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DISCUSSION PAPER SERIES

IZA DP No. 17219

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ISSN: 2365-9793

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ABSTRACT

Closing the Gender Gap: Promoting Labour Market Participation*

In many countries, a significant share of the gender earnings gap stems not only from firm's practices, or self-selection into lower productivity jobs, but also from a lower participation among women. Inactivity around the age of motherhood is frequent including in the most advanced countries, and can have lasting consequences on the chances to return to the labor market, as well as future earnings and promotions. In this paper, we discuss the major barriers reducing women's labor force participation and examine the effects of several policies aimed at overcoming those barriers: parental leave, reserved paternal leave, state-funded childcare for young children, extended school hours, and individual taxation. For each, we provide a brief discussion of policy design and effectiveness.

JEL Classification: J16, J13, J22

Keywords: economics of gender, child care, time allocation and labor supply, labor market policy, maternal and paternal labor force participation, gender norms

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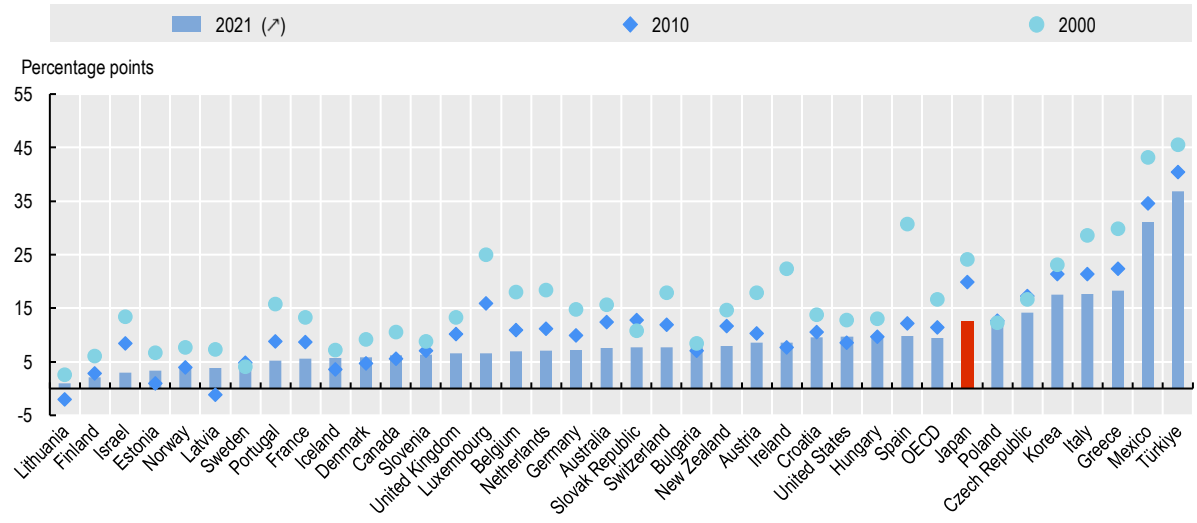
* This paper was prepared as a chapter in the Handbook on Labour Markets in Transition, edited by Stephane Carcillo and Stefano Scarpetta. We thank Jonathan Martelli for his excellent work as a research assistant.

1. Introduction

Women are less likely to be employed than men in almost all countries, including high-income countries. While gender gaps in employment are falling over time, progress is slow. While female employment was 16 percentage points lower than male employment across OECD countries in 2000, this gap had shrunk to 9.4 percentage points by 2021 (as shown in Figure 1).

Figure 1: Gender Gaps in Employment Rate in OECD Countries



Note: This figure shows the percent of men employed minus the percent of women employed in OECD countries in 2000, 2010, and 2021, among individuals aged 15-16. Data for 2000 refers to 2002 for Croatia. This figure is adapted from Figure 13.1 in the OECD report "Women at Work in OECD Countries" (Flutchmann and Patrini 2022). https://www.oecd-ilibrary.org/sites/152e4929-en/index.html?itemId=/content/component/152e4929-en#chapter-d1e17348-76fd9fa03d
Source: OECD Employment Database.

While differences in the treatment of men and women in the workplace contributes meaningfully to the gender earnings gap, a large portion of the gap can be attributed to lower labor force participation of women, particularly around the age of motherhood. Kleven et. al. (2019) estimate that in six OECD countries, mothers' long-run earnings decline relative to father's in the year that their first child is born. These earnings declines are persistent—reducing earnings over 10 years by between 21% (in Denmark) and 61% (in Germany). Indeed, Kleven et. al.'s estimates

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of the motherhood earnings penalty account for over 80% of the gender wage gap in all countries considered. While some of this reduction in earnings is due to discrimination against mothers in the labor market (Becker, Fernandes, and Weichselbaumer 2019), the majority of the reduction in earnings for mothers is a consequence of reduced hours of work throughout motherhood. While mothers increase their hours of work on average as their children get older, mothers continue to work fewer hours than do fathers and women without children through their late 50s (Goldin Kerr and Olivetti 2022).

Thus, effectively reducing differences in labor force participation between mothers and fathers may have substantial effects on the gender earnings gap. However, efforts to reduce these differences face three major challenges. First, many families, particularly highly-educated families, have high and increasing expectations for the amount of cognitive stimulation and active investment that children should receive (Doepke et. al. 2019). Thus, parents must either spend substantial amounts of time nurturing their children or access high-quality child-care providers through family, the private market, or the state. Second, cultural norms in most countries encourage mothers to take more responsibility for caregiving than do fathers. Thus, mothers adopt a disproportionate share of parenting responsibilities, and are thus able to provide fewer hours at work. Finally, reductions in women's earnings and workforce participation early in children's lives increase mother's comparative advantage in childcare, both by reducing earnings and by increasing parenting skill. Thus, shouldering a greater share of parenting responsibility early in children's lives increases the likelihood that a parent will continue to shoulder a greater share of the responsibility as children get older.

Several policy approaches have been attempted to address these problems. Policy makers have attempted to encourage women's re-entry into the workplace by providing paid leave following the birth of a child

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and by requiring employers to re-hire workers at their previous salary and title after returning from parental leave. They have attempted to encourage equality in the division of parenting responsibilities within the household by providing leave that can be taken only by fathers. They have attempted to reduce the overall burden, in time and effort, of parenting by providing free or subsidized child care and extending the school day. And they have provided financial incentives through changes to the tax code and to retirement benefits that encourage maternal employment.

In this paper, we will first discuss the barriers to women's labor force participation in greater depth and then review several policies that attempt to address these barriers. For each policy, we will identify best practices in the design of policies to promote women's participation in the labor market.

2. Barriers to Women's Labor Force Participation

In this section, we discuss several barriers to women's labor force participation: the rise of intensive parenting, cultural norms that encourage mothers to bear primary responsibility for children, and the role of intra-household comparative advantage in reinforcing a gendered division of labor. First, highly-educated households throughout the world have increased the amount of time, effort, and attention devoted to children. In the United States, mothers of children under the age of 6 spend an average of 8.8 hours per day caring or children as a primary or secondary activity, with fathers spending an average of 6.5 hours per day.[1] Furthermore, parents have increased the amount of time they spend caring for children over the past several decades in all OECD countries for which data are available (Doepke et. al. 2019).[2] These increases are

[1] Primary activities: https://www.bls.gov/news.release/atus.t09.htm, Secondary activities: https://www.bls.gov/news.release/atus.t10.htm

[2] Canada, Italy, The Netherlands, Spain, The United Kingdom, and the United States.

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particularly pronounced among educational activities, developmentally intensive time, and time focused primarily on children—parenting tasks that cannot easily be outsourced to childcare professionals (Altinas 2016). This increase has been led by more highly-educated parents. While American mothers with and without college degrees spent similar amounts of time with children in 1970 (Bianchi et. al. 2006), mothers with college degrees spent 50% more time with their children than did mothers without high school degrees by 2007 (Kalil, Ryan and Corey 2012). However, time spent with children has increased considerably among less-educated mothers in the past five years, suggesting that the trend toward high-effort, intensive parenting is broad-based and likely to persist (Cha and Park 2021). This trend toward intensive parenting is likely driven by increasing returns to children's cognitive ability—Doepke and Zillibotti (2019) show that this trend has been most pronounced in countries that have seen the largest increase in the college earnings premium. As a consequence, most households substantially reduce the amount of time that they spend at work after having children.

Second, mothers face social and cultural pressure to take primary responsibility for children. While attitudes toward gender roles have liberalized in the past several decades, mothers spend considerably more hours parenting children than do fathers across OECD countries (Craig and Mullan 2013). In part due to these gender norms, fathers show no average reduction in work hours following the birth of a child (Kleven et. al. 2019). Furthermore, mothers face the largest long-run earnings penalty in countries where larger shares of respondents say that it is better for children if mothers do not work (Kleven et. al. 2019). While mothers may take on primary responsibility for childcare in part because husbands earn more than their partners in more than three-quarters of marriages (Murray-Close and Heggeness 2018), evidence from several sources suggests that conformity to gender roles plays a dominant role in maintaining this inequality. Intra-household earnings differences produce far less specialization among same-sex couples than among

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heterosexual couples in both the United States (Black, Sanders, and Taylor 2007) and in Europe (Bauer 2016). Likewise, the distribution of husband and wife earnings in many countries suggests that heterosexual couples avoid having wives out-earn husbands, and husbands spend less time on home production when they earn less than their wives than they do in gender-equal households (Bertrand, Kamenica and Pan 2015). Notably, there is no evidence that heterosexual couples avoid having wives out-earn their husbands in East Germany, where decades of government policy placed equal pressure on men and women to participate in the labor market (Sprengholz, Weiber and Holst 2022).

Finally, reductions in women's earnings and workforce participation early in children's lives are maintained and magnified throughout childhood because they increase mothers' comparative advantage in child care. Mothers who spend a larger share of time providing child care than do fathers become more skilled at child care and related tasks at the same time that their wages fall relative to their partners'. As a consequence, it is less costly for mothers to provide parenting in later years than it is for fathers (Becker 1985, Grunow, Schulz and Blossfeld 2012). Likewise, expectations that women's earnings are likely to increase less than men's over time may lead couples to prioritize father's careers even when fathers do not earn more than their spouse prior to having children (Albanesi and Olivetti 2009), including by having women restrict their job search to jobs with short commutes (Albanese, Castro, and Tatsiramos 2022). Thus, differences in the costs or capabilities of providing childcare at one stage of the life-cycle are likely to heighten inequality in the allocation of parenting tasks throughout the life cycle. This dynamic can also extend outside of the household—the expectation that women will engage in more child care and less paid work than will men leads firms to discriminate against women in high-wage occupations.

3. Maternal Leave Policies

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In all high-income countries, mothers are provided some period of time after the birth of a child in which employers are required to retain them while on leave, allowing mothers to return to their job at the same rank and salary at which they left their job. In all high-income countries other than the United States, mothers retain part or all of their salary while on leave from their jobs.[3] These leaves are typically separated into two categories: maternity leave—intended to provide birth parents with time away from work shortly before and after work, and parental leave—intended to provide parents with time to care for a new infant. EU countries provide mothers with an average of 21 weeks of paid maternity leave and 43 weeks of paid parental leave.

While these policies are primarily intended to provide financial support to families of infants, they are also intended, in part, to encourage women to remain in the workforce in the years surrounding the birth of a child. By providing job protection to new mothers, these policies can increase the expected return of investment in human capital—especially firm-specific human capital—for women who intend to have children (Thomas 2024). As a result, these policies might be expected to increase labor force participation and wages for women prior to the birth of a first child and to increase the likelihood that women who leave the workforce after the birth of a child will return to the workforce at the expiration of benefits. However, these policies might also discourage female labor force participation in several ways. By providing a financial benefit contingent on leaving the labor force, these policies might increase the number of mothers that take a leave from work after having a child, and might encourage some mothers to take longer absences from the workplace than they would in the absence of parental leave policies. These absences may in turn make long-term reductions in workforce participation more

[3] California, Colorado, Connecticut, Delaware, Massachusetts, Maryland, New Jersey, New York, Oregon, Rhode Island, Washington, and the District of Columbia also provide paid family leave. https://www.ncsl.org/labor-and-employment/state-family-and-medical-leave-laws

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likely by depreciating women's skills in the labor market, by increasing their skill in parenting tasks relative to partners who remain in the workforce, and possibly by changing preferences for time spent at work and with children. In addition, because parental leave policies are costly for employers, these policies might increase discrimination against women of child-bearing age, particularly in roles where extended absence from the workplace is costly (Thomas 2024).

3.1 Critical Policy Elements

This mix of incentives suggests that the effect of parental leave policies is likely to be contingent on several factors. Effects may depend on the **length of leaves**—shorter leaves should have more positive effects than longer leaves. Likewise, effects may depend on **female labor force participation in the absence of policy**—parental leave should have more positive effects in environments where fewer women work after the birth of a child. Finally, effects depend on whether the analysis is carried out in the **short-run or the long-run**—long-run estimates are more likely to reflect positive effects on women's incentive to invest in human capital and negative effects on firms' incentives to hire women of child-bearing age for tasks with high firm-specific human capital.

The extensive empirical literature on the effect of parental leave on maternal employment largely bears out the prediction that short parental leaves have positive labor market effects, while long leaves have negative effects. Olivetti and Petrongolo (2017) use a two-way fixed-effects design to examine the effect of introducing or extending parental leave policies in 30 high-income countries, finding that extensions of leave to lengths of up to one year have positive long-term effects on women's employment and earnings, while extensions of leave to more than one year have negative effects. Estimates using higher-frequency data in single countries have largely confirmed this finding. While a one-year paid leave policy increased women's short-term employment by 12 percent (Kluve et. al., 2013), further extensions of

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paid leave have reduced women's earnings and employment (Schönberg and Ludsteck, 2014). Baker and Milligan (2008) find that Canadian province-level extensions of parental leave to between 29 and 70 weeks had modest and statistically imprecise positive effects on women's employment after the cessation of leave.

Similarly, empirical estimates provide suggestive evidence that the effects of parental leave policies on employment are smaller and more negative when parents have not been able to make occupation or human capital investment decisions on the basis of the policies—that is, in the years immediately after implementation, rather than in the long-run. While the adoption of short-duration paid family leave policies in California and New Jersey had no immediate impact on the labor force participation of women with children under the age of 5, both states saw increases in maternal labor force participation in the decade following adoption of paid family leave (Jones and Wilcher 2023).

In addition, methodologies that estimate longer-run effects of parental leave on maternal labor force participation tend to find larger and more positive effects than do methodologies that estimate effects on the first cohort of parents eligible for paid leave. Work on parental leave has largely adopted one of two strategies. The earlier strategy—adopted by Ruhm (1998), Thévenon and Solaz (2012), Del Rey, Kyriacou and Silva (2021), and Olivetti and Petrongolo (2017), estimates the effect of parental leave policies by examining multi-year, multi-country panels, typically covering several decades. These papers use a two-way fixed-effects design to compare the change in maternal employment in countries that have made parental leave more generous to changes in other countries that have not changed their parental leave policies. Because these designs include years that are a decade or more after the adoption of parental leave policies in their estimation designs, they implicitly estimate an average effect of the policies across early cohorts—who did not anticipate the policies when making occupation and human capital

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decisions—and later cohorts, who may have done so. Estimates using this methodology consistently find modest positive effects of short to medium-length parental leave policies.

In contrast, the later strategy—adopted by Kleven et. al. (2024) and Dahl et. al. (2016)—uses the timing of births to estimate a regression discontinuity design comparing households that gave birth immediately before a parental leave expansion to the timing of births immediately after a parental leave expansion. Because this approach examines effects of parental leave policies on the first cohort of parents exposed to these policies, it does not estimate the consequences of policy anticipation, either by employers or by workers who expect to take leave. Both Kleven et. al. (2024) and Dahl et. al. (2016) find no effect of parental leave policy expansion on female employment or earnings. This difference in estimates suggests that anticipation of parental leave may lead to important changes in mother's workforce attachment before children are born.

However, an alternative explanation is that the regression discontinuity approach more credibly accounts for trends in cultural norms, workplace flexibility, or other factors that may be associated with the adoption of more generous leave policies. This alternative explanation could explain why difference-in-difference strategies find positive effects of short-duration parental leave even in the short-run. For instance, Rossin-Slater, Ruhm, and Waldfogel (2013) find that maternal employment increased in California relative to other states in the four years following California's adoption of paid family leave. Bias from unaccounted-for cultural and economic change surrounding the adoption of leave policy could explain the similarity of Rossin-Slater, Ruhm, and Waldfogel's (2013) findings to the findings of long-term, cross-country comparisons. Future research should consider changes in the estimated effect of paid family leave policies by cohort explicitly in order to shed light on this question.

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Finally, there is some empirical evidence consistent with the hypothesis that paid family leave policies increase discrimination against women of child-bearing age—particularly in roles where reduction in work hours is costly. Huebener et. al. (2021) use administrative linked employer-employee data in Germany to show that women take shorter parental leaves when there are fewer workers in their work-groups of the same occupation (and thus fewer internal substitutes for their labor). Likewise, firms reduce their likelihood of hiring women of childbearing age into low-replaceability roles following an expansion of parental leave. Similarly, Thomas (2024) examines the effect of the United States' 1993 Family Medical Leave Act on women's work effort before and after having children and on the hiring decisions of firms. She shows that the FMLA increased women's work hours prior to having children—consistent with job protections increasing women's expected return on investment. However, she shows that employers are less likely to hire women of childbearing age into managerial roles following the adoption of the FMLA—consistent with employers no longer able to distinguish between women who are likely to continue working long hours after the birth of a child and those who will not (Thomas 2024).

3.2 Best Practices and Discussion:

Importantly, in no cases have parental leave policies been shown to have substantial positive or negative effects on female labor force participation. Olivetti and Petrongolo (2017) find that an extension of job-protected leave from 0 to 50 weeks would be expected to increase female labor force participation by only 1.6 percentage points. Likewise, while the introduction of unpaid family medical leave in the United States increased the probability that mothers remain with their pre-leave employer after giving birth (Baum 2003), there is no evidence that the introduction of job-protected leave increased overall female employment or earnings (Han et. al. 2009). Likewise, Kleven et. al.

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(2024) find that repeated expansions of parental leave in Austria from 1950 to 2000 had no effect on long-term female employment or earnings.

4. Paternal Leave Policies

One potential reason that maternal leave policies may have such disappointing effects on labor force participation is that these policies reinforce the norm that women ought to have primary responsibility for children. By encouraging mothers to take career interruptions and to bond with infant children, these policies increase women's comparative advantage in parenting. Because parental leave available to both parents is disproportionately taken by mothers, gender-neutral parental leave policies are also likely to reinforce gender norms. To address this, a majority of OECD countries provide non-transferrable parental leave to fathers.[4] While fathers are allowed to use a portion of parental leave in most countries, periods of leave reserved for fathers are typically short. The OECD average is 10 weeks, and Japan (52 weeks) and South Korea (54 weeks) are the only countries providing more than 31 weeks of reserved paternal leave.

4.1 Critical Policy Elements

These policies can affect maternal employment through a few channels. Most immediately, by increasing the availability of fathers during infancy, these policies could allow women to return to work sooner than they would absent paternal leave. In addition, by encouraging men to take short career interruptions in order to bond with and care for their children, the policies hope to increase men's attachment to their children and caregiving skill. Because increased male engagement with children reduces women's comparative advantage for parenting tasks, this might result in a more equal distribution of employment and household labor after the leave period is over. In addition, by encouraging leaves

[4] https://www.oecd.org/els/soc/PF2_1_Parental_leave_systems.pdf

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for men and women, these policies might reduce discrimination against women of childbearing age by reducing gender disparities in the risk of work interruptions. If the policies successfully induce men to spend more time and attention on parenting and less in the workforce, they would also reduce the signal value of gender for predicting the risk of reduced long-run engagement in the labor force after the birth of children. Thus, these policies could reduce statistical discrimination against women in investments of firm-specific human capital.

Most empirical evidence suggests that even short periods of paternal leave are broadly effective at increasing paternal parenting involvement, both during and after the parental leave period. In cases where leave-taking increases paternal involvement, paternity leave also appears to meaningfully increase women's time in the labor market. Using a difference-in-differences design that compares eligible fathers to those whose children were born prior to the policy, Farré and González (2019) show that the introduction of two weeks of paid paternity leave in Spain led fathers to do almost an hour more childcare per day in the three years following the birth of their child. Using a regression discontinuity design at the policy implementation date, Farré and González (2019) show that the introduction of two weeks of paid paternity leave in Spain led to a 5% increase in maternal employment in the two years after childbirth. Likewise, Patnaik (2019) finds that a 5-week "daddy quota" introduced in Quebec in 2006 increased father's leave-taking and father's long-term involvement in child care. Using time diary data collected 1 to 3 years after the birth of a child, Patnaik finds that exposure to paternal leave increased father's non-market work by almost 40 minutes per day, with increases in both domestic chores and childcare. This change had substantial benefits for maternal employment: Patnaik estimates that paternity leave increased women's employment rates and probability of being employed full-time by 5 percentage points, and increase mother's average time in paid employment by close to an hour per day. Kotsadam and Finseraas (2011) examine the effect of the

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1993 introduction of a four-week "daddy quota" in Norway on intra-household conflict, stated gender attitudes, and division of household labor 15 years after the policy went into effect. They find that having the opportunity to take parental leave reduced conflict over the division of labor and substantially increased the likelihood that couples share responsibility for household tasks. However, they do not examine effects on maternal employment.

However, not all evidence points to large or sustained changes in father's household involvement. Kleven et. al. (2024) find that a 1996 Austrian reform that required that six months of parental leave be taken by fathers had no effects on fathers' earnings and no effect on mothers' earnings or workforce participation after one year. Similarly Ekberg, Eriksson and Friebel (2013) find that while the 1995 introduction of a one-month paternity leave in Sweden increased average paternal leave-taking by 15 days (a 50% increase), it had no effect on the amount of time that fathers subsequently spend caring for sick children, and no effect on men's labor force participation.

4.2 Discussion and Best Practices:

Most evidence suggests that setting aside parental leave for the exclusive use of fathers or non-birthing parents can have large and long-lasting effects on the distribution of labor within the household. Even modest periods of paternal leave can increase father's attachment to their children and comfort caring for their children, in turn freeing mothers to return to the labor market sooner and for more hours than they would otherwise. However, these policies are effective only when fathers take parental leave and take on primary parenting responsibilities when on leave. This requires clear marketing of parental leave as an entitlement for fathers, as well as encouragement or requirement that parental leave be non-concurrent with maternal leave.

5. State-Financed Childcare

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A second set of policies focuses on reducing the demands of children on parents' time. For young children, this is typically accomplished by providing state-run or state-subsidized childcare for young children. These policies can promote maternal labor force participation by reducing the opportunity cost of work. While all OECD countries offer some amount of state-run or state-subsidized childcare for children under the age of 5, the details of these policies vary tremendously. The United States provides state-run child care through Head Start and Early Head Start—federal programs that provides child care and pre-kindergarten education for children of very low-income families below the age of 5, and provides state-level child care subsidies that are typically means-tested. In contrast, Sweden, Norway, Denmark and Finland provide state support for childcare for all children under the age of 5, with childcare services provided by regulated private entities but paid entirely or primarily by the government. Meanwhile, France[5] and Quebec provide state-run childcare facilities for children between the ages of 3 and 5.

5.1 Critical Policy Elements

The effectiveness of these programs in promoting maternal labor force participation depends on several factors. First, the effect of these policies depends on the **alternative care arrangements available** to parents absent state support. State-supported child care will increase labor force participation among mothers who would provide child care themselves in the absence of support, but will not affect labor force participation among mothers who would purchase child care on the private market or rely on friends and family for child care absent state support. As a result, the effects of state supported childcare is small for countries and sub-populations where maternal labor force participation is already high. Second, effects depend on **how state-supported childcare is apportioned**. Even in countries where eligibility for state-supported

[5] France also provides subsidies for privately-hired child minders and nannies.

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childcare is broad-based or universal, actual places in subsidized childcare may be rationed due to limited availability. If mothers with strong attachment to the labor market are more motivated to gain access to limited available spots than are mothers on the margin of employment, rationing may reduce the effectiveness of child care subsidies in increasing maternal employment.

Empirical research on child care availability has consistently shown that state-support for childcare increases maternal labor force participation in contexts with low prior labor force participation. For example, Nollenberger and Rodriguez-Planas (2015) show that 1990 and 1997 expansions of publicly subsidized full-time childcare in Spain led to substantial increases in maternal employment. Prior to the reform, only 8.5% of Spanish 3-year-olds were enrolled in child care and only 29.3% of mothers of 3-year-olds worked. The reform increased maternal employment by 9.6%, suggesting that more than 15% of mothers who used child care became employed as a result. Likewise, Haeck Lefebvre and Merrigan (2015) examine the effect of a subsidized child-care policy in Quebec that offered day-care spaces for $5.00 per day for children aged 4 in 1997, and expanded the policy to cover all children under age 5 in 2000. They estimate that the labor force participation rate for mothers of children aged 1 to 5 increased by 8 percentage points, from a pre-policy baseline of 57% (well below the Canadian average of 66%).

In contrast, state support for childcare has modest to no effects on maternal labor force participation in contexts where prior participation is high. For instance, Fitzpatrick (2010) examines the effect of Universal pre-kindergarten for four-year-olds in Georgia (in 1993) and Oklahoma (in 2004). In both states, 70% of eligible mothers were employed prior to the policy change—close to the current OECD average (OECD 2023). Fitzpatrick finds that universal pre-kindergarten increased enrollment in preschool by 12% but had no effect on maternal employment. Likewise, Michalopoulos, Lundquist and Castells (2010) show

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that a random control trial providing child care subsidies to moderate income families in Illinois had no effect on maternal employment, an effect that they attribute to the fact that over 90% of the control group was employed. Similarly, Lundin (2008) examines a 2002 reform in Sweden which expanded the capacity of child care facilities and capped the price that municipalities could charge for child care, with the central government paying the difference between the initial price and the capped price. At the time of the reform, more than 80% of children aged 3-6 and 60% of children aged 1-2 were already in publicly provided childcare facilities. While this reform modestly increased use of public preschools (Wikström 2007), it had no effect on rates of maternal employment (Lundin 2008). Finally, heterogenous effects of universal child care expansions also show that sub-groups with low maternal employment experience larger gains in employment than those with higher maternal employment. Cascio (2009) find that the adoption of universal kindergarten in the United States in the mid-1960s to late 1970s substantially increased employment among single mothers, with no effects on married mothers. Cascio estimates that among single mothers whose children enrolled in pre-school as a result of this policy, 40% entered the labor market. Meanwhile, she shows that married mothers exhibited significant substitution away from private schooling toward public kindergarten, but had modest employment effects.

Existing evidence also supports the hypothesis that state support for child care is more likely to raise maternal employment when there are relatively few barriers to accessing care—reducing self-selection. For instance, Havnes and Mogstad (2011) find that a large expansion of heavily subsidized public child care in Norway in 1975 had no effect on maternal employment, despite the fact that Norway's maternal employment rate was only 50% at the time of the expansion. Havnes and Mogstad note that, while all households in Norway were eligible for this subsidized child care, the supply of child care was insufficient to meet demand both before and after the reform. As a consequence, households with

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mothers who intended to work regardless of the policy were likely overrepresented among those who gained access to the child care. In contrast, Bauernschuster and Schlotter (2015) find that a 1996 reform in Germany that made access to highly-subsidized childcare universal for children aged 3 to 6 substantially increased maternal employment. Prior to this reform, childcare centers were highly over-subscribed in West Germany, but not in East Germany. As a consequence, West German mothers who wanted access to state-supported child care needed to request spaces early and in multiple centers. After the reform, the government committed to fully meeting demand for child care across the country—likely increasing usage primarily among mothers who were less motivated to access care. The authors estimate that the reform increased maternal employment by 6.5 percentage points, suggesting that 36% of mothers whose children were enrolled in kindergarten as a consequence of the policy became employed as a result.

5.2 Discussion and Best Practices

As discussed above, state subsidy for child care is most effective when subsidies are targeted at mothers who are likely to work if provided with low-cost child care, but who will not work in the absence of such child care. A key challenge for these programs is that the mothers who are most motivated to take advantage of these policies are those who are likely to work even in the absence of subsidized child care. As a consequence, these policies are most likely to increase maternal employment when directed at communities where maternal employment is low. Likewise, these polices are likely to be most effective when policy makers avoid overcrowding, waiting lists, and other barriers to the utilization of subsidized child care, because these barriers are likely disproportionately discourage the households who are most likely to respond to the policy.

6. Extended School Hours

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State support can also substitute for parental time among older children through policies to extend the school day to match the length of the work day. In most countries, children between the ages of 6 and 18 can attend free, universal, schooling from the early morning until the early afternoon. However, the school day typically ends several hours before parents finish their work day. As a consequence, parents must either leave work early to care for children after school, enroll children in after school programs, or pay for after school child care. As a result, providing free after school activities or extending compulsory school hours to match the work day can plausibly increase employment rates for mothers of school-aged children and increase hours of work for employed mothers.

6.1 Critical Policy Elements

The expected costs and benefits of extended school days are quite similar to those of state-financed childcare. As with state-financed childcare, targeting extended school hours is a key challenge—policies are most cost-effective if they target parents who are unlikely to work or unlikely to work full-time without policy intervention, but parents who are likely to work regardless of the policy are most likely to take it up. As a consequence, extended school days are most likely to affect maternal employment in contexts where maternal employment is low and where access to extended school days is easily available. However, extended school days differ from state-financed childcare because the cost of caring for older children is considerably less than that of caring for younger children. For the state, providing adequate child care for children younger than school age requires a high ratio of care-givers to children, resulting in high overall costs of child care programs and high marginal costs. In contrast, after-school programs for older children can be provided at high quality with a much lower ratio of instructors to students, reducing overall costs and especially reducing marginal costs in contexts of relatively low take-up. At the

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same time, because the cost of caring for older children is also lower for parents, school day extensions are likely to have a smaller effect on the costs and benefits of employment than do state-financed childcare programs. Older children can be more easily left in the care of a relative, placed in private after-school programs, or left unsupervised—more than 20% of US elementary school children[6] and 25% of UK elementary school children (Pearce et. al. 2014) spend are unsupervised after school. In addition, while mothers of older children have a higher employment rate than do mothers of younger children, mothers of older children who are not employed are more likely to have had an extended absence from the workplace (Turon 2023). As a result, the elasticity of maternal labor supply is likely lower for parents of older children.

While the empirical literature on the effect of extended school days on maternal labor supply is sparser than the literature on child care for young children, the available evidence suggests that programs that extend the school day or provide after-school programs are most likely to affect maternal labor force participation when coverage is universal and cost of participation are low—consistent with the hypothesis that mothers with the largest treatment effects are least likely to gain access to these programs. For instance, Contreras and Sepulveda (2017) show that a reform in Chile that lengthened the mandatory school day by three hours for children between the ages of 8 and 13. They find that this reform increased labor force participation among single mothers of children in the affected age range by 4 percentage points from a baseline of 68%, but had no effect on the labor supply of married mothers or of mothers with younger children. In contrast, Dehos and Paul (2023) show that an massive expansion in the availability of after-school programs in West Germany—from covering 1% of primary-school children in 2002 to covering 22% by 2012—had no effect on maternal employment or on hours worked. Because nearly all after-

[6] https://www.afterschoolalliance.org/documents/AA3PM-2014/AA3PM_Key_Findings.pdf

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school programs had a waiting list, this reform only affected the fifth of households who signed up earliest for after-school programs. If these households represent the most motivated fifth of German households, they may have been households with mothers who already intended to work full-time.

In contrast, policies that extend the school day to five days per week show more consistently positive effects. For instance, Duchini and Van Effenterre (2020) examine the effects of a 2013 French reform that reallocated some of children's class-time to Wednesday mornings, rather than concentrating class time in four days per week. The reform replaced instructional hours on other weekdays with three hours of free, optional extracurricular activities. They find that this reform increased the likelihood that mothers work a five-day workweek by three percentage points, with most of this increase coming from mothers who shifted from part-time to full-time work contracts. Further, it increased mothers' average monthly wages by 3%. Because this reform had no effect on the work schedules of fathers, this reform reduced the gender wage gap among parents of elementary-school children by 6 percentage points. Similarly, Ward (2019) examines the effect of adopting a 4-day school week in rural school districts in the United States. Ward finds that this shift reduces maternal employment by 7.6 percentage points, with reductions coming entirely from married mothers.

6.2 Discussion and Best Practices

While empirical evidence on extended school days is limited, the best available evidence suggests that extended school days can increase maternal employment. These policies are likely to have the largest impact when they are universal, to avoid negative selection. In addition, policies that ensure that children have care for the majority of the work day for five days per week have larger impacts than do policies that extend the school day.

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7. Tax and Retirement Policy

A final set of policies can influence women's labor force participation by reducing effective marginal tax rates on second earners. Because women earn less than their spouses in more than three-quarters of marriages (Murray-Close and Heggeness 2018), progressive taxes based on household incomes tend to impose larger marginal taxes on married women than they would face as unmarried individuals.[7] Likewise, retirement benefits that take into account spouse earnings, such as the Social Security Spouse Benefit in the United States (Borella et. al. 2023), reduce the marginal return to work for mostly-female secondary earners.

7.1 Critical Policy Elements

The degree to which married women's real hourly earnings are influenced by these policy choices depends on the characteristics of the tax system as well as the characteristics of the household. In most progressive tax schemes, the effect of marriage on a woman's marginal tax rate will be higher when the woman's spouse's income is larger and the woman's own income is lower. As a consequence, tax policies might be expected to play a large role in the work decisions of spouses of high-income men who have a weak attachment to the labor market. In addition, due to means-tested benefits like the Earned Income Tax Credit in the United States, the Prime D'Activité in France or the Working Tax credit in the UK, effective marginal tax rates are often higher for very low-income households than for households elsewhere in the income

[7] The use of household income for determining taxes, benefits, and retirement varies considerably among OECD countries. While a majority of countries require individuals to file their own tax returns regardless of their marital status, Belgium, Switzerland, France, Greece, Luxemburg and Malta require married households to file a joint return. Meanwhile the United States, Germany, Spain, Ireland, and Portugal allow couples to file taxes individually or jointly, with tax brackets for married individuals filing individually differing from those for single individuals (Deloitte 2017).

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distribution. As a result, tax and benefit systems may also have a larger-than-average effect on the labor supply decisions of very low-income women.

Estimates of the effects of tax and benefit systems on women's employment have to contend with several empirical challenges, common to the literature on responses to taxation. First, the short-run and long-run responses to taxation may differ considerably. Households that anticipate facing high taxes in the future may report more taxable income ahead of tax increases, exaggerating estimates of short-run responses to taxation. At the same time, short-run responses to tax policy may be much smaller than long-run changes, both because tax rates will affect human capital decisions in the long-run (Saez, Slemrod and Giertz 2012) and because households may not understand new tax policies well enough to respond to them (Chetty, Friedman and Saez 2013). In addition, many households may not understand or react to distinctions between marginal and average tax rates even from long-term, relatively simple tax policies (Feldman, Katuscak and Kwano 2016). As a result of these factors, reduced-form estimates of policy responses that measure the short-run effects of policy changes may differ considerably from the long-run effects of the same tax policies over the life-cycle. Due to this limitation, much of the work on responses to taxation has relied on the use of structural models calibrated to explain household behavior well enough to estimate behavior under various counter-factual policies.

These structural estimates of the effects of joint taxation and spousal retirement benefits on women's labor supply consistently find that household taxation and retirement benefits based on spousal earnings have large, negative effects on female employment. For example, Borella et. al. (2023) construct a dynamic life-cycle model of household earnings that incorporates all marriage related taxes and benefits in the United States into a unified framework. By simulating counterfactual policy regimes in their model, they estimate that eliminating spousal social

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security benefits would increase the labor market participation rate of married women by 10 percentage points from ages 25-60. Likewise, they estimate that eliminating joint income taxation would increase women's labor force participation rate by more than 20 percentage points through age 35 and by 10 percentage points from age 35 to 60. Meanwhile, eliminating both marriage-related tax and benefit provisions would raise labor market participation of married women by between 15-28 percentage points through age 62. Similarly, Guner, Kaygusuz and Ventura (2012) find that eliminating joint taxation would increase the labor supply of married women by 10%, and of married women with children by 18%. Kabátek, Van Soest and Stancanelli (2014) arrive at more modest estimates of switching to individual taxation in France, estimating that this would increase women's labor market hours by 3.7% while reducing their hours of housework by 2%, with smaller changes in the opposite direction for men.

These estimates are largely consistent with the limited reduced-form estimates of the effects of shifts between individual and joint taxation systems. For instance, Selin (2014) shows that a 1971 Swedish reform that eliminated joint taxation increased employment among women of high-earning husbands—who had faced the highest marginal tax rates under the joint taxation regime. Likewise, Crossley and Jeon (2007) show that a 1998 Canadian reform that replaced a spousal tax exemption with a non-refundable tax credit increased labor force participation among wives of high-income husbands by 10 percentage points. Likewise, shifts from individual to joint taxation schemes have reduced labor force participation. Lalumia (2008) shows that the introduction of joint taxation in the United States in 1948 reduced married women's labor force participation by 2 percentage points, with the decline coming entirely from wives of high-income husbands. Likewise, Kalíšková (2014) shows that the introduction of joint taxation in the Czech Republic reduced employment of married women with children by 3 percentage points, with spouses of college-educated husbands reducing employment by 6 percentage

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points. Reduced-form evidence also suggests that low-income mothers are highly responsive to work incentives in the tax code. For instance, Chetty, Friedman and Saez (2013) exploit differences in knowledge about the work incentives of the Earned Income Tax Credit in the United States to show that mothers substantially increase earnings in order to receive the full value of the tax credit.

7.2 Discussion and Best Practices

Most available evidence suggests that high-income and low-income women are fairly responsive to tax and benefit incentives. As a result, policy-makers may be able to encourage increases in women's labor supply by requiring married individuals to file taxes individually, conditioning retirement benefits only on individual income, and reducing marriage penalties in the design of means-tested transfer programs. However, there are a few reasons to conclude that the empirical literature on these policies may overestimate their effects. While structural estimates can address questions that are unavailable to reduced-form researchers, estimated policy effects emerging from these models will not incorporate factors like imperfect information or social resistance to women earning more money than their husbands unless those factors are explicitly included in the models. As a result, they may have a tendency to over-state the effects of changes in tax policy. Meanwhile, reduced-form estimates of women's responsiveness to tax policy changes examine policy changes that occurred several decades ago, in a context of rising female labor supply. However, women's elasticity of labor supply with respect to their own and their spouses' incomes have been falling since the 1990s (Blau and Kahn, 2007) and women's labor supply has stopped growing in most developed countries (OECD 2023). As a consequence, future tax and benefit policy changes may have effects smaller than those suggested in prior literature.

8. Concluding Remarks

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As we have discussed in this paper, well-designed policy can promote women's workforce participation by reducing the difficulty of re-entering the labor market after having children, by reducing the time and financial burden of parenting through state support, and by encouraging fathers to take on a larger share of parenting responsibilities. However, the effectiveness of public policy in promoting labor force participation depends strongly on the design of the policy and the context in which the policy is implemented. While paid family leave can promote re-entry of mothers into the labor market after completing leave, leaves of more than one year can depreciate mother's human capital and increase discrimination against women of child-bearing age. Parental leave reserved for fathers can promote greater gender equality in the division of parenting and paid work, but does not provide a benefit for single mothers. Provision of child support, extended school hours, and tax incentives for female labor force participation are all more likely to affect mothers who are marginally attached to the labor force than those that are more strongly committed to the labor force. As a result, all of these policy approaches are likely most effective when provided in a simple, universal way that minimizes self-selection, and least effective in countries with already-high levels of female labor force participation.

However, much of the gap between mother's and father's labor force participation is unlikely to be resolved through any of the policies discussed in this paper. Women have substantially lower labor-force participation than men in every OECD country (OECD 2023), demonstrating that no as-of-yet existing combination of labor market policies has eliminated all barriers to women's employment. As a result, policy makers may want to consider how to shift culture and norms around gender, in addition to considering how to create better incentives for women to enter or re-enter the workforce.

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We can find insight on the question of how to shift culture and norms from a growing body of research considering how gender norms are formed and how they change. Several studies have examined the role of early childhood experiences on the formation of gender roles. For instance, Fernandes, Fogli, and Olivetti (2004) shows that the sons of women who were pulled into the workforce during World War II were more likely to have wives who worked, suggesting that increases in women's labor market participation can have inter-generational effects on cultural norms and expectations. Likewise, Olivetti, Patacchini and Zenou (2018) show that young women in the United States are more likely to work after having children and less likely to feel that work interferes with family responsibilities if a larger share of their high school peers' mothers worked.

Gender norms are also affected by environments directly shaped by policy—particularly school and classroom environments. Girls score better on STEM subjects and request more demanding high schools when in classrooms with less gender-biased teachers (Carlana 2019). Likewise, Schneeweis and Zweimüller (2012) find that girls who attend all-girls schools are more likely to major in STEM. School environments can also reinforce gender stereotypes—Cools, Fernández and Patacchini (2022) find that girls in a school cohort with high-achieving boys are less likely to attend college and have lower labor force participation. Similarly, Brenøe and Zölitz (2020) find that, for students attending mixed-gender schools, girls are less likely to major in STEM and boys are more likely to major in STEM when placed in cohorts with more girls.

Some evidence suggests that active and intentional intervention in the formation of gender norms in the classroom can be effective. Dhar, Jain, and Jayachandran (2022) show that an Indian program encouraging adolescent students in extended and repeated discussions of gender equality led boys and girls to adopt and maintain gender-inclusive attitudes. Similarly, Ashraf et. al. (2020) show that providing Zambian

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girls with negotiation training improved educational outcomes over the course of three years. Classroom interventions can shape attitudes and behavior in developed countries as well—female undergraduate students in the United States became more likely to major in economics when introduced to successful female economics majors in their introductory courses (Porter and Serra 2020).

In addition, attitudes about women's employment can be affected by the observed diversity of major professions. Battaglini, Harris and Patacchini (2023) show that random assignment to cases with female judges increases the likelihood that male judges hire women for entry-level positions. Similarly, Riise, Willage and Willen (2022) show that Swedish girls who are assigned a female primary care physician are more likely to choose male-dominated education programs in high school—particularly programs in STEMM. This work suggests that small increases in women's labor force participation can spur larger changes by increasing the visibility of women's careers. Likewise, it suggests that intentional efforts to diversify important, visible positions in society can meaningfully influence gender norms.

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