

The Outlook for Women's Employment and Labor Force Participation

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Abstract

Employment and participation rates for US prime age women rose steadily during the second half of the 20th century. In the last 30 years, however, those rates stagnated, even as employment and participation rates for women in other industrialized countries continued to rise. I discuss the role of changes in the earnings structure and persistent institutional barriers, such as limited investment in family policies, that may be holding back employment among American women today. The COVID-19 pandemic reduced employment more for women than for men and raised the barriers to female participation due to the increase in childcare responsibilities during this period. Yet, the diffusion of remote and hybrid work arrangements in its aftermath may be beneficial for women's participation in the long run, even if both men's and women's post-pandemic employment growth so far are strongly associated with access to remote work options.

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1 Introduction

The dramatic rise in women’s labor market participation is one of the most notable economic phenomena of the second half of the twentieth century. Women’s employment has increased in most advanced economies, and has been associated with a gradual gender convergence in wages and earnings and the entry of women in traditionally male occupations. A substantial body of work has emerged to study women’s changing economic role and the underlying driving forces (see Goldin (2006) and recent surveys by Albanesi, Olivetti, and Petrongolo (2023) and Blau and Kahn (2017)).

Women’s participation also rose in the United States, reaching 59% in 1997 and stayed at that level until the 2007-2009 recession, when it started to decline, as shown in Figure 1. By contrast, it grew by half a percentage point per year on average throughout the post-war period up to that point. The male-female gap in labor force participation rate in 1997 was 15 percentage points, and fell to 9 percentage points by 2021, as a consequence of the greater decline in the labor force participation of men over that period.¹

This is a puzzling development in light of the continued rise in women’s educational attainment relative to men and their entry into professional high-earning occupations (Goldin, Katz, and Kuziemko (2006)). Women’s labor force participation has continued to rise in other countries, as can be seen in Table 1, which reports labor force participation for prime age men and women in selected OECD countries between 1990 and 2019. In 1990, the United States ranked 5th out of 22 in women’s participation, while by 2019, the United States’s rank had dropped to 21st.

Why have the United States fallen behind comparable countries in women’s participation? While there is an extensive literature on the rise in women’s participation, less attention has been paid to its slowdown. I will explore two factors that play a prominent role. The first is changes in the earnings structure. The 1990s saw an accelerated rise in top earnings of college educated men (Heathcote, Perri, and Violante (2010)) and an increase in the gender

¹Figure 1 also shows that labor force participation of men has been steadily declining, and as shown in Table 1, the United States’s rank in men’s participation dropped from 10th in 1990 to 19th in 2019 among comparable countries. Krueger (2017) shows that population aging, declining job opportunities for men without a college degree and worsening health play a sizable role.

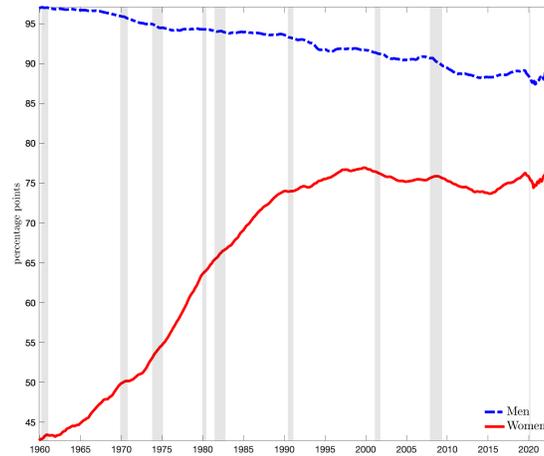


Figure 1: Labor force participation rate by gender 25-54 years old, 1960-2023. Gray bars denote NBER recessions. Source: OECD Employment Statistics.

wage gap for college workers (Albanesi and Prados (2022)). Top earning professional and managerial occupations also feature large penalties for lower hours and any type of workplace flexibility (Goldin and Katz (2011b)). This resulted in a negative income effect from rising spousal earnings and frictions to career advancement, which may have reduced labor supply for college educated married women— despite their considerable educational investments (?)— leading some of them to stop working and some of them to reduce their work hours.

The second important factor likely contributing to the discontinued rise in women’s participation is the lack of progress in family policies. While in most countries there has been an increase in the availability of family policies in the last 40 years, no progress in this area has been made at the federal level in the United States since the Family and Medical Leave Act of 1993 introduced unpaid job protected leave for specified family and medical reasons (Albanesi, Olivetti, and Petrongolo (2023)). Blau and Kahn (2013) find that 28% of the difference can be attributable to differences in family policies, including entitlements to paid parental leave, giving workers the right to switch to a part-time schedule and publicly provided childcare services.

I present a conceptual framework that illustrates how changes in the wage structure may

Table 1: Labor force participation rate by gender

		1990		2000		2010		2019	
	Country	Men	Women	Men	Women	Men	Women	Men	Women
1	Australia	93	67	90	70	91	75	91	79
2	Austria	94	76	92	82	92	86
3	Belgium	92	61	92	73	92	80	89	80
4	Canada	93	75	91	78	91	82	91	83
5	Denmark	95	88	92	84	92	85	90	83
6	Finland	93	86	91	85	91	84	90	85
7	France	95	73	94	79	94	83	92	83
8	Germany	90	63	93	77	93	81	93	83
9	Greece	94	51	94	62	94	72	93	78
10	Iceland	96	88	92	84	92	86
11	Ireland	92	45	92	65	89	73	91	76
12	Israel	89	61	87	70	87	75	86	80
13	Italy	94	54	91	58	89	64	88	68
14	Luxembourg	95	50	94	65	95	76	93	84
15	Netherlands	93	58	93	73	93	82	92	83
16	New Zealand	93	69	91	73	92	77	93	82
17	Norway	92	79	91	83	90	84	89	83
18	Portugal	94	68	92	77	93	85	93	88
19	Spain	94	47	93	63	92	79	92	82
20	Sweden	95	91	91	86	93	87	94	89
21	United Kingdom	95	73	92	76	91	78	92	82
22	United States	93	74	92	77	89	75	89	76
Average non-US		93	66	92	75	92	80	91	82
Rank US		10	5	14	10	20	18	19	21

Population 25-54 years old. Source: OECD Employment Statistics.

influence women’s participation and discuss the evidence on the relation between changes in the wage structure and the slowdown in women’s participation in the United States. I then compare the United States to similar countries in their provision of family policies and evaluate the relation between variation in family policies and women’s employment and earnings.

The emergence of COVID-19 dealt a large shock to labor markets in 2020, particularly for women whose employment declined more than men (Albanesi and Kim (2021), Alon et al. (2020), GOLDIN (2022)). This was a combination of exposure, with women over-represented in service occupations adversely hit by the pandemic, and caring responsibilities,

with childcare centers and schools closed or virtual. However, in the recovery from the pandemic, women’s employment grew at a faster rate than men’s. I explore the variation of employment recovery for men and women after COVID-19 and examine the factors that have shaped the post-pandemic labor market.

2 Slowing Trend in Women’s Participation

Women’s labor force participation in the United States started to slow down in the 1990s. I will focus on two possible factors that contributed to this development.

The first is changes in the structure of earnings. During the 1970s and 1980s, the United States and other rich countries experienced a marked rise in the wage premium for college workers (Katz and Murphy (1992)). The associated decline in wages for workers without a college degree is one of the factors that has determined a decline in participation of men in the last 50 years (Krueger (2017)). However, women mainly benefited from the rise in the college premium, as they gained educational attainment and experience, and the rise in college wages contributed to raising their attachment to the labor market over this period (Olivetti (2006)). Starting in the 1990s, there was an acceleration in the growth in income inequality, driven by growing dispersion in top earnings (Heathcote, Perri, and Violante (2010)). The growth in the level and dispersion of top earnings resulted from a change in the earnings structure for professional and managerial occupations, partly as a result of the rise in performance pay.

Lemieux, MacLeod, and Parent (2009) show that the growth in the use of performance pay contributed substantially to the increase in income inequality for men starting in the 1990s. While no such studies of women exist, Albanesi and Olivetti (2009) show that women earn lower performance pay and this is a key driver of the gender gap in wages. Additionally, Albanesi, Olivetti, and Prados (2015) show that female top executives receive lower performance pay than male top executives and this difference accounts for most of the gender gap in earnings for this group of professionals. Another change in the earnings structure that may contribute to increases in the gender gap in earnings is the non-linearity of pay as

a function on hours in many professional occupations (Goldin (2014)). Small differences in hours of work may lead to large differences in earnings, given the large premium to working long hours, and this accounts for the sizable dispersion in wages and earnings across occupations (Erosa et al. (2023)). As women entered professional and managerial occupations starting in the 1980s, these changes in the wage structure may have adversely affected their returns to employment and therefore their willingness to participate in the workforce.

The second important factor influencing the ability of women to participate in the labor force are *family policies*, that is policies that interact with household structure, child well-being or parental outcomes. While paid parental leave and support for early education and childcare are the most direct forms of public aid to families, taxation interacts with family structure in a way that differentially affects men and women and parents. Finally, labor market regulation can provide workplace conditions that increase flexibility for employees. Blau and Kahn (2013) find that the expansion of parental leave and other support to families outside the US are important factors behind weaker female employment growth in the US since the early 1990s, relative to other OECD countries, while Albanesi, Olivetti, and Petrongolo (2023) show that the United States invests significantly less in family policies overall.

I will now examine the link between women’s employment and the earnings structure and family policies in turn.

2.1 Earnings Structure

To help illustrate how the earnings structure influences women’s labor force participation, I now introduce a simple conceptual framework that captures household labor supply decisions. I assume that couples enjoy utility from consumption of a market purchased good and a home public good. The market good is purchased with the partner’s labor earnings, while the public home good is produced with the partners’ time as well as the market good. The public home good captures standard household activities such as childcare or home maintenance. The partners choose the allocation of their time to the labor market and the production of this public good, taking as given the wage structure.

Let's consider the choice of hours for the two partners, f for female and m for male. Their labor supply, denoted by h_f, h_m , represents the fraction of unitary endowment of active time devoted to market work, whereas $1 - h_f$ and $1 - h_m$ correspond to the fraction devoted to home production. The choice of labor supply solves the following problem:

$$\max_{h_f, h_m \in [0,1], q \geq 0} [W(h_f) + W(h_m) - pq + f(\alpha^f(1 - h_f), \alpha^m(1 - h_m), q)],$$

where $W(\cdot)$ denotes earnings as a function of hours, and the male partner's labor supply h_m is taken as given. The third term in the objective function corresponds to the production function of the household public good, where q represents the quantity of market good used in the production of the home good, such as supplies or service purchases, and p is its price. This function is increasing in each argument and exhibits decreasing returns. The parameters $\alpha_f, \alpha_m > 0$ represent the partner's relative efficiency in home production. I will assume that the marginal product of each partner's time devoted to home public good production is decreasing in the other partner's time devoted to it, which reflects complementarity. I will also assume there is some substitutability between home hours of the partners and the market good used in home production.

To capture the non-linear relation between earnings and hours of work for professional and managerial occupations, I assume that the earnings function has the form:

$$W(h) = \begin{cases} 0 & \text{for } h < \underline{h} \\ \underline{w}h & \text{for } \underline{h} \leq h < \bar{h} \\ \bar{w}h & \text{for } h \geq \bar{h} \end{cases}$$

with $\underline{w} < \bar{w}$ and \bar{h} between 0 and 1. That is earnings grow more with hours if hours are high enough, introducing a wage penalty for working less than \bar{h} . Additionally, if workers do not work at least a minimum of \underline{h} hours, they will not be compensated at all, an assumption that captures the indivisibility of labor in most jobs (Hansen (1985), Rogerson (1988)). Indivisibility is a form of lack of flexibility in work time, which I will discuss further below.

The couple will choose market hours for each partner comparing the marginal benefit with the marginal cost, which for the female partner are given by $W'(h_f)$ and $\alpha_f \frac{\partial f(\alpha_f(1-h_f), \alpha_m(1-h_m), q)}{\partial h_f}$, respectively, with similar expressions for the male partner. The marginal benefit of increasing market hours corresponds to the wage, which is higher for the partner with higher market hours. The marginal cost of market hours is higher for the partner with the highest home good productivity. Additionally, a lower price p for the market good used in home production increase the optimal quantity of it chose, reduce the marginal cost of market hours for both partners, and increase their optimal choice of market hours, more so for the partner with higher home good productivity.

Let's assume for argument's sake that $\alpha_f > \alpha_m$, that is the female partner has a comparative advantage in home production. Then, her optimal market hours will be lower than her partner. Assume her partner's optimal market hours are above \bar{h} . If their home good productivity differences are small, her labor supply will still be above \bar{h} and they will face the same wage. But if their home productivity differences are large enough, it will be optimal for her to choose value of labor supply below the threshold \bar{h} , and earn the lower wage \underline{w} , leading to a larger gap in market hours between the two partners. Alternatively, her optimal labor supply may be below \underline{h} , and in that case, she will be induced to not to supply any hours to the market. Relative wages will also matter for the choice of market good to be used in home production. A high wage couple will choose higher values of q , whereas the opposite will be true for a low wage couple.

The changes in the earnings structure in the 1990s can be captured in this framework as a rise in \bar{w} , that is an increase in the premium for working longer hours. What will happen to this couple's labor supply? This is depicted in Figure 2. The male partner will increase his labor supply, which will increase the marginal cost of home hours for the female partner. This will tend to reduce her market hours. If \bar{h} is high enough, she will choose $h_f < \bar{h}$. The fact that she faces a lower wage will make it optimal for her to further reduce her hours, relative to a case in which a decline in hours does not also decrease the wage. This will lead to a larger gap and in earnings between the partners. If the male partner's market hours increase enough, the marginal cost of market hours for the female partner may rise enough

to make it optimal for her to choose zero market hours, corresponding to non-participation.

Utility from consumption is linear in this example. However, a standard concave utility function would amplify this effect by reducing the marginal value of consumption as the male partner's earnings increase, leading to an additional negative income effect on the female partner's hours.

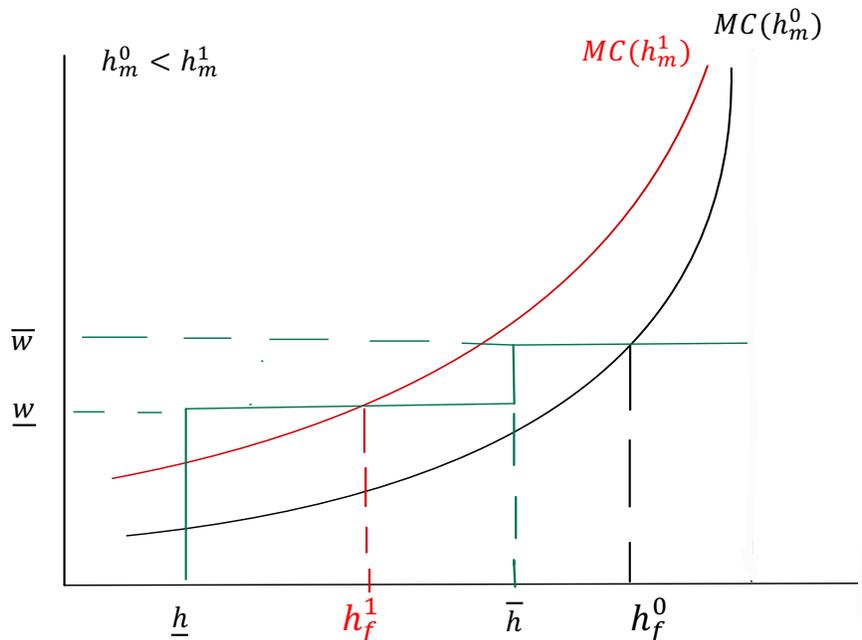


Figure 2: Impact of the Earnings Structure on Wives' Participation

Notes: Effect of an increase in the male partner's market hours on the female partner's optimal market hours. An increase in the male partner's hours from h_m^0 to h_m^1 , increases the marginal cost of market hours for the female partners, which decreases her labor supply. Given that the wage decreases in hours under the wage function $W(h)$, this causes a bigger decline in the female partner's hours than under a fixed wage.

How is this conceptual framework related to the empirical relation between the slowdown in women's participation and the changes in the earnings structure in the 1990s? First, the slowdown in participation only occurred for married women, it was greater for women with a college degree and for women married to husbands with a college degree. This can be seen in Table 2, which reports the difference between actual labor force participation in 1995-2005 and the level that would have been projected based on the 1975-1994 trend

Table 2: Slowdown in Married Women’s Labor Force Participation By Education

Household Types (Husband-Wife)	Married Women’s Participation			
	HS-HS	C-HS	HS-C	C-C
Average 1995-2005				
Actual	0.6	0.56	0.73	0.63
Projected	0.66	0.67	0.79	0.75
Actual-Projected	-0.06	-0.11	-0.06	-0.12
Actual-Projected%	-9.8	-17	-8	-17

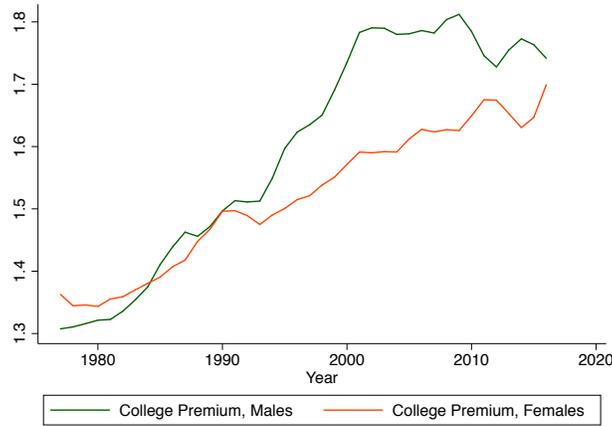
Difference between actual participation in 1995-2004 and participation projected based on probit model estimated on 1975-1994 data, controlling for age and age squared, for married women age 25-54 by household type. Household types correspond to husband’s and wife’s completed educational degree (High School or College). Source: Albanesi and Prados (2022) with data from Current Population Survey, March Supplement.

for married women, stratified by their own and their husbands’ educational attainment.² Contemporaneous to the slowdown in married women’s labor force participation, we also see a decline in the rate of convergence of wages for married men and women with a college degree, shown in Figure 3.

Using a quantitative model of household labor supply that captures at a more detailed level the forces I have discussed, Albanesi and Prados (2022) show that the change in the earnings structure can explain approximately one third of the slowdown in women’s participation relative to the pre-1995 trend for women married to men with a college degree and accounts for part of the rise of the gender wage gap for married college workers. They also show that this phenomenon is not unique to the United States. Other rich countries that experienced a rise in top earnings for men show a decline in the growth rate of married women’s participation. However, the decline was greatest in the United States for two possible reasons. First, the United States experienced this change in the earnings structure to the largest degree (Krueger et al. (2010)). Additionally, the United States saw virtually no progress in family policies since the early 1990s (Blau and Kahn (2013)). The lack of progress in family policies may also explain why, though to a smaller degree, labor force par-

²Figure 9 shows the same gap by quintile of the distribution of labor income for married men. It shows that the slowdown in participation was greatest for women with husbands in the top 2 quantiles of the earnings distribution.

Figure 3: College Wage Premium by Gender



College wage premium by gender. All married individuals, age 25-54 years old, working full time full year.
Source: Albanesi and Prados (2022) with data from Current Population Survey, March Supplement.

participation also slowed for women with a college degree married to men with lower educational attainment, and for women without a college degree married to men with the same level of education (Albanesi and Prados (2022)). Particularly, given that demographic factors, such as population aging, only partially account for this pattern (Krueger (2017)).

The changes in the earnings structure that occurred in the 1990s effectively reduced flexibility in labor supply for professional workers, as they increased the cost of lower work hours, which are a way to gain flexibility. While there is some variation across occupations, in addition to a penalty for lower hours, professional and managerial occupations exhibit penalties for flexibility in work schedules for given number of hours worked (Goldin and Katz (2011a)). These changes affect college workers. For those without a college degree a more recent challenge is the rise of *just-in-time* scheduling in the 2000s, leading to insufficient and unpredictable work hours. The inability to have predictable schedules may cause difficulties for parents (Goldin (2015)) and mothers in particular, making it hard to arrange and pay for childcare.

This reduction in flexibility of work hours increases the role of public interventions designed to reduce the constraints on labor supply on mothers and other individuals with caring

responsibilities.

2.2 Family Policies

I now turn to family policies with the goal of comparing the United States to other rich countries, and discussing the economic relation between family policies and labor market outcomes for women. For this analysis, I rely on the OECD Tax Policy, Labour and Family Policies database, and focus on taxation, childcare support, parental leave and workplace flexibility. I will rely on the conceptual framework to illustrate their potential impacts and briefly summarize the empirical evidence on their relation with women's labor market outcomes.³ I then use the data to run a counterfactual to examine the relation between family policies and gender differences in employment and earnings in the countries included in the analysis.

Before diving into specific policies, it is instructive to compare spending on family policies across countries. Figure 4 reports total public social expenditure as a fraction of GDP and its composition, broken down into expenditure on cash benefits for families, expenditure on services and in-kind benefits, and expenditures on tax breaks for families. The sample roughly breaks into two groups, countries with total public social expenditure below 2.5% of GDP, comprising Greece, the United States, Spain, Canada, Italy and the Netherlands and the other countries. Most countries in the high total expenditure group devote a large share of spending on cash benefits for families. Finland, Norway, Sweden and Denmark have the largest share of spending on services and in-kind benefits. The United States stand out for the large role of tax breaks for families, amounting to approximately 0.5% of GDP, and very low expenditures on cash benefits for families.

³The literature on the impact of family policies is large and spans several disciplines, approaches, and data sources. A detailed discussion of the literature on family policies and their variation in a large set of OECD countries can be found in Albanesi, Olivetti, and Petrongolo (2023).

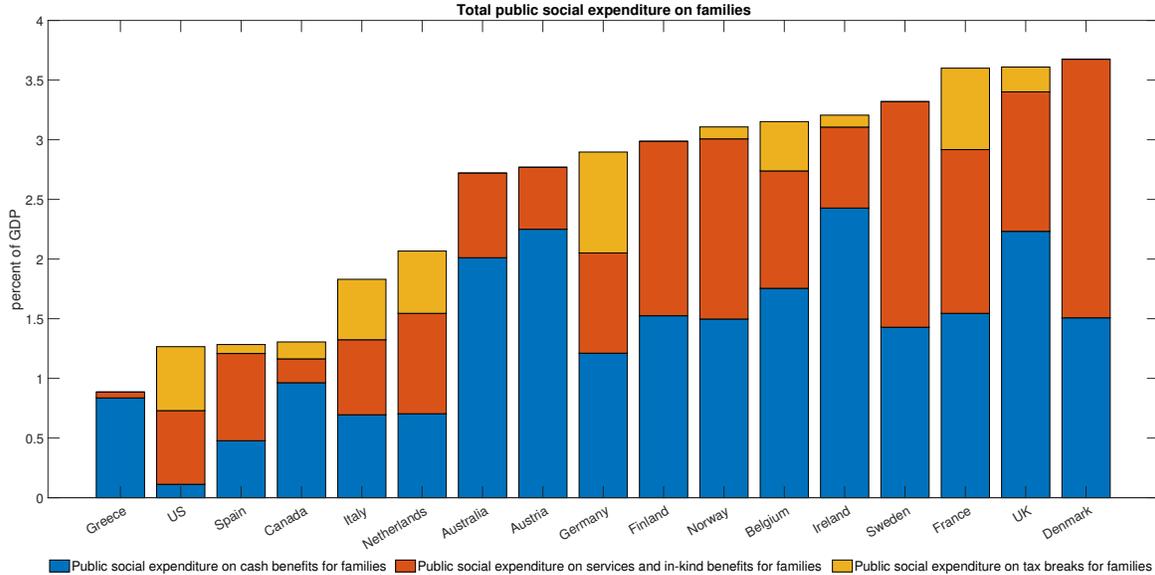


Figure 4: Total public social expenditure as a fraction of GDP and composition, 2000-2015 average. Source: Author’s calculations from OECD Family Policies Database.

2.2.1 Income Taxation

Income taxes are often excluded from the list of family policies that advocates and policy makers consider, yet modern tax and benefit systems contain many components targeted at families, such as tax credits for low-income parents and child benefits. If these benefits phase-out when income increases, this results in higher marginal income taxes for the recipients (Altig et al. (2020)). Additionally, marginal income taxes may vary with the gender and the household composition of tax payers. In progressive tax systems with *joint* taxation of married couples, as in the United States, the secondary earner in a household faces higher marginal taxes. In tax systems with *individual* taxation, marginal tax rates of married and single workers can still differ whenever the phase out of cash transfers and tax credits depend on household composition.

Using the conceptual framework, the marginal benefit of an additional hour of market work for the female partner will now be $W'(h_f)(1 - \tau_f)$, where τ_f denotes the marginal tax rate, compared to $W'(h_m)(1 - \tau_m)$ for the male partner. The presence of taxes will then affect the choice of hours by creating a wedge between untaxed work at home and market

work. Additionally, if the two partner's do not face the same marginal tax, the tax system will affect their comparative advantage in market versus home work, and distort the couple's internal division of labor. One additional factor, not captured in the conceptual framework, is that women tend to have higher labor supply elasticity than men (Blundell and MaCurdy (1999) and Keane (2011)). As a consequence, any disincentive effect of marginal taxes on labor supply is expected to be higher for women than for men, with normative implications for gender differentials in marginal tax rates (Alesina, Ichino, and Karabarbounis (2011)).

So how does the U.S. fare in terms of marginal taxes? One key feature of the U.S. tax system is joint taxation of income for married individuals. Since the tax system is also progressive, this implies that secondary earners, typically wives, face a higher marginal rate than primary earners, typically husbands. It also means that marginal taxes for a given worker will be different based on whether they are single or married.

To illustrate the position of the United States with respect to income taxation for families, Figure 5, Panels (a) and (b), show the married-single difference in marginal taxes at the average wage for the primary earner based on the employment status of their spouse, against the marginal tax for a single worker at the same wage, for individuals without children. Marginal taxes for married workers with a non-working spouse are higher than those on single workers at the same wage in most countries, but not for the U.S., where being married to a non-working spouse decreases marginal taxes relative to being single. On the other hand, the marginal tax faced by a worker with a spouse at the same wage is higher than if that worker were single, the so called *marriage penalty*. Additionally, though the U.S. has relatively low marginal taxes for singles, it imposes relatively high taxes on married workers with spouses earning the same wage. In summary, the labor income tax system in the United States favors one earner married households.

Now let's consider the impact of children. Figure 5, Panel (c) plots the children minus no-children difference in marginal taxes for married couples with both spouses at the average wage against the marginal tax for couples without children at the same wage.⁴ The U.S.

⁴The OECD Tax Database calculates marginal taxes by wage of each spouse for married couples with two children aged 4 and 6 years old, as well as marginal taxes for married couples with no children.

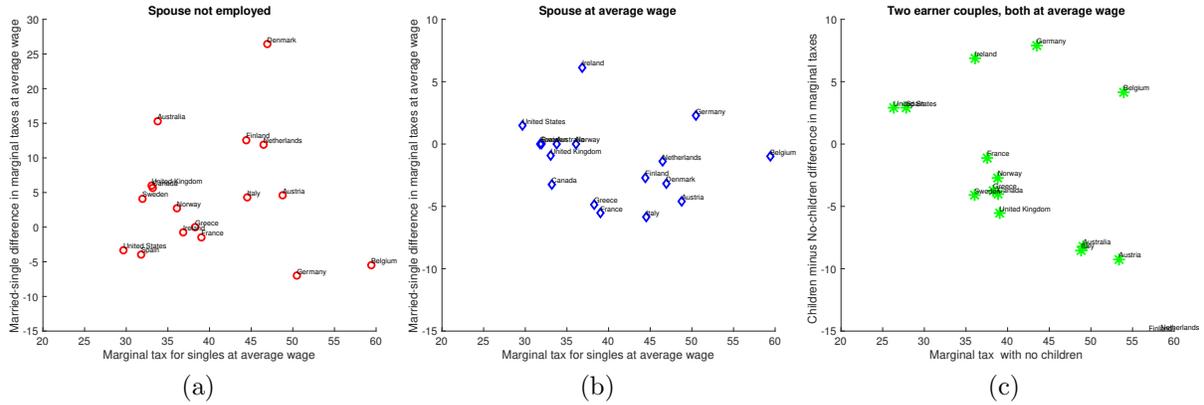


Figure 5: Difference in marginal taxes by marital status and presence of children, 2000-2015
Notes: Marginal taxes calculated for an increase in effort from 50 to 100 percent of full time work for individuals and couples without children. All values in percentage. Source: Author’s calculations from OECD Tax Database.

has a relatively low marginal tax on couples without children, but it displays relatively high increase in marginal taxes on the same couple with children. This behavior of marginal taxes results from phase-out of income based benefits and tax breaks associated with the presence of children, effectively rendering marginal taxes for married workers with children higher than for those without children. Due to the system of joint taxation, these high marginal taxes exert most impact on the behavior of secondary earners, typically wives.

Quantitatively, high marginal taxes for two earner couples and for those with children have substantial negative effects on women’s labor supply. Guner, Kaygusuz, and Ventura (2012) consider two revenue-neutral tax reforms, eliminating progressive taxation and replacing joint with single taxation. Both reforms stimulate the labor supply of married women, but the second has a much larger quantitative impact than the first, as women tend to be secondary earners. Borella, De Nardi, and Yang (2023) and Bronson and Mazzocco (2022) estimate structural, life-cycle models of household labor supply and document strong disincentive effects of joint taxation on female labor supply in the US. Kaygusuz (2010) finds that the 1980s tax cuts in the US can explain up to one quarter of the observed rise in the participation rate of married women. Internationally, Bick and Fuchs-Schündeln (2018) evaluate the contribution of international variation in tax systems to cross-country differences

in the labor supply of couples. Capturing differences in the tax treatment of couples, their calibrated model accounts for nearly 90% of the US–Europe gap in the working hours of married women.⁵

2.2.2 Childcare Support

Government support to families continues beyond childbirth in the form of subsidized childcare or preschool programs. These programs have the dual goal of enabling parents’ employment and enhancing child development. The support can come in the form of free publicly provided childcare and early education programs, or subsidies and tax breaks for expenses related to private purchases of such services.

Within our conceptual framework, any in-kind direct childcare support can be modeled as a no-cost increase in the market good used in home production. This decreases the marginal cost of market work for both partners and leads to an increase in market hours. Based on our working assumption that the female partner has a comparative advantage in the production of the home public good, this effect would be larger for women. Additionally, given the convexity of the earnings structure, an increase in market hours may lead to an increase in wages, which would further increase both women’s market hours and their earnings. Governments also provide childcare support in the form of direct subsidies and tax deductions. Direct subsidies reduce the relative price of the market good used in home production, to $(1 - s)p$ if s is the subsidy rate. The demand for home hours from the partners declines as a result, thus increasing market hours. Tax deductions have a similar effect, in this case the subsidy rate would correspond to the marginal tax for the secondary earner.

Table 3 reports childcare costs as a fraction of average income for couples and singles at the average wage levels.⁶ Childcare costs vary widely across countries, from a low of 7%

⁵The effect of marginal taxes on women’s labor supply depends on the value of the Frisch labor supply elasticities. Most of the macroeconomic literature uses values around 0.4-0.5, similar to the reduced-form estimates in Eissa (1995, Eissa (1996) for married women. However, several of the microeconomic estimates are substantially lower. Chetty et al. (2011) show that optimization frictions such as hours constraints and adjustment costs substantially attenuate micro labor supply elasticities.

⁶Childcare costs in the OECD Family Policies Database are calculated for couples working full time with two children age 2 and 3 year old in full time center based childcare facilities. They comprise household expenditure on childcare, net of any childcare related subsidies or transfers from the government.

of average income for Greece, to highs of over 30% for certain household types in Canada, Ireland and the United Kingdom. The United States has relatively high childcare costs, close to 25% of average income.

Table 3 reports the fraction of children enrolled in pre-primary education or primary school by age. This includes both private and public centers. Enrollment for 3-5 year olds is very high in all countries, ranging from 60% in Greece to 100% in France. However, enrollment is significantly lower for children aged 0-2 years old, ranging from 16% in Greece to close to 60% in the Netherlands. The United States is in the middle of the distribution for these two statistics.

Available studies suggest that assistance for childcare has a sizable impact on maternal labor supply (Attanasio, Low, and Sánchez-Marcos (2008), Domeij and Klein (2012), Bick (2016)). In particular, Guner, Kaygusuz, and Ventura (2020) consider dynamic costs and benefits of career breaks associated to parenthood and a wide set of policy tools, distinguishing between universal and means-tested childcare subsidies, whether conditional on parental employment or unconditional. They find substantial positive impacts of conditional subsidies on maternal labor supply, while unconditional subsidies would reduce it. Moreover, they find that means-testing leads to larger welfare gains by providing more generous transfers to low-income households. In country-level panel data presented by Olivetti and Petrongolo (2017), an increase in government spending in early childhood education and care is typically associated with higher female participation and lower earnings gaps.

2.2.3 Parental Leave

From a conceptual standpoint, paid parental leave is akin to a form of subsidized childcare, during which parents may still accrue wages and/or benefits, according to specific institutional arrangements. Any impacts of parental leave are intrinsically dynamic, and therefore they cannot be captured within our static model. However, the economics of parental leave are straightforward. Parents entitled to leave can return to their pre-birth job after a temporary interruption, which may encourage continuity of labor supply. At the same time, there may be future costs to parental leave whenever employment breaks lead to loss of la-

bor market experience, human capital depreciation or other career hurdles resulting in lower wage growth in the long run. The magnitude of these effects may depend on the individual's education, their occupation and the industry in which they are employed.

Table 3 reports weeks of paid job-protected parental and family leave for men and women. There is a wide variation across countries in weeks of maternal leave, with Finland granting the longest leave to mothers, up to 160 weeks of paid family and parental leave. Additionally, few countries have paid parental and family leave for fathers, usually with very short leave periods. The United States stands out as the only country that does not have any paid parental and family leave benefits for parents at the federal level.

Parental leave benefits were introduced and expanded in European countries starting in 1969 (Ruhm (1998)). In the United States, the Family Medical Leave Act (FMLA) of 1993 introduced 12 weeks of job-protected but unpaid leave, with very restricted eligibility requirements based on employer size and work history, leaving about half of employees uncovered. While there is no federal mandate in the U.S., legislation on parental leave is being gradually adopted at the state level. California introduced six weeks of paid leave under the Paid Family Leave Act in 2004. After California introduced paid leave in 2004, seven additional states (Connecticut, Massachusetts, New Jersey, New York, Oregon, Rhode Island, Washington), and Washington D.C. have legislation in place as of 2023, and Colorado passed legislation that will come into effect in 2024. ⁷

What do we know about the impact of parental leave? Based on international variation in parental leave provisions, Ruhm (1998) studies their impact on female employment and wages in nine European countries that introduced leave mandates during 1969-1993. Short leave entitlements around three months are associated with a 3 to 4% rise in employment rates, with little impact on wages, while longer entitlements around nine months lead to negligible additional impact on employment but a 3% decline in wages. The approach of Ruhm (1998) has been extended by later work to cover more recent years and a wider set of countries,

⁷Provision of paid parental leave by firms in the private sector has increased over the past two decades (see ?). Only large employers in the professional service and technical sectors have been offering such programs. They typically provide fewer benefits than government mandated programs in comparable countries and are only accessible to full-time high-wage employees.

with similar findings. A more recent literature examines the causal impact of maternity leave expansions for specific European countries using variation from natural experiments. In most cases, increases in available job-protected parental leave lead to earnings and work reductions in the short run, but they do not have long term implications for employment and wages beyond the first few years of motherhood. Results from the United States following the introduction of parental leave in California are more mixed (Byker (2016), Bailey et al. (2019)), and detect long-run impacts ranging between zero and negative on both wages and employment. This is consistent with career breaks having a detrimental impact on women’s earnings in some occupations in the United States (Albanesi and Olivetti (2009), Bertrand, Goldin, and Katz (2010), Goldin and Katz (2011a)). Overall, the evidence suggests that childcare support has more beneficial effects on maternal labor supply and women’s employment than longer or more generous parental leave.⁸

2.2.4 Workplace Flexibility Regulations

Until the broad adoption of remote work during and after the COVID-19 pandemic, workplace flexibility was mainly associated with access to a part-time schedule. Part-time entitlements include the ability to request part-time arrangements without penalty and the equal treatment of part-time and full-time workers. The OECD has developed a part-time generosity index, based on the right to demand part time work, the year in which such right was granted if available, whether part time work is treated equally to full time and when this equal treatment was introduced. The resulting ranking is reported in Table 3. The United States has no provisions supporting part-time, and indeed, as I previously discussed, there are sharp wage penalties to working relatively low hours, both at the high and low end of the wage distribution (Goldin (2015)). As a result, the United States ranked last in 2015 among the countries in our sample.

In our conceptual framework, the ability to request part-time work would amount to a

⁸Very few countries have parental leave benefits for fathers. Evidence suggests that take up of parental leave by fathers is extremely limited (Bana et al. (2022)). Andresen and Nix (2022) studies parental leave entitlements that are lost if a portion is not taken up by fathers, and finds that fathers rarely take up more than their reserved quota, with limited impact on the demand for maternal childcare.

lowering of the minimum work hours h and would increase labor force participation, even if lower hours are retributed at a lower wage rate. Equal treatment of part-time and full-time employees would entail no variation of wages with hours. Such equal treatment would generate further increases in the female partner’s participation. However, the model does not capture some possible pitfalls of extending part-time entitlements. To the extent that such entitlements are exercised more by women than men, they may generate negative incentives to hire or promote women.⁹

Table 3: Family Policies in Selected OECD Countries

	Part-time	Childcare costs		Weeks paid leave		School enrollment	
	Rank	Couples	Singles	Mothers	Fathers	Age 0-2	Age 3-5
Australia	13	30	14	8	1	39	69
Austria	9	9	7	72	16	17	88
Belgium	4	15	7	30	17	48	99
Canada	12	30	17	51	0	na	na
Denmark	16	11	7	50	4	55	98
Finland	11	22	20	160	7	27	73
France	1	17	7	37	10	50	100
Germany	8	9	8	61	6	27	93
Greece	2	6	6	33	0	16	59
Ireland	15	33	33	23	0	31	87
Italy	14	na	na	48	0	28	96
Netherlands	3	23	10	24	8	59	93
Norway	7	16	15	89	8	47	94
Spain	6	8	8	16	2	26	97
Sweden	5	7	6	59	10	47	94
UK	10	35	11	33	2	37	95
US	17	24	24	0	0	28	66
Non-US mean	na	18	12	50	6	37	89

Notes: Part-time generosity rank in 2015 based on equal treatment of part-time work, rights to demand part-time work and year in which these rights were extended. Childcare costs as percentage of average income for two earner couples both at average wage and singles at average wage. School enrollment is the percent of children enrolled in pre-primary education or primary school by age. All variables 2000-2015 averages except for part-time generosity rank. Source: Author’s calculations from OECD Family Policies Database.

⁹See OECD (2010) for a comprehensive discussion of part-time entitlements and their implications for employment and wages by demographic group.

2.2.5 Relation with Labor Market Outcomes

We now turn to the relation between labor market outcomes and family policies. While the impact of individual policies, such as marginal taxes or parental leave, on labor supply is clear, it is hard to draw broad conclusions about the joint impact of a broad set of policies. Additionally, adopted policies may be endogenous to social preferences of other factors at the country level that also affect labor market outcomes.

To examine the relation between the mix of family policies and labor market outcomes, I use a regression based approach following Blau and Kahn (2013). I use the logarithm of the female/male ratio of employment and labor earnings for 25-54 year old married individuals calculated from the Luxembourg Income Study as the main outcome of interest.¹⁰ The explanatory variables include all the policies I discussed. I also control for the logarithm of the female/male ratio of the same outcomes for single individuals to capture country specific differences in women's and men's behaviors that are common across married and single workers, that may be due to cultural preferences and social norms.

The estimated coefficients for this regression are reported in Table 5 in the appendix. These estimates capture the degree of association between each policy variable and the outcome of interest. The estimates suggest that higher marginal taxes are significantly negatively related to the female/male employment ratio, while total public social expenditures on families, the length of paid parental and family leave for fathers and the rank in the generosity of part time are positively related to this ratio. For the female/male earnings ratios, none of the coefficients for the policy variables are individually significant, though they are jointly highly significant.

I use these estimates to perform a simple counterfactual in the spirit of Blau and Kahn (2013). The country with the highest female/male ratio in employment for married workers over the sample period is Sweden. Using the estimated coefficients from the policy regression, I calculate counterfactual values for the female/male employment and earnings ratios in the other countries, if they were assigned the same set of policy values as Sweden. The biggest

¹⁰These ratios are for all married men and women in the population, not within couples. For details on the construction of this variable, see Albanesi, Olivetti, and Petrongolo (2023).

differences in policies between Sweden and the average of other countries are in for marginal taxes (6 percentage points lower in Sweden), childcare costs (8 percentage points lower as a fraction of average income in Sweden), longer paid maternal and paternal leaves (9 and 5 weeks longer, respectively) higher enrollment of children in pre-primary and primary education.¹¹

Figure 6 reports the difference between the counterfactual and actual female/male employment and earning ratios, where the countries are ordered by the difference in the employment ratios. The figure shows that being assigned Sweden's policies is associated with an increase in the female/male employment ratio of 2.5 percentage points and an increase of the female/male earnings ratio of 1.5 percentage points in the United States. Many countries experience larger gains in these ratios. For example, the female/male employment ratio rises by approximately 5 percentage points in Ireland and the Netherlands, approximately 10 percentage points in Spain and Greece, and of well over 15 percentage points in Italy. In most of these countries, the female/male ratio in earnings for married workers also increases with Swedish policies. However, there are also a number of countries in which the female/male employment ratio would decrease with Swedish policies. In most of these countries, the female/male earnings ratio would also decrease.

This exercise suggests that policy variation can account for a substantial fraction of the variation in female/male ratios in employment and earnings for married workers across countries, but there is no simple policy recipe that is associated with improvement of labor market outcomes for women. However, for the United States, closing the gap in family policies with Sweden, would be associated with a modest but meaningful rise women's gap in employment and earnings relative to men.

3 Lessons from COVID-19

The COVID-19 pandemic was a dramatic shock for the labor market, from the standpoint of both labor demand and labor supply. The change in lifestyle associated with the emergence

¹¹Column 5 in Table 5 reports the difference in values between each policy variable in Sweden and the average in other countries.

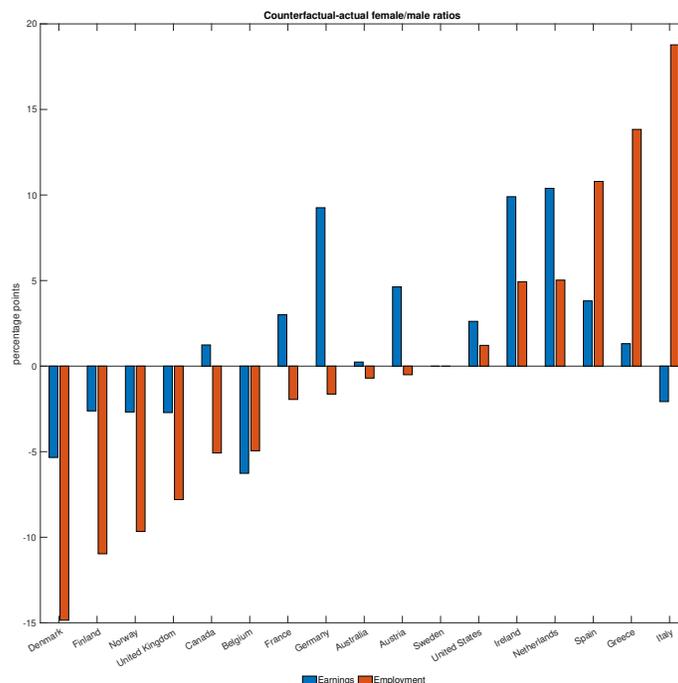


Figure 6: Policy counterfactual. Source: Author’s calculations from OECD Family Policies Database.

of the pandemic disrupted supply chains and generated a structural reallocation (Barrero, Bloom, and Davis (2020)) that is still taking place. The need to distance and reduce the risk of infection caused a shift to remote work for occupations in which this arrangement is feasible. Additionally, most schools switched to remote learning and childcare centers and early education facilities were not available for a period of time, leading to major challenges for working parents, especially mothers.

The labor market impact of the COVID-19 pandemic fell disproportionately on women. Albanesi and Kim (2021) show that High Contact occupations, that is those in which it is impossible to distance from customers and co-workers, and Inflexible occupations, in which it is hard to work remotely, were disproportionately female and experienced the biggest decline in employment. At the same time, within most occupations, employment fell more for women than for men, and the occupational distribution can only account for about one third of the additional decline in women’s compared to men’s employment and labor force participation. Throughout 2020 and the first quarter of 2021, the gender gap in the decline

of employment and labor force participation was greatest for single parents and married parents, conditional on age, education and occupation.

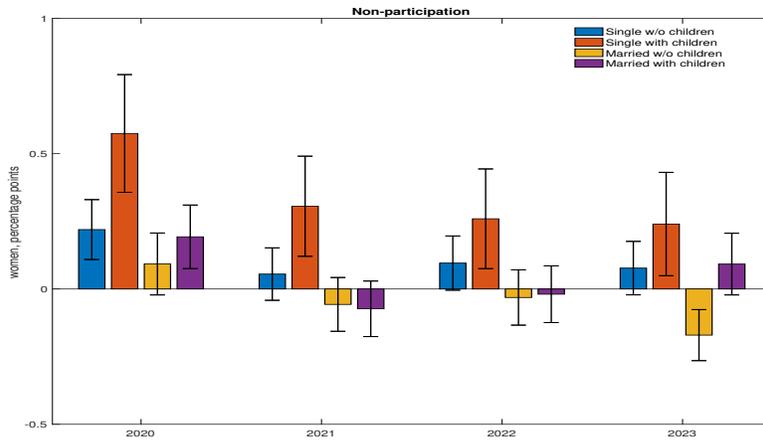
GOLDIN (2022) argues that the rise of remote work may have benefitted highly educated mothers with young children during the pandemic and many of them may have been able to continue working whereas this may not have been the case without this shock. While Albanesi and Kim (2021) find that overall, both single and married mothers experienced greater declines in employment and non-participation compared to fathers, Albanesi (2022) shows that most of the rise in non-participation for mothers during the pandemic stems from flows from unemployment rather than employment. This suggests that it is mainly the mothers who lost their jobs that exited the workforce during the pandemic, while those who were not laid-off managed to continue working.

I now document the extent of the post-pandemic labor market recovery by gender and examine some factors that are associated with this recovery to draw insights for the outlook for women's employment.

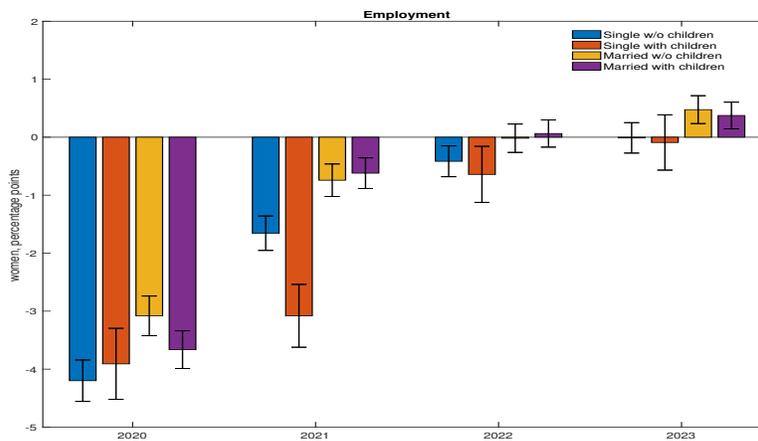
3.1 Labor Market Recovery

Figure 7, Panels (a) and (b), show the change in the fraction of prime age women not in the labor force and employment, controlling for age and education, as a difference from 2019 in each of the pandemic and post-pandemic years. The fraction of single mothers not in the labor force shows a persistent increase, even as the adverse effects on employment of the pandemic were erased by 2022, and married women experience higher rates of employment relative to 2019 in 2023.

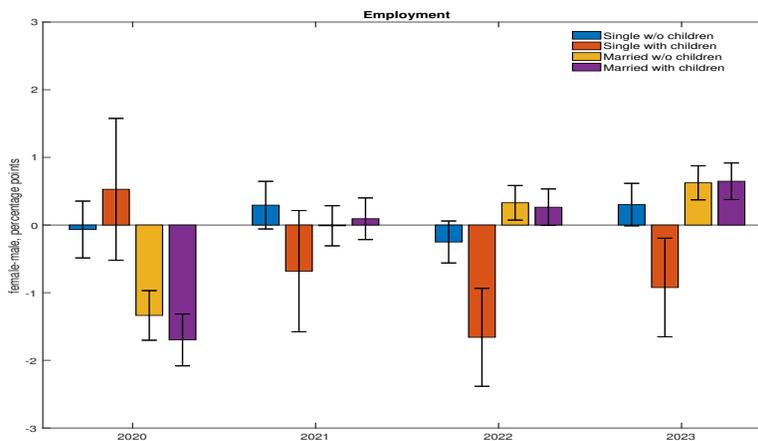
Figure 7, Panel (c), displays the female-male gap in the difference in employment relative to 2019, again controlling for age and education. While single mothers' employment has recovered less than single father's in 2022 and 2023, married women, both with and without children, show greater gains in employment than men in the same category.



(a) Women's non-participation



(b) Women's employment



(c) Female-male gap in employment

Figure 7: Changes in women's non-participation and employment relative to the 2019 by family status, controlling for age and education, 25-54 years olds. Error bars denote 90% confidence intervals. Individuals "with children" reside with children younger than 12 years old. See Appendix A.3 for details. Source: Author's calculations from Current Population Survey, Bureau of Labor Statistics.

3.2 Role of Occupations

Albanesi and Kim (2021) found that the occupational distribution was an important factor for gender gaps in the employment responses during the pandemic. In particular, occupations where it is possible to work remotely experienced smaller declines in employment. The adoption of remote work persisted beyond the pandemic and there is a large demand for remote work among all workers and especially women (Barrero, Bloom, and Davis (2021), Bick, Blandin, and Mertens (2023)). As the risk of infection receded after 2021, most workers with access to remote work embraced a hybrid schedule, where they split their time between in person and remote work. The acceptance of remote or hybrid work by many employers has injected a degree of flexibility that was not available pre-pandemic, because even in occupations where remote work was possible, such as most professional occupations, it was mostly not practiced and requesting flexibility led to large penalties in earnings (Goldin and Katz (2011a), Goldin (2015)). The increase in flexibility afforded by access to remote and hybrid work schedules may benefit women and other workers with caring responsibilities.

I now evaluate whether the diffusion of remote work is related to the change in employment between 2022, the first full year post-pandemic for which data is available, and 2019, for both men and women by occupation. I measure the propensity to work from home using the proxy of flexibility developed in Albanesi and Kim (2021), which uses occupational characteristics in O’NET to determine whether the tasks associated with an occupation can be performed remotely.

Figure 8 plots the 2022-2019 log change in the number of employed men and women by 2-digit SOC occupations in relation to the degree of inflexibility or inability to work remotely. For men, there is a clear negative relation between the change in men’s share in the occupation and the ability to work from home. For women, surprisingly, the relation appears to be positive owing to an increase in the share of women in Transportation and Material Moving, Construction and Healthcare Support, occupations that show very low propensity for remote work.

Table 4 reports estimated coefficients from a regression in which the dependent variable is

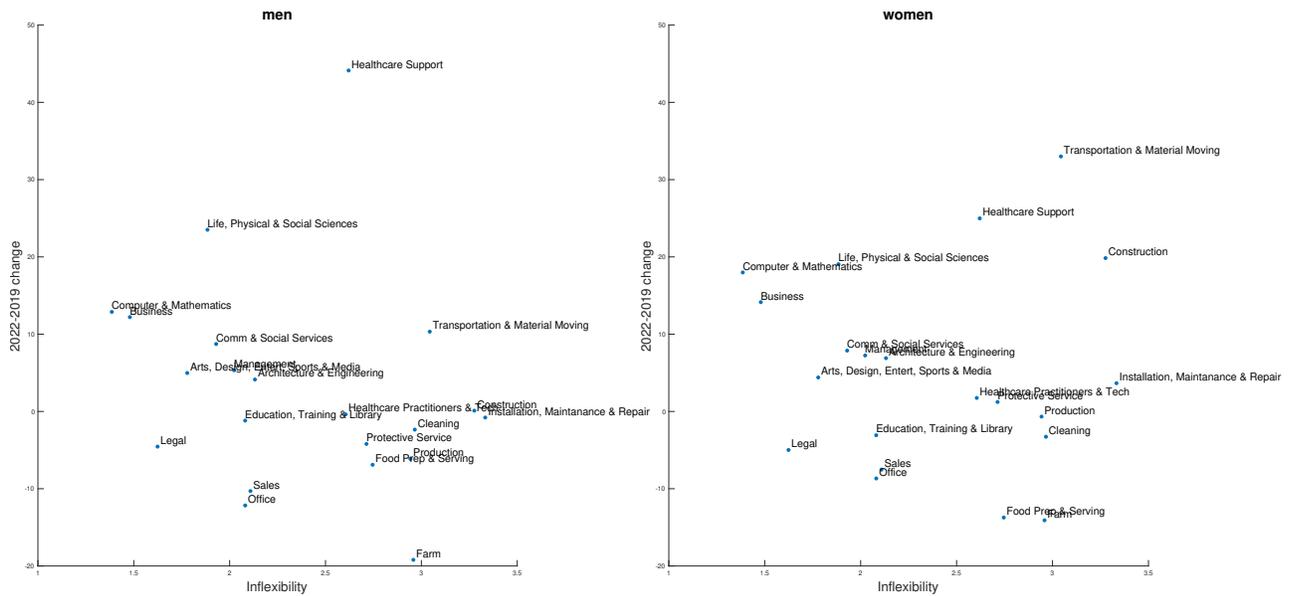


Figure 8: Change in employment relative to 2019 by 2-digit SOC occupations for 2022 by gender, population 20 years and over. Inflexibility measures the propensity of tasks associated with an occupation to be performed remotely, where high inflexibility corresponds to low propensity. Source: Author's calculations from Current Population Survey, Bureau of Labor Statistics.

the 2022-2019 log change in the number of employed individuals by gender in each occupation, and the main explanatory variable is the degree of inflexibility. To isolate this relation, I also control for additional occupational characteristics. First, I use the new question introduced by the Current Population Survey in May 2020, asking participants whether they worked remotely due to COVID-19 in the previous month.¹² Specifically, I calculate the fraction of women and the fraction of men that respond affirmatively on average in 2020.¹³ I then consider additional occupational characteristics that may affect the change in employment post-pandemic by gender. Albanesi and Kim (2021) show that the occupations that were most hit by the pandemic also display a high degree of susceptibility to automation. The labor shortages and the decline in labor supply following the pandemic, as well as the need to manage the risk of infection, may have increased the incentive to adopt labor-saving automation technologies in the recovery from the pandemic. I use the susceptibility to automation index developed by Autor and Dorn (2013), as adapted by Albanesi and Kim (2021). Finally, I also control for the fraction of women and the fraction of men employed in each occupation in 2019, since occupations are highly segregated by gender (Erosa et al. (2022)) and that may affect how appealing men and women find each occupation.

The estimates suggest that for both men and women, there is a strong negative relation between the change in employment and Inflexibility, suggesting that indeed employment increased more in occupations more amenable to remote work. Interestingly, the change in employment was positively related to the fraction of men in the occupation in 2019 and negatively related to the fraction of women, for both genders. This implies the male dominated occupations experienced a larger net inflow of both female and male workers. Other occupational characteristics are not significantly related to the change in employment.

These findings are consistent with the notion that increased flexibility stemming from the ability to work remotely is associated with a rise in employment post-pandemic, though this has occurred for both men and women. Additionally, occupations that do not allow for this

¹²See Bick, Blandin, and Mertens (2023) for a detailed discussion of this question.

¹³The two measures are related though the fraction in remote work in 2020 will reflect not just an occupation's amenability for remote work captured by the Inflexibility measure, but also any cultural or institutional constraints that may affect the actual incidence of remote work and are unrelated to the actual performance of the tasks associate with the occupation.

Table 4: Change in Occupation Distribution by Gender 2022-2019

	Men	Women
Constant	21.247 (0.37)	12.479 (0.67)
High Contact	2.1247 (0.79)	9.193 (0.34)
Inflexibility	-14.951 (0.06)	-16.498 (0.08)
Susceptibility to automation	2.3455 (0.85)	-6.3085 (0.68)
Fraction of men working from home due to COVID in 2020	-1.1393 (0.21)	-0.94458 (0.40)
Fraction of women working from home due to COVID in 2020	2.1076 (0.19)	1.4562 (0.45)
Percent of men employed in 2019	2.12 (0.09)	2.17 (0.16)
Percent of women employed in 2019	-1.65 (0.11)	-2.09 (0.11)
R-squared	0.485	0.367
Adjusted R-Squared	0.207	0.0259

Notes: Dependent variable: log change between 2022 and 2019 in the number of employed individuals in 2-digit SOC occupations. Population 25-54 year olds. P-values in parenthesis. Source: Author's calculations based on Current Population Survey, Bureau of Labor Statistics.

flexibility, such as Healthcare Support, Construction, Transportation and Material Moving, and Installation, Maintenance and Repair have experienced an increase in employment for both men and women. Other than Healthcare Support, these occupations are traditionally male dominated and also highly cyclical, typically experiencing large employment gains during economic expansions (Albanesi and Şahin (2018), Albanesi (2019)). This feature may have driven the rise in employment in these occupations in the recovery from COVID, despite their low amenability to remote work.

4 Discussion

What insights can we gain for the future outlook for women's employment? The changes in the earnings structure that contributed to the slowdown in the growth in women's partici-

pation in the last thirty years are likely to continue. However, for professional workers they might be mitigated by the increase in flexibility of work schedules associated with the rise of remote and hybrid work. The fact that both men and women seem to be attracted to remote work options limits the degree to which remote work might be stigmatized and considered a penalty for career advancement. However, remote work and the flexibility that it injects are for the most part only available to workers in managerial and professional occupations. An improvement in access to family policies, particularly those that would reduce childcare costs, and a change in labor income taxes that would reduce marginal taxes for secondary earners and for couples with children, would be instrumental in leveling the playing field in the labor market for men and women.

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A Appendix

A.1 Earnings Structure and Women's Participation

Figure 9: Slowdown in Married Women's Labor Force Participation by Husband's Income



Difference between actual participation in 1995-2004 and participation projected based on probit model estimated on 1975-1994 data, controlling for age and age squared, for married women age 25-54 by quintile of the married men's labor income distribution. Source: Albanesi and Prados (2022) with data from March Supplement of CPS.

A.2 Family Policies

Table 5: Relation Between Female/Male Ratios of Employment and Earnings and Policies

log f/m ratio married	Employment		Earnings		Counterfactual
	Estimate	p-value	Estimate	p-value	Policy difference
Constant	2.282	0.116	-1.759	0.170	
log f/m ratio singles	0.452	0.165	1.301	0.001	
Marginal tax married	-0.006	0.003	-0.002	0.683	-6.2
Childcare cost	0.001	0.630	-0.001	0.865	-7.9
Total public social expenditure on families	0.072	0.035	-0.011	0.856	0.9
Maternity and parental leave for mothers	0.001	0.209	0.001	0.234	8.9
Paternity and parental leave for fathers	0.012	0.003	-0.001	0.926	4.7
Proportion of children aged 0-2 enrolled	0.003	0.146	0.005	0.107	14.6
Proportion of children aged 3-5 enrolled	-0.002	0.253	-0.001	0.814	7.8
Part time generosity rank	0.006	0.063	0.007	0.203	-8.4
R-squared	0.863		0.651		
Number of observations	24		22		
Model F-statistic	9.78		5.35		
Model p-value	1.19E-04		0.00443		

Estimated coefficients of the relation between the female/male ratios in total annual employment rates and earnings for married workers 25-54 years old on marginal taxes for married couples, childcare costs and family policies. Marginal taxes are for married workers at the average wage with spouse at average wage, childcare costs are for married parents both at the average wage working full time. Counterfactual policy difference is between the average value of each policy variable for Sweden and the average of the same policy variable for all the other countries. Sample period 2000-2015. Source: Authors' calculations based on OECD and LIS data.

A.3 COVID-19

The dynamics of employment over during and after the COVID-19 pandemic are captured by the following regression:

$$y_{i,t} = \alpha + \sum_{\tau=1}^1 4_{\tau=1}\beta_{\tau} \times I(\tau) + \gamma I^i(f) + \delta I^i(m) + \eta I^i(c) + \nu X_t^i + \epsilon_{i,t}. \quad (1)$$

where i indexes an individual and τ is quarter indicator variable for one of two phases of the pandemic, with $\tau = 1$ corresponding to the first quarter of 2020 and $\tau = 14$ corresponding to the second quarter of 2023. The variable $I^i(f)$ is a dummy for gender, equal to 1 for female, $I^i(m)$ is a dummy for marital status, equal to 1 for married, and $I^i(c)$ is a dummy for children under the age of 12 present, equal to 1 if they are, and X_t^i include a set of controls for age, educational attainment and, in some specifications, occupation, as categorized in Albanesi and Kim (2021). Additionally, I include a full set of interactions between the phase effects

and the gender, marital status and presence of children dummies, and the age, education and occupation controls. The estimated value of α is the average value of the dependent variable for male, single, childless individuals in average in 2019. The coefficients β_τ estimate the change of the dependent variable between quarter τ and 2019. The coefficients on the interactions estimate the differential impact of the pandemic on individuals by gender, marital status and presence of children in each phase of the pandemic. I aggregate the quarter effects at the yearly frequency for clarity by calculating an average.