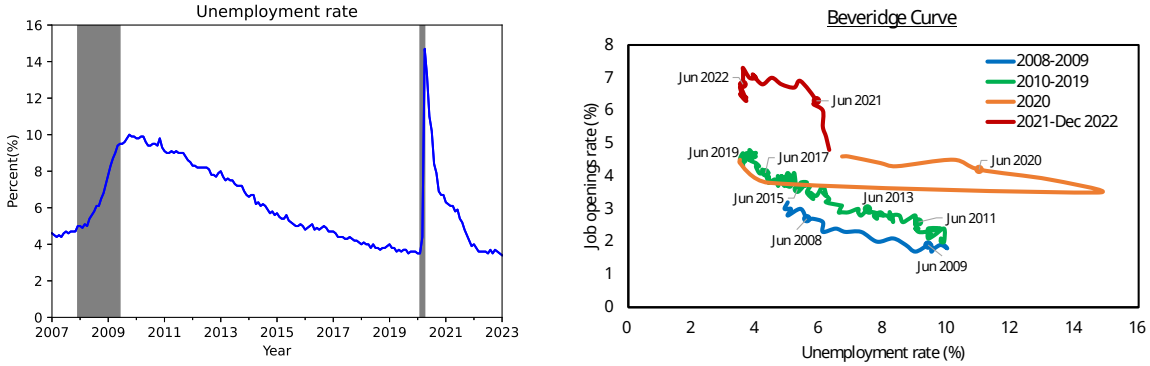
2. For this reason, the Planet Money blog of the National Public Radio called the Great Resignation "the Great Renegotiation" (https://www.npr.org/sections/money/2022/01/25/1075115539/the-great-resignation-more-like-the-great-renegotiation).

3. In comparison, after the Great Recession, it took six full years for the unemployment rate to fall from the October 2009 peak of 10 percent to the pre-recession level of below 5 percent. The rapid decline after the lockdown is explained by "recall" unemployment (Buera et al., 2021; Hall and Kudlyak, 2022; Lee, Park, and Shin, 2021).

4. Under the lockdown in April 2020, the unemployment rate shot up without much of a fall in vacancies. As unemployed workers were recalled to their previous employers, unemployment fell rapidly without much of a rise in vacancies.

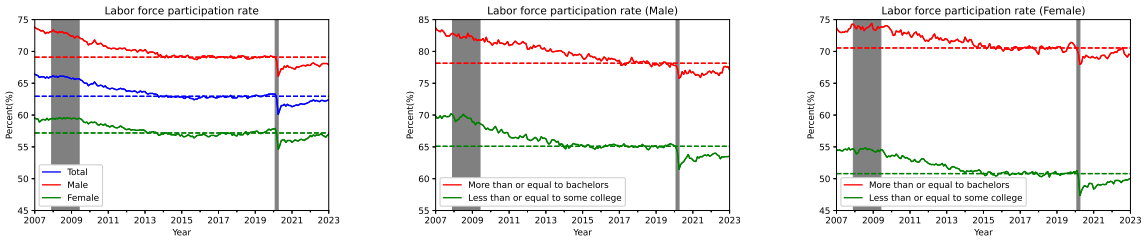
5. Domash and Summers (2022) made a similar point about the labor market at the end of 2021.

Figure 1
Unemployment Rate and the Beveridge Curve



NOTE: The left panel shows the monthly unemployment rate of the US since January 2007. The right panel shows the relationship between vacancy rates (vertical axis) and unemployment rates (horizontal axis) between January 2008 and December 2022. This relationship is known as the Beveridge curve.

Figure 2
Labor Force Participation Rate



NOTE: The left panel shows the labor force population rate for the overall population (blue line) and by gender (red for male, green for female). The middle panel divides men into two groups based on educational attainment and shows their participation rate: The first group (in green) includes those who never went to college and those who did but did not earn a four-year college degree, and the second group (in red) includes those who earned a four-year college degree or more. The right panel similarly divides women by educational attainment.

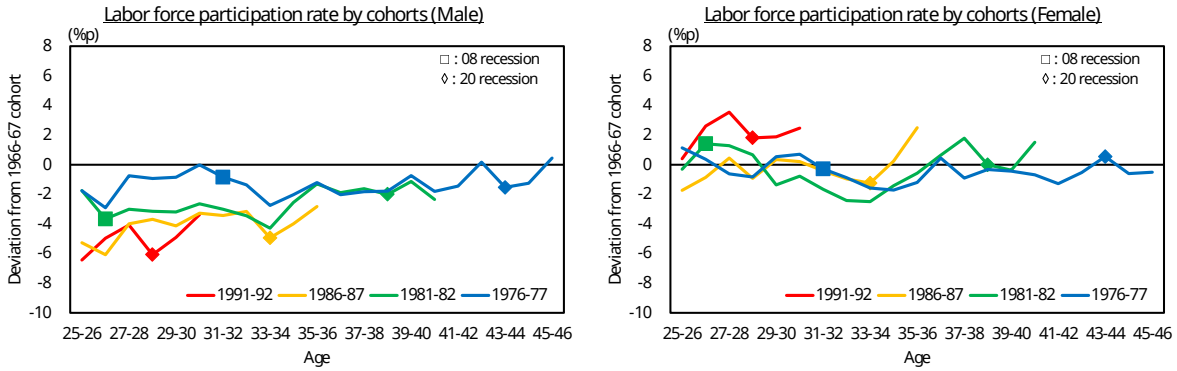
trend was arrested, the participation rate never recovered.[6] When the pandemic hit and the economy went into lockdown, the participation rate declined to 60.2 percent. Since then, it has risen steadily, and its level of 62.6 percent in April 2023 is 0.3 percentage points lower than the pre-pandemic level, the average between 2017 and 2019 represented by the horizontal dashed line.

The same panel shows that men and women have different levels but similar time trends. One difference is that men's participation rate fell by more than women's after both the Great Recession and the pandemic. Between July 2007 and January 2014, men's participation rate fell by 3.9 percentage points compared with women's 2.3. Similarly, men's participation rate in April 2023 of 68.1 percent is 1.0 percentage point lower than the average between 2017 and 2019, while women's participation rate in April 2023 of 57.3 percent is actually 0.1 percentage points *higher* than the average between 2017 and 2019.

The other two panels of Figure 2 show the participation rates by education for men (center panel) and women (right panel). Those with a four-year college degree or more are in the BA+ (more than or equal to a bachelor's) category, and the rest are in the SMC- category (less than or equal to some college). For both men and women, the two education groups have different levels but similar time trends. What is relevant for our purpose is the gap between the current and the pre-pandemic participation rates for each group. As of this writing, the latest figures by education are for March 2023. For men, the participation rate of both the less-educated and the more-educated groups in March 2023 is 0.9 percentage points lower than their pre-pandemic average. The gaps are 1.0 and 0.2 percentage points, respectively, for the less-educated and the more-educated women.

6. The peak participation rate was 67.3 percent, recorded during the first three months of 2000.

Figure 3
Participation Rates over Life Cycle, Deviation from the 1966-67 Cohort's Rate, by Gender



NOTE: Separately for men (left panel) and women (right panel), we compute the life cycle of participation rates for four cohorts, whose birth years are shown at the bottom. Their age profile of participation rates is shown as deviations from the participation rate of the 1966–67 birth cohort at the same age. The squares denote when the Great Recession hit each cohort, and the diamonds denote the COVID-19 lockdown.

Next, we examine the pattern in participation rates over the life cycle. To emphasize how the age profile of participation rates differs across cohorts, we first select five birth cohorts: those born in 1966–67 (ages 55–56 in 2022), 1976–77 (ages 45–46), 1981–82 (ages 40–41), 1986–87 (ages 35–36), and 1991–92 (ages 30–31). We then use the participation rates over the life cycle of the 1966–67 cohort as the baseline, and for each of the other four cohorts, we calculate how much their participation rates deviate from the 1966–67 cohort's rate at any given age.

Figure 3 shows the result, where the horizontal axis is age and the vertical axis is the deviation in the participation rate from the 1966–67 cohort's rate. The four lines end at the respective cohort's age in 2022. Since each cohort's age is different in any given calendar year (i.e., age = current year – birth year), we denote 2008 (Great Recession) with a square and 2020 (COVID-19 lockdown) with a diamond. The left panel shows the results for men and the right for women.

The first notable observation is that the participation rates of successive younger male cohorts are significantly lower than earlier male cohorts' rates at the same age. The 1981–82 and the 1976–77 cohorts' experiences show the long shadow cast by the Great Recession, denoted with squares. The age profiles of their participation rates fell significantly compared with the 1966–67 cohort, coinciding with the Great Recession, and a full recovery has not been achieved.[7] The 1991–92 and the 1986–87 cohorts, who experienced the Great Recession at even younger ages (16–17 and 21–22, respectively, not shown in the figure), have even lower participation rates in their late 20s and early 30s, which are on average 5 percentage points lower than the 1966–67 cohort's rate at the same age. For all cohorts, the pandemic lockdown seems to show only temporary effects.

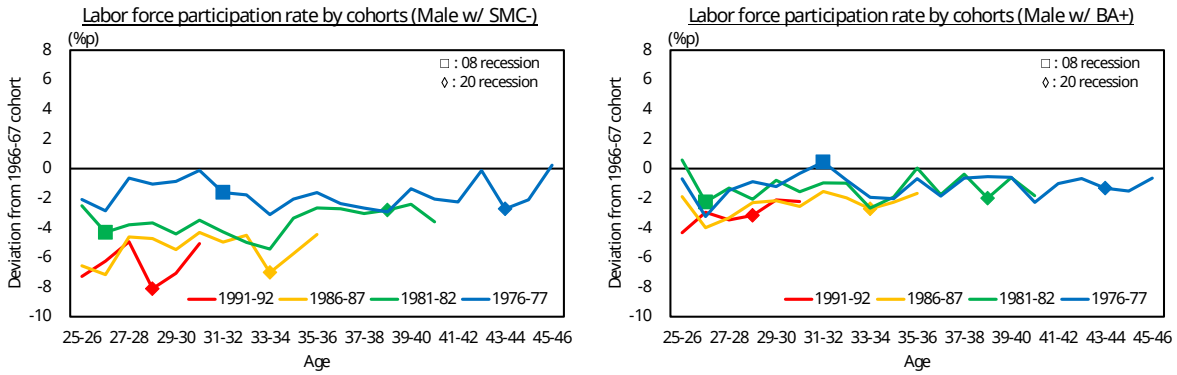
On the other hand, younger female cohorts' participation rates hew closely to the 1966–67 cohort's rates over the life cycle, in spite of the Great Recession. If anything, the youngest cohorts have higher participation rates than earlier cohorts at the same stages of the life cycle.

The lower participation rates of younger male cohorts are especially puzzling since younger cohorts tend to have more education, and more-educated people are more likely to participate, as seen in Figure 2. To be precise, 35.3 percent of the men in the 1991–92 cohort are in the BA+ category compared with 30.2 percent of the men in the 1966–67 cohort. Women show a much larger difference in educational attainment across cohorts. The fraction in the BA+ category is 42.1 percent for the 1991–92 cohort and 31.6 percent for the 1966–67 cohort. This difference may explain the slightly higher participation rates of the younger female cohorts.

To understand the role of education in the difference in participation rates across cohorts, we construct the analogue of Figure 3 separately for the two education groups for each gender. In the left panel of Figure 4, we plot the deviation of the participation rates of younger male cohorts in the SMC- category from those of the 1966–67 cohort in the SMC- category. In the right panel, we do the same for those in the BA+ category. It is clear that the lower participation rates of younger male cohorts are largely driven by those with less education.

7. The 1976–77 cohort seems to recover at ages 42–43 but only because the baseline cohort, 1966–67, is hit with the Great Recession at these ages.

Figure 4
Participation Rates over Life Cycle, Deviation from the 1966-67 Cohort's Rate, Men by Education



NOTE: We divide men into two groups by educational attainment: those with a four-year college degree or more in the right panel (BA+) and the rest in the left panel (SMC-). Separately for the two education groups, we compute the life cycle of participation rates for four cohorts, whose birth years are shown at the bottom. Their age profile of participation rates is shown as deviations from the participation rate of the 1966-67 birth cohort in the same education group at the same age. The squares denote when the Great Recession hit each cohort, and the diamonds denote the COVID-19 lockdown.

Compared with the SMC- group of the 1966-67 cohort, the SMC- group of the 1991-92 and the 1986-87 cohorts has participation rates that are on average 7 percentage points lower. While the BA+ group of younger cohorts also has lower participation rates than the BA+ group of the 1966-67 cohort, the gap is smaller, 3 percentage points on average.

Figure 5 shows the results for women, with the left panel representing the SMC- group and the right panel the BA+ group. The two education groups paint very different pictures. For the less educated, younger female cohorts have lower participation rates than the 1966-67 cohort, after they turn 30. In contrast, the BA+ group of younger cohorts has higher participation rates than the BA+ group of the 1966-67 cohort, after they turn 30. These opposing patterns of the two education groups roughly offset each other, generating the flat pattern around zero in the right panel of Figure 3.

2.3 Discussion on Labor Force Participation

Much has been written about the low participation rate during and after the economic recovery from the COVID pandemic, although the latest figure (April 2023) is fairly close to the pre-pandemic average from 2017 to 2019. Faria e Castro (2021) and Forsythe et al. (2022) point to the wave of earlier retirements by older workers. Goda and Soltas (2022) find that workers with a week-long COVID-related absence were more likely to leave the labor force the following year, which contributed to a 0.2-percentage-point decrease in the participation rate through June 2022. Abraham and Rendell (forthcoming) provide a comprehensive review of the above discussion.

Our finding emphasizing the low participation rates of less-educated young men suggests the effect of the pandemic was temporary and that the current participation rate reflects certain trends that have been ongoing for some time. This last point is related to Cooper et al. (2021) and Hobijn and Şahin (2022), who show that the claims of missing workers are exaggerated because of the downward trend in participation that was already present before 2020. They point to population aging in general as the cause of the trend, whereas we emphasize the low participation rates of young male cohorts.

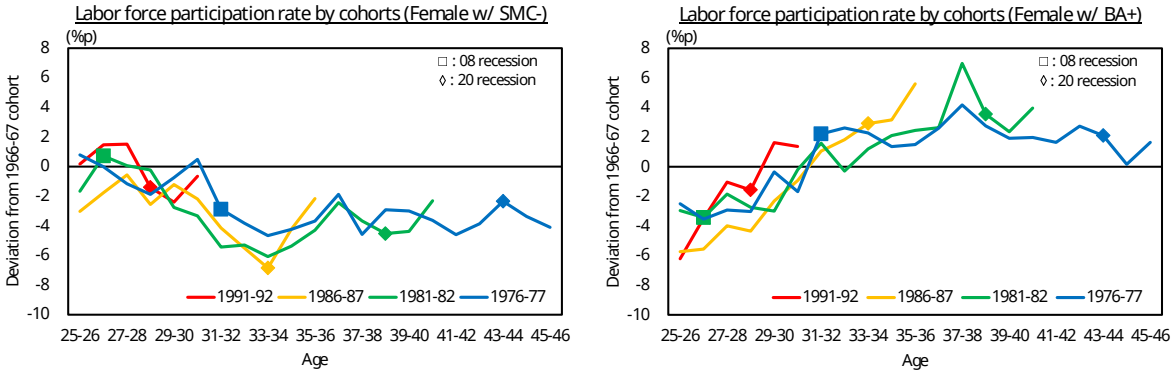
3. EXTENSIVE AND INTENSIVE MARGINS

The slack in the labor supply can arise not only from fewer people working or looking for jobs (lower participation rates) but also from workers working fewer hours. The former is the extensive margin, and the latter is the intensive margin. In this section, we more formally analyze how the change in aggregate hours worked of a population can be decomposed into extensive and intensive margin changes.

3.1 Data and Methodology

For population weights, worker characteristics, employment status, and actual hours worked, we use the Current Population Survey (CPS) from January 2007 to December 2022, taking yearly averages of the monthly

Figure 5
Participation Rates over Life Cycle, Deviation from the 1966-67 Cohort's Rate, Women by Education



NOTE: We divide women into two groups by educational attainment: those with a four-year college degree or more in the right panel (BA+) and the rest in the left panel (SMC-). Separately for the two education groups, we compute the life cycle of participation rates for four cohorts, whose birth years are shown at the bottom. Their age profile of participation rates is shown as deviations from the participation rate of the 1966-67 birth cohort in the same education group at the same age. The squares denote when the Great Recession hit each cohort, and the diamonds denote the COVID-19 lockdown.

data.[8] We restrict our analysis to the civilian noninstitutional population 25 years and older and do not use the panel dimension of the CPS. We use the actual number of hours the respondent reported working at their main job last week instead of relying on the usual hours worked question, as the latter does not specify the time frame and is thus less useful for measuring recent short-term changes in hours. The appendix has more details on the data, including a discussion of the actual versus usual hours.

We divide the entire sample period into three subperiods: 2007-13, 2013-19, and 2019-22. The first period is the impact and the sluggish recovery from the Great Recession. The middle is the second phase of the recovery from the Great Recession and a "new normal" leading up to the COVID pandemic. The last period is the recovery from the pandemic.

We decompose the changes in aggregate hours worked into the intensive and the extensive margins following Blundell, Bozio, and Laroque (2011). The total hours worked of a group change from one year to the next when (i) the number of people in the group (population weight) changes, (ii) the fraction of people in the group who work (employment rate) changes, or (iii) the average hours worked of those who work change. Since the number of people in a given demographic group is stable in the short run, we drop this channel from our analysis and focus on the other two channels. The extensive margin is the change in the employment rate multiplied by the average hours worked of those who worked in the current year. The intensive margin is the change in the average hours worked of those who worked, multiplied by the employment rate in the previous year.[9] The formal definition of the intensive and the extensive margin changes is in the appendix.

3.2 Results

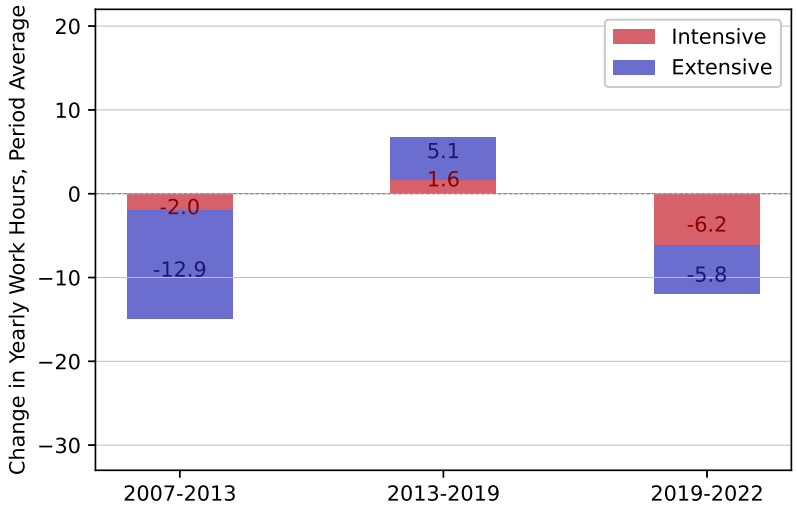
We start with the changes in annual hours worked per person of the entire population. Note that annual hours per person is computed as the product of average annual hours per worker and the employment rate, so those who did not work are included in this calculation. Between 2007 and 2013, the annual hours worked per person decreased by 14.9 hours each year on average, which means that, over the six years, the annual hours worked per person fell by 89.4 hours. Since the annual hours worked per person was 1,278 in 2007, this is a 7 percent decline of annual hours. Of the 14.9-hour-per-year decline, the vast majority, 12.9, comes through the extensive margin (i.e., fall in the employment rate) and the rest through the intensive margin (i.e., reduction in hours worked per worker). This result is consistent with the rise in unemployment in Figure 1 and the fall in participation in Figure 2 between 2007 and 2013, shown as the left bar in Figure 6.

The middle bar in Figure 6 shows the recovery in annual hours worked per person between 2013 and 2019. The 6.7-hour-per-year increase is mostly through the extensive margin, but the 40.2-hour increase in annual

8. An alternative data source for hours worked is Current Employment Statistics (CES). In the appendix, we explain why hours reported in the CPS are the relevant measure for our purpose.

9. As explained in Blundell, Bozio, and Laroque, 2011, this procedure picks the lower bound of the intensive margin change and the upper bound of the extensive margin change. An alternative is to construct the extensive margin by multiplying by the average hours worked of the previous year and the intensive margin by multiplying by the employment rate of the current year, which gives the upper bound of the intensive margin and the lower bound of the extensive margin. The decomposition results are similar either way.

Figure 6
Decomposition of Change in Aggregate Hours Worked



NOTE: The vertical positions of the red and the blue bars are the changes in annual hours worked per person through the intensive and the extensive margins, respectively. The numbers are the average change per year over the given period, so the total change can be computed by multiplying each number by the period length, six years for the first two periods and three years for the last period.

hours worked per person over this six-year period did not fully offset the 89.4-hour decline in the previous six years. This result is consistent with the finding in Figure 2 that the participation rate never went back to its level before the Great Recession.

The right bar shows the change in annual hours worked per person between 2019 and 2022, which is meant to capture the impact and the recovery from the COVID pandemic. The 12.0-hour decline per year over the three years translates into a 36.0-hour drop in annual hours worked per person (from 1,229 to 1,193), and it obliterated more than 80 percent of the 40.2-hour increase recorded during the preceding six years. What stands out is that more than half of the decline came through the intensive margin rather than the extensive margin. That is, focusing only on the extensive margin as we did in Section 2, one will miss more than half of the hours worked decline since 2019.

In the left panel of Figure 7, we repeat the decomposition but separately for men and women. During the first period, men recorded more than double the fall in annual hours worked that women did. The recovery during the second period was more even between men and women. In both periods, most of the adjustments occurred along the extensive margin, as in Figure 6. During the last period, it was again men who experienced a much larger drop in annual hours worked per person. For them, the drop along the intensive margin was larger than that along the extensive margin.[10]

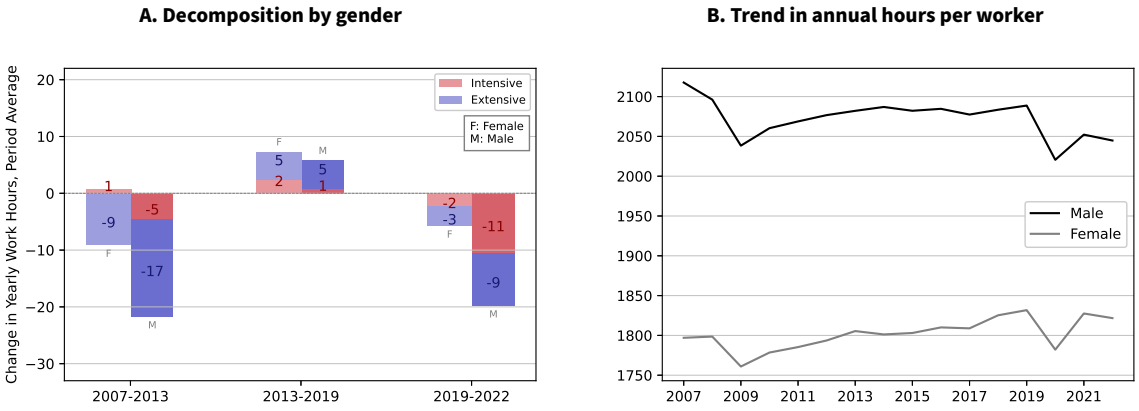
The right panel of Figure 7 shows the annual hours worked per worker (i.e., excluding those not working) for men and women since 2007. Working men log longer hours than working women on average, but the drop in hours since 2019 is larger for men than for women. In addition, we see that working women's hours has actually increased since 2007, unlike working men's hours.

As in Section 2, we further group men and women by educational attainment. Unlike in that section, however, we have three education groups here: those with a high school degree or less, those with some college education but no bachelor's degree, and those with a bachelor's degree or more.[11] Figure 8 shows the results. The first sets of bars in the left (women) and the right (men) panels show that, between 2007 and 2013, high school and some college groups experienced larger declines in annual hours worked per person than college graduates, with nearly all adjustments occurring at the extensive margin. The middle sets of bars show that the recovery between 2013 and 2019 was strongest for women (left panel) and men (right panel) with a

10. Alon et al. (2021) find that in the pandemic recession, women were hit harder and the employment gap (extensive margin) between men and women widened. This was true during their sample period, which is from February to October 2020. Our pandemic period is from 2019 to 2022, and we find the opposite pattern.

11. The first group, labeled "HS," includes high school graduates as well as dropouts. The second group, labeled "SMC," has attended some college but have no degree or has an associate's degree. The third group, labeled "BA+," has at least a bachelor's degree.

Figure 7
Decomposition of Change in Aggregate Hours Worked by Gender



NOTE: In the left panel, the vertical positions of the red and the blue bars are the changes in annual hours worked per person through the intensive and the extensive margins, respectively. The numbers are the average change per year over the given period, so the total change can be computed by multiplying each number by the period length. For each period, the left bar represents women and the right represents men. The widths of the bars are proportional to the population weight of each group at the beginning of the period. The right panel shows the annual hours worked per worker for men and women, from 2007 to 2022.

high school degree or less, again mostly through the extensive margin. The right sets of bars show the change between 2019 and 2022. For both women (left panel) and men (right panel), the drop in annual hours worked per person was largest for the some college group. Furthermore, the intensive margin (hours per worker) was much more important for men. In particular, for men with a bachelor's degree or more, the intensive margin change was more than double the extensive margin change.

We can also do the decomposition across age groups. For both men and women, we construct four age groups: ages 25 to 39, 40 to 54, 55 to 64, and 65 and older. Unlike in Section 2.2, where we follow cohorts over time, we group people by their age in each year. During the first period, 2007–13, as shown by the left sets of bars in both panels of Figure 9, annual hours worked per person fell the most for the first two age groups of women and men (prime-age women and men), mostly along the extensive margin. Surprisingly, the oldest group increased their annual hours worked per person along the extensive and the intensive margins.[12]

During the second period (the middle set of bars in both panels), the annual hours worked per person grew robustly for all age groups, both for women and men. Again, most of the rise occurred along the extensive margin. One difference is that for women, the annual hours per person of the youngest group (25–39) grew the most, whereas for men, it was those aged 55–64 that increased their hours per person the most.

The final period, 2019–22 (the right set of bars in both panels), shows very different patterns between women and men. For women, the annual hours of the youngest group move in opposite directions along the extensive and the intensive margins, resulting in negligible net changes in hours per person. Women aged 40–54 and 55–64 decreased their hours modestly along the intensive margin. For women 65 and older, the annual hours per person fell, almost exclusively along the extensive margin. For men, between 2019 and 2022, the fall in annual hours per person was largest among prime-age men, most of it along the intensive margin.

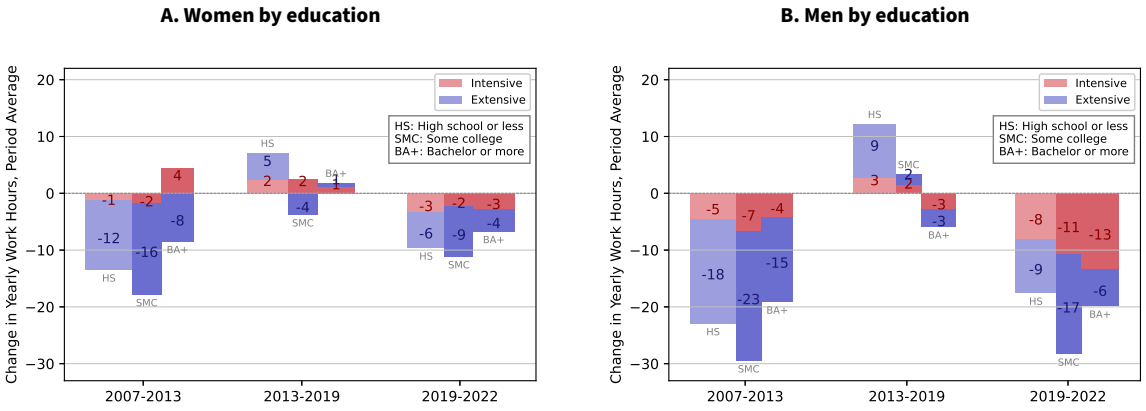
In summary, the 2019–22 period is unique in that the majority of the changes in annual hours worked per person occurred along the intensive margin rather than the extensive margin. In earlier periods, the intensive margin changes were negligible. During this period, the intensive margin decline was more pronounced for men than women, especially men with a bachelor's degree or more and in prime ages (25–54). Consistent with the result from Section 2, the extensive margin declines were larger for young men without a bachelor's degree.

3.3 Decline of Hours Worked among Male Workers

The result of our decomposition for the 2019–22 period emphasizes the reduction in hours by those who work. In this section, we examine how the distribution of annual hours among those who work changed over time. Since the intensive margin changes were more pronounced for men than for women, we only consider men in this section.

12. The increased employment rate of older workers in the early stages of recovery from the Great Recession is consistent with the evidence discussed in Aum, Lee, and Shin (2017).

Figure 8
Decomposition of Change in Aggregate Hours Worked by Education and Gender



NOTE: The vertical positions of the red and the blue bars are the changes in annual hours worked per person through the intensive and the extensive margins, respectively. The numbers are the average change per year over the given period, so the total change can be computed by multiplying each number by the period length. The left panel shows results for women and the right for men. For each period, the left bar represents those with only a high school education, the middle represents those with some college education but no four-year degree, and the right represents those with a four-year college degree or more. The widths of the bars are proportional to the population weight of each group at the beginning of the period.

Table 1
Percentiles of Annual Hours Worked, Male Workers

Percentile	2007	2013	2019	2022	2013-17	2013-19	2019-22
10th	1,560	1,560	1,560	1,560	0	0	0
25th	2,080	2,080	2,080	2,080	0	0	0
50th	2,080	2,080	2,080	2,080	0	0	0
75th	2,496	2,340	2,340	2,340	-156	0	0
90th	2,964	2,860	2,860	2,704	-104	0	-156

In Table 1, we report selected percentiles of the annual hours worked distribution among men who worked in a given year. Because people report weekly hours, which we then multiply by 52, the values cluster to certain integers. For example, in all four years, the 25th percentile and the median are 2,080 hours of work during the year. Nevertheless, it is clear that those who work very long hours cut back on their hours between 2019 and 2022, evidenced by the significant hours reduction at the 90th percentiles but not at the median. In 2019, one had to work for at least 2,860 hours (55 hours per week) to rank in the top 10 percent of workers working longest hours. In 2022, one needed to work "only" 2,704 hours (52 hours per week) to win this dubious honor.

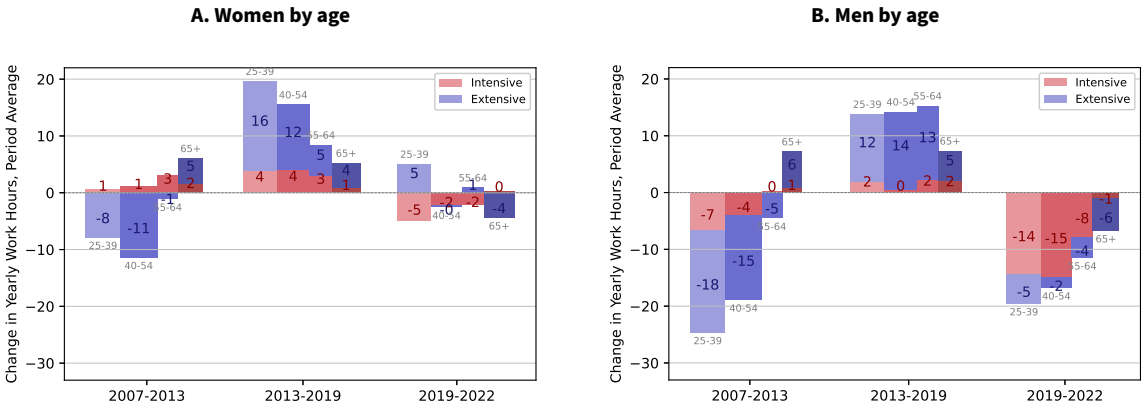
We can also examine the reduction in annual hours across the earnings distribution. For each year, we construct earnings deciles and compute the average hours worked of male workers in each decile. Figure 10 shows the result, and we make two observations. First, the average hours worked in a given earnings decile remained fairly stable between 2007 and 2019. Second, the average annual hours worked between 2019 and 2022 declined in all deciles except the lowest two but declined more at the higher end of the earnings distribution. Male workers in the ninth and the top deciles of the 2022 earnings distribution worked 51 and 79 fewer hours than those in the respective earnings decile in 2019. In summary, male workers with long hours and high earnings reduced their annual hours worked between 2019 and 2022 the most.

3.4 Discussion on Hours Decline

One natural question is whether this reduction in hours among those who work is voluntary or involuntary. Both circumstantial and direct evidence indicates that it is voluntary. The tight labor markets with high vacancy rates (Section 2.1) suggest that workers would have opportunities to work more hours if they so choose. More important, Faberman, Mueller, and Şahin (2022) provide direct survey evidence revealing a sharp decline in people's desired work hours during the COVID pandemic that persisted through the end of 2021. Our analysis shows that workers indeed reduced their work hours at least through the end of 2022.

In addition, as shown in the left panel of Figure 7, the hours per worker actually fell between 2021 and 2022

Figure 9
Decomposition of Change in Aggregate Hours Worked by Age and Gender



NOTE: The vertical positions of the red and the blue bars are the changes in annual hours worked per person through the intensive and the extensive margins, respectively. The numbers are the average change per year over the given period, so the total change can be computed by multiplying each number by the period length. The left panel shows results for women and the right for men. For each period, each bar stands for an age group as noted. The widths of the bars are proportional to the population weight of each group at the beginning of the period.

as the pandemic was fast receding. This pattern suggests that the hours reduction lasting through the end of 2022 cannot be explained by such pandemic-period factors such as sickness (Ham, 2022), fear of infection (Aum, Lee, and Shin, 2021), or child care needs during school closures (Garcia and Cowan, 2022). While determining the cause of the hours reduction is beyond the scope of this article, we conjecture that shifts in preference toward better work-life balance, manifested by the quiet quitting phenomenon, is an important factor. The pandemic may have motivated people to reevaluate their life priorities and also gotten them accustomed to more flexible work arrangements (e.g., work from home), leading them to choose to work fewer hours, especially if they could afford it. Our finding that the hours reduction is larger for those in the right tail of the hours and the earnings distributions supports this interpretation.

In this view, the reduction in hours worked may well persist, and that would not be a perverse outcome. The US stands out among advanced economies in terms of annual hours worked per worker. According to the OECD, the average US worker worked 1,791 hours in 2021. This amount is significantly higher than the corresponding number from other advanced economies: Canada (1,685), Japan (1,607), the UK (1,497), France (1,490), and Germany (1,349), for example.[13] In this context, if anything, there is room for hours worked per worker to further decline in the US.[14]

4. CONCLUDING REMARKS

Widespread worker shortages are what defined the tight labor markets of 2021 and 2022. The 1-percentage-point decline in the labor force participation rate between 2019 and 2022 is definitely part of the story, but this article shows that it is not the whole story. In fact, more than half of the decline in aggregate hours worked occurred through the intensive margin: Those who worked reduced their hours.

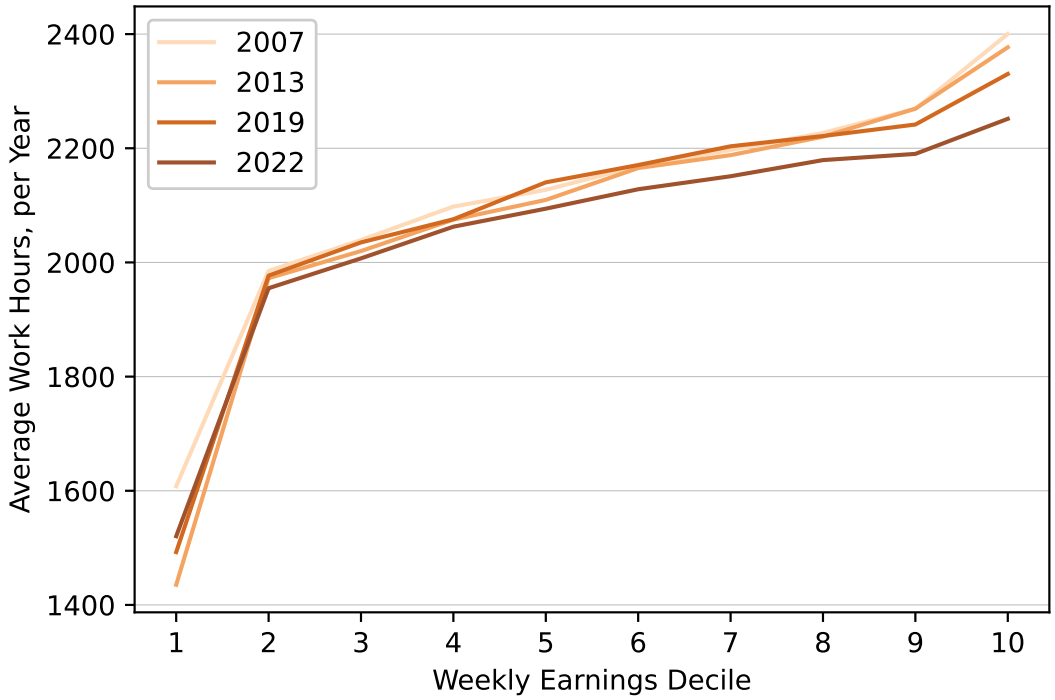
The lower participation rate is, to a large extent, a continuation of a trend that existed since the Great Recession, especially the lower participation of younger male cohorts without a bachelor's degree. The reduction in hours among workers is a new phenomenon induced by the pandemic, but available evidence suggests that it will likely stay with us. Indeed, as of May 2023, the participation rate has returned to the pre-pandemic level, but the hours worked per worker still shows no sign of recovering. The reduction in hours was larger for prime-age male workers with a bachelor's degree as well as for those male workers who already worked longer hours and earned more.

A lesson for researchers and policymakers is that one must pay attention to hours worked of workers, in

13. The OECD countries with higher annual hours worked per worker than the US are, in descending order, Mexico (2,127), Costa Rica (2,073), Colombia (1,964), Chile (1,915), Korea (1,915), Greece (1,872), and Poland (1,830). The richest among them is Korea, but even its GDP per capita is only two-thirds of the US's.

14. To provide a historical background, the annual hours worked per worker fell from over 2,000 in the 1950s to 1,770 in 1982, after which it exhibited neither downward nor upward trends.

Figure 10
Average Annual Hours Worked across Earnings Deciles, Male Workers



addition to the employment or participation rate, to have an accurate assessment of the labor market conditions. In the current labor market, focusing only on unemployment and labor force participation will lead to a significant underestimation of the tightness of the labor market, which echoes the conclusion of Domash and Summers (2022) and Faberman, Mueller, and Şahin (2022) about the labor market of 2021. Relatedly, Bick, Blandin, and Fuchs-Schündeln (2022) emphasize the importance of the hours margin in growth-accounting exercises and in the projection of potential labor supply.[15]

While we made some conjectures based on available evidence as to why workers reduced their hours and whether they will continue to do so, these remain open questions. In addition, it will be fruitful to have a better understanding of the lower labor force participation of younger male cohorts, both its causes and consequences. These important topics are left for future research.

APPENDIX 1. NOTE ON DATA

Hours Worked We use AHRSWORK1 in IPUMS-CPS (Flood et al., 2022). Hours worked is the actual number of hours the respondent reported working at their main job last week. They are reported only for those who are employed during the survey week. The values for this variable are integers ranging from 0 to 99. Hours above 99 are recorded as 99 hours. Those who report zero hours account for less than 0.1 percent of the employed. About 4 percent of the employed do not report hours, but they are included when the employment rates are calculated.

Earnings Figure 10 uses EARNWEEK in IPUMS-CPS. Earnings is how much the respondent usually earned per week at their current job, before deductions. We exclude samples with weekly earnings smaller than $1.

Employment Status "Employed" includes both those employed and at work last week and those employed but not at work, for example, due to sick leave, in the EMPSTAT variable in IPUMS-CPS.

15. In their analysis of data from 18 European countries and the US between 1997 and 2019, they document a downward trend in hours per worker and an upward trend in the employment rate in most countries. They construct a model that rationalizes these divergent trends.

APPENDIX 2. ALTERNATIVE DATA SOURCE FOR HOURS WORKED

Usual Hours Worked As explained in the main text, we choose actual hours worked because the timeframe is unspecified for the usual hours question (variable name UHRSWORK1) in the monthly CPS samples. The usual hours variable (UHRSWORKLY) in the Annual Social and Economic Supplement (ASEC) samples of the CPS is an alternative. This variable specifies the timeframe as the previous calendar year and reports hours worked over all jobs. We could get annual hours worked last year by multiplying this usual hours variable by weeks worked last year. Using this specification, data are available up to 2021. The results for the first two periods, 2007–13 and 2013–19, are similar except that extensive margins come out slightly stronger than in our benchmark result. This could be explained by the fact that respondents are reporting their usual hours of work, which may exclude short-term decreases in hours, or they may be prompted to include paid vacation and sick leaves as part of their weeks worked variable.

CES CES, a payroll survey, is an alternative source of hours worked data. It shows there has been a small increase in the average hours per worker between 2019 and 2022, whereas the CPS shows the opposite. There are four possible reasons for this discrepancy. First, the coverage of the survey is different. CES samples establishments with employees and excludes those who are self-employed. However, when we exclude the self-employed from our CPS sample, the discrepancy between the two series remains, so this cannot be the reason. Second, the unit of CES is a job in an establishment, while the unit of the CPS is an individual. This distinction matters because an individual may have multiple jobs. Third, CES reports all paid hours, so if employees go on a paid vacation or a paid medical leave, they will be still counted as if they were working. In the CPS, a vacation or medical leave shows up as fewer work hours, whether it is paid or not.

Last, there is a measurement issue. The CPS asks workers directly how many hours they work during a week. However, CES is an establishment-level survey, so an HR manager would possibly answer this question. For hourly workers and those eligible for overtime pay, it is reasonable to think that the manager has an accurate record of their hours. However, a large fraction of workers in the US are salaried exempt workers.[16] It is unlikely that the HR manager has a good statistic on the work hours of exempt workers since there is no need to keep track of their work hours. Based on the last three reasons, we believe that directly asking workers about their hours will give us a more reliable answer.

In addition, the American Time Use Survey by the BLS, which is another individual survey, also shows that hours worked has declined since COVID, although the 2022 data are not yet available as of this writing.

APPENDIX 3. DEFINITION OF INTENSIVE AND EXTENSIVE MARGINS

We closely follow the method of Blundell, Bozio, and Laroque (2011). A period is a year and is indexed by t, and groups are indexed by $j = 1, ..., J$. q_{jt} is the population share of group j. Hours per person for each group j in year t, H_{jt}, is the product of hours per worker h_{jt} and employment rate p_{jt}: $H_{jt} = h_{jt}p_{jt}$. Aggregate hours per person, H_t, is the population-weighted sum of hours per person of each group: $H_t = \sum_{j\in J} q_{jt}H_{jt}$.

The structural effect due to the change in the composition of population is $S_t = \sum_{j\in J} H_{jt}[q_{jt} - q_{j,t-1}]$. In addition, the change in hours per person of group j, using the population weight of period $t-1$, is $\Delta_{jt} = q_{j,t-1}[H_{jt} - H_{j,t-1}]$. The total change across all J groups is then $\Delta_t = \sum_{j\in J} \Delta_{jt}$. By construction, $H_t - H_{t-1} = S_t + \Delta_t$.

To obtain the desired decomposition, assume linearity and that the intensive margin has the same sign as the change in hours per worker from the previous period ($\Delta h_{jt} = h_{jt} - h_{j,t-1}$). Then we have

$$I_{jt} = p^I_{jt}\Delta h_{jt} \quad \text{and} \quad E_{jt} = h^E_{jt}\Delta p_{jt},$$

where $\Delta p_{jt} = p_{jt} - p_{j,t-1}$, and the extensive margin follows from the identity $\Delta_{jt} = q_{j,t-1}(I_{jt} + E_{jt})$.

There are two alternatives for p^I_{jt}: $p_{j,t-1}$ and $p_{j,t}$, corresponding to $h^E_{jt} = h_{j,t}$ and $h_{j,t-1}$ respectively. That is,

$$\Delta_{jt} = q_{j,t-1}[p_{jt}\Delta h_{jt} + h_{j,t-1}\Delta p_{jt}] \quad \text{and} \quad \Delta_{jt} = q_{j,t-1}[p_{j,t-1}\Delta h_{jt} + h_{j,t}\Delta p_{jt}].$$

16. The term "exempt" comes from the Fair Labor Standards Act (FLSA). These workers are exempt from overtime pay. Employees exempt from the FLSA must be paid a salary above a certain level and work in an administrative, professional, executive, computer, or outside sales role.

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