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Families, Labor Markets and Policy

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Abstract

Using comparable data for 24 countries since the 1970s, we document gender convergence in schooling, employment and earnings, marriage delay and the accompanying decline in fertility, and the large remaining gaps in labor market outcomes, especially among parents. A model of time allocation illustrates how the specialization of spouses in home or market production responds to preferences, comparative advantages and public policies. We draw lessons from existing evidence on the impacts of family policies on women's careers and children's wellbeing. There is to date little or no evidence of beneficial effects of longer parental leave (or fathers' quotas) on maternal participation and earnings. In most cases longer leave delays mothers' return to work, without long-lasting consequences on their careers. More generous childcare funding instead encourages female participation whenever subsidized childcare replaces maternal childcare. Impacts on child development depend on counterfactual childcare arrangements and tend to be more beneficial for disadvantaged households. In-work benefits targeted to low-earners have clear positive impacts on lone mothers' employment and negligible impacts on other groups. While most of this literature takes policy as exogenous, political economy aspects of policy adoption help understand the interplay between societal changes, family policies and gender equality.

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1 Introduction

The second half of the twentieth century has witnessed a spectacular rise in women's participation to the labor market in most of the developed world, together with gradual gender convergence in wages and earnings, and the entry of women in occupations traditionally occupied by men. These developments have generated a vast body of work, studying women's changing role in the economy and the underlying driving forces (see Goldin 2006 and recent surveys by Olivetti and Petrongolo 2016 and Blau and Kahn 2017). A widely documented trend is the female gain in human capital accumulation, leading to narrowing and then reversing gender gaps in college completion rates. As women's labor market experience increased, their college majors became more relevant to their employment, and their education and professional degrees expanded. Meanwhile, medical advances have reduced fertility and delayed marriage via the introduction of oral contraceptives and improved maternal health, and provided substitutes to maternal lactation. Besides gender-specific trends, gender-neutral changes such as the rise in the service economy were creating cleaner and less physically demanding jobs in which women have a comparative advantage, whether innate or acquired. These changes were accompanied by the evolution of gender identity norms, which gradually reshaped women's aspirations and societal perceptions about appropriate gender roles in the household and the labor market. Women's changing role in the labor market has also generated and was often eased by government intervention and firm policies targeting families and in particular providing women with means to combine careers and motherhood.

Despite decades of progress, sizable gender gaps remain in most indicators of labor market success. Women in the US earn about 18% less than men (on an hourly basis) and their employment rates are 10 percentage points lower. In the UK, gender differences closely replicate the US picture, with a 20% wage gap and an employment gap of 9 percentage points. In most of continental Europe wage gaps are narrower, but – except in Nordic countries – employment gaps are substantially larger. Importantly, a large portion of gender inequalities in employment and earnings seems to be explained by the presence of children, as parenthood produces sizable and permanent setbacks in women's careers, while being roughly neutral to men's careers.

The causes of remaining gender inequalities, as well as their cross-country variation, are actively debated in current research in labor, household and macro-economics. In

the early work, household and labor perspectives on gender developed along relatively disjoint paths. Bergstrom (1997) in the Handbook of Population and Family Economics reviewed theories of household decision making, whereby preferences, wage rates and comparative advantages – taken as given – determine the allocation of spouses' time between market and domestic work. Altonji and Blank (1999) in the Handbook of Labor Economics discussed the emergence of gender gaps in earnings based on differences in productivity and preferences and discrimination, with the acknowledgement that lack of direct evidence on gender preferences and discrimination was an obstacle to cleanly differentiate among the role of these three forces. Meanwhile, the growing influence of (social) psychology in economic research provided economists with novel approaches and data to investigate gender differences in preferences and behavioral nuances, as well as novel explanations based on group identity and social norms (see Bertrand 2011 in the latest Labor Handbook volume). A strand of recent work has built on insights from both labor and household research to investigate the asymmetric consequences of worklife balance considerations for the careers of men and women, with an emphasis on the career costs of fertility and gender differences in the value attached to job amenities (see the discussions in Bertrand 2018, 2020). The view that remaining gender gaps in the labor market may reflect barriers to women's entry in certain professions or education tracks has attracted the focus of some recent work to the allocative consequences of the gendered division of work (Hsieh et al., 2019; Ashraf et al., 2022).

This Chapter brings together these strands of work by discussing theories and evidence on interactions between families, the labor market and public policy. We start by illustrating in Section 2 the most salient gender trends in human capital accumulation, employment, earnings, and family formation. We will cover evidence from a large set of OECD countries since the 1970s, bringing together comparable country-level sources from Censuses of Population and household surveys covered in the Luxembourg Income Study. The big picture that emerges from our data work is one of clear gender convergence over the past five decades in educational attainment, employment and earnings, accompanied by a decline fertility and a delay in marriage. Cross-country differences in the speed of change and remaining gender gaps are nevertheless suggestive of the role of country-specific factors such as local institutions and culture. While our sample includes a few middle-income countries, we need to acknowledge that our analysis is primarily

representative of trends and policy questions in the developed world (see Anderson and Bidner 2023; Bau and Fernández 2023 in this volume for a discussion of family rule in the global context and Jayachandran 2015 for a review gender inequality in the developing world).

Section 3 introduces a conceptual framework for the time allocation of spouses, in which gender specialization in domestic or paid work may result as an outcome of preferences, comparative advantages and policy-driven incentives. Taxation affects take-home pay, and alternative forms of taxation can have an impact on gender gaps in participation and hours worked via marginal tax rates on secondary earners. Parental leave allows for job protected breaks from the labor market, but at the same time slows down the accumulation of actual labor market experience of the primary caregiver. Childcare support eases budget constraints and encourages labor market participation of the spouse who would otherwise specialize in home production. Conservative gender norms can be thought of shaping the time allocation of spouses via preferences and beliefs about comparative advantages, as well as limited substitutability of maternal childcare. To the extent that women are disproportionately more likely to be the main caregiver and the secondary earner in their households, these policies have important and sometimes unintended consequences for the gender pay gap.

Section 4 draws lessons from a vast body of evidence on the impacts of these policies on women's careers and children's wellbeing. The existing literature has found very limited evidence of beneficial effects of longer parental leave on maternal participation and earnings. In most of the work based on European reforms, longer leave simply delays mothers' return to work, without long-lasting consequences on their careers in either direction, although the recent introduction of paid leave is some US states seems to be associated with long-run earnings losses for mothers. Work on evaluation of paternity leave quotas – which is still at a much earlier stage – has failed to detect clear substitution effects with maternal care and favorable consequences on mothers' careers. More generous support for childcare, in terms of public provision or subsidies, seems instead to encourage female participation in contexts in which subsidized childcare replaces maternal childcare. Impacts on children's health and education mostly depend on counterfactual childcare arrangements and tend to be more beneficial for relatively disadvantaged households. Finally, in-work benefits targeted to low-earners have clear beneficial impacts on lone

mothers' employment and negligible impacts on other groups.

Section 5 discusses existing political economy perspectives on the introduction of governments' support to families. While much of the existing evaluation literature considers family policies as exogenous, and political economy considerations are largely absent from this body of work, we argue that lessons on the rationale of several forms of intervention can be drawn from work on the political economy of women's rights and welfare states. Insights from this work help understand the interplay between societal changes, family policies and gender equality. Cross-country variation in relevant institutions is described in Section 6. Finally Section 7 concludes with a discussion of open questions and avenues for future research.

2 Trends

We document trends in education, living arrangements, fertility, employment and earnings for twenty-four countries since the 1970s. One common theme emerging from the data is that gender convergence in relevant outcomes occurred in all countries, with some interesting variations across regions of the world. Southern Europe and Latin America share important similarities, such as relatively low female schooling and employment and high fertility initially, combined with delayed but speedy gender convergence. Some of these features are shared by countries in East Asia. Anglo-Saxon and Nordic countries, with more equal gender outcomes and less conservative gender norms to start with, experienced instead relatively steady gender converge since the 1970s, if anything slowing down in more recent years. Countries in continental Europe lie somewhere in between, both in terms of initial gender gaps and their narrowing over time.

2.1 Schooling trends

One of the key trends documented for most of the developed world is the narrowing and reversing gaps in schooling between men and women. For the US, Goldin (2006) shows evidence of a reversal in the gender education gap starting with the mid-1950s birth cohorts, when women's college graduation rates first surpassed those of men. Bertrand (2018) updates this analysis to cover more recent cohorts, and finds that gender gaps in college graduation kept widening for most recent US birth cohorts: while men's graduation rates remained fairly constant around 30% since the 1970 cohort, women's graduation

rates reached 40% in the 1985 cohort. In this section, we expand this perspective to a large number of OECD countries on which we have data on completed schooling for the past few decades.

To maximize country and time coverage, we combine data from the Luxembourg Income Study Database (LIS) and IPUMS International, whose combined sample includes 24 countries observed over 3 to 5 decades.[1] We organize countries in three groups. Group 1 includes Anglo-Saxon countries (Australia, Canada, United Kingdom, United States) and Nordic countries (Denmark, Finland, Norway, Sweden). Group 2 includes Continental Europe (Austria, Belgium, France, Germany, Hungary, Netherlands, Poland) and Ireland. Group 3 includes Southern Europe (Italy, Greece, Portugal, Spain), Latin America (Mexico, Chile, Colombia), and East Asia (Taiwan). This grouping reflects a combinations of geographic vicinity and similarity in the gender outcomes considered at the start of the sample period.

Figure 1 shows evidence on the rise in college graduation for men (y-axis) and women (x-axis) for the three groups of countries described. We focus on a relatively narrow age band (35-44) to identify changes in educational attainment across birth cohorts born between the late-1920s and the mid-1980s. Each line represents the joint evolution of the male and female college shares in each country over time from the earliest decade covered (which ranges from the 1960s to the 1990s) to the 2010s, with each marker representing averages over a decade. Positively-sloped trajectories reflect rising college education for both genders. Observations above the 45-degree line indicate cases in which college graduation rates are higher among men than women, and vice versa. Trajectories that cross the 45-degree line indicate a reversal in the gender gap in graduation rates.

Pooling all countries, the share of college educated women was growing on average by 7.3 percentage points per decade, with some international divergence. Countries with relatively high graduation rates in the 1970s also experienced faster growth and vice-versa (9.5 percentage points per decade in Group 1, against 5 percentage points in Group 3). The increase in graduation rates among men was more modest, on average 4.3 percentage

[1]LIS: http://www.lisdatacenter.org (multiple countries; June 2022-September 2022); IPUMS International: Minnesota Population Center, Integrated Public Use Microdata Series, International: Version 7.3 [dataset]. https://doi.org/10.18128/D020.V7.3. The primary data source for most countries is LIS. The exceptions are Portugal, which is not covered by LIS, and Colombia, which is only covered from the mid-2000s. We use IPUMS International as the primary data source for these two countries, as well as the secondary data source for the earlier decades (1960-1980) for any country where LIS data become available from a later date. See Appendix A for details.

points per decade, ranging between about 6 percentage points on average in Group 1 and about 3.6 percentage points in Groups 2 and 3.

All countries considered had higher college graduation rates among men at the start of the sample period, but the gender gap had reversed almost everywhere by the 2010s. Chile, Mexico and Taiwan are the only countries where graduation rates are still higher among men than women by the 2010s, although they display substantial gender convergence since the earlier decades.

It is nevertheless important to note that female gains in human capital accumulation may be overstated by simple evidence on highest qualifications attained. Indeed women still make systematically different college major choices from men and are to date largely under-represented in STEM fields, typically conducive to both higher earnings and aggregate growth. Bertrand (2020) reports that, as of 2016, the share of women graduating from a STEM major is below 20% in all OECD countries, against a male share that ranges between 25% and 55%. While recent decades have seen progress of women in both STEM majors and STEM occupations, gender convergence in these fields is much slower than for the overall number of college degrees.

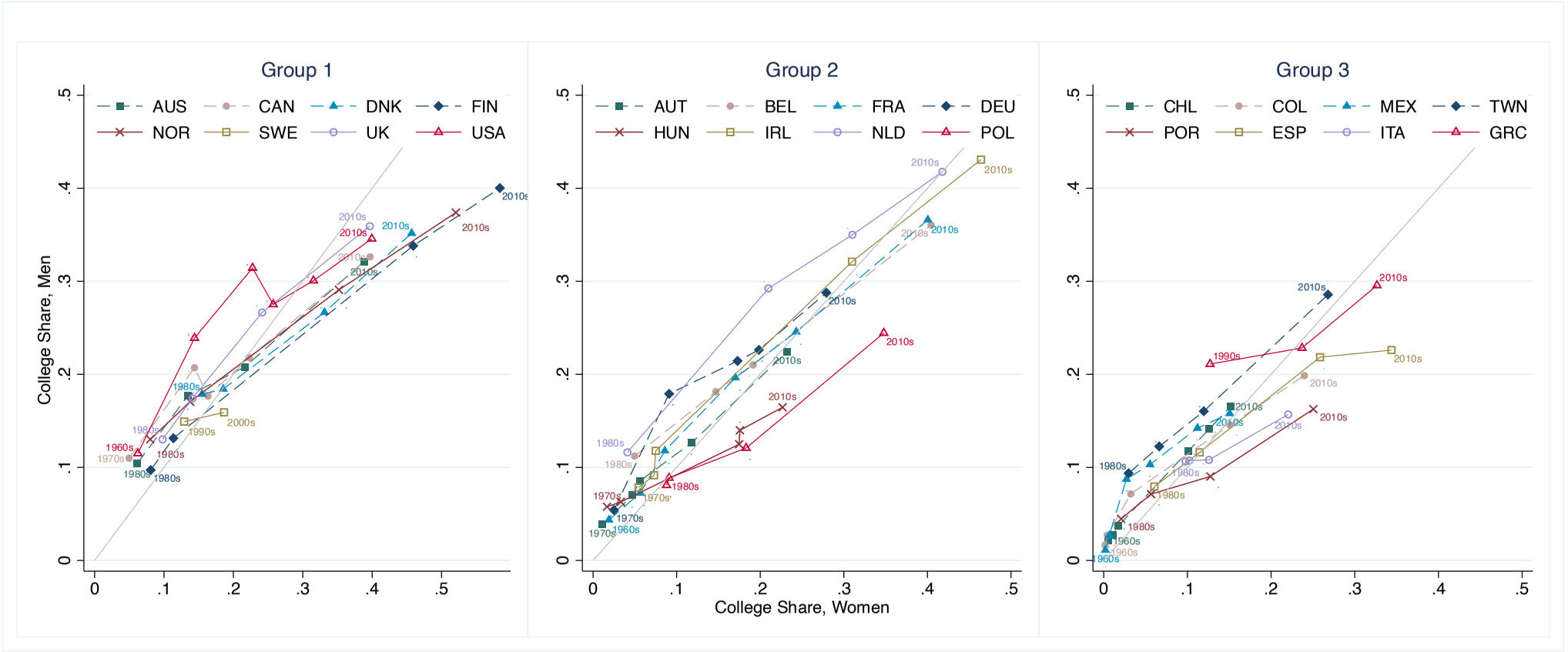
2.2 Marriage and Fertility

Higher investment in education has been associated with declining marriage rates and fertility throughout the industrialized world. This decline has received widespread attention in the literature. Influential work has discussed a range of contributing factors, including improved access to birth control and abortion (Goldin and Katz 2002, Bailey 2006, and Myers 2017, among others), improvements in maternal health (Albanesi and Olivetti 2016), changes in marriage and divorce laws (Stevenson 2007, Rasul 2006), technological progress (Greenwood et al. 2016) as well as higher returns to labor participation (Blau et al. 2000).[2]

We document changes in the prevalence of marriage between the 1970s and the 2010s. As above, we focus on women aged 35-44 to effectively describe trends across cohorts, and we combine data from IPUMS and LIS to maximize country and time coverage. Marital status is provided in relation to the marriage laws or customs of each country. Since information on *de facto* unions is not consistently available in our data, our baseline evidence excludes informal cohabitations from our definition of marriage.

[2]Stevenson and Wolfers (2007) provide a comprehensive discussion of the role of these factors.

Figure 1: Share of college graduates among men and women aged 35-44



Notes: Data on men and women aged 35-44 at the time of survey. College is defined as the equivalent of a four-year college degree in the US. See Appendix A for details about variable definitions and samples. *Data Sources*: LIS and IPUMS International.

Panel A in Figure 2 shows data on the share of women ever-married (irrespective of current marital status), defined as having ever been in a *de jure* relationship, whether a marriage or a registered union. In the 1970s, approximately 93% of women would marry by age 35-44 on average across countries, with only moderate variation across the three country groups. By the 2010s, 82% did so in Latin America, Southern Europe and Taiwan, while only 75% did, on average, in the remaining two country groups. The decline is largest (by 30 percentage points or more) in France, Belgium and Norway and smallest (by about 10 points or less) in the Americas, Greece, Ireland, Portugal and Poland.

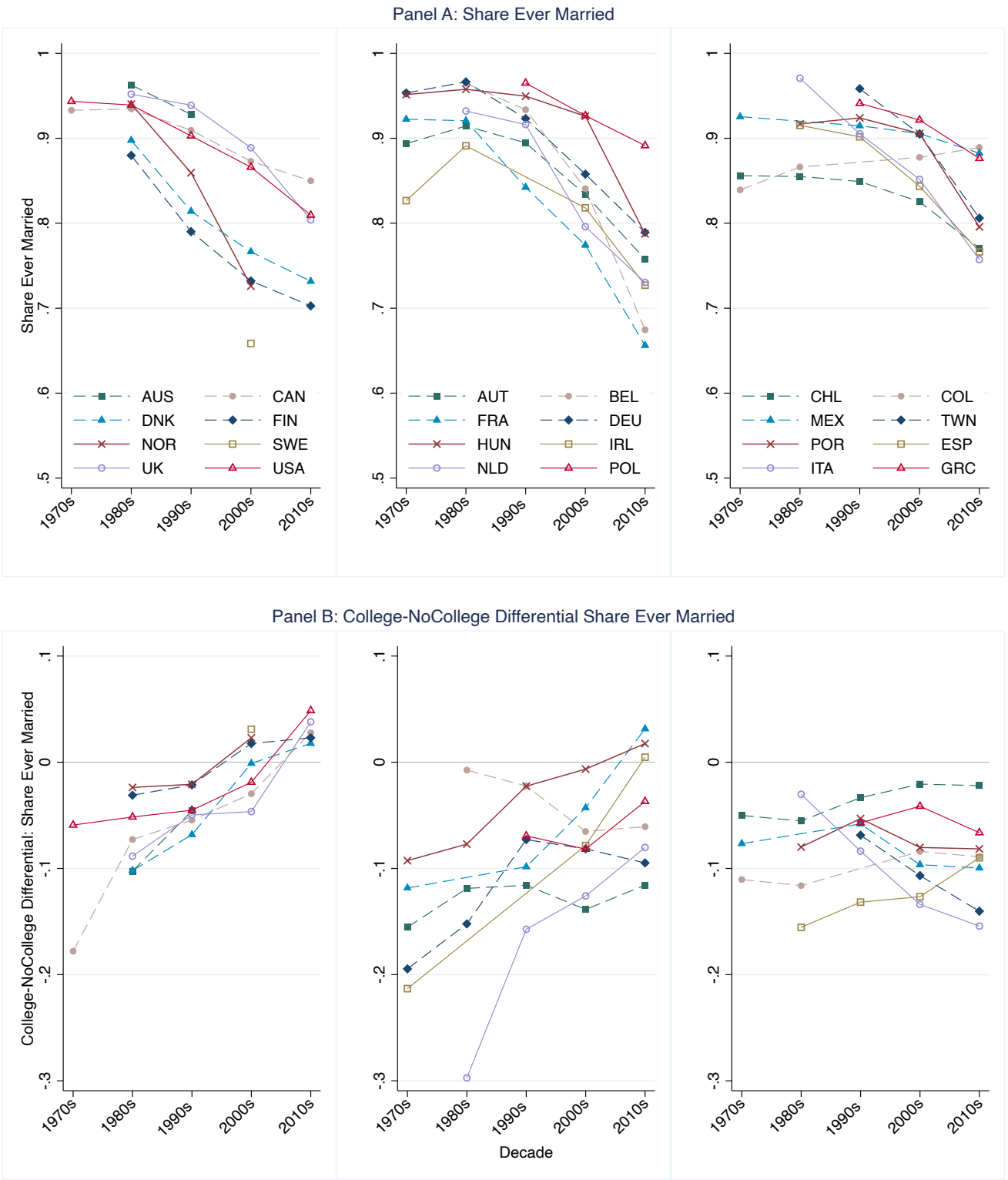
Declining marriage rates have to a large extent reflected marriage delays, especially for women. Across countries in our sample, women's average age at first marriage ranged between 22 and 27 in 1990. By 2017, this had increased everywhere, ranging between 27 and 33. The rise was smallest (3.5 years) in the US and largest in Belgium, Hungary and Spain (about 7 years).[3]

The long-run retreat from marriage in the US has been heterogeneous by education. Among women born in late 19th century, those in the top quartile of schooling were about 13 percentage points less likely to ever marry than those in the bottom quartile. Following a sharp increase in marriage rates among the highly educated, those rates had almost completely converged for the 1920-1940 cohorts, before opening again for the baby-boom cohorts (Bailey et al., 2014). By 2010, college educated women are more likely to marry (69%) than the less-educated (56%) (Lundberg et al. 2016); they are also less likely to divorce and, if they do, they are more likey to re-marry (Isen and Stevenson, 2011).

The relatively slower decline in marriage rates among the highly-educated has been attributed to differential changes over time in the demand for marital commitment across education groups (Lafortune and Low, 2020), differences in child-rearing practices and in the returns to investment in children (Lundberg and Pollak, 2014), and leisure complementarities that made marriage more appealing to those with higher disposable income (Isen and Stevenson, 2011). The sharper decline in the prevalence of marriage among those with lower education has been ascribed to disincentives effects of welfare programs (Bitler and Hoynes 2006), increasing cost of marriage (Buckles and Price 2011), deteri-

[3]See Chart SF3.1.B. Mean age at first marriage by sex, 1990, 2000, and 2017 or latest available year in https://www.oecd.org/els/family/SF_3_1_Marriage_and_divorce_rates.pdf (accessed on June 18, 2021).

Figure 2: Marriage trends: 1970s to 2010s



Notes: Data on women aged 35-44. An individual is ever-married (irrespective of current marital status) if they are or have ever been in a *de jure* relationship (marriage or registered union). Data points are missing for Australia (2000s, 2010s), Norway (2010s), Sweden (1975-1995), because only information on current marital status is available in these surveys, not on ever married. See Appendix A for details and variable definitions. *Data Sources*: LIS and IPUMS International.

orating economic opportunities for men (Autor et al. 2019), and increasing male income inequality (Loughran 2002).

As shown in Panel B of Figure 2, several countries experienced a similarly uneven decline in marriage rates to the US, with the college marriage deficit shrinking over time, and turning into a surplus by the 2010s in most Nordic and Anglo-Saxon countries as well as France. In Southern Europe and Latin America, by contrast, the college marriage deficit is fairly stable over time, except in Italy and Taiwan where it actually increases (Bertrand et al. 2020 document similar college marriage deficits in other East Asian countries as in southern Europe).

The decline in marriage reflects a variety of transition paths towards the formation of legal partnerships across countries. For example, cohabitation has become an important form of long-term unions in the Nordic countries, frequently replacing marriage as the partnership standard. In the US, the increase in cohabitation mostly reflects a delay in marriage. As shown by Bailey et al. (2014), once cohabitations are factored in, the average age at first partnership for women born in the 1960s and 1970s is similar (around 22.5) to that observed pre-baby boom. The increase in cohabitations has been especially pronounced in Latin America, where, as argued by Esteve et al. (2016), the cohabitation boom increased both in regions where legal marriages used to be prevalent and in areas where informal arrangements traditionally existed as an alternative to "European" marriages.

The prevalence and nature of *de facto* cohabitations differ across education groups. Lundberg and Pollak (2014) find that, for college-educated women in the US, childbearing during cohabitation is relatively rare, and in most cases it leads to marriage. Among the less-educated, however, the rise of cohabitation is associated with a higher share of children parented out of wedlock. Because cohabitation tends to be less stable than marriage regardless of the presence children, children in cohabiting households are at higher risk of instability in living arrangements and household income.

Cross-country variation in living arrangements can be glimpsed in Figure 3, showing the joint evolution of legal unions (on the horizontal axis, based on LIS variable *marital*, including marriages and registered unions) and total co-residing partnerships (on the vertical axis, based LIS variable *partner*) for women aged 35-44. As in Figure 1, each marker represents a decade. In the 1970s and the 1980s, data points are very close to

the 45-degree line, indicating low rates of *de facto* cohabitation. Over later decades, the incidence of legal unions declines faster than overall co-residences, implying a rise in *de facto* cohabitation, and especially so in Latin America.

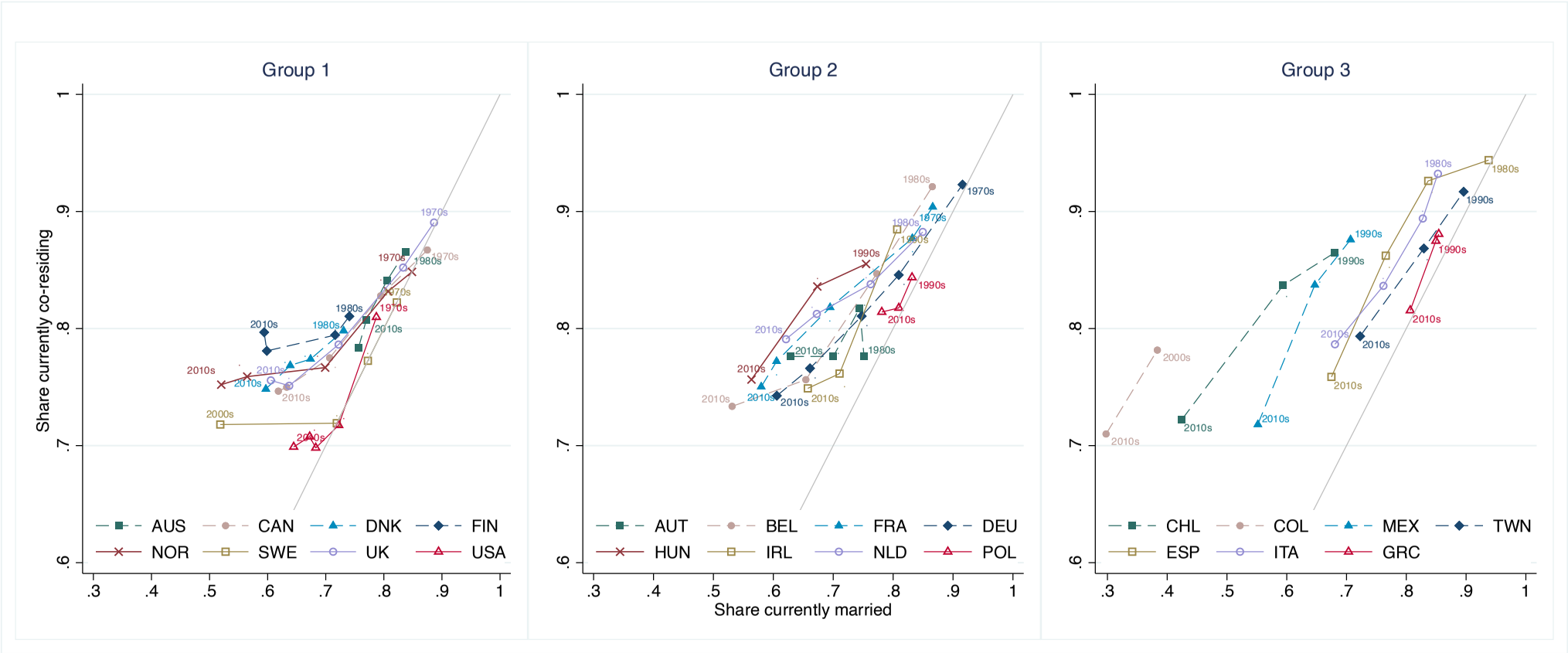
Alongside delayed and declining marriage, most countries experienced a delay and decline in fertility at the extensive and intensive margins. Figure 4 shows trends in the share of women aged 35-44 who have children (Panel A) and in the average number of children (Panel B). The share of mothers falls slightly in most countries, but it falls sharply from a relatively high baseline in Sothern Europe and Taiwan. Remarkably, Spain had the highest share of mothers in this age group in the 1980s (about 93%) and the lowest in the 2010s (about 57%). Panel B shows evidence of strong international convergence in the average number of children (including the zeros), hovering around or below 2 in most countries in the 2010s. Ireland, Spain, Portugal, Mexico, Colombia, Chile and Taiwan experience the largest decline in the number of children, implying a reversal of the relationship between fertility and female employment among high-income countries (see also Ahn and Mira 2002 and Feyrer et al. 2008 on this point).

The study of the Second Demographic Transition, characterized by a combination of sub-replacement fertility, increasing cohabitations and a looser link between marriage and fertility, has been an active area of scholarship in demography and related fields (see the discussion by Esteve et al. 2016). This literature has argued that the observed patterns, which are especially salient in Latin-America, may not be entirely explained by purely economic factors. In fact they are part of a process of de-stigmatization and weakening restrictions on behaviors such as divorce, abortion, out-of-wedlock fertility and homosexuality, following secularization and changing attitudes towards gender relations. In economics, a growing literature emphasizes how the interplay between women's growing labor market opportunities and gender norms may impact fertility (Feyrer et al., 2008) and marriage (Bertrand et al., 2020), by altering the trade off between human capital investment and marriage.

2.3 Pay and Employment Gaps

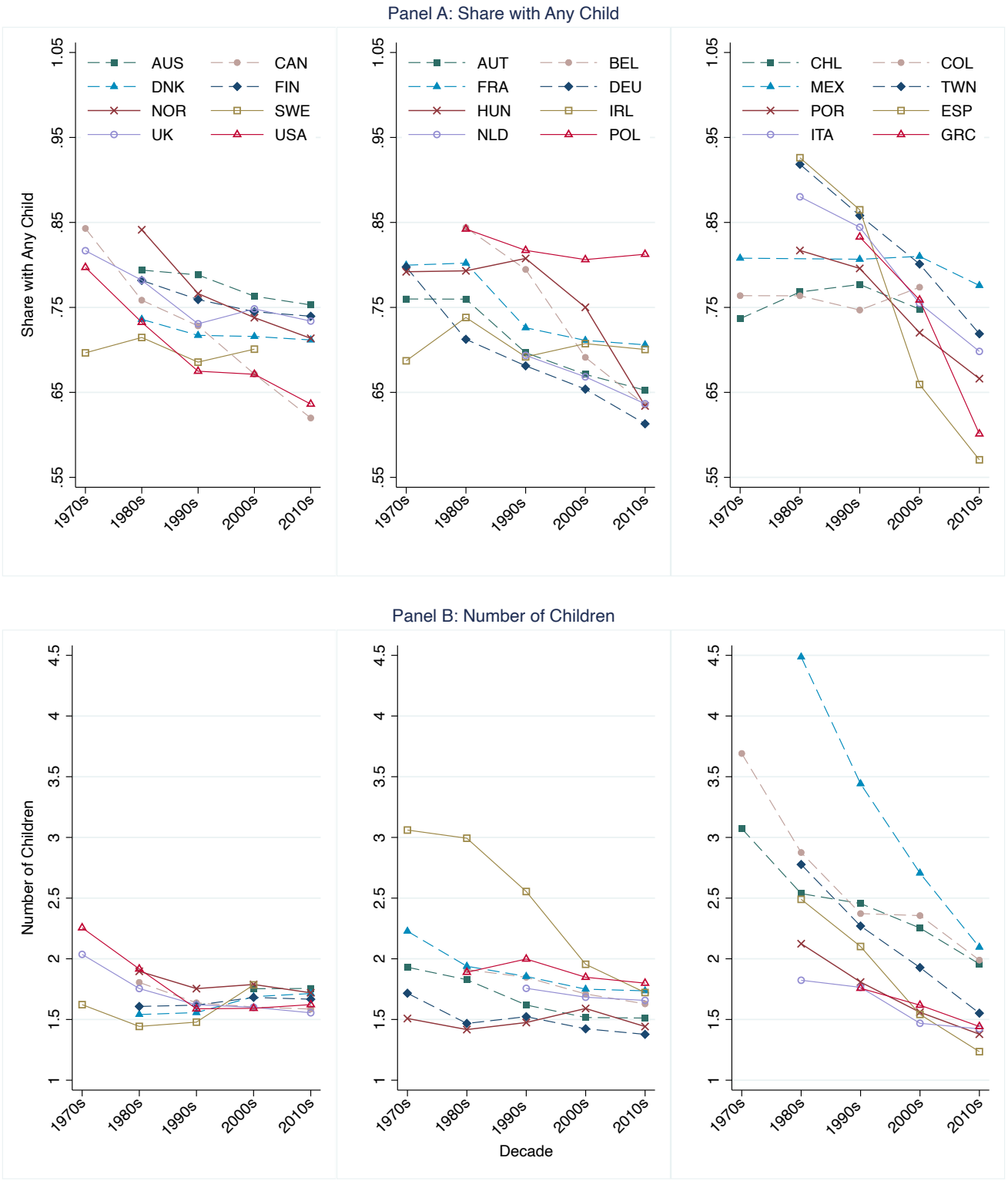
Female gains in human capital investment and the decline in marriage and fertility were key forces behind women's progress in the labor market. Additional factors include labor-saving technologies in home production and childcare (Greenwood et al. 2005; Albanesi

Figure 3: Trends in legal unions and co-residence



Notes: Women aged 35-44. Individuals are currently married if they are in a *de jure* relationship (whether marriage or registered unions). Individuals are classified as co-residents if they are currently married, or in a registered partnership or cohabiting. See Appendix A for details about variable definitions and samples. *Data Sources*: LIS and IPUMS International.

Figure 4: Fertility Trends across Countries: 1970s to 2010s



Notes: Data on women aged 35-44. The fertility measures refer to children aged 17 or younger living in the household. See Appendix A for details about variable definitions and samples. *Data Sources*: LIS and IPUMS International.

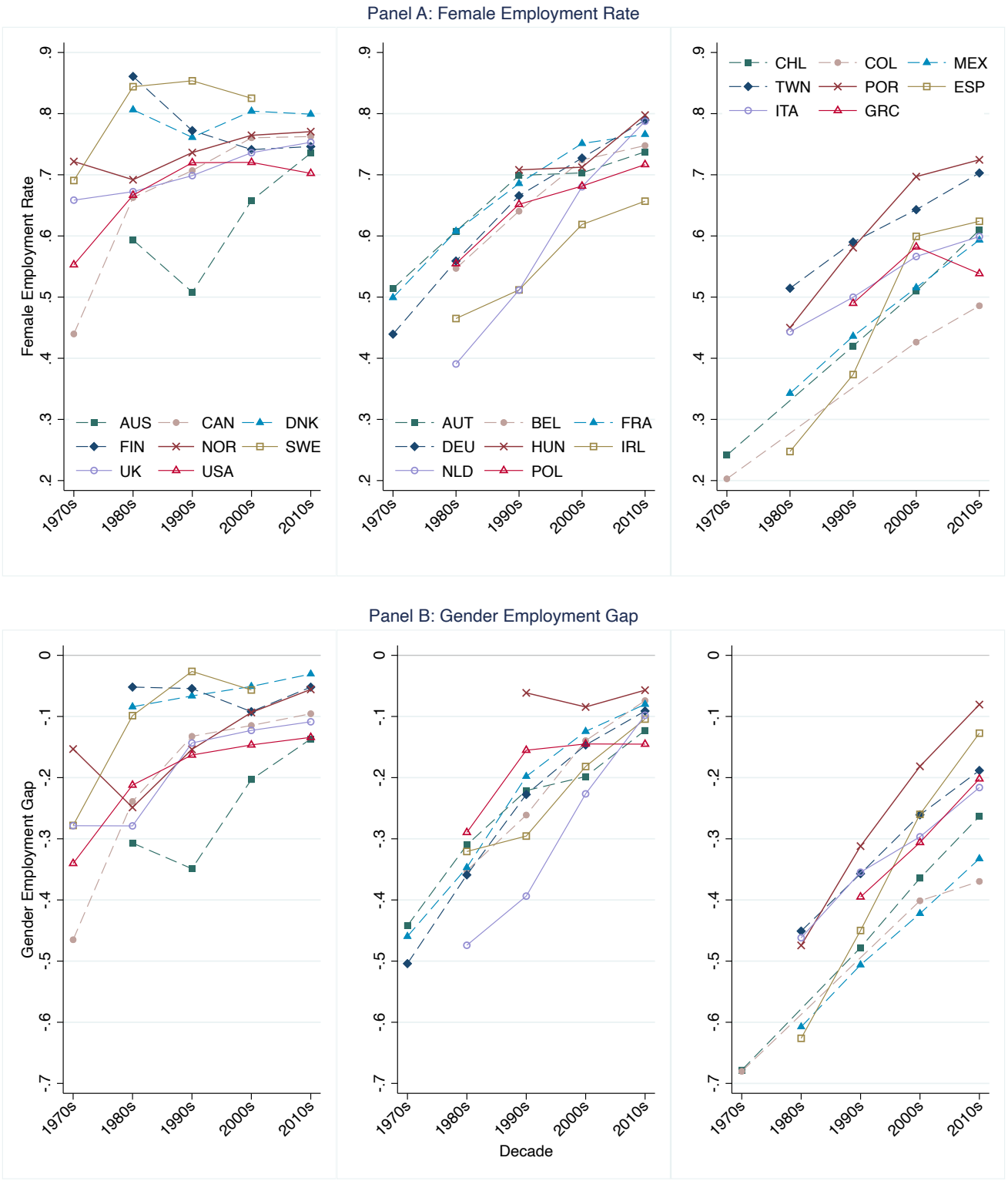
and Olivetti 2016) and greater availability of non-parental childcare (Attanasio et al. 2008), reducing the need of (mostly female) labor input in home production. Technological progress in the workplace has raised the value of non-manual relative to manual skills, thereby raising female relative wages and participation, and expanded sectors in which women are typically over-represented (see Heathcote et al. 2010 and Ngai and Petrongolo 2017, among others). Finally, women's economic progress eased and was reinforced by evolving social norms about appropriate gender roles in the household and the labor market (see Fernández 2013, Fernández et al. 2004).

Figure 5 depicts employment trends. Panel A shows evidence of a sustained rise in the female employment-to-population ratio for prime-age individuals (aged 25-54) in all countries. On average, the female employment rate has grown by 6 percentage points per decade since the 1970s, while the cross-country variation in female employment rates has declined. Although the growth in female employment is more modest in Anglo-Saxon and Nordic countries (3 percentage points per decade) than elsewhere (around 7 percentage points per decade), initial differences were so large that important international gaps remain to date, with Latin America and Southern Europe still lagging well behind the rest of the sample.

As shown in Panel B, female employment gains are reflected in declining employment gaps with respect to men, whose employment decline (1.7 percentage points per decade on average) displays relatively limited variation across countries and over time. By the 2010s, the gender employment gap is near or below 10 percentage points in most countries, with the exception of Italy, Taiwan and Latin America where it hovers around 20 percentage points.

While these aggregate trends have been extensively documented in earlier work (see, among others, Olivetti and Petrongolo 2016 and references therein), their educational dimension is noteworthy, as employment growth among women without college education has been substantially higher than among college graduates, and there is wider cross-country variation in the employment rates of the less-skilled than in those of college graduates. Figure 6 illustrates the joint dynamics of the gender employment gap for those with a college degree (y-axis) and those without (x-axis). Positively-sloped trajectories reflect female employment gains for both skill groups. For virtually all countries and decades the data points lie above the 45-degree line, indicating smaller employment gaps

Figure 5: Employment trends: 1970s to 2010s



Notes: Data on men and women aged 25-54. The employment rate is the employment to population ratio. The employment gap is the difference between the female and the male employment rate. *Data Sources*: LIS and IPUMS International.

for the college educated. However, in most countries the employment advantage of the highly-educated eroded over time, as shown by the positive trajectories approaching the 45-degree line. Despite convergence, in Latin America, Southern Europe and Taiwan, the less educated still face a substantially larger employment gap with respect to men than the highly educated.

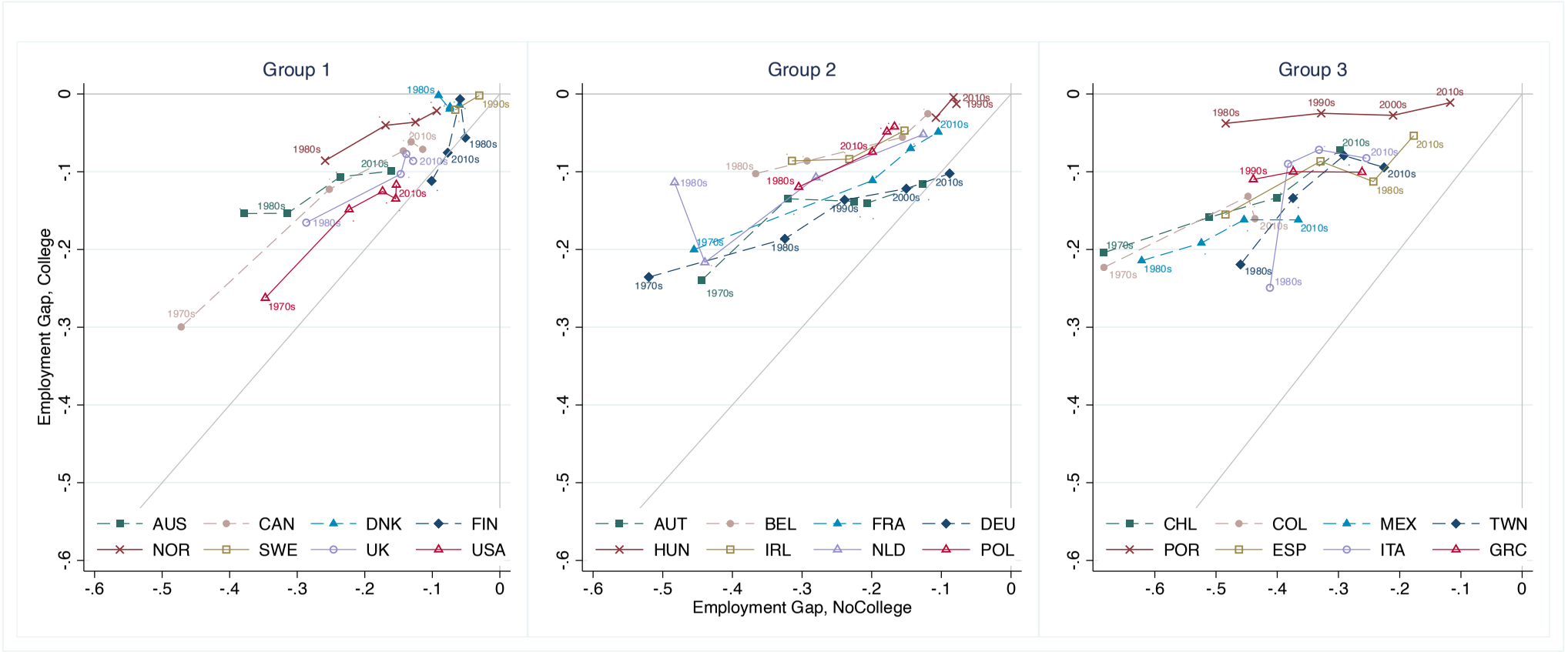
Figure 7 shows evidence on gender convergence in earnings. Because information on hours and weeks worked is not consistently available across all countries and waves, annual earnings are used.[4] Hence the resulting gender gap conflates differences in wage rates as well as differences in hours and weeks worked by gender, which are important determinants of the gender gap (Goldin 2014).

Earnings in Panel A are conditional on being in work during the reference year. Trends for Anglo-Saxon countries display a substantial decline in the pay gap. In the US, women earn 45% of male earnings in the 1970s, rising to 70% in the 2010s. In the UK, the earnings ratio rises from 42% to 66%. Most other countries experience slower gender convergence in earnings but – bar a few exceptions – experience lower levels of gender inequality to start with. In particular, in Southern Europe and Latin America there is hardly any earnings convergence over the sample period.

International variation in gender gaps reflects a variety of factors. While moderate gender gaps in Nordic, relative to Anglo-Saxon, countries mostly result from a relatively compressed wage distribution (Blau and Kahn 2003), in Southern Europe they are to a large extent the consequence of positive selection of high wage women in the labor force (Olivetti and Petrongolo 2008). The latter point is evidenced by the comparison of gender gaps conditional on positive earnings in Panel A to those that include those with zero earnings in Panel B in the figure. While in country groups 1 and 2 the levels as well as the trends in the gender gaps are not too strongly altered by the inclusion of individuals with zero earnings, the two panels reveal striking differences for group 3. Once the nonemployed feature with zero earnings in the pay distribution, gender gaps are much larger than among those with positive earnings, and follow very similar trends as in other countries. Especially in Southern Europe and Latin America, gender convergence in labor market outcomes almost entirely reflects the rise in female employment.

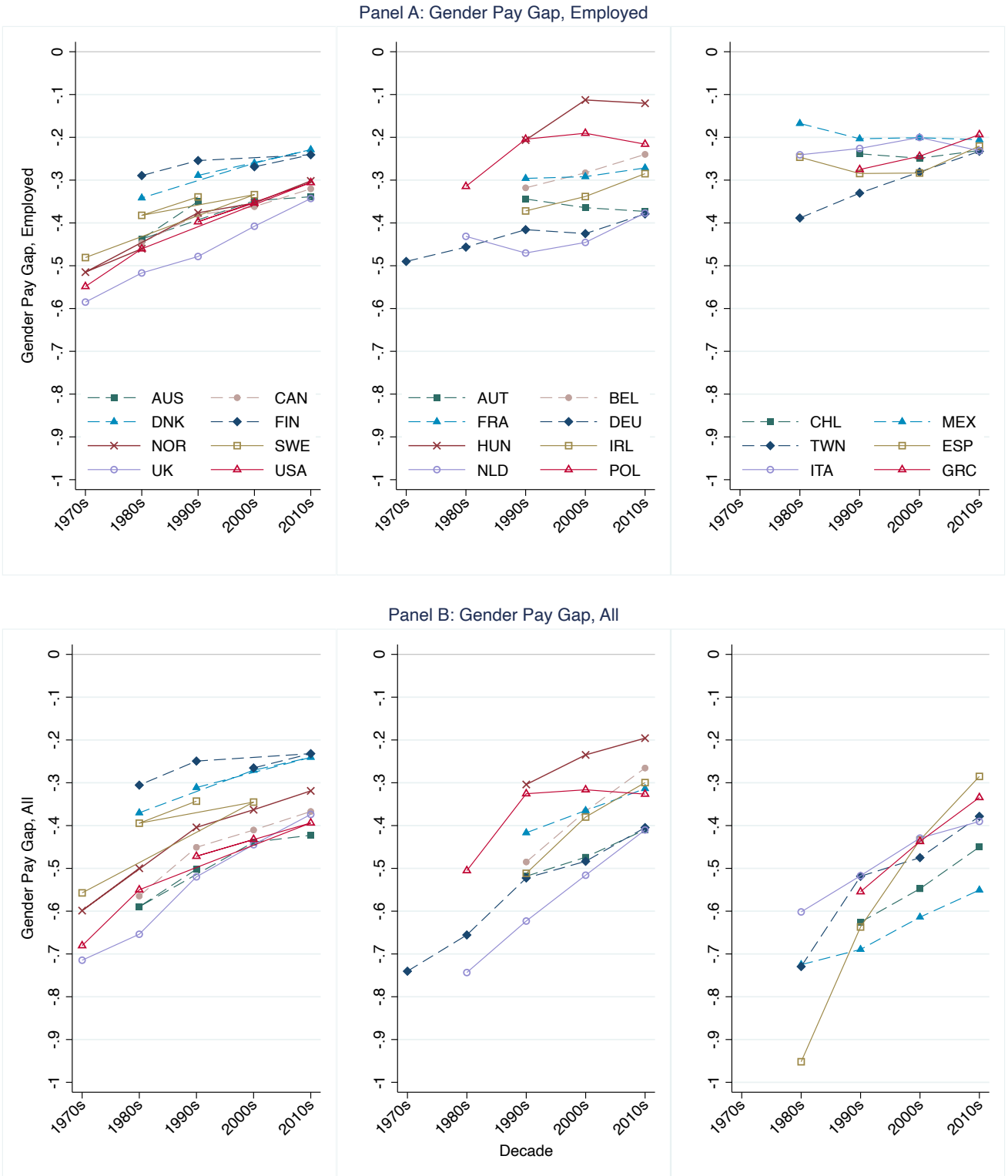
[4]The earnings analysis is based on LIS. Annual earnings are measured by the variable *pi11*, which includes gross wage and salary income and monetary supplements to the basic wage (overtime pay, employer bonuses, 13th month bonus, profit-shares and tips). This analysis excludes Portugal (not covered in LIS) and Colombia (whose earnings data in LIS only start in the 2000s).

Figure 6: Gender employment gaps by education: 1970s to 2010s



Notes: Data on men women aged 25-54. The employment gap is the female-male difference in employment rates as measured by employment-to-population ratios.
Data Sources: LIS and IPUMS.

Figure 7: The evolution of the gender pay gap: 1970s to 2010s



Notes: Data on men and women aged 25-54. The pay gap is given by the average female pay minus average male pay, divided by average male pay, where pay corresponds to annual earnings. Sample: individuals with positive annual labor earnings (Panel A); all individuals, including those with zero annual labor earnings (Panel B). *Data Source*: LIS.

2.4 Marriage, Children and Earnings

To investigate the association between earnings, marital status and children across countries in our sample, we estimate the following regression:

$$Y_{ict} = \sum\nolimits_c \alpha^c M_{ict} + \sum\nolimits_c \phi^c K_{ict} + \beta X_{ict} + \pi_c + \gamma_t + \epsilon_{ict}, \tag{1}$$

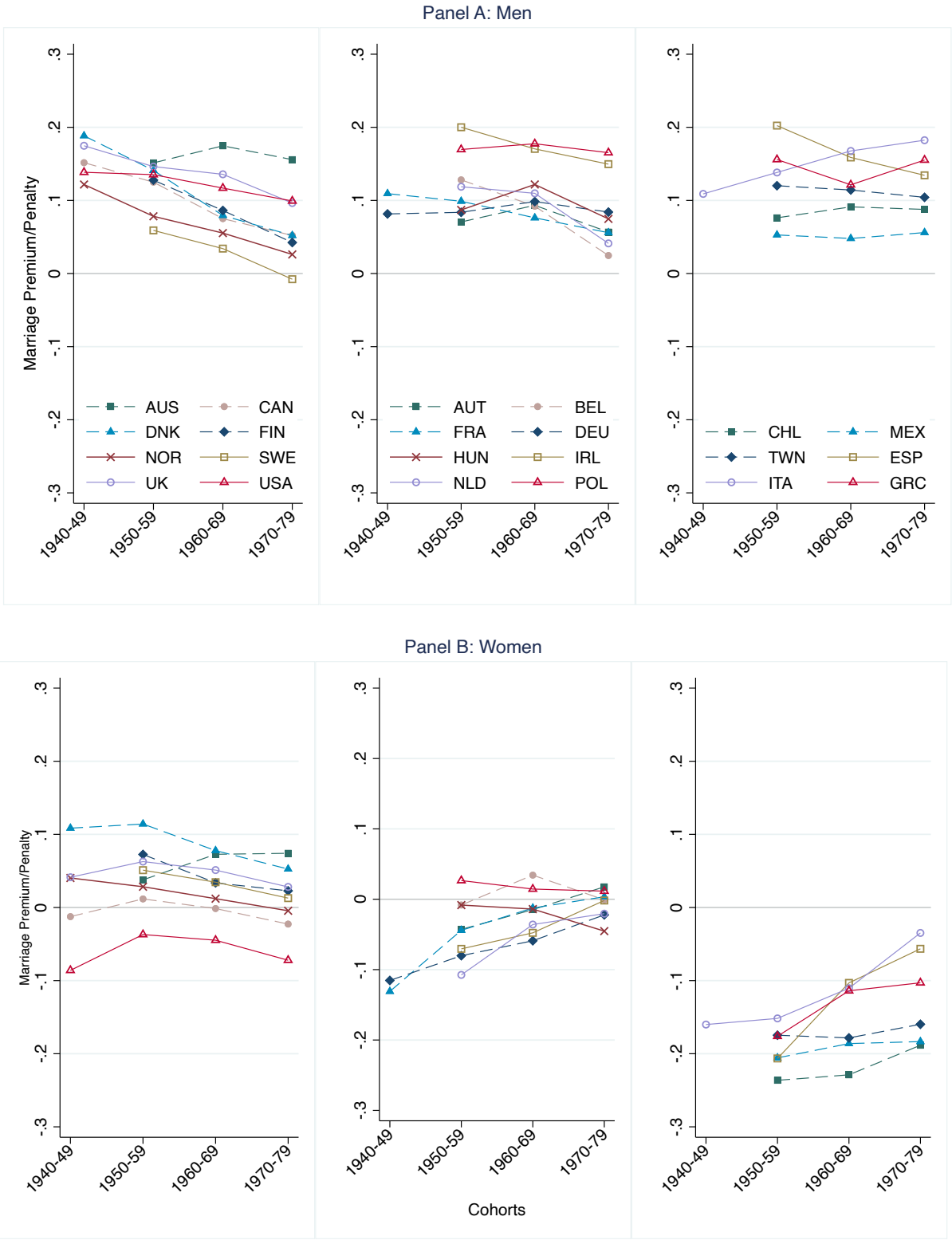
where i denotes individuals, c denotes birth cohorts, t denotes years and the outcome variable Y_{it} is either employment status or (log) earnings. The two main variables of interest are marital status M_{ict} ($M_{ict} = 1$ if currently married or in a registered union, 0 otherwise) and fertility K_{ict} ($K_{ict} = 1$ if an individual has own children present in household, 0 otherwise). These two indicators are interacted with ten-year birth cohort dummies: 1940-49, 1950-59, 1960-69 and 1970-79.[5] The vector X includes a quartic polynomial in age and education dummies (college, some college/high school, where the reference category is less than high school). Cohort and time effects are denoted by π_c and γ_t, respectively. This specification is borrowed from Juhn and McCue (2017), who estimate similar earnings regressions for the US birth cohorts from the 1930s onwards.

We first explore the relationship between marriage, children and employment, setting $Y_{ict} = 1$ for those currently employed, and 0 otherwise. We run separate regressions by country and gender. Figure 8 reports estimated coefficients on marital status M_{ict} for men (Panel A) and women (Panel B), by country and birth-cohorts. Most estimates are significant at least at the 10% level (confidence intervals are reported in Appendix B). A coefficient of, say, 0.1 means that the employment probability is 10 percentage points higher for married than single individuals keeping all else constant. Given that specification (1) additionally controls for fertility K_{ict}, the effect of marital status on employment should be interpreted at constant fertility. Viceversa, the effect of fertility on employment should be interpreted at constant marital status.

Estimates in Panel A imply that married men are more likely to work than single men in all countries, with wide variation in the associated premium across countries and cohorts, up to 20 percentage points in some cases. Such premium declines over birth cohorts for most countries in groups 1 and 2, but stays roughly flat in group 3. For women

[5]These cohort boundaries allow us to obtain a fairly balanced sample by age for all cohorts. We drop Colombia, as information on earnings is only available in the 2010s, and we drop the 1940-49 cohort for countries where available information only starts in the 1980s or later (as in those cases the 1940-49 cohort would only be observed quite late in the life cycle).

Figure 8: The employment deficit/surplus for husbands and wives



Notes: Data on men and women aged 25-54. Specification (1) is estimated separately by gender and country. The dependent variable is an employment dummy. Panel A and Panel B report the point estimates for the cohort-specific coefficients on the married dummy for men and for women, respectively. *Data Source*: LIS.

(Panel B), marriage is associated with an employment penalty in all countries in group 3, most countries in group 2, plus the US, and is especially large in Southern Europe, Latin America and Taiwan. In most of these countries (with the notable exception of the US) the marriage employment penalty declines over time and in a few of them turns into a premium in the 2010s. In the Nordic countries, Australia and the UK, married women are more likely to work than single women in most cohorts (once the presence of children is controlled for).

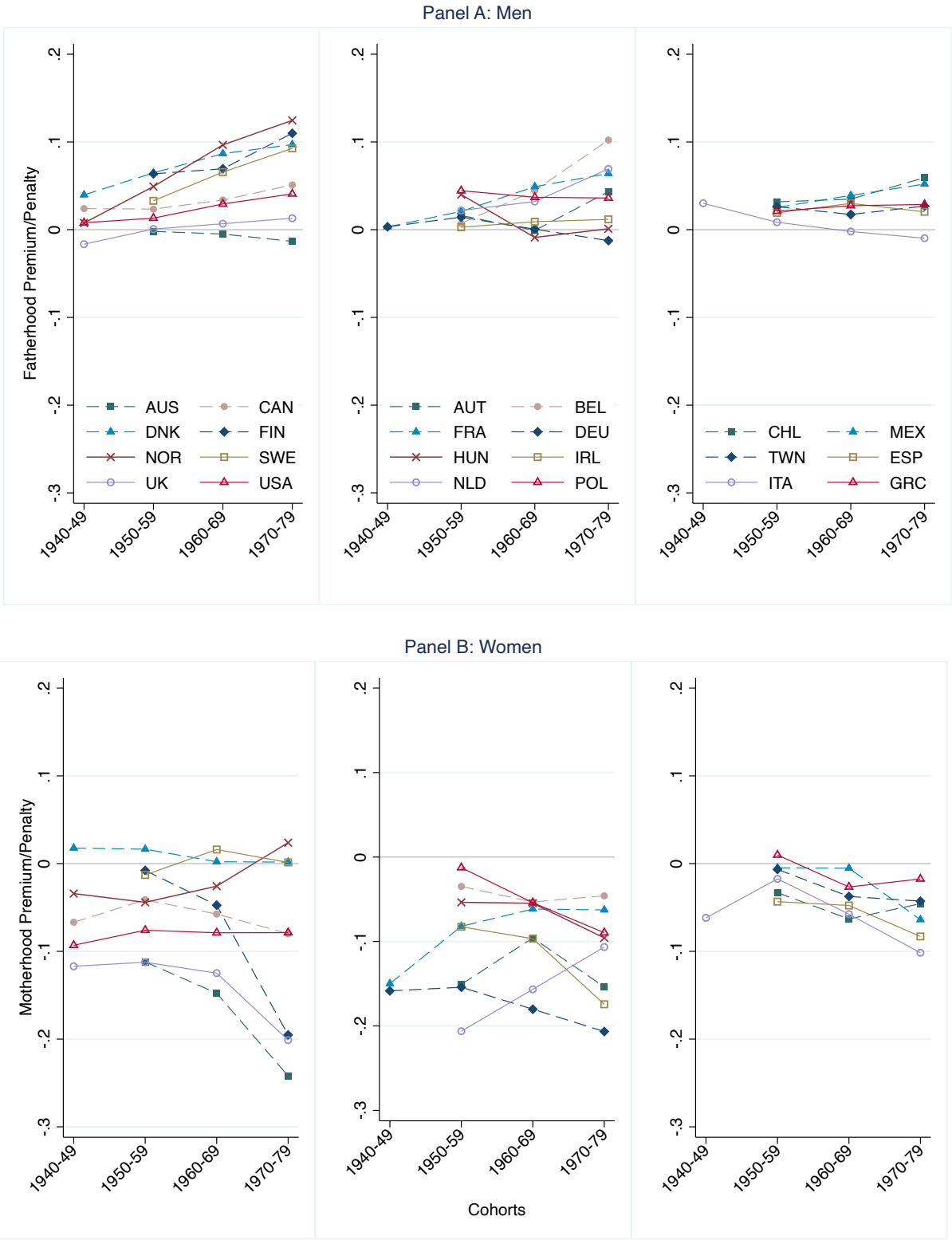
Figure 9 reports the estimated coefficients on the fertility indicator in 1. Panel A shows evidence of an emerging and increasing child premium for male employment, which is especially high in Nordic countries and Belgium. On the other hand, children are virtually everywhere associated with an employment penalty for women, which does not show signs of narrowing over time.

The above results on the probability of being employed facilitate the cross-country comparisons of earnings premia and penalties associated with marriage and children, which we analyze next. These are obtained by estimating equation (1) on the sample of those with positive earnings in the reference year, using log earnings as the dependent variable. Figure 10 reports estimated coefficients on marital status for men (Panel A) and women (Panel B). Marriage is everywhere associated with large earnings premia for men, although these are narrowing for recent cohorts. For women, marriage is instead associated with large earnings penalties in most countries, with an overall tendency for them to decline over time, except for the most recent cohorts in Denmark and Ireland.[6]

Corresponding estimates for the impact of children are reported in Figure 11. On average, children have large negative impacts on the earnings of mothers, but mostly positive impacts (smaller in absolute value) on the earnings of fathers. Moreover, the motherhood penalty does not decrease over time: in fact it tends to be larger for more recent cohorts. The interpretation of this result requires caution. Given the data structure, more recent cohorts are more likely to have younger children in our sample, typically associated with a lower intensive margin of labor supply. As our outcome variable is annual earnings (due to lack of consistent measures of hours or weeks worked in our sample),

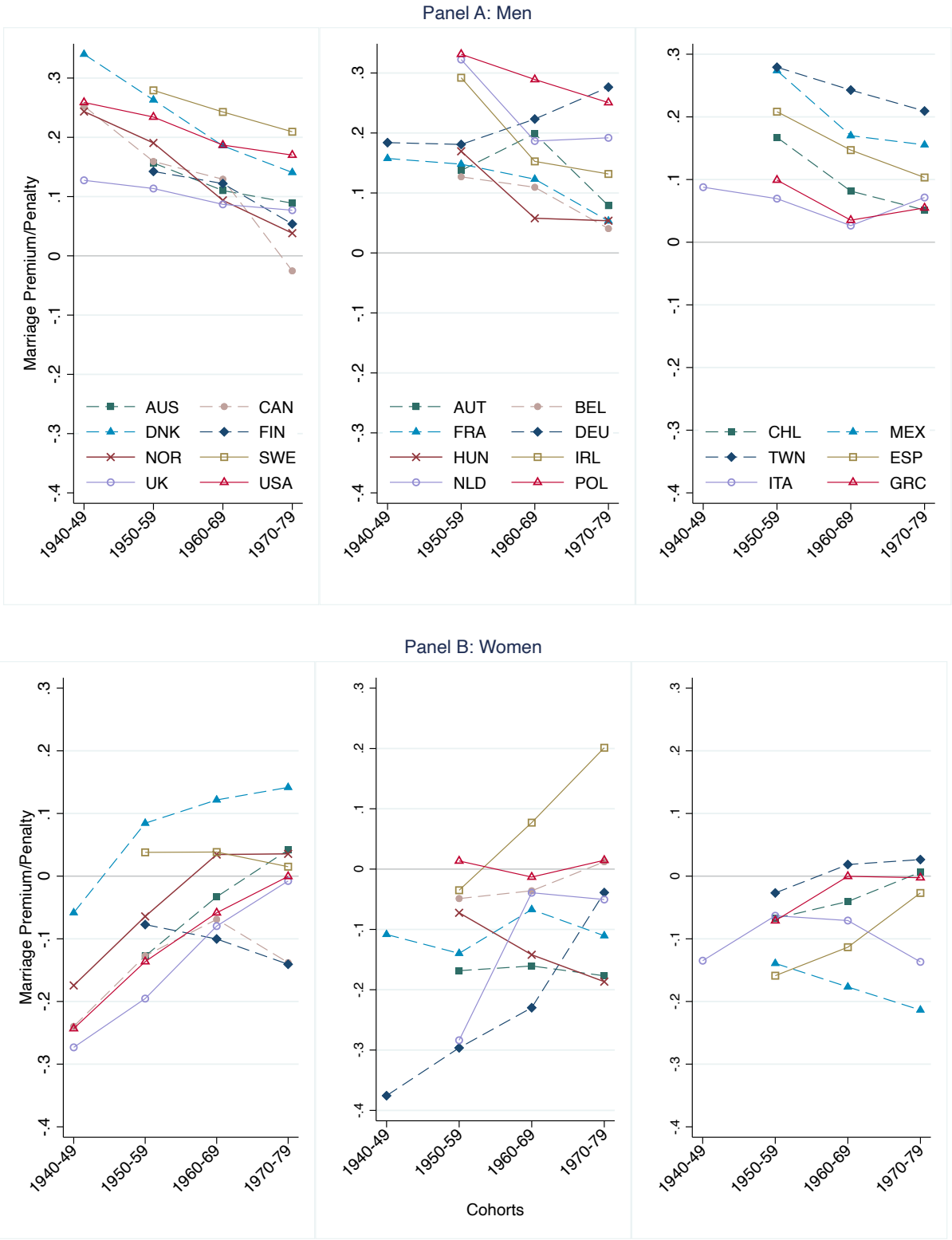
[6]The interpretation for these two cases is that, conditional on fertility, married women are more likely to be employed than single women and, as it will be shown in Figure 11, the impact of fertility is negative. Given the strong correlation between marriage and fertility, controlling for marriage alone yields near-zero cofficients on marital status for each country, and controlling for fertility alone yields negative coefficients on fertility, although smaller in absolute value than those presented in Figure 11.

Figure 9: The employment surplus/deficit for mothers and fathers



Notes: Data on men and women aged 25-54. Specification (1) is estimated separately by gender and country. The dependent variable is an employment dummy. Panel A and Panel B report the point estimates for the cohort-specific coefficients on the fertility dummy for men and for women, respectively. *Data Source*: LIS.

Figure 10: The earnings premium/penalty for husbands and wives



Notes: Data on men and women aged 25-54. Specification (1) is estimated separately by gender and country. The dependent variable is log annual earnings (conditional on positive earnings). Panel A and Panel B report the point estimates for the cohort-specific coefficients on the married dummy for men and for women, respectively. *Data Source*: LIS.

widening motherhood penalties across cohorts may partly reflect the presence of relatively young children. In addition, more recent cohorts of women increasingly enter professional occupations that tend to penalize career breaks and shorter hours, feeding into higher motherhood penalties (Blau and Kahn 2017).

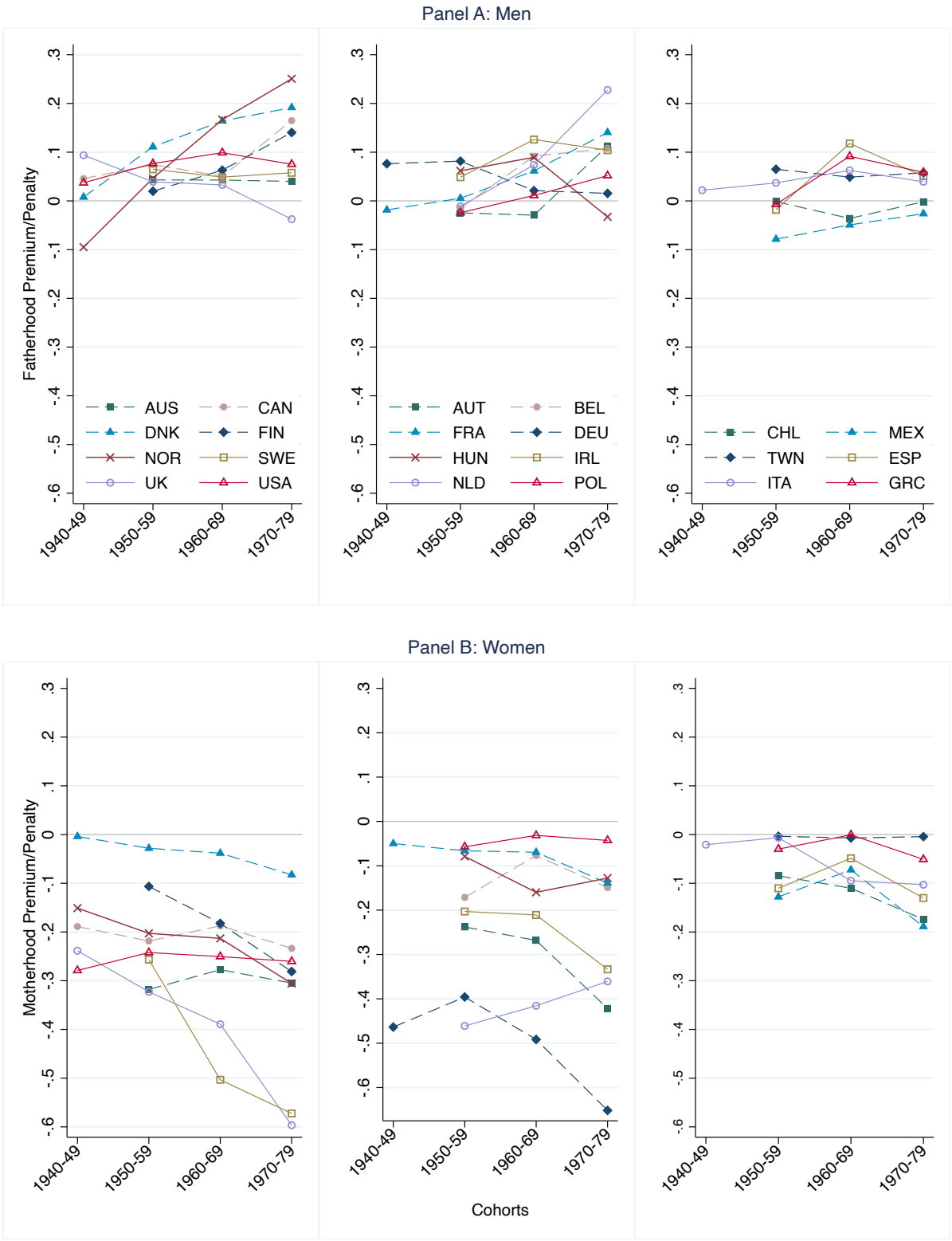
The motherhood penalty in employment and earnings is relatively low (in international comparisons) in Southern Europe and Taiwan, but the corresponding marriage penalties are highest. This is consistent with women retreating from (extensive and intensive margins of) labor supply once they get married, ahead of (or independently of) motherhood. As this pattern is most evident for the earlier cohorts, it likely reflects the influence of conservative gender norms on the labor market involvement of married women. In most other countries, penalties associated with children are larger than those associated to marriage.

Additional insight into the observed variation of labor market outcomes associated to family composition may be provided by the (changing) process of selection into marriage and children. For example, increasing marriage rates among high-wage women (as it has been noted in the discussion of Section 2.2) would induce, other things equal, declining earning penalties to marriage. Fixed effects models help in this dimension as they identify changes in employment and earnings along individual transitions through phases of the family life-cycle. For the US, fixed effects estimates of marriage and child penalties for women deliver trends across cohorts that are similar to those obtained on the repeated cross-sections (Juhn and McCue 2017), suggesting that selection into marriage and motherhood may not fully explain the observed patterns.

The motherhood earning penalty is currenlty one of the most actively researched areas of gender inequalities. Adda et al. (2017) estimate the career cost of children in Germany in a dynamic, life-cycle model with marriage, fertility, participation, and occupation choices. Angelov et al. (2016), Kleven et al. (2019a,b), Cortés and Pan (2023) and Andresen and Nix (2022b) – among others – compare the earning trajectories of mothers and fathers before and after birth in an event-study set-up. In all countries considered (Sweden, Denmark, Germany, Austria, Norway, UK and US), childbirth drives a large and persistent penalty in the earnings of mothers, while representing a minor or even neutral event in the careers of fathers.[7] Data on repeated cohorts reveal that the motherhood

[7]Goldin and Mitchell (2017) show closely related evidence for female participation before and after birth in the US across subsequent cohort.

Figure 11: The earnings premium/penalty for mothers and fathers



Notes: Data on men and women aged 25-54. Specification (1) is estimated separately by gender and country. The dependent variable is log annual earnings (conditional on positive earnings). Panel A and Panel B report the point estimates for the cohort-specific coefficients on the fertility dummy for men and for women, respectively. *Data Source*: LIS.

penalty explains a rising share of overall gender inequalities over time, as the portion of gender gaps unrelated to children (mostly reflecting differences in human capital and labour market discrimination) has been rapidly falling against fairly stable child-related penalties (Kleven et al. 2019a; Cortés and Pan 2023). While this approach does not factor in anticipatory effects, if any, of expected fertility on human capital investments, their presence would reinforce quantitative conclusions about the overall career cost of children.

Overwhelming evidence within and across countries suggests that the motherhood penalty is driven by the differential burden on parenthood on men and women (see the discussion and literature review by Kleven et al. 2019a; Cortés and Pan 2023). Andresen and Nix (2022b) finds that same-sex female couples in Norway share the earnings penalties from children between parents much more evenly than heterosexual couples, including adopting ones, casting doubts on the role of biological gender differences and incapacitation from birth and breastfeeding. Kleven et al. (2019b) shows that intervational variation in the motherhood penalty is strongly related with the share of population agreeing with conservative gender roles. For example, in Austria nearly 39% of the population agrees with the view that women with pre-school children or children in school should not work outside the home, and the long-run motherhood penalty (relative to fatherhood) is 51%. In Denmark, 6% agrees with this view, and the long-run motherhood penalty is 21%. While cross-country correlations conflate the role of additional factors such as variation in institutions and economic conditions, Kleven (2022) shows qualitatively comparable evidence across US states. Existing measures of gender conservatism vary even more widely across countries in our sample. One of the most widely used measure of gender norms, available from the International Value Survey, is based on answers to a question whether men have more right to a job than a woman when jobs are scarce. According to latest available surveys, the share of the population agreeing with this view is below 10% in Nordic countries and the US, between 18%-20% in the UK, France, Germany and Italy, and above one third in Taiwan, Chile and Greece.

To summarize most salient features of the evidence presented in this Section, we have shown clear evidence of gender convergence in education, employment and earnings, and of a decline in fertility and (especially legal) partnerships. According to most indicators, female outcomes look much more similar across countries in recent years than they did in

the 1970s. As of the 2010s, gender convergence is far from complete, with an increasing share of gender gaps being explained by household composition. To the extent that the career costs of marriage and children are largely pinned down by conservative gender roles, government support to families faces an uphill struggle in the attempt to close the remaining gaps. The next Section describes the emergence of gender gaps in labor supply as an outcome of spousal specialization in the household, and how specialization can be altered by policy. Section 4 will discussion existing evidence on policy impacts.

3 Conceptual Framework

To understand the factors that may drive the cross-country variation in the observed trends, we introduce a simple (partial equilibrium) model for the time allocation of spouses between the home and the market, that allows us to represent the impact of preferences, productivity and government policies on the labor supply of spouses and the parental provision of childcare.

The model builds on Cortés and Pan (2023) and assumes that partners in a couple enjoy utility from own consumption, the other partner's consumption, and a household public good. Each partner chooses the allocation of their time to the labor market and the household, taking as given the behavior of the other partner and household characteristics, including the number of children, each partner's wage, productivity in home production and preferences. While the model is not cooperative, it retains a key property of cooperative models, that the time allocation of partners is efficient and consistent with their comparative advantage.

Each household is comprised of two adult partners, i and j, and an exogenous number of children, n. Partner i's labor supply, denoted by h_i, maximizes the following indirect utility function:

$$U_i(w_i, w_j, n) = max_{h_i \in [0,1]} \left[w_i h_i + w_j h_j + \beta_i f(1 - h_i, 1 - h_j, n) \right],$$

taking as given their own wage w_i, and their partner's wage w_j and labor supply h_j, where $f()$ is the production function for the household public good, which is continuous and increasing in all arguments, and $\beta_i > 0$ is the associated marginal utility. Labor supply represents the fraction of each partner's unitary endowment of active time devoted to market work, whereas $1 - h_i$ corresponds to the fraction devoted to home production.

To simplify, we assume $f(1-h_i, 1-h_j, n) = \phi(\alpha_i(1-h_i)+\alpha_j(1-h_j))n$, where α_i and α_j are productivity parameters in home production, and ϕ is a strictly increasing, concave, and twice differentiable function. This specification assumes that home production is driven by the presence of children, consistent with evidence on the central role of children for labor supply. Wages and parameters such as productivity in home production α_i, α_j and preferences for the public good β_i, β_j are exogenous and may vary across couples.

The first-order condition for an internal solution $0 < h_i < 1$ is given by

$$\frac{w_i}{\beta_i \alpha_i} = \phi'(\alpha_i(1-h_i) + \alpha_j(1-h_j))n. \tag{2}$$

Partner i chooses instead not to participate to the labor market ($h_i = 0$) for

$$\frac{w_i}{\beta_i \alpha_i} > \phi'(\alpha_i + \alpha_j(1-h_j))n \tag{3}$$

and work in the market only ($h_i = 1$) for

$$\frac{w_i}{\beta_i \alpha_i} < \phi'(\alpha_j(1-h_j))n, \tag{4}$$

and similarly for partner j.

Without loss of generality, we assume that partner i is the secondary earner, i.e. $w_i < w_j$, and they have a comparative advantage in home production, i.e. $\frac{w_i}{\beta_i \alpha_i} < \frac{w_j}{\beta_j \alpha_j}$, determined by a combination of market wages, preferences and productivity in home production. Four cases can arise. In the first, both partners work both in the market and the home, with $0 < h_i < h_j < 1$. In the second, partner i specializes in home production and partner j does a combination of home and market work, i.e. $0 = h_i < h_j < 1$. In the third, partner i does both and j specializes in market work, i.e. $0 < h_i < h_j = 1$. Finally, each partner may specialize, in home production and market work respectively, with $h_i = 0$ and $h_j = 1$.

Spousal gaps in labor supply and patterns of specialization depend on comparative advantages. In particular, the secondary earner i works less in the market and is more likely to specialize in home production due to a combination of lower market returns (w_i) and/or higher household returns ($\beta_i \alpha_i$), encompassing productivity and preferences. We do not explicitly model gender norms in this set-up but their role may be subsumed under the $\beta_i \alpha_i$ term, as both productivity and preferences may reflect gender stereotypes as well as innate gender differences (Bertrand 2020). An alternative way to model conservative

norms consists in introducing imperfect substitutability between parental childcare inputs, as strong beliefs about gendered roles would make families unwilling to substitute maternal childcare with either paternal or non-parental childcare (Ichino et al. 2022).

Finally, while this is a static model, in a dynamic setting current gaps in labor supply would compound into larger gaps in earnings via returns to actual labor market experience. We next incorporate different family policies into the baseline framework.

Income Taxes Consider marginal income taxes $\tau_i, \tau_j > 0$, which partners take as given, reflecting direct taxes on labor income as well as income-related benefits. This is an approximation to typical fiscal systems in which individuals face a non-linear income tax schedule and may receive benefits that phase out with income. τ_i and τ_j capture their overall impact on labor supply.

Given marginal taxes, partners in a couple solve the problem:

$$U_i(w_i, w_j, n) = max_{h_i \in [0,1]} \left[w_i h_i (1 - \tau_i) + w_j h_j (1 - \tau_j) + \beta_i \phi(1 - h_i, 1 - h_j) n \right],$$

and analogous first-order conditions to (2)-(4) hold, having replaced wages in the baseline framework by their after tax values, $w_i(1 - \tau_i)$ and $w_j(1 - \tau_j)$. Assuming that income effects are small and substitution effects prevail, if both partners face identical marginal tax rates, taxation does not affect the couple's time allocation. If the secondary earner faces a higher marginal tax rate than the primary earner ($\tau_i > \tau_j$), taxes induce a more unequal time allocation across spouses, with the secondary earner more likely to specialize in home production and the primary earner more likely to specialize in market work.

As documented in Section **??**, there is substantial cross-country variation in how marginal taxes vary across spouses and with the presence of children.

Childcare Support Childcare support may be provided in monetary form, with a direct cash transfer or a subsidy, or in kind, whether by the government or employers. In-kind support can be interpreted as an arrangement by which childcare is provided for free. The government may also provide tax deductions for childcare expenditure. We analyze these options in turn.

We first introduce non-parental childcare as a variable $m_i, m_j \geq 0$, denoting the amount of childcare services purchased by each partner, taking the choice of the other partner as given. Total childcare provision is given by $f(1 - h_i, 1 - h_j, m, n) = \phi(\alpha_i(1 -$

$h_i) + \alpha_j(1 - h_j) + m)n$, with $m = m_i + m_j$, so that childcare expenditures are a perfect substitute for parental time. The resulting optimization problem can be expressed as:

$$U_i(w_i, w_j, m_i, m_j, n) = max_{h_i \in [0,1], m_i \geq 0} \left[w_i h_i - p m_i + w_j h_j - p m_j \right] + \beta_i \phi(1 - h_i, 1 - h_j, m_i + m_j) n, \quad (5)$$

where $p > 0$ is the market price of childcare. The first order condition for childcare expenditure is:

$$-p + \beta_i \phi'(\alpha_i(1 - h_i) + \alpha_j(1 - h_j) + m_i + m_j) n \leq 0, \quad (6)$$

which holds with equality for $m_i + m_j > 0$.

The first-order conditions for partners' labor supply are similar to (2)-(4), with childcare time per child now represented by $\alpha_i(1 - h_i) + \alpha_j(1 - h_j) + m_i + m_j$. Since childcare spending substitutes parental time in home production, relatively high-wage individuals (within and across households) choose higher values of childcare spending and increase their labor supply relative to a case in which childcare services cannot be purchased.

Consider next taxation in this setting and assume that childcare expenditure is tax-deductible, thus individuals pay taxes on post-childcare earnings. The optimization problem is described by

$$U_i(w_i, w_j, m_j, n) = max_{h_i \in [,1], m_i \geq 0} \left[(w_i h_i - p m_i)(1 - \tau_i) + (w_j h_j - p m_j)(1 - \tau_j) \right] + \beta_i \phi(1 - h_i, 1 - h_j, m_i + m_j) n. \quad (7)$$

The first order condition for purchased childcare becomes:

$$-p(1 - \tau_i) + \beta_i \phi'(\alpha_i(1 - h_i) + \alpha_j(1 - h_j) + m_i + m_j) n \leq 0,$$

which holds with equality for $m_i + m_j > 0$. The partner with the higher marginal tax rate faces a cheaper cost of childcare and has an incentive to purchase more of it, all else equal. The case in which the Government finances part of childcare via a proportional subsidy $s \in (0, 1)$ is similar to (5), with the net price of childcare given by $p(1 - s)$.

If childcare is instead provided in kind as a fixed amount $\overline{m}$, non-parental childcare in each partner's problem becomes $m = m_i + m_j + \overline{m}$. Given the concavity of $\phi()$, the introduction of $\overline{m}$ reduces the amount of childcare that each partner decides to purchase from the market and increases their labor supply. Relative to tax deductions, in-kind

services have the advantage of not distorting the partners' time allocation.

Parental Leave In this framework, 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. In a dynamic set-up, parental leave rights enable partners to return to their pre-birth job after a temporary interruptions of employment, and thus may encourage continuity of labor supply in the long run. At the same time, there may be dynamic costs to parental leave whenever employment breaks lead to loss of valuable labor 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.

To model dynamic costs of parental leave, we extend labor supply choices over two periods, assuming that partner i is entitled to parental leave in period 1 but not in period 2 (e.g. because leave rights are exhausted). Leave is remunerated at a fraction $\rho < 1$ of market wages, according to the government's or employers' benefits policy. Without loss of generality, we assume that partner j has no leave entitlement and their wage is constant over time. Using superscripts to indicate periods, the problem in period 2 is as in the static model, with indirect utility $U_i^2(w_i^2, w_j^2, n)$. In period 1, given that parental leave is paid, partner i has no incentive to do any unpaid childcare, and they simply choose the fraction of time spent on leave $l_i \in [0, 1]$, the rest being spent working in the market. Additionally, we introduce returns to actual labor market experience by letting wages in period 2 increase with hours worked in period 1, so that $w_i^2 = \mathcal{W}(1 - l_i)$, with $\mathcal{W}' > 0$ and $\mathcal{W}'' < 0$.

Considering for simplicity the case in which the primary earner j specializes in market production ($h_j^1 = 1$), the secondary earner i's decision problem in period 1 is given by:

$$U_i^1(w_i^1, w_j, n) = max_{l_i \in [0,1]} \left[w_i^1(1 - l_i) + \rho w_i^1 l_i + w_j \right] + \beta_i \phi(l_i) n + U_i^2(\mathcal{W}(1 - l_i), w_j, n).$$

The first order condition for (an interior solution for) parental leave is given by:

$$w_i^1 + \mathcal{W}'(1 - l_i) \frac{\partial U_i^2(w_i^2, w_j, n)}{\partial w_i^2} = \rho w_i^1 + \beta_i \phi'(l_i) n. \tag{8}$$

The left hand side of (8) captures the marginal cost of parental leave, in terms of foregone current earnings and lower future earnings due to the loss of labor market experience.

The right hand side captures its marginal benefit, given by replacement benefits and the increase in childcare production. If the benefit is smaller than the marginal cost for any positive value of leave, no leave is taken ($l_i = 0$). If the benefit exceeds the marginal cost for any positive value of labor supply, the whole first period of life is spent on parental leave ($l_i = 1$). In general, the optimum amount of leave increases with the replacement ratio ρ and decreases with the returns to actual experience $\mathcal{W}'$. The model can be extended to consider policy combinations of paid parental leave rights and subsidized childcare: both would increase the overall provision of childcare, but the childcare subsidy option would avoid dynamics costs related to the loss of actual experience. We will discuss evidence on the impacts of parental leave extensions via-à-vis childcare support in the next Section.

In a frictional labor market, an additional benefit of a parental leave program is to prevent workers from quitting their jobs when they become parents and facing involuntary unemployment if they later decide to search for a new job. Employers may also have an incentive to offer job-protected leave to workers who have accumulated firm-specific human capital and/or to save the cost of a replacement hire. From a normative standpoint, labor market frictions strengthen the case for mandated parental leave and give employers an incentive to offer parental leave to their employees in the absence of a government mandate.

Worktime regulations and part-time work While we have considered fully flexible labor supply choices in the interval $h_i \in [0, 1]$, labor regulations often impose inflexible workweeks and/or minimum working hours. This case can be modeled by restricting hours choices in the set $\mathcal{H} = \{0, [\overline{h}, 1]\}$, where $\overline{h}$ is typically close to 1. A partner may decide not to participate to the labor market, in which case $h_i = 0$. If they participate, they must work at least $\overline{h} \in (0, 1)$ hours. Work time regulations induce specialization in the household whenever the wage gap $w_j - w_i$ is large enough, such that the primary earner is unaffected ($\overline{h} < h_j \leq 1$) and the secondary earner is pushed to the corner solution ($h_i = 0$). The availability of part-time work, as implicit in the baseline model with $h_i \in [0, 1]$ eases work time constraints and may induce the secondary earner to participate to the labor market.

This framework may also allow for lower wage rates on part-time work ($h_i < \overline{h}$), in line with evidence that, in most countries, otherwise similar workers on average earn lower

wages on part-time than full-time jobs. Most of the part-time pay penalty is driven by occupational differentials, as part-time work is markedly more widespread in low-wage occupations, and transitions from full-time to part-time jobs often involve occupational downgrading (Manning and Petrongolo, 2008). Policies aimed at introducing hours flexibility in highly paid occupations may therefore reduce the penalty associated to shorter working hours and increase the labor supply of secondary earners. A dynamic version of the model may also encompass the reduced accumulation of labor market experience on part-time jobs, introducing a similar trade-off as parental leave between childcare time and the accumulation of actual labor market experience.

4 Evidence on Policy Impacts

The literature linking family policies to household structure, child wellbeing and parental outcomes is large and ever expanding, spanning several disciplines, approaches, and data sources. The discussion in this section mostly draws lessons from the economic literature on policy impacts, which is – nonetheless – increasingly influenced by advances in sociology and social policy on the interplay between societal change, evolving household structures, and policy adoption (Nieuwenhuis and Van Lancker, 2020).

Maternity (or parental) leave has historically been the most important dimension of public aid to families, followed (in time and importance) by support for early years' education and childcare. Taxation also has several elements that depend on family structure and that potentially affect men and women differently. Furthermore, employers play a role in accommodating the take-up of various forms of family support, they may complement government support and/or provide workplace conditions that ease the worklife balance of employees. Below we discuss each aspect in turn.

4.1 Parental Leave

All OECD countries, with the exception of the United States,[8] currently have in place universal, job-protected parental leave rights and part of the leave entitlement is paid. Overall parental leave includes maternity and paternity leave rights around or just after

[8]While there is no federal mandate in the US, legislation on parental leave is being gradually adopted at the state level. After California introduced paid leave in 2004, seven additional states (Connecticut, Massachusetts, New Jersey, New York, Rhode Island, Washington), and Washington D.C. have legislation in place as of 2022, and two more passed legislation that will come into effect in 2023 (Oregon) and 2024 (Colorado).

birth, as well as a longer-term leave that can be shared by parents and in most cases can be taken before a child's third birthday. The modern rationale for parental leave is to enable parents – especially mothers – to remain attached to the labor market during childrearing breaks, ensuring continuity of careers and retention of firm-specific and occupation-specific human capital. Leveraging evidence from decades of reforms in several high-income countries, the evaluation of the impacts of parental leave on parents and families is one of the most active areas of research on family policies.

4.1.1 Maternal Outcomes

Based on international variation in parental leave provisions, Ruhm (1998) studies their impact on female employment and wages in nine European countries that reformed their leave mandates during 1969-1993. He finds that 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 negative impacts on wages around 3%. The approach of Ruhm (1998) has been extended by later work to cover more recent years, a wider set of countries, and a richer set of institutions. Similarly as Ruhm (1998), Olivetti and Petrongolo (2017) find evidence of a non-monotonic association between parental leave and female labor market outcomes, with the peak between 12 and 17 months. Relatedly, gender earnings gaps initially decline and later rise with leave entitlement. 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.

These results provide a suggestive picture, and – being based on country-level outcomes – take into account spillover effects of policy beyond the targeted population. However, as noted within and outside this literature, causal inference based on a country-level panel may be delicate whenever policy adoption is itself a response to labor market trends, and the need for policy measures that are comparable both internationally and over time reduces the complexity of intervention to relatively coarse indicators.

A strand of the literature has addressed these concerns by evaluating the causal impact of policy for specific countries by combining rich micro data – often social security records – and variation from natural experiments. Lalive and Zweimüller (2009) analyze

the effects of changes in entitlement to paid, job-protected parental leave on maternal outcomes, following a major Austrian reform that extended the duration of parental leave from one to two years for children born after 1 July 1990. Based on variation across births on either side of the policy cutoff, the authors find that extended leave delays return to work of mothers, resulting in significant reductions in employment and earnings during the first three years since birth, with 62% of women returning to work within three years of birth in the pre-reform regime and 52% in the post-reform regime. However, only minor effects are detected beyond three years. Extended leave also leads to significantly higher fertility, via both tighter spacing of births and excess long-run fertility. Later reforms of 1996 and 2000 shortened and extended, respectively, entitlement to replacement benefits, leaving job protected leave unchanged, and Lalive et al. (2013) estimate that longer cash benefits significantly delay return to work of mothers when leave is job-protected, but less so once job protection has expired.

Following a similar approach, Schönberg and Ludsteck (2014) evaluate the impact of five major expansions in maternity leave coverage in Germany on maternal outcomes. The reforms took place between 1979 and 1993 and led to staggered extensions in job-protected leave from 2 to 36 months, and in cash benefits from 2 to 24 months. Findings indicate that extension of coverage at short durations leads to small delays in return to work, and larger delays at longer durations, but it has a very small impact on employment rates and earnings beyond 3 years from childbirth. However, extensions of cash benefits beyond the job-protected period produce significant employment and earnings losses for affected mothers in the long-run, pointing at the role of the job guarantee in avoiding long-lasting negative effects of benefit extensions.

Dahl et al. (2016) focus on a series of expansions in paid maternity leave in Norway, which nearly doubled from 18 weeks in 1977 to 35 weeks in 1992, and find that that take-up of longer paid leave to a large extent added to pre-existing unpaid leave, thereby leading to an overall delay in mothers' return to work. However, they detect no discernible impact on female labor supply in long-run.

Kleven et al. (2021) evaluate the impact of parental leave on the motherhood earnings' penalty in Austria. In the year following the birth of their first child, mothers' earnings fall to 10% of their pre-birth level and, despite some later convergence, mothers still suffer a 50% earnings drop with respect to fathers ten years into parenthood, via a

combination of decreased participation, and shorter hours and lower wages among those who participate. The authors estimate changes in the motherhood penalty following the introduction of paid parental leave in 1961 and through the 1990-2000 reforms. Their main finding is that longer leave entitlement for mothers leads to deeper initial drops in post-birth earnings, but no discernible impact on the long-run penalty, consistent with earlier findings for Austria (Lalive and Zweimüller 2009; Lalive et al. 2013) and for other countries. While there are nuances across studies in the extent of the estimated delays in the process of return to work, this literature excludes that extended entitlements may positively contribute to gender convergence in employment and earnings.

One finding that deserves closer scrutiny in this literature is that in most cases there are no long-run employment or earnings penalties for taking time off the labor market during the first few years of motherhood. This is in contrast with evidence that in some professions career breaks do have a detrimental impact on women's earnings (Albanesi and Olivetti 2009; Bertrand et al. 2010; Goldin and Katz 2011), via a combination of returns to actual experience, occupational downgrading and employers' beliefs. One plausible explanation is that these channels may only be relevant in high-skill careers, and may not be discernible on the average maternity leave taker. However, Lalive and Zweimüller (2009) do not find evidence of heterogeneous effects between high- and low-wage mothers, or between white and blue collar workers, and Kleven et al. (2021) find that even mothers in the top quartile of the pre-birth earning distribution experience no long run penalty of parental leave. One may argue that these divides are too coarse to detect detrimental impacts of career breaks (if any) on high-skill women, and more research should be targeted to women at the top of the earnings ladder to reveal whether extended parental leave may explain glass-ceiling effects. A complementary explanation could be that treatment effects of parental leave are heterogeneous, and compliance is higher among mothers with lower career costs.

Unsurprisingly, most available evidence on the impacts of parental leave refer to European countries, who have been relatively early adopters and currently have in place longer entitlements than most non-European countries. But, following the introduction in 2004 of six weeks of paid leave in California under the Paid Family Leave Act, US-based studies are gradually coming to light. Evidence on the US case is not simply interesting in its own right, but also in relation to contexts who have long had in place extended leave entitle-

ments. Byker (2016) finds that the PFLA increased labor market attachment of mothers who otherwise would have temporarily left employment in the months surrounding birth. Using a regression-kink design, Bana et al. (2020) estimate that an increase in the leave benefit amount increases the likelihood of returning to the pre-leave workplace for women with relatively high earnings (i.e. near the maximum benefit threshold). However, work by Bailey et al. (2019) on the universe of working mothers in California detects no beneficial employment effects of the PFLA, whether for the short- or long-run, and detects negative effects of 2.1 percentage points in the short-run, up to 4.1 in the long-run, for first-time mothers. Their paper discusses suggestive evidence that null or negative effects may be driven by increased bonding and involvement of women with their newborns. In a broad comparison, studies of parental leave reforms in most European countries tend to find negative impacts of longer parental leave rights in the short run, but negligible or very small impacts beyond three years since childbirth (if leave is job protected), while US-based studies detect long-run impacts ranging between zero and negative.

While in most contexts parental leave can, to some extent, be shared by both parents, explicit incentives to fathers' leave participation have been introduced more recently with nontransferable "daddy quotas," whose entitlement is lost if it is not taken up by fathers. Daddy quotas were pioneered in Scandinavian countries in the 1990s, followed by a few other countries in the past two decades. Existing studies find that fathers tend to respond to incentives, but rarely take up more than their reserved quota, with limited leeway for replacing maternal childcare. For example, Ekberg et al. (2013) find that Swedish fathers responded to the introduction of the daddy month in 1995 by taking 15 extra leave days on average, but without consequences on paternal involvement in childcare later in life. Consistent with this evidence, Andresen and Nix (2022a) estimates that fathers' take-up of parental leave left the motherhood earnings penalty in Norway virtually unchanged. However, positive long-run effects on paternal childcare are detected following the introduction of daddy quotas in Spain (Farré and González 2019) and Quebec (Patnaik 2019), as well as mild beneficial effects on maternal labor supply. For professional careers, Antecol et al. (2018) offer a cautionary tale. Gender-neutral stopping policies on tenure-clocks, adopted by the majority of research universities in the US, effectively penalized female economists, as men were able to use the extra time more productively or strategically than women.

Fathers' limited take-up of parental leave may have deep roots, perhaps related to gender norms in caregiving and beliefs on employers' expectations. For example, Bana et al. (2022) find that men in California are less likely than women to take-up family leave and disability insurance, but gender differences for family leave are much larger than for disability insurance, and men's take-up of family leave is especially responsive to firm characteristics. Interestingly, Johnsen et al. (2020) find that fathers respond to incentives for presenteism at the workplace for fear of missing out on promotion opportunities when the majority of their coworkers and direct competitors are at work. Recent work also suggests that in some cases fathers' fear of reputational consequences of leave taking may be misplaced, as they tend to overestimate their peers' negative attitudes towards paternity leave (Miyajima and Yamaguchi 2017). This behavior is consistent with evidence on pluralistic ignorance from other contexts (Bursztyn et al. 2020), in which most individuals personally reject a conservative norm, but end up abiding to it in the incorrect belief that their peers accept the norm and would socially sanction those rejecting it. In the presence of pluralistic ignorance, peer influences and learning from exposure to leave-takers may be especially effective in eroding conformity to conservative behaviors (see Dahl et al. 2014 for evidence of peer effects in paternity leave taking in Norway).

4.1.2 Child Outcomes

An important goal of the introduction of parental leave has been the improvement of child development and welfare. The main channels at play are prolonged breastfeeding (Fitzimons and Vera-Hernández 2022 and Baker and Milligan 2008b) and more intensive parent-child interactions in a critical stage of development (see Cunha and Heckman 2007a and the discussion in Fort et al. 2020). Indeed all studies of parental leave discussed above show evidence of significant take-up by mothers, translating into longer exposure of children to maternal care in the early years of their lives. Parental leave may also have indirect effects on child development via changes in household income and fertility. Importantly, in case in which leave can be shared by parents, there can be additional effects via the involvement and labor supply of fathers.

Ruhm (2000) detects negative and significant impacts of parental leave coverage on infant and child mortality in a panel of high-income countries, and qualitatively similar results of on child health are highlighted in the 2005 Economic Journal Symposium

dedicated to this topic (Gregg and Waldfogel 2005 and references therein). Looking into country-level reforms, Rossin-Slater et al. (2013) detects beneficial impacts of the 1993 FMLA Act in the US for the children of college-educated and married mothers, who were most likely to take advantage of the unpaid leave. On the contrary, longer parental leave extensions analysed by Baker and Milligan (2008b,a) and Wurtz-Ramussen (2010) find little evidence of improved child health in Canada and Denmark, respectively.

The availability of longitudinal data from administrative sources has made it possible to investigate children's outcomes beyond the early years, and well into their education trajectories and in some cases the labor market. Carneiro et al. (2015) investigate children's long-run outcomes following the introduction of 18 weeks' paid maternity leave in Norway in 1977, and the extension of unpaid job-protected leave from 12 to 52 weeks. Their analysis suggests a sharp increase in the take-up of paid leave, without changes in the length of unpaid leave or in mothers' disposable income, due to a 100% replacement ratio of leave benefits. Such feature makes this reform a promising setting for identifying the impact of maternal time on children, uncontaminated by income effects. The increased time spent with children led to a 3 percentage point decline in high-school dropout rates, a 3.5 percentage point increase in college attendance, and a 7% increase in earnings at age 30. Further reforms gradually expanded paid leave in Norway from 18 to 45 weeks between 1987 and 1992 and Dahl et al. (2016) detect no further beneficial impact on schooling outcomes, nor on family outcomes such as fertility, marriage or divorce.

Dustmann and Schoenberg (2012) find negligible effects on children's education of gradual extensions of job-protected leave in Germany from 2 to 18 months during 1979-1990, while keeping constant at two months the portion covered at full mother's salary. Negative (though small) effects instead follow from the 1992 expansion in leave entitlement. The suggested interpretation is that this reform implied a substantial fall in disposable income and extended benefits up to 36 months, when children would benefit relatively less from exclusive parental care.

Lack of beneficial educational impacts at longer parental leave entitlements are also highlighted by Wurtz-Ramussen (2010) following a leave extension in Denmark from 6 to 14 weeks in 1984, and by Liu and Skans (2010) following an extension from 12 to 15 months in Sweden in 1988. However, Liu and Skans (2010) find that impacts are

beneficial for a subsample of college-educated mothers, who may have an advantage over nonparental daycare in early years education.

From this discussion it emerges that key mediators for the impacts of parental leave and maternal time on child development are the child age at which parental leave is extended and the counterfactual childcare arrangement that would prevail in the various contexts. This brings us to a more detailed discussion of the impacts of childcare intervention in Section 4.2.

4.1.3 Employers

Some of the impacts of parental leave on worker careers and their families are mediated by the role of firms. For example, one may argue that small firms would struggle to accommodate leave taking by their employees because they lack the flexibility to cover absences. But this does not seem to be the case from (scant) existing evidence. The recent survey study by Bartel et al. (2021) compares the responses of medium and small size employers in New York State, where paid family leave was introduced in 2018, to those of a matched sample of firms in Pennsylvania, a neighboring state without paid leave provisions. Employers in NY indicate an improved ease of managing longer employee absences after intervention, and they do not seem to alter their perceptions of employee performance, or change the composition of their workforce. Ginja et al. (2023) find that employers respond to an extension of maternity leave in Sweden with both new hires and longer hours among incumbent employees, with a consequent increase in their wage bill. While results from these studies point in different directions, the consequences of parental leave entitlement for firm performance and their personnel decisions deserve further study. An important insight on this matter concerns the signalling content of parental leave, on which employers may build beliefs about employee attachment to the job. Tô (2018) posits, in a context with asymmetric information, that a worker's decision to forgo paid leave serves as a costly signal to the employer of their future value. This mechanism has consequences for within-firm inequality, as "less valued" employees would pool at the maximum leave take-up, while "highly valued" employees would forgo some of their entitlement and earn higher wages upon their return to work. Finally, firms may decide to complement government provision of parental leave with additional entitlement or benefits. We will discuss evidence of their impacts in Section 4.4.

4.2 Childcare Support

In several countries, government support to families continues beyond childbirth in the form of subsidized childcare and/or preschool programs. These serve a two-fold purpose, namely enabling parents to be employed, with reduced reliance on public assistance, and enhancing child development, particularly among disadvantaged families. The subsections below will reflect this distinction, discussing first the impact of childcare programs on maternal employment and, next, their consequences for child health and education.

4.2.1 Maternal Outcomes

A few recent papers have studied the macroeconomic effects of childcare transfers in the contexts of life-cycle models of household labor supply decisions (see, among others, Attanasio et al. 2008, Domeij and Klein 2012, Bick 2016, Guner et al. 2020). In particular, Guner et al. (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. Their calibrated model delivers substantial positive impacts of conditional subsidies on maternal labor supply, while unconditional subsidies would reduce it. Moreover, means-testing leads to larger welfare gains by providing more generous transfers to low-income households. On the 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. While within-country causal estimates offer a more nuanced picture of the impacts of childcare support on maternal labor supply, overall the available evidence suggests clearer beneficial effects on female employment than for the case of longer or more generous parental leave.

Gelbach (2002) provides one of the earliest studies that leverage quasi-experimental variation in eligibility for pre-school programs in the US.[9] By using quarter of birth as an instrument for enrollment in kindergarten in 1980, he finds that public kindergarten access increases labor supply measures by 6-24% among single mothers whose youngest child is five, with slightly milder impacts among married mothers. Cascio (2009) exploits the staggered pattern of state-level subsidies for kindergarten over the 1960s and 1970s and documents positive enrollment effects for 5 year olds in all household types, rela-

[9] See Blau and Currie (2006) for a discussion of earlier work.

tively large employment responses for single mothers whose youngest child is five, and null and/or imprecisely estimated responses for married mothers and single mothers with younger children. Using evidence from the 2000 Census, Fitzpatrick (2012) finds that kindergarten enrollment significantly increases the employment rate of single mothers without additional young children, while estimates for all other groups are positive but not statistically different from zero. Studies on the availability of pre-kindergarten places (for 3-4 year olds) find little or no evidence that these encouraged maternal employment (Fitzpatrick 2012), except for short-lived effects for less educated mothers (Cascio and Schanzenbach 2013). Most US-based evidence tends to find largest effects for disadvantaged parents, for whom the availability of free childcare is more attractive.

Comparable studies for Canada leverage variation from the expansion of subsidized childcare in Quebec, which started in 1997 with universal kindergarten coverage for 5 year olds and low-cost childcare for 4 year olds, progressively extended to younger children until the under-2 became covered in 2000. Baker et al. (2008) document a substantial increase in the use of institutional care (which partly crowds out informal care), together with an increase in maternal labor supply (see also Lefebvre and Merrigan 2008 and Lefebvre et al. 2009).

Existing studies on European countries tend to show evidence of smaller and/or less clear-cut impacts, mostly depending on the substitutability between state-funded and alternative forms of childcare. The substantial expansion of state-funded childcare places in Norway in 1975 generated a negligible rise in maternal employment (Havnes and Mogstad, 2011a). As the number of working women using subsidized childcare increased, these pieces of evidence suggest substantial crowding-out of non-maternal, informal childcare. Research on the 2002 expansion of childcare places for 1-2 year olds detected more sizable impacts on maternal employment, such that mothers living in a couple who use a full year of childcare are 32% more likely to be employed than mothers who have no access (Andresen and Havnes, 2019). For France, Givord and Marbot (2015) estimate very small impacts of childcare subsidies for the under-3, although Goux and Maurin (2010) shows that their effects are sizable in the subsample of single mothers. For Austria, Kleven et al. (2021) detect near zero impacts of wider availability of childcare places on the motherhood earning penalty, whether soon after birth or in the longer run. Survey evidence on time use and childcare arrangements reveals that, among working mothers, subsidized

childcare largely replaced care provided by relatives, leaving maternal childcare roughly unchanged; among non-working mothers, the vast majority declare that they do not work because they have a preference for maternal childcare. As a consequence, female employment in Austria is not constrained by the availability of state-funded childcare.

4.2.2 Child Outcomes

Pre-school and early childhood programs are generally considered important to foster child development (see, e.g., Currie 2001), especially for children who suffer from lack of parental investments – in time and/or money – early in life. Dynamic complementarities in human development imply that investments made in early years not only make recipients more productive at later ages, but also make subsequent investments more fruitful (Cunha and Heckman 2007b; Heckman 2007; Aizer and Cunha 2012).

Impacts on child development depend on the quality of care provided and the alternatives available and affordable to families. While affluent households typically have access to high-quality alternatives, public programs may be expected to improve on the quality of early-life environments for disadvantaged and/or single parent households.

The extensive survey by Elango et al. (2016) reviews findings on short- and long-term impacts of early childhood interventions in the US and a few other countries, covering both targeted and universal programs. The US implemented a number of randomized social experiments ("demonstration programs") between the early 1960s and late 1980s, targeted to children from disadvantaged backgrounds. These programs are found to have clear beneficial effects on early measures of IQ, as well as non-cognitive skills. While IQ gains fade away in the teenage years, gains in non-cognitive skills tend to produce beneficial long-lasting effects on school completion, employment, health, and criminal behaviour. Studies that investigate heterogeneous impacts find that poorer children within the targeted population benefit the most. The Head-Start is a means-tested federal pro-school program started in 1965. Existing evaluations exploit variation from cross-state diffusion and age-eligibility rules and tend to detect beneficial short- and long-term effects on cognitive and non-cognitive skills, albeit smaller than for the demonstration programs, consistent with relatively wider eligibility of the Head-Start among the less-disadvantaged as well as wider heterogeneity in the quality of care provided. For both types of programs, cost-benefit analyses that take into account long-term gains in the form of higher earnings

and reduced incidence of criminal activity conclude that such programs can be socially efficient.

Results from existing evaluations of universal pre-school programs are more mixed. The 1975 expansion of subsidized childcare in Norway produced beneficial effects on several long-term outcomes, including completed education, employment, and welfare dependency. The likely channel is that the reform did not crowd-out maternal childcare, but mostly replaced informal child-care with high-quality formal care. While average treatment effects are positive, they turn negative for higher-earning children (Havnes and Mogstad 2011b, 2015). The 1997 universal childcare reform in Quebec extended subsidies to all households with children aged 0-4, being previously restricted to low-income families. Baker et al. (2008) detect negative impacts on child behavior and child-parent interactions, associated to the displacement of maternal childcare in affluent families and Kottelenberg and Lehrer (2017) relate heterogeneous impacts to patterns of parental childcare displacement across population groups. In the US, universal pre-school programs have been introduced in Georgia and Oklahoma, with positive effects on average, albeit with wide variation across socio-economic groups (Cascio and Schanzenbach 2013; Cascio 2023). In Italy, the availability of day-care places to a relatively affluent and educated population resulted in a loss of IQ and other non-cognitive traits, whose associated penalty grows with family income. The interpretation is that day care for the population under study deprives children of high-quality, one-to-one interaction with parents, other family members, or nannies (Fort et al. 2020).

Given shortage of individual-level information on childcare attendance, several estimates found in the literature identify intent-to-treat effects that often conflate heterogeneity in take-up and response to treatment. To disentangle the two mechanisms, some recent papers have estimated variants of the Heckman and Vytlacil (1999) marginal treatment effect (MTE) framework, which relates heterogeneity in treatment effects to observed and unobserved heterogeneity in the take-up propensity. Kline and Walters (2016) investigate impacts of Head Start in a context of a selection model that relates variation in treatment effects to variation in childcare alternatives as well as observed and unobserved child characteristics. They detect positive short-run effects on test scores of children who would otherwise have been cared of at home, and insignificant effects on children who would have attended other pre-school programs. They also find evidence

of "reverse" selection on unobservables, namely children whose unobserved characteristics discourage Head Start take-up would experience larger test score gains. Comparable findings are shown by Cornelissen et al. (2018) in a study of treatment heterogeneity of universal childcare in Germany aimed at 3-6 year olds. Having established negative selection on gains, they estimate a positive and strong effect of treatment on the untreated, and a negative effect on the treated. Felfe and Lalive (2018) provide a more nuanced view on impacts for children aged 0-2 in Germany, whereby children who are mostly likely to attend benefit in terms of motor skill development, and children who are least likely to attend benefit the most in terms of socio-emotional development. In summary, existing evidence on the correlation between selection and gains form pre-school programs points at a clear role for policy to attract low take-up children. Successful outreach to low-attendance families would not only maximize private returns to preschool programs, but also make them socially efficient.

4.3 Taxes

Modern tax and benefit systems contain elements targeted at families, including for example tax credits for low-income families and child benefits. In addition, marginal income taxes may vary with the gender and the household composition of tax payers. In progressive tax systems with joint couple taxation, 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 differ whenever the phase out of cash transfers and tax credits, if any, depend on household composition.

The relationship between taxes and female labor supply at both the intensive and extensive margins has long attracted attention in several strands of literature. From the observation that women tend to have higher labor supply elasticity than men (Blundell and MaCurdy 1999 and Keane 2011), 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 et al. 2011).

The macroeconomic literature has produced several evaluations of tax reforms in the context of household labor supply models with heterogeneous agents, typically with a focus on the behavior of married couples. Kaygusuz (2010) studies the impacts of the 1980s tax cuts in the US in a calibrated model with a Frisch elasticity of labor supply of

0.5 and concludes that the 1980s reforms would explain up to one quarter of the observed rise in the participation rate of married women. Guner et al. (2012) quantify the effects of two revenue-neutral tax reforms in turn – the first eliminates progressive taxation and the second replaces joint with single taxation. Both reforms stimulate the labor supply of married women, but the second reform has a much larger quantitative impact than the first, as women tend to be secondary earners. In an international perspective, Bick and Fuchs-Schündeln (2018) evaluate the contribution of international variation in tax systems to cross-country differences in the labor supply of couples. By capturing differences in the non-linearity of country-level tax systems, as well as 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. Borella et al. (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.

The calibrated Frisch labor supply elasticities used in most of the macroeconomic literature (around 0.4-0.5) are in the same ballpark of the reduced-form estimates obtained by Eissa (1995, 1996) for married women, based on difference-in-differences evaluations of the 1980s US tax reforms. However, several of the microeconometric estimates discussed by Blundell and MaCurdy (1999) for married women are substantially lower, and the meta analysis of Chetty et al. (2011a) documents sizable gaps between micro and macro estimates in the literature. Chetty et al. (2011b) show that optimization frictions such as hours constraints and adjustment costs substantially attenuate micro labor supply elasticities with respect to their macro (or "structural") counterparts.

Besides work on the overall tax structure, a vast literature has emerged on the evaluation of fiscal programs specifically targeted at families, most notably the Earned Income Tax Credit (EITC), which is available to low-income families with children and positive labor earnings in the United States. Since its introduction in 1975, the EITC has gradually become a key component of the US welfare system. Nichols and Rothstein (2016) review a large body of work that evaluated its impacts on a range of outcomes. Much of this literature has exploited variation from expansions in EITC coverage during the 1990s.[10] The broad consensus from this literature is that the EITC had a sizable impact on the participation rates of single mothers (with an extensive margin elasticity of about 0.7, according to the estimates of Meyer and Rosenbaum 2001); a small negative impact

[10]See Hotz et al. (2018) for an evaluation of earlier work.

for married women, as they tend to be secondary earners in their households, and almost no impact on men. Work by Saez et al. (2012) shows evidence of much smaller responses at the intensive margin, as identified by the excess mass of the earnings distribution clustering around two kinks in the EITC tax schedules, at the phase-in range, and at the start of the phase-out range, respectively. Limited intensive margin responses may in turn be driven by individuals' limited ability to finely adjust their working hours and earnings and/or limited knowledge about the EITC schedule (Chetty et al. 2013). Nichols and Rothstein (2016) also document evidence of important EITC effects on children's academic achievement and attainment.

The increasing reliance of modern welfare systems on in-work benefits has witnessed the introduction of family tax credits in a few other countries (see Brewer et al. 2009 and references therein for a cross-national perspective and Brewer and Hoynes 2019 for an in-depth US-UK comparison). In particular, the introduction of the Working Family Tax Credit in the UK in 1999 has produced similar labor supply effects as the EITC, with positive impacts on lone mothers' employment, and little or no impacts on other groups (see Blundell 2006 for an overview).

4.4 Firm-level Provisions

Employers play a role in the work-life balance of their employees. Depending on the institutional context, they need to accommodate the take-up rate of government policies such as parental leave and reduced working hours, and may complement public support to families via family friendly arrangements, especially in cases in which government intervention is limited. Family-friendly practices possibly include additional parental leave, child-care support, and alternative work arrangements such as reduced and/or flexible hours and remote work opportunities. Additionally, employers may be the relevant source of information for their employees about available government programs. Bana et al. (2022) shows evidence that employees in high-wage firms in California are relatively more likely to take-up family leave and disability insurance, suggesting that firm-level attributes are important determinants of social insurance use.

Unsurprisingly, most available evidence is drawn from the US case, where only a minority of states have in place paid leave legislation.[11] Using a combination of firm- and

[11] See also OECD (2001) for cross-country evidence on the prevalence of firm-level practices and its relationship with government provided benefits.

individual-level data, Goldin et al. (2020) estimate that access to employer-provided paid parental leave has risen from 11% to 17% of all workers between 2010 and 2018. Coverage is highest in the finance and insurance sector, where about 40% of the 150 largest firms offer some form of paid leave as of 2017, and lowest in retail and manufacturing, with an incidence between 5% and 10%. But, even in the industries with the highest levels of paid leave, these voluntary offerings are lower than what most high-income countries provide through government programs. Whenever firms offer paid leave, this does not automatically cover all employees. During 2001-2010, 64% of college graduates who were at work while pregnant received some paid leave, against 36% of those without degrees.

Firms may find it profitable to offer paid leave whenever this encourages firm-specific human-capital investment and bonding of employees to workplaces (Goldin et al. 2020) and, more in general, to attract and retain female talent and improve gender diversity. In support of this hypothesis, Liu et al. (2023) find that firms offer more generous female-friendly benefits, relative to gender-neutral benefits, in industries where female talent is limited.

A growing literature has shown the importance of worker sorting into high- and low-paying firms as an important driver of wage inequality, overall and by gender (see, among others, (Card et al., 2015)). But there is little evidence unpacking the link between sorting, pay and benefits. Causal evidence on the impacts of employer provided family-friendly benefits on workers and firms is to date scant. Even as matched employer-employee data become increasingly available, it is hard to extract information on firm-level benefits. In the absence of direct information on workplace practices, Hotz et al. (2018) apply a revealed preference approach to infer men's and women's preferences for workplace characteristics before and after childbirth in Sweden. They estimate that family-friendly firms are more likely to employ low-mid skill workers and to have a more compressed wage structure, but they do not necessarily belong to industries that tend to offer work flexibility. Moving to family-friendly workplaces slightly improves the earnings of mothers, while reducing the earnings of fathers. A promising source of detailed information on firm-level practices and benefits is provided by the textual analysis of job adverts, which would flag perks like employee control over work schedules and opportunities to work remotely.

5 The political economy of family policies

Most of the policy evaluation literature takes institutional reforms as largely exogenous, but one key open question concerns the forces that drive policy adoption and the consequent wide variation in family policies across countries and over time. Despite some convergence in the quantity and quality of governments' support to families over recent decades, encouraged to some extent by international convergence in fertility, female employment and social norms, broad disparities persist.

The path to policy adoption has differed widely across countries, both in the overall generosity of family support and in the combination of specific policy components. Early legislation on parental leave rights, advocated by the 1919 ILO Maternity Protection Convention and gradually implemented across Europe over the following decades, had the main rationale to protect maternal health around birth and child development and – implicitly or explicitly – empasized women's traditional gender roles as wives and mothers in a male-breadwinner society. The sustained rise in female participation during the second half of the twentieth century, as well as evolving norms regarding gender roles, translated into higher demands for maternity leave rights as a way to reconcile careers and motherhood. These factors, together with rising emphasis on equalized education opportunities for children, motivated public investment in early years' care and education. More recently, in an attempt to redress gender disparities in the career cost of children, several countries have introduced fathers' exclusive quotas in leave entitlements. Nordic countries have pioneered both the progressive expansion in maternity leave duration since the mid-late 20th century and the introduction of fathers' quotas. At the other extreme, parental leave legislation is being gradually introduced at the State level in the US, starting with California in 2004.[12]

Since at least work by Musgrave (1969), the economics literature has devoted much attention to explaining cross-country variation in various dimensions of fiscal policy – such as the overall size of public spending, taxation, social security benefits and redistribution – from a political economy perspective (Persson and Tabellini, 2002).[13]

[12]See Wilkander et al. (1995) for early labor legislation directed at women and Nieuwenhuis and Van Lancker (2020) for the more recent history and further details.

[13]Factors associated with cross-country variation in government policies include the income distribution (Meltzer and Richard, 1981), political regimes (Persson et al. 2000, Milesi-Ferretti et al. 2002, Mulligan et al. 2004), openness and country size (Alesina and Wacziarg, 1998), ethnic conflict (Alesina et al., 1999), and beliefs about fairness (Alesina and Angeletos, 2005), among others.

This perspective is largely missing in the existing body of work on family policies, with the exception of Givati and Troiano (2012), who investigate the role of cultural attitudes towards gender-based discrimination in establishing maternity leave rights. One general way to connect the political economy literature to family policies is to interpret these as part of the welfare state system. As welfare policies typically seek to maintain standards of living for those unable to work (disability insurance and social security), insure against business cycle risk (unemployment benefits), or redistribute income (transfers and progressive taxation), they have elements in common with various forms of family support. Indeed, relatively generous welfare states in Nordic countries are accompanied by robust family policies. The US case stands out for having both a less generous welfare system and more limited support to families than virtually all countries in our sample.

Alesina et al. (2001) discuss the possible factors behind differences in the observed levels of fiscal redistribution between the US and Europe. One important argument is that racial heterogeneity and discord in the US make redistribution to the poor, who are disproportionately African American, unappealing to the median voter. This reasoning may extend to family policies, as family support is understood to especially benefit single working mothers, among whom African American mothers would be over-represented (see also Boustan and Collins 2014 for evidence on black-white differentials in participation).

However, simply viewing family policies as a component of the welfare state is limiting, as it ignores their gender dimension. For example, joint income taxation on married couples effectively increases marginal taxes on the labor supply of wives, and so do income-based childcare subsidies. On the other hand, publicly provided childcare and daddy quotas may encourage female labor supply in contexts where mothers are mostly in charge of childcare.

Complementary insight on the adoption of family policies can be gained from work on the origin of women's rights. Tertilt et al. (2022) discuss their economic and political origins, ranging from civil rights and the control over their own bodies, to equal treatment in the labor market. One view is that cultural change contributes to evolving attitudes towards women's rights, which eventually become adopted by (mostly male) legislators. This view naturally raises a question about deeper drivers of cultural change.

Doepke et al. (2012) discuss evidence in support of the hypothesis that cultural change is often spurred by economic development and shocks such as technological change, con-

flict or natural disasters. These may lead directly to the expansion of women's rights. For example Doepke and Tertilt (2009) argue that technological change and higher returns to education in 19th century England and US eased women's economic empowerment thanks to women's prominent role in the education of children. Indeed Cascio and Shenhav (2020) discuss evidence that the introduction of women's voting rights in the US translated had an impact on policy choices and social welfare. Alternatively, economic development may encourage the expansion of women's rights indirectly via cultural change. In support of this view, the epidemiological approach infers the relevance of culture from the behavior of second-generation immigrants in the host country, who face the same economic and instituional contexts as natives, but may share cultural traits from their country of ancestry. Indeed, work in this field has found that the fertility and labor participation of immigrants in the US are correlated with outcomes in their origin country (see, among others, Fernández and Fogli 2009). Research on the long-run transmission of culture by Alesina et al. (2013) probe the cultural legacy of the introduction of the plough in agriculture, leading to women's specialization in domestic work, more conservative gender attitudes in society, and wider gaps in labor market outcomes.

6 Cross-Country Variation in Family Policies

We use OECD Tax Policy, Labour and Family Policies databases to document the cross-country variation in the family policies analyzed in this chapter.[14] We consider marginal taxes for primary and secondary earners based on family status and wages. We also consider childcare costs for parents using childcare facilities net of any benefits designed to reduce the gross childcare fees. Additionally, our analysis includes total expenditures on family policies as a fraction of GDP and its components, length in weeks of paid maternal and paternal leave, proportion of children enrolled in pre-primary education or primary school, and the rank in the generosity of part-time entitlements. The data on policies for our sample of countries starts in the year 2000 and mostly ends in 2018 or 2019. We provide an overview of the variation in these family policies across countries and highlight some systematic patterns.

Marginal Income Taxes We begin with marginal labor income taxes for married couples for primary and secondary earners. Marginal taxes measure the fraction of additional

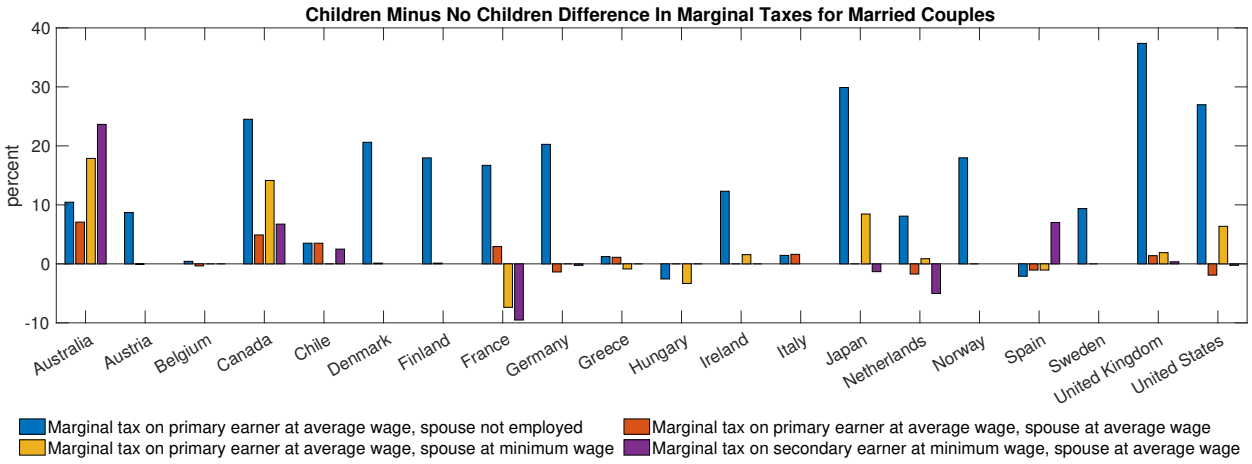
[14] OECD Family Database

earnings that is lost to either higher taxes or lower benefits when an employed person marginally increases their working hours. Marginal taxes take into account phasing out of cash benefits or tax deductions as income increases, but not those related to childcare costs, which we will consider separately. Marginal taxes apply to an increase in work effort from 50 to 100% as a fraction of full-time, so that they are to be interpreted as marginal taxes on the intensive margin only. When spouses have the same wages, their marginal taxes are assumed to be the same.

Given our emphasis on family policies, we consider how marginal taxes for married workers vary with the presence of children. The 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 12 reports the children minus no-children difference in marginal taxes for married couples with the primary earner at the average wage. Strikingly, in most countries, marginal taxes on primary earners at the average wage with a non-working spouse are substantially higher for couples with children than for couples with no children. The difference is often well above 10 percentage points. The only countries in which this pattern does not hold are Belgium, Chile, Greece, Hungary, Italy and Spain. This behavior of marginal taxes for one-earner couples likely results from phase-out of income based benefits and tax deductions associated with the presence of children that are only available to couples with relatively low income, such as one-earner couples. Indeed, for two-earner couples, marginal taxes on both the primary and the secondary earner vary little with the presence of children. Only Australia and Canada show marginal taxes that are systematically higher for two-earner couples with children compared to those without children, while in France marginal taxes on two-earner couples with one spouse at the average and the other at the minimum wage with children are approximately 10 percentage points lower that for couples without children.

To highlight the pattern of variation in marginal income taxes with and without children in two earner married couples, Figure 13 plots the children-no children difference in marginal taxes on each spouse for couples with the primary earner at the average wage. The left panel displays the data for couples with the second spouse also at the average wage while the right panel displays the difference when the spouse is at the minimum wage. In both cases, taxes for couples with children tend to be higher than on couples

Figure 12: Children minus no-children difference in marginal taxes for married workers by wage and earnings of the spouse, 2000-2015 averages.



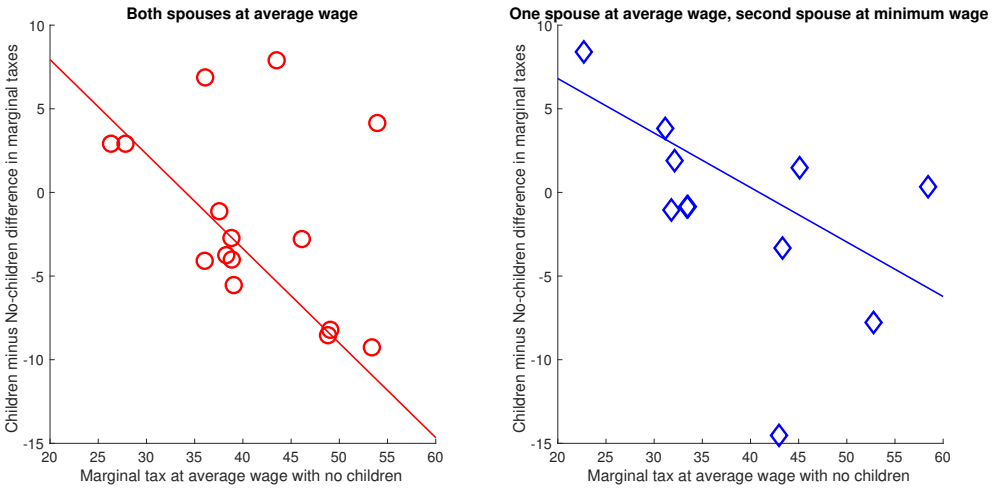
Notes: Marginal taxes calculated for an increase in effort from 50 to 100 percent of full time work for couples with two children age 4 and 6 years old. All values in percentage. Source: Author's calculations from OECD Tax Database.

with no children in low marginal tax countries, while the opposite is true in countries with high marginal taxes.

The pattern of variation in marginal income taxes based on the presence of children suggests that cash benefits or tax deductions and credits associated with children phase out as income increases, effectively rendering marginal taxes of married workers with children higher than on those without children. Moreover, the children minus no-children difference in marginal taxes is highest for one earner couples. This is important because it adds to the fact that, as shown in Figure 21 in Appendix D, marginal taxes for married workers with a non-working spouse are higher than those on single workers at the same wage in most countries, essentially creating a marriage penalty for the working spouse. Moreover, the married minus single difference in marginal taxes tends to be high in low marginal tax countries and low in high marginal tax countries. This variation is mainly driven by the fact that many high marginal tax countries have *separate* taxation of labor income for married couples, so that single and married individuals face the same rate (Bick and Fuchs-Schündeln, 2017). These include most northern European countries. By contrast, most low marginal tax countries, including the United States, feature *joint* taxation of labor income for married couples, which implies that the secondary earner faces higher marginal taxes than the primary earner with a progressive income tax system.

The marginal taxes provided in the OECD Tax Database are to be intended as op-

Figure 13: Children minus no-children difference in marginal taxes against marginal taxes with no children for primary earners at the average wage by earnings of the spouse.



Notes: Marginal taxes calculated for an increase in effort from 50 to 100 percent of full time work. All values in percentage. Source: Author's calculations from OECD Tax Database.

erating on the *intensive margin* of labor supply. However, the marginal tax on married workers with a spouse who is not employed can also serve as a proxy for taxes on the *extensive margin* of labor supply of the non-employed spouse in countries with joint taxation of income of married couples, as these taxes would apply on an additional dollar of household income, irrespective of which spouse increases their work effort. As shown in Figures 13 and 21, in low marginal tax countries, most of which have joint-taxation regime, marginal taxes on married workers with a non-employed spouse are substantially higher than on single workers at the same wage, and even higher if children are present. This effectively amounts to a high participation tax for married individuals who are not employed. Additionally, the high marginal taxes on one-earner couples with children compared to those without are a function of benefits and tax deductions associated with the presence of children that phase out with income. While these benefits and deductions decrease the tax burden for these couples, the fact that they decline in income, a phenomenon known as the 'benefit cliff,' reduces the incentive to supply any or additional labor for secondary earner in these households (Altig et al., 2020). Given the relative high intensive and extensive margin elasticity of women's labor supply, this pattern is likely to cause large disincentive effects for married women in those countries.

Childcare Costs We now turn to the cross-country variation in childcare costs. These data are from the OECD Family Policies Database and 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.[15]

To illustrate the cross-country pattern of variation in childcare costs as a function of parental income, Figure 22 in Appendix D displays childcare costs as a fraction of average income for couples and singles at different wage levels. Childcare costs vary widely across countries, from a low of 7% of average income for Greece, to highs of over 30% for certain household types in Canada, Ireland and the United Kingdom. For Greece, Hungary, Spain and the United States childcare costs vary little with parental income. In countries such as Australia, Belgium, France and the United Kingdom childcare costs increase substantially with parental income for married couples.

Figure 23 in Appendix D reports on the horizontal axis childcare costs for two earner couples with both spouses at the minimum wage, and on the vertical axis the difference in childcare costs between couples with both spouses at the average wage and those with both spouses at the minimum wage. The figure suggests that childcare costs tend to increase with parental income. In countries with lower childcare costs, the cost tends to increase more as family income increases than in countries with higher childcare costs.

Since childcare costs as measured in the data are a combination of private expenditures and subsidies or credits provided by the government, this suggests that such subsidies may be higher for lower income couples. There is no data available on how these subsidies phase-out with income, that is on the marginal variation in childcare costs. However, the fact that the childcare costs increase with income in most countries suggest there may be a phasing out of such subsidies. Thus, the variation in childcare costs replicates the pattern for marginal income taxes and may also generate a negative effect on labor supply of secondary earners for married couples.[16]

Other Policies The other policies we consider are parental leave and government spending on family policies as a fraction of GDP.

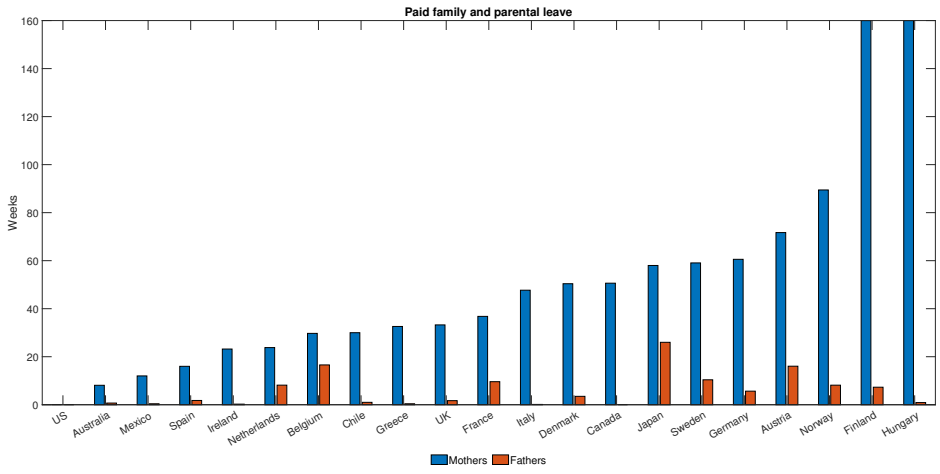
Figure 14 reports weeks of paid parental and family leave for men and women in the

[15]Childcare costs are not available for one-earner couples in the OECD data.

[16]The OECD Tax and Family Policies databases do not provide any information on marginal taxes and childcare costs for cohabitating couples. Presumably, in most countries, individuals in cohabitating couples face the marginal taxes applicable for single individuals, though certain tax deductions and benefits associated with the presence of children, as well as childcare costs, may depend on the couples's joint income.

countries in our sample, order by weeks of total leave, that is the sum of maternal and paternal leave. As discussed in Section 4, 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. Additionally, many countries do not have paid parental and family leave for men, and the countries that do, only grant very short leave period to fathers. When it comes to maternal leave, there is a wide variation across countries, with Finland and Hungary granting the longest leave to mothers, up to 160 weeks of paid family and parental leave. There is no relation between the length of paid parental leave granted to mothers and fathers in the group of countries we consider.

Figure 14: Weeks of paid parental and family leave for men and women, 2000-2015 average.

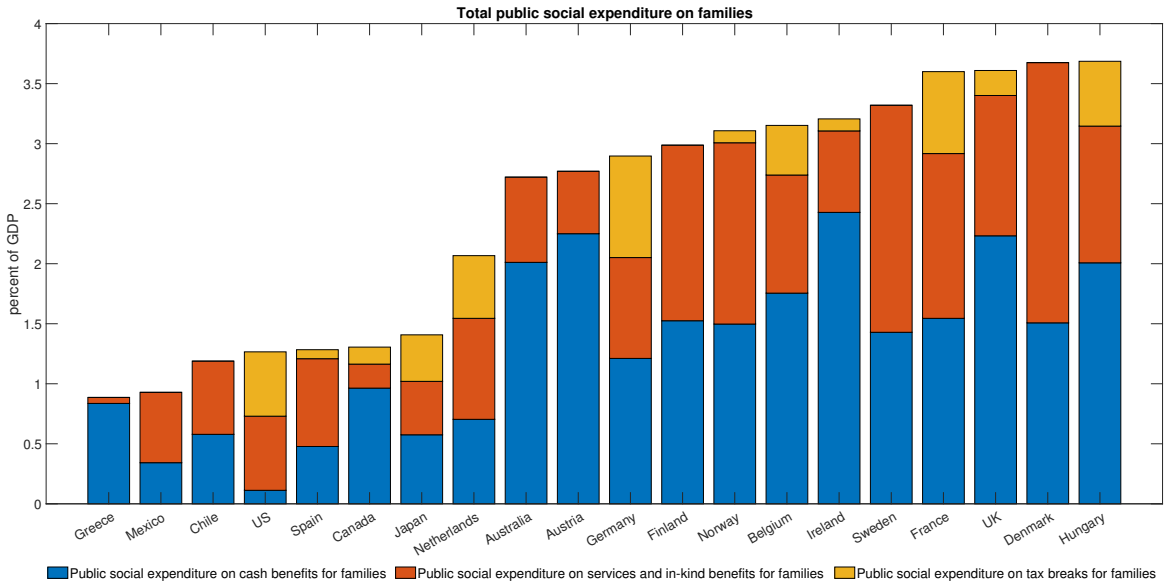


Notes: Source: Author's calculations from OECD Family Policies Database.

We conclude by reporting 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 for families, and expenditures on tax breaks for families, displayed in Figure 15. The sample breaks into two groups, countries with total public social expenditure below 1.5% of GDP, comprising Greece, Mexico, Chile, the United States, Spain, Canada and Japan, and the other countries, for which total social expenditures on families is above 2% of GDP. For all countries other than the United States, cash benefits for families comprise at least one third of total expenditure on family policies. As noted earlier, cash benefits that phase out with income for recipients contribute to high marginal taxes and potentially have a distortionary effect on labor supply. Expenditure in the form of tax breaks has the same potential distortionary impact on recipients but

it is small or negligible in the sample. The five countries with the highest total expenditures, comprising Sweden, France, the United Kingdom, Denmark and Hungary devote a large share of their spending on services and in-kind benefits. As our model in Section 3 suggests, in kind benefits have the lowest potential for distortionary effects and for this reason may be the most effective way to provide benefits to families.

Figure 15: Total public social expenditure as a fraction of GDP and composition, 2000-2015 average.



Notes: Source: Author's calculations from OECD Family Policies Database.

Discussion Much of the literature on the relationship between policies and gender differences in labor market outcomes, especially for married workers, focusses on the presence and generosity of such policies. However, the theory of taxation teaches us that it is not the level of a policy, but how it varies with actions that are chosen by workers that is most important for the effects of the policy, owing to the possible distortions induced by that variation (Diamond, 1998). This is particularly important for policies that directly target or have disparate impact on women and are related to their earnings, such as marginal taxes or childcare subsidies, since women's higher labor supply elasticity compared to men may exacerbate the distortionary effects of such policies.

The variation in marginal taxes and childcare costs as a function of wages and income that we document have the potential to generate substantial distortions on the extensive and intensive margin for married women's labor supply. The highest marginal income

tax in most countries applies to workers in one-earner couples with children. Since this can be interpreted as the marginal tax on the first dollar earned by the non-participating spouse in these households, this pattern may lead to substantial disincentives to enter the labor force (Rendall, 2018).

While most of the work on the impact of family policies is centered on outcomes for women or children, Fruttero et al. (2020) show that there are substantial macroeconomic and distributional consequences of fiscal policy interventions aimed at fostering women's entry into the labor market. They find that in advanced economies, removing tax provisions that discriminate against secondary earners would have a large positive impact on female labor force participation for all women and for economic growth, at no fiscal cost in the long run, with a positive impact on both inequality and poverty. Subsidizing childcare and providing paid maternity leave would also boost aggregate economic activity.

7 Conclusions

This Chapter has discussed theories and evidence on interactions between families, the labor market and public policy. We have documented evidence of clear gender convergence over the past five decades in educational attainment, employment and earnings, accompanied by a decline in marriage rates and fertility, with important cross-country differences in the speed of change and remaining gender gaps. Based on a simple framework for the time allocation of spouses, we illustrate how various forms of policy intervention may encourage or alleviate spousal specialization in domestic or paid work. We finally discuss existing evidence on the impacts of public policy on gender inequality and children's outcomes. We find very limited evidence of beneficial effects of longer parental leave on maternal participation and earnings, with the notable exception of cases with little or no provision to start with. In most cases, longer leave simply delays mothers' return to work, without long-lasting consequences on their careers in either direction. More goenerous support for childcare, in terms of public provision or subsidies, seems instead to play a more important role for female participation. Impacts on children's health and education mostly depend on counterfactual childcare arrangements and tend to be more beneficial for relatively disadvantaged households. Finally, in-work benefits targeted to low-earners have clear beneficial impacts on lone mothers' employment and

negligible impacts on other groups.

Despite a vast body of work on the evaluation of policy impacts on rich data sources, a few important questions remain to date underexplored. First, more research is welcome on the role played by employers and the organization of workplaces in mediating policy impacts and providing amenities that help parents ease their work-life balance. While mothers seem to have a higher demand than fathers for non-wage job attributes like work-time flexibility and the opportunity to work from home, evidence on the causal impacts of these factors on the gender gap in earnings is to date quite limited. In addition, it is important to realize that, as leave-taking behavior for caring responsibilities still differs enormously across genders, entirely gender-neutral workplace practices upon returning to work may have unintended consequences.

Second, together with the realization that social constructs shape a large portion of gender inequalities, the economics literature has become more upfront on the implicit zero-sum fallacy in much of the existing rhetoric about gender equity, recognizing that even gender roles in the household and equal opportunities in the labor market need not come to the detriment of male welfare. The view of gender equality as a possible route to unlock untapped talent for male-dominated occupations, female-dominated occupations as well as family responsabilities should inform future research on the efficiency losses associated to exitsing barriers to gender equality.

Finally, further insight is welcome into the process of policy adoption and its political economy dimensions, to relate the evolving support for various forms of intervention to changing norms, demographics and household structures. For example, we noted that the decline of the male-breadwinner model in the second half of the 20th century has gradually shifted the emphasis in legislation from the need to protect women around childbirth to work-life conciliation for both parents. To date, the family policy system in place in most countries is primarily designed to cater for opposite-sex married couples with joint children. The number of births to the heteronormative family has been falling for decades in favour of births to unmarried couples, single parents and, more recently, same-sex couples. As new family structures emerge and are legally recognised, it is important to reflect on the inclusivity of existing welfare states and available family support.

References

Adda, Jérôme, Christian Dustmann, and Katrien Stevens, "The Career Costs of Children," *Journal of Political Economy*, 2017, *125* (2), 293–337.

Ahn, Namkee and Pedro Mira, "A Note on the Changing Relationship between Fertility and Female Employment Rates in Developed Countries," *Journal of Population Economics*, 2002, *15* (4), 667–682.

Aizer, Anna and Flávio Cunha, "The Production of Human Capital: Endowments, Investments and Fertility," NBER Working Paper 18429, 2012.

Albanesi, Stefania and Claudia Olivetti, "Home Production, Market Production and the Gender Wage Gap: Incentives and Expectations," *Review of Economic Dynamics*, 2009, *12* (1), 80–107.

_ **and** _ , "Gender roles and medical progress," *Journal of Political Economy*, 2016, *124* (3), 650–695.

Alesina, Alberto and George-Marios Angeletos, "Fairness and redistribution," *American Economic Review*, 2005, *95* (4), 960–980.

_ **and Romain Wacziarg**, "Openness, country size and government," *Journal of Public Economics*, 1998, *69* (3), 305–321.

_ **, Andrea Ichino, and Loukas Karabarbounis**, "Gender-based taxation and the division of family chores," *American Economic Journal: Economic Policy*, 2011, *3* (2), 1–40.

_ **, Edward Glaeser, and Bruce Sacerdote**, "Why Doesn't the US Have a European-Style Welfare System?," *Brookings Papers on Economic Activity*, 2001, *2*, 187–277.

_ **, Paola Giuliano, and Nathan Nunn**, "On the Origins of Gender Roles: Women and the Plough," *Quarterly Journal of Economics*, 2013, *128* (2), 469–530.

_ **, Reza Baqir, and William Easterly**, "Public goods and ethnic divisions," *Quarterly Journal of Economics*, 1999, *114* (4), 1243–1284.

Altig, David, Alan J Auerbach, Laurence J Kotlikoff, Elias Ilin, and Victor Ye, "Marginal Net Taxation of Americans' Labor Supply," NBER Working Paper 27164, 2020.

Altonji, Joseph and Rebecca Blank, "Race and Gender in the Labor Market," in "Handbook of Labor Economics," Vol. 3C, Elsevier, 1999, chapter 48, pp. 3143–3259.

Anderson, Siwan and Chris Bidner, "An Institutional Perspective on the Economics of the Family," in Shelly Lundberg and Alessandra Voena, eds., *Handbook of Family Economics*, Vol. forthcoming 2023.

Andresen, Eckhoff Martin and Emily Nix, "Can the Child Penalty be Reduced? Evaluating Multiple Policy Interventions," mimeo 2022.

Andresen, Martin Eckhoff and Emily Nix, "What Causes the Child Penalty? Evidence from Adopting and Same-Sex Couples," *Journal of Labor Economics*, 2022, *40* (4), 971–1004.

_ **and Tarjei Havnes**, "Child care, parental labor supply and tax revenue," *Labour Economics*, 2019, *61*, 101762.

Angelov, Nikolay, Per Johansson, and Erica Lindahl, "Parenthood and the Gender Gap in Pay," *Journal of Labor Economics*, 2016, *34* (3), 545 – 579.

Antecol, Heather, Kelly Bedard, and Jenna Stearns, "Equal but Inequitable: Who Benefits from Gender-Neutral Tenure Clock Stopping Policies?," *American Economic Review*, 2018, *108* (9), 2420–41.

Ashraf, Nava, Oriana Bandiera, Virginia MInni, and Quintas-Martínez Victor, "Gender Roles and the Misallocation of Labour Across Countries," Technical Report 2022.

Attanasio, Orazio, Hamish Low, and Virginia Sánchez-Marcos, "Explaining changes in female labor supply in a life-cycle model," *American Economic Review*, 2008, *98* (4), 1517–52.

Autor, David, David Dorn, and Gordon Hanson, "When Work Disappears: Manufacturing Decline and the Falling Marriage Market Value of Young Men," *American Economic Review: Insights*, 2019, *1* (2), 161–78.

Bailey, Martha J., "More Power to the Pill: The Impact of Contraceptive Freedom on Women's Life Cycle Labor Supply," *Quarterly Journal of Economics*, 2006, *121* (1), 289–320.

_ , Melanie Guldi, and Brad J. Hershbein, "Is There a Case for a "Second Demographic Transition"? Three Distinctive Features of the Post-1960 U.S. Fertility Decline," in "Human Capital in History: The American Record" NBER Chapters, National Bureau of Economic Research, Inc, 2014, pp. 273–312.

Bailey, Martha J, Tanya S Byker, Elena Patel, and Shanthi Ramnath, "The Long-Term Effects of California's 2004 Paid Family Leave Act on Women's Careers: Evidence from U.S. Tax Data," NBER Working Paper 26416, 2019.

Baker, Michael and Kevin Milligan, "Evidence from Maternity Leave Expansions of the Impact of Maternal Care on Early Child Development," *Journal of Human Resources*, 2008, *45* (1), 1–32.

_ and _ , "Maternal Employment, Breastfeeding, and Health: Evidence from Maternity Leave Mandates," *Journal of Health Economics*, 2008, *27* (4), 871–887.

_ , Jonathan Gruber, and Kevin Milligan, "Universal Child Care, Maternal Labor Supply, and Family Well Being," *Journal of Political Economy*, 2008, *116* (4), 709–745.

Bana, Sarah H., Kelly Bedard, and Maya Rossin-Slater, "The Impacts of Paid Family Leave Benefits: Regression Kink Evidence from California Administrative Data," *Journal of Policy Analysis and Management*, 2020, *39* (4), 888–929.

Bana, Sarah, Kelly Bedard, Maya Rossin-Slater, and Jenna Stearns, "Unequal use of social insurance benefits: The role of employers," *Journal of Econometrics*, 2022, *forthcoming.*

Barro, Robert and Jong-Wha Lee, "A New Data Set of Educational Attainment in the World, 1950-2010.," *Journal of Development Economics*, 2013, *104*, 184–198.

Bartel, Ann P, Maya Rossin-Slater, Christopher J Ruhm, Meredith Slopen, and Jane Waldfogel, "The Impact of Paid Family Leave on Employers: Evidence from New York," NBER Working Paper 28672, 2021.

Bau, Natalie and Raquel Fernández, "Culture and the Family," in Shelly Lundberg and Alessandra Voena, eds., *Handbook of Family Economics*, Vol. forthcoming 2023.

Bergstrom, Theodore C., "A Survey of Theories of the Family," in Mark R. Rosenzweig and Oded Stark, eds., *Handbook of Population and Family Economics*, Vol. 1, Elsevier, 1997, chapter 2, pp. 21–79.

Bertrand, Marianne, "New Perspectives on Gender," in Orley Ashenfelter and David Card, eds., *Handbook of Labor Economics*, Vol. 4B, Elsevier, 2011, chapter 17, pp. 1543–1590.

_ , "Coase Lecture – The Glass Ceiling," *Economica*, 2018, *85* (338), 205–231.

_ , "Gender in the Twenty-First Century," *AEA Papers and Proceedings*, 2020, *110*, 1–24.

_ **, Claudia Goldin, and Lawrence F. Katz**, "Dynamics of the Gender Gap for Young Professionals in the Financial and Corporate Sectors," *American Economic Journal: Applied Economics*, 2010, *2* (3), 228–255.

_ **, Patricia Cortés, Claudia Olivetti, and Jessica Pan**, "Social Norms, Labour Market Opportunities, and the Marriage Gap Between Skilled and Unskilled Women," *Review of Economic Studies*, 2020, *88.*

Bick, Alexander, "The Quantitative Role of Child Care for Female Labor Force Participation and Fertility," *Journal of the European Economic Association*, 2016, *14* (3), 639–668.

_ **and Nicola Fuchs-Schündeln**, "Quantifying the disincentive effects of joint taxation on married women's labor supply," *American Economic Review*, 2017, *107* (5), 100–104.

_ **and** _ , "Taxation and labour supply of married couples across countries: A macroeconomic analysis," *Review of Economic Studies*, 2018, *85* (3), 1543–1576.

Blau, David and Janet Currie, "Pre-School, Day Care, and After-School Care: Who's Minding the Kids?," in Erik Hanushek and F. Welch, eds., *Handbook of the Economics of Education*, Vol. 2 2006, chapter 20, pp. 1163–1278.

Blau, Francine D. and Lawrence M. Kahn, "Understanding International Differences in the Gender Pay Gap," *Journal of Labor Economics*, 2003, *21* (1), 106–144.

_ **and** _ , "Female Labor Supply: Why Is the United States Falling Behind?," *American Economic Review*, 2013, *103* (3), 251–56.

_ **and** _ , "The Gender Wage Gap: Extent, Trends, and Explanations," *Journal of Economic Literature*, 2017, *55* (3), 789–865.

_ **,** _ **, and Jane Waldfogel**, "Understanding young women's marriage decisions: The role of labor and marriage market conditions," *Industrial and Labor Relations Review*, 2000, *53* (4), 624–647.

Blundell, Richard, "Earned income tax credit policies: Impact and optimality: The Adam Smith Lecture, 2005," *Labour Economics*, 2006, *13* (4), 423–443.

_ **and Thomas MaCurdy**, "Labor supply: A review of alternative approaches," *Handbook of labor economics*, 1999, *3*, 1559–1695.

Borella, Margherita, Mariacristina De Nardi, and Fang Yang, "Are Marriage-Related Taxes and Social Security Benefits Holding Back Female Labor Supply?," *Review of Economic Studies*, 2023, *forthcoming.*

Boustan, Leah Platt and William J. Collins, "Cohabitation and the Uneven Retreat from Marriage in the United States, 1950-2010," in Leah Platt Boustan, Carola Frydman, and Robert A. Margo, eds., *Human Capital in History: The American Record*, University of Chicago Press, 2014, chapter 6, pp. 241–272.

Brewer, Mike and Hilary Hoynes, "In-Work Credits in the UK and the US," *Fiscal Studies*, 2019, *40* (4), 519–560.

_ **, Marco Francesconi, Paul Gregg, and Jeffrey Grogger**, "Feature: In-Work Benefit Reform in a Cross-National Perspective: Introduction," *The Economic Journal*, 2009, *119*, F1–F14.

Bronson, Mary Ann and Maurizio Mazzocco, "Taxation and Household Decisions: An Intertemporal Analysis," mimeo 2022.

Bursztyn, Leonardo, Alessandra L. González, and David Yanagizawa-Drott, "Misperceived Social Norms: Women Working Outside the Home in Saudi Arabia," *American Economic Review*, 2020, *110* (10), 2997–3029.

Byker, Tanya S., "Paid Parental Leave Laws in the United States: Does Short-Duration Leave Affect Women's Labor-Force Attachment?," *AEA Papers and Proceedings*, 2016, *106* (5), 242–46.

Card, David, Ana Rute Cardoso, and Patrick Kline, "Bargaining, Sorting, and the Gender Wage Gap: Quantifying the Impact of Firms on the Relative Pay of Women," *Quarterly Journal of Economics*, 2015, *131* (2), 633–686.

Carneiro, Pedro, Katrine V. Løken, and Kjell G. Salvanes, "A Flying Start? Maternity Leave Benefits and Long-Run Outcomes of Children," *Journal of Political Economy*, 2015, *123* (2), 365–412.

Cascio, Elizabeth and Diane Whitmore Schanzenbach, "The Impacts of Expanding Access to High-Quality Preschool Education," *Brookings Papers on Economic Activity*, 2013, *44* (2), 127–192.

Cascio, Elizabeth U., "Maternal Labor Supply and the Introduction of Kindergartens into American Public Schools," *Journal of Human Resources*, 2009, *44* (1), 140–170.

Cascio, Elizabeth U, "Does Universal Preschool Hit the Target? Program Access and Preschool Impacts," *Journal of Human Resources*, 2023, *58* (1), 1–42.

Cascio, Elizabeth U. and Na'ama Shenhav, "A Century of the American Woman Voter: Sex Gaps in Political Participation, Preferences, and Partisanship since Women's Enfranchisement," *Journal of Economic Perspectives*, 2020, *34* (2), 24–48.

Chetty, Raj, Adam Guren, Day Manoli, and Andrea Weber, "Are micro and macro labor supply elasticities consistent? A review of evidence on the intensive and extensive margins," *American Economic Review*, 2011, *101* (3), 471–75.

_ , John N. Friedman, and Emmanuel Saez, "Using Differences in Knowledge across Neighborhoods to Uncover the Impacts of the EITC on Earnings," *American Economic Review*, 2013, *103* (7), 2683–2721.

_ , _ , Tore Olsen, and Luigi Pistaferri, " Adjustment Costs, Firm Responses, and Micro vs. Macro Labor Supply Elasticities: Evidence from Danish Tax Records," *Quarterly Journal of Economics*, 2011, *126* (2), 749–804.

Cornelissen, Thomas, Christian Dustmann, Anna Raute, and Uta Schönberg, "Who Benefits from Universal Child Care? Estimating Marginal Returns to Early Child Care Attendance," *Journal of Political Economy*, 2018, *126* (6), 2356–2409.

Cortés, Patricia and Jessica Pan, "Children and the Remaining Gender Gaps in the Labor Market," *Journal of Economic Literature*, 2023, *forthcoming.*

Cunha, Flavio and James Heckman, "The Technology of Skill Formation," *American Economic Review*, 2007, *97* (2), 31–47.

_ **and** _ , "The Technology of Skill Formation," *American Economic Review*, 2007, *97* (2), 31–47.

Currie, Janet, "Early Childhood Education Programs," *Journal of Economic Perspectives*, 2001, *15* (2), 213–238.

Dahl, Gordon B., Katrine V. Løken, and Magne Mogstad, "Peer Effects in Program Participation," *American Economic Review*, 2014, *104* (7), 2049–2074.

_ , _ , _ , **and Kari Vea Salvanes**, "What Is the Case for Paid Maternity Leave?," *Review of Economics and Statistics*, 2016, *98* (4), 655–670.

Diamond, Peter A, "Optimal income taxation: an example with a U-shaped pattern of optimal marginal tax rates," *American Economic Review*, 1998, *88*, 83–95.

Doepke, Matthias and Michèle Tertilt, "Women's Liberation: What's in It for Men?," *Quarterly Journal of Economics*, 2009, *124* (4), 1541–1591.

_ , _ , **and Alessandra Voena**, "The Economics and Politics of Women's Rights," *Annual Review of Economics*, 2012, *4* (1), 339–372.

Domeij, David and Paul Klein, "Should Day Care be Subsidized?," *Review of Economic Studies*, 11 2012, *80* (2), 568–595.

Dustmann, Christian and Uta Schoenberg, "Expansions in Maternity Leave Coverage and Children's Long-Term Outcomes," *American Economic Journal: Applied Economics*, 2012, *4* (3), 190–224.

Eissa, Nada, "Taxation and Labor Supply of Married Women: The Tax Reform Act of 1986 as a Natural Experiment," NBER Working Paper 5023, 1995.

_ , "Labor Supply and the Economic Recovery Tax Act of 1981," in Martin Feldstein and James M. Poterba, eds., *Empirical Foundations of Household Taxation*, University of Chicago Press, 1996, pp. 5–38.

Ekberg, John, Rickard Eriksson, and Guido Friebel, "Parental leave – A policy evaluation of the Swedish "Daddy-Month" reform," *Journal of Public Economics*, 2013, *97*, 131–143.

Elango, Sneha, Jorge Luis Garcia, James Heckman, and Andrés Hojman, "Early Childhood Education," in Robert Moffit, ed., *Economics of Means-Tested Transfer Programs in the United States, Volume II*, National Bureau of Economic Research, Inc, 2016, chapter 4.

Esteve, Albert, Ron J. Lesthaeghe, Antonio López-Gay, and Joan García-Román, "The Rise of Cohabitation in Latin America and the Caribbean, 1970–2011," in Albert Esteve and Ron J. Lesthaeghe, eds., *Cohabitation and Marriage in the Americas: Geo-historical Legacies and New Trends*, Springer International Publishing, 2016, pp. 25–57.

Farré, Lidia and Libertad González, "Does Paternity Leave Reduce Fertility?," *Journal of Public Economics*, 2019, *172*, 52–66.

Felfe, Christina and Rafael Lalive, "Does Early Child Care Affect Children's Development?," *Journal of Public Economics*, 2018, *159*, 33–53.

Fernández, Raquel, "Cultural change as learning: The evolution of female labor force participation over a century," *American Economic Review*, 2013, *103* (1), 472–500.

_ , Alessandra Fogli, and Claudia Olivetti, "Mothers and sons: Preference formation and female labor force dynamics," *Quarterly Journal of Economics*, 2004, *119* (4), 1249–1299.

_ and _ , "Culture: An Empirical Investigation of Beliefs, Work, and Fertility," *American Economic Journal: Macroeconomics*, 2009, *1*, 146–177.

Feyrer, James, Bruce Sacerdote, and Ariel Dora Stern, "Will the Stork Return to Europe and Japan? Understanding Fertility within Developed Nations," *Journal of Economic Perspectives*, 2008, *22* (3), 3–22.

Fitzimons, Emla and Marcos Vera-Hernández, "Breastfeeding and Child Development," *American Economic Journal: Applied Economics*, 2022, *forthcoming.*

Fitzpatrick, Maria, "Revising Our Thinking About the Relationship Between Maternal Labor Supply and Preschool," *Journal of Human Resources*, 2012, *47* (3), 583–612.

Fort, Margherita, Andrea Ichino, and Giulio Zanella, "Cognitive and Noncognitive Costs of Day Care at Age 0-2 for Children in Advantaged Families," *Journal of Political Economy*, 2020, *128* (1), 158–205.

Fruttero, Anna, Daniel Gurara, Ms Lisa L Kolovich, Vivian Malta, Ms Marina Mendes Tavares, Nino Tchelishvili, and Ms Stefania Fabrizio, *Women in the Labor Force: The Role of Fiscal Policies*, International Monetary Fund, 2020.

Gelbach, Jonah B., "Public Schooling for Young Children and Maternal Labor Supply," *American Economic Review*, March 2002, *92* (1), 307–322.

Ginja, Rita, Arizo Karimi, and Pengpeng Xiao, "Employer Responses to Family Leave Programs," *American Economic Journal: Applied Economics*, 2023, *forthcoming.*

Givati, Yehonatan and Ugo Troiano, "Law, Economics, and Culture: Theory of Mandated Benefits and Evidence from Maternity Leave Policies," *The Journal of Law and Economics*, 2012, *55* (2), 339–364.

Givord, Pauline and Claire Marbot, "Does the cost of child care affect female labor market participation? An evaluation of a French reform of childcare subsidies," *Labour Economics*, 2015, *36*, 99–111.

Goldin, Claudia, "The Quiet Revolution That Transformed Women's Employment, Education, and Family," *American Economic Review*, 2006, *96* (2), 1–21.

_ , "A Grand Gender Convergence: Its Last Chapter," *American Economic Review*, 2014, *104* (4), 1091–1119.

_ **and Joshua Mitchell**, "The New Life Cycle of Women's Employment: Disappearing Humps, Sagging Middles, Expanding Tops," *Journal of Economic Perspectives*, 2017, *31* (1), 161–82.

_ **and Lawrence F Katz**, "The power of the pill: Oral contraceptives and women's career and marriage decisions," *Journal of Political Economy*, 2002, *110* (4), 730–770.

_ **and Lawrence F. Katz**, "The Cost of Workplace Flexibility for High-Powered Professionals," *The ANNALS of the American Academy of Political and Social Science*, 2011, *638* (1), 45–67.

_ **, Sari Kerr, and Claudia Olivetti**, "Why Firms Offer Paid Parental Leave: An Exploratory Study," in Betsey Stevenson and Isabel V. Sawhill, eds., *Paid Leave for Caregiving: Issues and Answers*, Brooking Institution, 2020, pp. 66–92.

Goux, Dominique and Eric Maurin, "Public School Availability for Two-Year Olds and Mothers' Labour Supply," *Labour Economics*, 2010, *17* (6), 951–962.

Greenwood, Jeremy, Ananth Seshadri, and Mehmet Yorukoglu, "Engines of Liberation," *Review of Economic Studies*, 2005, *72* (1), 109–133.

_ **, Nezih Guner, Georgi Kocharkov, and Cezar Santos**, "Technology and the Changing Family: A Unified Model of Marriage, Divorce, Educational Attainment, and Married Female Labor-Force Participation," *American Economic Journal: Macroeconomics*, 2016, *8* (1), 1–41.

Gregg, Paul and Jane Waldfogel, "Symposium on Parental Leave, Early Maternal Employment and Child Outcomes: Introduction," *The Economic Journal*, 2005, *115* (501), F1–F6.

Guner, Nezih, Remzi Kaygusuz, and Gustavo Ventura, "Taxation and Household Labour Supply," *Review of Economic Studies*, 2012, *79* (3), 1113–1149.

_ **,** _ **, and** _ , "Child-related transfers, household labour supply, and welfare," *Review of Economic Studies*, 2020, *87* (5), 2290–2321.

Havnes, Tarjei and Magne Mogstad, "Money for Nothing? Universal Child Care and Maternal Employment," *Journal of Public Economics*, 2011, *95* (11), 1455–1465.

_ **and** _ , "No Child Left Behind: Subsidized Child Care and Children's Long-Run Outcomes," *American Economic Journal: Economic Policy*, May 2011, *3* (2), 97–129.

_ **and** _ , "Is Universal Child Care Leveling the Playing Field?," *Journal of Public Economics*, 2015, *127*, 100–114.

Heathcote, Jonathan, Kjetil Storesletten, and Giovanni L. Violante, "The Macroeconomic Implications of Rising Wage Inequality in the United States," *Journal of Political Economy*, 2010, *118* (4), 681–722.

Heckman, James J., "The Economics, Technology, and Neuroscience of Human Capability Formation," *Proceedings of the National Academy of Sciences*, 2007, *104* (33), 13250–13255.

_ **and Edward J. Vytlacil**, "Local Instrumental Variables and Latent Variable Models for Identifying and Bounding Treatment Effects," *Proceedings of the National Academy of Sciences of the United States of America*, 1999, *96* (8), 4730–4734.

Hotz, Joseph, Per Johansson, and Arizo Karimi, "Parenthood, Family Friendly Workplaces, and the Gender Gaps in Early Work Careers," NBER Working Paper 24173, 2018.

Hsieh, Chang-Tai, Erik Hurst, Charles I. Jones, and Peter J. Klenow, "The Allocation of Talent and U.S. Economic Growth," *Econometrica*, 2019, *87* (5), 1439–1474.

Ichino, Andrea, Martin Olsson, Barbara Petrongolo, and Peter Skogman-Thoursie, "Taxes, Childcare and Gender Identity Norms," mimeo 2022.

Isen, Adam and Betsey Stevenson, "Women's Education and Family Behavior: Trends in Marriage, Divorce, and Fertility," in John B. Shoven, ed., *Demography and the Economy*, Chicago: University of Chicago Press, 2011, chapter 3, pp. 107–142.

Jayachandran, Seema, "The Roots of Gender Inequality in Developing Countries," *Annual Review of Economics*, 2015, *7* (1), 63–88.

Johnsen, Julian V., Kjell G. Salvanes, and Hyejin Ku, "Competition and Career Advancement: The Hidden Costs of Paid Leave," CEPR Discussion Paper 5157, 2020.

Juhn, Chinhui and Kristin McCue, "Specialization Then and Now: Marriage, Children, and the Gender Earnings Gap across Cohorts," *Journal of Economic Perspectives*, 2017, *31* (1), 183–204.

Kasey, Melanie Guldi Buckles and Joseph Price, "Changing the Price of Marriage: Evidence from Blood Test Requirements," *Journal of Human Resources*, 2011, *1, July* (46), 539–567.

Kaygusuz, Remzi, "Taxes and Female Labor Supply," *Review of Economic Dynamics*, 2010, *13* (4), 725–741.

Keane, Michael P, "Labor Supply and Taxes: A Survey," *Journal of Economic Literature*, 2011, *49* (4), 961–1075.

Kleven, Henrik, "The Geography of Child Penalties and Gender Norms: Evidence from the United States," NBER Working Paper 30176, 2022.

_ , Camille Landais, and Jakob Egholt Sogaard, "Children and Gender Inequality: Evidence from Denmark," *American Economic Journal: Applied Economics*, 2019, *37*, 181–209.

_ , _ , Johanna Posch, Andreas Steinhauer, and Josef Zweimüller, "Child Penalties across Countries: Evidence and Explanations," *AEA Papers and Proceedings*, 2019, *109*, 122–26.

_ , _ , _ , _ , and _ , "Do Family Policies Reduce Gender Inequality? Evidence from 60 Years of Policy Experimentation," Technical Report 28082, 2021.

Kline, Patrick and Christopher R. Walters, "Evaluating Public Programs with Close Substitutes: The Case of Head Start," *Quarterly Journal of Economics*, 2016, *131* (4), 1795–1848.

Kottelenberg, Michael J. and Steven F. Lehrer, "Targeted or Universal Coverage? Assessing Heterogeneity in the Effects of Universal Child Care," *Journal of Labor Economics*, 2017, *35* (3), 609–653.

Lafortune, Jeanne and Corinne Low, "Collateralized Marriage," NBER Working Paper 27210, 2020.

Lalive, Rafael, Analia Schlosser, Andreas Steihauer, and Josef Zweimüller, "Parental Leave and Mother's Post Birth Careers: The Relative Importance of Job Protection and Cash Benefits," *Review of Economic Studies*, 2013, *81*, 219–265.

_ **and Josef Zweimüller**, "How Does Parental Leave Affect Fertility and Return to Work? Evidence from Two Natural Experiments," *Quarterly Journal of Economics*, 2009, *124*, 1363–1402.

Lefebvre, Pierre and Philip Merrigan, "Child-Care Policy and the Labor Supply of Mothers with Young Children: A Natural Experiment from Canada," *Journal of Labor Economics*, 2008, *26* (3), 519–548.

_ **,** _ **, and Matthieu Verstraete**, "Dynamic Labour Supply Effects of Childcare Subsidies: Evidence from a Canadian Natural Experiment on Low-Fee Universal Child Care," *Labour Economics*, 2009, *16* (5), 490–502.

Liu, Qian and Oskar Nordstrom Skans, "The Duration of Paid Parental Leave and Children's Scholastic Performance," *The B.E. Journal of Economic Analysis & Policy*, 2010, *10* (1).

Liu, Tim, Christos Makridis, Paige Ouimet, and Elena Simintzi, "The Distribution of Non-Wage Benefits: Maternity Benefits and Gender Diversity," *Review of Financial Studies*, 2023, *forthcoming.*

Loughran, David S., "The Effect of Male Wage Inequality on Female Age at First Marriage," *The Review of Economics and Statistics*, 2002, *84* (2), 237–250.

Lundberg, Shelly and Robert A. Pollak, "Cohabitation and the Uneven Retreat from Marriage in the United States, 1950-2010," in Leah Platt Boustan, Carola Frydman, and Robert A. Margo, eds., *Human Capital in History*, University of Chicago Press, 2014, chapter 7, pp. 241–272.

_ **, Robert A Pollak, and Jenna Stearns**, "Family inequality: Diverging patterns in marriage, cohabitation, and childbearing," *Journal of Economic Perspectives*, 2016, *30* (2), 79–102.

Manning, Alan and Barbara Petrongolo, "The Part-Time Pay Penalty for Women in Britain," *The Economic Journal*, 2008, *118* (526), F28–F51.

Meltzer, Allan H. and Scott F. Richard, "A rational theory of the size of government," *Journal of Political Economy*, 1981, *89* (5), 914–927.

Meyer, Bruce D. and Dan T. Rosenbaum, "Welfare, the Earned Income Tax Credit, and the Labor Supply of Single Mothers*," *Quarterly Journal of Economics*, 08 2001, *116* (3), 1063–1114.

Milesi-Ferretti, Gian Maria, Roberto Perotti, and Massimo Rostagno, "Electoral systems and public spending," *Quarterly Journal of Economics*, 2002, *117* (2), 609–657.

Miyajima, Takeru and Hiroyuki Yamaguchi, "I Want but I Won't: Pluralistic Ignorance Inhibits Intentions to Take Paternity Leave in Japan.," *Frontiers in Psychology*, 2017, *8*.

Mulligan, Casey B, Ricard Gil, and Xavier Sala i Martin, "Do Democracies Have Different Public Policies than Nondemocracies?," *Journal of Economic Perspectives*, 2004, *18* (1), 51–74.

Musgrave, Richard A, *Fiscal Systems*, Yale University Press, 1969.

Myers, Caitlin Knowles, "The Power of Abortion Policy: Reexamining the Effects of Young Women's Access to Reproductive Control," *Journal of Political Economy*, 2017, *125* (6), 2178–2224.

Ngai, L Rachel and Barbara Petrongolo, "Gender gaps and the rise of the service economy," *American Economic Journal: Macroeconomics*, 2017, *9* (4), 1–44.

Nichols, Austin and Jesse Rothstein, "The Earned Income TAx Credit," in Robert Moffit, ed., *Economics of Means-Tested Transfer Programs in the United States, Volume I*, National Bureau of Economic Research, Inc, 2016, chapter 2.

Nieuwenhuis, Rense and Wim Van Lancker, *The Palgrave Handbook of Family Policy*, Palgrave Macmillan, 2020.

OECD, "Balancing Work and Family Life: Helping Parents into Paid Employment," Employment Outlook 2001.

Olivetti, Claudia and Barbara Petrongolo, "Unequal Pay or Unequal Employment? A Cross-Country Analysis of Gender Gaps," *Journal of Labor Economics*, 2008, *26* (4), 621–654.

_ **and** _ , "The Evolution of Gender Gaps in Industrialized Countries," *Annual Review of Economics*, 2016, *8* (1), 405–434.

_ **and** _ , "The Economic Consequences of Family Policies: Lessons from a Century of Legislation in High-Income Countries," *Journal of Economic Perspectives*, 2017, *31* (1), 205–30.

P., Jonah B. Gelbach Bitler Marianne and Hilary W. Hoynes, "Welfare Reform and Children's Living Arrangements," *Journal of Human Resources*, 2006, *41* (1), 1–27.

Patnaik, Ankita, "Reserving Time for Daddy: The Consequences of Fathers' Quotas," *Journal of Labor Economics*, 2019, *37* (4), 1009–1059.

Persson, Torsten and Guido Tabellini, "Political Economics and Public Finance," in Alan J. Auerbach and Martin Feldstein, eds., *Handbook of Public Economics*, Vol. 3, Elsevier, 2002, chapter 24, pp. 1549–1659.

_ **, Gerard Roland, and Guido Tabellini**, "Comparative Politics and Public Finance," *Journal of Political Economy*, 2000, *108* (6), 1121–1161.

Rasul, Imran, "Marriage Markets and Divorce Laws," *Journal of Law, Economics, and Organization*, 2006, *22* (1), 30–69.

Rendall, Michelle, "Female market work, tax regimes, and the rise of the service sector," *Review of Economic Dynamics*, 2018, *28*, 269–289.

Rossin-Slater, Maya, Christopher Ruhm, and Jane Waldfogel, "The effects of California's paid family leave program on mothers' leave-taking and subsequent labor market outcomes," *Journal of the Association for Public Policy Analysis and Management*, 2013, *32* (2), 224–245.

Ruhm, Christopher J., "The Economic Consequences of Parental Leave Mandates: Lessons from Europe," *Quarterly Journal of Economics*, 1998, *113* (1), 285–317.

_ , "Parental leave and child health," *Journal of Health Economics*, 2000, *19* (6), 931–960.

Saez, Emmanuel, Joel Slemrod, and Seth H. Giertz, "The Elasticity of Taxable Income with Respect to Marginal Tax Rates: A Critical Review," *Journal of Economic Literature*, 2012, *50* (1), 3–50.

Schönberg, Uta and Johannes Ludsteck, "Expansions in Maternity Leave Coverage and Mothers' Labor Market Outcomes after Childbirth," *Journal of Labor Economics*, 2014, *32* (3), 469–505.

Stevenson, Betsey, "The Impact of Divorce Laws on Marriage-Specific Capital," *Journal of Labor Economics*, 2007, *25* (1), 75–94.

_ **and Justin Wolfers**, "Marriage and Divorce: Changes and their Driving Forces," *Journal of Economic Perspectives*, 2007, *21* (2), 27–52.

Tertilt, Michèle, Matthias Doepke, Anne Hannusch, and Laura Montenbruck, "The Economics of Women's Rights," Working Paper 30617, National Bureau of Economic Research November 2022.

Tô, Lihn, "The Signalling Role of Parental Leave," mimeo 2018.

Wilkander, Ulla, Alice Kessler-Harris, and Jane Lewis, *Protecting Women: Labor Legislation in Europe, the United States and Australia, 1880-1920*, University of Illinois Press, 1995.

Wurtz-Ramussen, Astrid, "Increasing the length of parents' birth-related leave: The effect on children's long-term educational outcomes," *Labour Economics*, 2010, *17* (1), 91–100.

A Data Appendix

Our guiding principle was to create the largest possible panel of countries with available information for all the relevant variables. For most countries in our sample, the primary data source is the Luxembourg Income Study Database (LIS). We also use IPUMS International data for Portugal (not represented in LIS), Colombia (whose LIS coverage starts in mid-2000s) and, when available, to add country observations for the earlier decades (for most countries in our sample LIS data are only available since the 1990s.) The resulting combined sample spans 24 countries over 5 decades, with information on educational attainment, marriage, fertility and employment. Since information on earnings is not available in IPUMS International, Portugal and Colombia are not included in the earnings analysis.

Most variables (e.g. employment, fertility) in LIS and IPUMS International are harmonized within and across countries, but education required a more careful analysis. Our objective was to define a "college graduate" as an individual whose highest level of educational attainment is the equivalent of a four-year college degree in the US (as it is the case for the harmonized IPUMS International variable *edattain*.) The harmonized LIS *educlev* variable classifies degrees in primary, secondary and tertiary education. However, depending on the country/wave, tertiary education may include technical degrees that are not comparable to a four-year college. *Educlev* is also not typically available in the earlier waves. To further harmonize the definition of college graduates and go as far back in time as possible, we additionally used the country-specific variable *educ_c*. The resulting education recode defines College (or higher) as *completed* tertiary education, including short cycle tertiary university degrees. For the purpose of the regression analysis we categorize education in three groups: Those who did not complete High School (i.e. primary education), those with a High School degree or Some College (corresponding to secondary education and including tertiary non-university degree) and those with at least a College Degree (e.g. tertiary education, including short cycle tertiary university degrees.)

We compare college graduation rates in our data to the OECD statistics and to the Barro and Lee (2013) data. The OECD definition tend to over-estimates college graduation rates for some countries relative to the US because it often includes technical (non-university) degrees. Barro-Lee carefully define College as comparable to a four-year

college degree in the US. This second definition, however, tend to under-estimate college graduation rates, especially for the European Union where the Bologna concord of 1999 reshaped university degrees to a "3+2" system. That is, starting in the late 1990s/early 2000s, a three-year college degree corresponds to a standard four-year Bachelor's degree (in the US), while the "+2" corresponds to a Master of Arts (MA) or Master of Sciences (MS). Reassuringly, college graduation rates obtained with our classification lye systematically between the OECD and Barro-Lee statistics.

One other key LIS variable is the wage income (*pi11*), which is consistently available for all countries in our sample. It includes monetary payments received from regular and irregular dependent employment: cash wage and salary income (gross of social security contributions and income taxes) and monetary supplements to the basic wage, such as overtime pay, employer bonuses, 13th month bonus, profit-share, tips. Therefore, potential differences by gender in work hours or weeks worked are conflated into our earnings measure.

Next are the key demographic variables. For marital status, the main LIS variable (*marital*) classifies people in relation to the marriage laws or customs of the country. In general, marital status corresponds to *de jure* partnerships (marriage or registered union), but in some cases it also includes cohabitations (consensual unions). There is substantial variation in marital categories across countries. In some cases (e.g. Australia) the *marital* variable has only one marriage category covering *de jure* partnerships (code 100, "married/in union"). In most cases, however, there are two categories: *de jure* (code 110) and *de facto* unions (code 120). Because the code for *de facto* unions is not consistently available, our baseline definition of marriage includes *de jure* unions only. For countries where the information on cohabitation is available, regression analyses that use the most inclusive definition of partnership (codes, 100, 110 and 120), the resulting trends are unaffected. In the descriptive analysis individuals are classified as never married if they were "never married/not in union" (marital code 210).

In a few countries/years it is not possible to distinguish between current and past marital status (Australia, 2000–; Mexico, 1980s; Norway, 2007–; Spain, 1980s; Sweden, 1975-1995). Whenever available, we recover this information from IPUMS international (Spain, 1980s; Mexico, 1970s). Finally, the presence of children is defined using the LIS household variable *nhhmem17*, which reports the number of household members who are

17 years old or younger.

Education Recode: Details

Below we list the data source - IPUMS or LIS - by country and decade. For LIS, we use *educ_c* in instances when *educlev* is not available or when *educlev* code 311 pools together short cycle tertiary non-university (e.g. Some College) and short cycle university degree (e.g. College).

Australia:
Data source is LIS for the years: 1981, 1985, 1989, 1995, 2001, 2003, 2004, 2008, 2010, 2014, 2018. We use variable *educ_c* to code as College (or higher degree) individuals with *educ_c* codes (in parentheses): 1981 (2); 1985, 1989 (7); 1995 (2-4); 2001, 2003 (2); 2004, 2008, 2010, 2014, 2018 (10, 11).

Austria
Data for 1971 are from IPUMS International. An individual has college (or higher) if *edattain* equals to 400. LIS data for the years 1987, 1994, 1995, 1997, 2000, 2004, 2007, 2010, 2013, 2016-2019. We use LIS variable *educlev* to code as College (or higher) individuals with codes (in parentheses): 1987 to 2010 (312-320); 2013, 2016-2019 (311-320).

Belgium
Data Source is LIS, available years: 1985, 1988, 1992, 1995, 1997, 2000, 2003-2017. Use variable *educ_c* to code as having a bachelor's degree or higher individuals with codes (in parentheses): 1985, 1988 (7, 8); 1992 (11,12,13-17); 1995, 2000 (10, 11-12); 1997 (11, 12, 13); 2003, 2005, 2006 (30, 31-34); 2004 (30, 31-35); 2007, 2008 (14, 15, 16-22); 2009 -2012 (8, 9-11); 2013-2017 (500-800).

Canada
Data Source is LIS, available years: 1971, 1975, 1981, 1987, 1991, 1994, 1996-2018. Use LIS variable *educlev* to code as having a bachelor's degree or higher individuals with codes 312-320.

Chile

Data for 1960, 1970, and 1982 are from IPUMS International.An individual has college (or higher) if *edattain* equals 4. LIS data for the years 1990, 1992, 1994, 1996, 1998, 2000, 2003, 2006, 2009, 2011, 2013, 2015, 2017. Use a combination of LIS variables *educlev* and *educ_c* to code as having a bachelor's degree or higher individuals with the codes (in parentheses). For years prior to 1996: *educlev* (300), recoding as "High School/Some College" observations with *educ_c* codes (in parentheses): 1990 (62, 82); 1992 (62, 71); 1994 (62, 71, 82). For 1996-2017: *educlev* (312-320).

Colombia

Data for 1964, 1973, 1985 and 1993 are from IPUMS International. An individual has college (or higher) if *edattain* equals 4. LIS data for the years 2001-2018. Use a combination of LIS variables *educlev* and *educ_c* to code as having a bachelor's degree or higher individuals with codes (in parentheses): *educlev* (311-313) for all years, but recode as "High School degree or Some College" observations with *educ_c* code 34.

Denmark

Data Source is LIS, available years: 1987, 1992, 1995, 2000, 2004, 2007, 2010, 2013 and 2016. Use variable *educ_c* to code as having a bachelor's degree or higher individuals with codes (in parentheses): 1987, 1992 (4, 6-8); 1995 (5-7); 2000, 2004 (19, 20, 22); 2007, 2010, 2013 (40, 50, 60, 65, 70); 2016 (4-8).

Finland

Data Source is LIS, available years: 1987, 1991, 1995, 2000, 2004, 2007, 2010, 2013, 2016. Use variable *educ_c* to code as having a bachelor's degree or higher individuals with codes (in parentheses): 1987, 1991, 1995, 2013, 2016 (5-8); 2000, 2004, 2007, 2010 (51, 53, 60).

France

Data for 1962, 1968, 1975 and 1982 are from IPUMS International. An individual has college (or higher) if *edattain* equals 4. LIS data for the years 1996-2018. Use a combination of LIS variables *educlev* and *educ_c* to code as having a bachelor's degree or higher individuals with codes (in parentheses): *educlev* (311-320) for all years. We recode as "High School degree or Some College" observations with *educ_c*: 1996-2018 (510); 1996-

2001 (522-526); 2002-2018 (520). We use LIS data as of June-August 2022, where data for France are from the French Tax Income Survey (TIS), which provides a larger sample relative to the previous editions, but does not include basic socioeconomic variables (e.g. education) prior to 1996.

Germany

Data for 1970 and 1971 are from IPUMS International. An individual has college (or higher) if *edattain* equals 4. LIS data for the years 1981, 1983-2019. Use a combination of LIS variables *educlev* and *educ_c* to code as having a bachelor's degree or higher individuals with codes (in parentheses): educlev (312-320) or educ_c (61).

Greece

Data Source is LIS, available years: 1995, 2000, 2004, 2007, 2010, 2013, 2016. Use variable *educlev* to code as having a bachelor's degree or higher individuals with codes (in parentheses): 1995-2010 (312-320); 2013 and 2016 (311-320).

Hungary

We combine LIS and IPUMS international data. Data for 1970 and 1980 are from IPUMS International. An individual has college (or higher) if *edattain* equals 4. LIS data for the years 1991, 1994, 1999, 2005, 2007, 2009, 2012, 2015. For all years, use variable *educlev* to code as having a bachelor's degree or higher individuals with codes 312-320.

Ireland

Data for 1971 and 1979 are from IPUMS International. An individual has college (or higher) if *edattain* equals 4. LIS data for the years 1987, 1994-1996, 2000, 2002 - 2018. For all years, use variable *educlev* to code as having a bachelor's degree or higher individuals with codes 312-320.

Italy

Data Source is LIS, available years: 1986, 1987, 1989, 1991, 1993, 1995, 1998, 2000, 2004, 2008, 2010, 2014, 2016. Use variable *educlev* to code as having a bachelor's degree or higher individuals with codes (in parentheses): 1986, 1987 (300); 1989 to 1998 (312-320);

2000-2016 (311-320).

Mexico

Data for 1960 and 1970 are from IPUMS International. An individual has college (or higher) if *edattain* equals 4. LIS data for the years 1984, 1989, 1992, 1994, 1996, 1998, 2000, 2002, 2004, 2008, 2010, 2012, 2012, 2014, 2016, 2018. For all years, use variable *educlev* to code as having a bachelor's degree or higher individuals with codes 300-320.

Netherlands

Data Source is LIS, available years: 1983, 1987, 1990, 1993, 1999, 2004, 2007, 2010, 2013, 2015-2018. Use variable *educlev* to code as having a bachelor's degree or higher individuals with codes (in parentheses): 1983, 1987, 2004, 2007, 2010 (300); 1990, 1993, 1999, 2013, 2015-2018 (312-320).

Norway

Data Source is LIS, available years: 1979, 1986, 1991, 1995, 2000, 2004, 2007, 2010, 2013, 2016, 2019. For all years, use variable *educlev* to code as having a bachelor's degree or higher individuals with codes 300-320.

Poland

Data Source is LIS, available years: 1986, 1992, 1995, 1999, 2004-2019. Use variable *educlev* to code as having a bachelor's degree or higher individuals with codes (in parentheses): 1986, 1992, 1995, 1999, 2004-2009 (300); 2010-2019 (312-320).

Portugal

Data Source is IPUMS International, available years 1981, 1991, 2001, 2011. An individual has college (or higher) if *edattain* equals 4.

Spain

Data Source is LIS, available years: 1980, 1985, 1990, 1995, 2000, 2004, 2007, 2010, 2013, 2016. Use variable *educlev* to code as having a bachelor's degree or higher individuals with codes (in parentheses): 1980, 1990, 2004 (300); 1985, 1995, 2000, 2007, 2010, 2013, 2016 (312-320).

Sweden

Data Source is LIS, available years: 1967, 1975, 1981, 1987, 1992, 1995, 2000, 2005. For all years, use variable *educlev* to code as having a bachelor's degree or higher individuals with codes 300-320.

Taiwan

Data Source is LIS, available years: 1981, 1986, 1991, 1995, 1997, 2000, 2005, 2007, 2010, 2013, 2016. For all years, use variable *educlev* to code as having a bachelor's degree or higher individuals with codes 300-320.

UK

Data Source is LIS, available years: 1974, 1979, 1986, 1991, 1994, 1995, 1999-2018. Use a combination of LIS variables *educlev* and *educ_c* to code as having a bachelor's degree or higher individuals with codes (in parentheses): 1974, 1979, 1986, 1991, 1994, 1995 (*educ_c*, 21-52); 1999-2018 (*educlev*, 300 or 312-320). If (*educlev*, 300) then recode as "High School and Some College" observations with (*educ_c*, 221).

USA

Data for 1960 are from IPUMS International. An individual has college (or higher) if *edattain* equals 4. LIS data for the years 1974, 1979, 1986, 1991, 1993=2018. For all years, use variable *educlev* to code as having a bachelor's degree or higher individuals with the codes 300-320.

B Regression Estimates

Figure 16: Employment differentials associated with Marriage and Children: Part A

		Males		Females	
Country	Cohort	Marriage Deficit/Surplus	Fatherhood Penalty/Premium	Marriage Deficit/Surplus	Motherhood Penalty/Premium
Australia	1940-49				
Australia	1950-59	0.151	-0.002	0.038	-0.112
Australia	1960-69	**0.175**	-0.005	**0.073**	**-0.148**
Australia	1970-79	**0.156**	**-0.013**	0.074	**-0.242**
Austria	1940-49				
Austria	1950-59	**0.071**	0.016	**-0.043**	**-0.151**
Austria	1960-69	**0.093**	-0.001	**-0.015**	**-0.096**
Austria	1970-79	**0.057**	0.043	**0.018**	**-0.154**
Belgium	1940-49				
Belgium	1950-59	**0.128**	0.007	-0.008	**-0.035**
Belgium	1960-69	**0.092**	0.045	0.034	**-0.053**
Belgium	1970-79	**0.025**	**0.102**	**-0.001**	**-0.046**
Canada	1940-49	**0.152**	**0.024**	-0.012	**-0.067**
Canada	1950-59	**0.125**	0.023	**0.012**	**-0.041**
Canada	1960-69	**0.075**	**0.034**	**-0.001**	**-0.057**
Canada	1970-79	**0.052**	**0.051**	**-0.023**	**-0.080**
Chile	1940-49				
Chile	1950-59	0.076	0.032	**-0.236**	**-0.033**
Chile	1960-69	**0.091**	0.035	**-0.229**	**-0.063**
Chile	1970-79	**0.088**	**0.059**	**-0.188**	**-0.046**
Denmark	1940-49	**0.188**	0.040	0.109	**0.018**
Denmark	1950-59	**0.141**	0.065	**0.114**	**0.016**
Denmark	1960-69	**0.079**	**0.087**	**0.078**	**0.002**
Denmark	1970-79	**0.052**	**0.097**	**0.053**	**0.002**
Finland	1940-49				
Finland	1950-59	0.128	0.064	0.073	**-0.008**
Finland	1960-69	**0.086**	0.069	**0.034**	**-0.047**
Finland	1970-79	**0.042**	**0.110**	**0.023**	**-0.195**
France	1940-49	0.109	**0.003**	**-0.131**	**-0.150**
France	1950-59	**0.099**	0.021	**-0.044**	**-0.082**
France	1960-69	**0.076**	0.049	**-0.012**	**-0.062**
France	1970-79	**0.056**	**0.064**	**0.004**	**-0.063**
Germany	1940-49	0.082	**0.003**	**-0.115**	**-0.158**
Germany	1950-59	**0.084**	**0.014**	**-0.080**	**-0.154**
Germany	1960-69	**0.098**	**0.001**	**-0.059**	**-0.180**
Germany	1970-79	**0.084**	-0.012	**-0.022**	**-0.207**
Greece	1940-49				
Greece	1950-59	0.156	0.021	-0.176	0.010
Greece	1960-69	0.121	0.027	-0.114	-0.027
Greece	1970-79	0.155	**0.029**	-0.103	-0.017
Hungary	1940-49				
Hungary	1950-59	0.087	0.040	-0.008	-0.054
Hungary	1960-69	**0.122**	-0.009	-0.014	-0.055
Hungary	1970-79	0.075	**0.001**	-0.045	**-0.096**

Notes: Sample of men and women aged 25-54. Entries are based on regression estimates of equation (1) by country and gender. The dependent variable is a dummy equal to 1 if an individual is employed. We report the interaction terms between the cohort dummies and the married dummy (col 1 and 3) or 'any child' dummy (col 2 and 4). Robust standard errors are obtained with the delta method. Coefficients in bold are statistically significant at least at the 10 percent level. Data source: LIS.

Figure 17: Employment differentials associated with Marriage and Children: Part B

		Males		Females	
Country	Cohort	Marriage Deficit/Surplus	Fatherhood Penalty/Premium	Marriage Deficit/Surplus	Motherhood Penalty/Premium
Ireland	1940-49				
Ireland	1950-59	**0.200**	**0.003**	-0.070	**-0.083**
Ireland	1960-69	**0.171**	**0.009**	**-0.048**	**-0.097**
Ireland	1970-79	**0.150**	0.012	**-0.002**	**-0.174**
Italy	1940-49	**0.109**	**0.030**	**-0.160**	**-0.062**
Italy	1950-59	0.138	**0.009**	**-0.152**	-0.017
Italy	1960-69	**0.168**	-0.002	**-0.110**	**-0.058**
Italy	1970-79	**0.182**	-0.010	**-0.035**	**-0.102**
Mexico	1940-49				
Mexico	1950-59	**0.053**	**0.025**	**-0.206**	**-0.005**
Mexico	1960-69	**0.048**	0.039	**-0.186**	**-0.005**
Mexico	1970-79	0.056	0.052	**-0.183**	**-0.064**
Netherlands	1940-49				
Netherlands	1950-59	**0.119**	**0.022**	**-0.107**	**-0.206**
Netherlands	1960-69	**0.110**	**0.032**	-0.036	**-0.157**
Netherlands	1970-79	**0.041**	**0.069**	-0.020	**-0.107**
Norway	1940-49	**0.122**	0.008	**0.040**	**-0.034**
Norway	1950-59	**0.078**	**0.049**	0.028	**-0.044**
Norway	1960-69	**0.055**	**0.097**	0.012	**-0.026**
Norway	1970-79	**0.026**	0.125	-0.004	**0.024**
Poland	1940-49				
Poland	1950-59	**0.170**	**0.044**	0.027	**-0.013**
Poland	1960-69	**0.178**	**0.037**	**0.015**	**-0.054**
Poland	1970-79	**0.165**	0.036	**0.012**	**-0.090**
Spain	1940-49				
Spain	1950-59	**0.202**	**0.019**	**-0.206**	**-0.043**
Spain	1960-69	**0.159**	0.030	**-0.103**	-0.048
Spain	1970-79	0.134	0.020	-0.056	**-0.083**
Sweden	1940-49				
Sweden	1950-59	**0.059**	**0.033**	0.051	**-0.013**
Sweden	1960-69	**0.034**	**0.066**	0.035	**0.016**
Sweden	1970-79	**-0.008**	0.093	0.013	**0.001**
Taiwan	1940-49				
Taiwan	1950-59	**0.120**	**0.026**	-0.175	-0.007
Taiwan	1960-69	**0.114**	**0.017**	**-0.178**	-0.037
Taiwan	1970-79	**0.104**	**0.027**	**-0.160**	-0.043
United Kingdom	1940-49	**0.175**	**-0.017**	**0.041**	**-0.117**
United Kingdom	1950-59	**0.146**	**0.001**	**0.063**	**-0.112**
United Kingdom	1960-69	**0.136**	**0.007**	**0.051**	**-0.125**
United Kingdom	1970-79	**0.096**	**0.013**	0.028	**-0.201**
United States	1940-49	**0.138**	**0.008**	**-0.086**	**-0.093**
United States	1950-59	**0.135**	**0.013**	**-0.037**	**-0.076**
United States	1960-69	**0.117**	**0.029**	**-0.045**	**-0.079**
United States	1970-79	0.099	0.041	-0.072	**-0.079**

Notes: Sample of men and women aged 25-54. Entries are based on regression estimates of equation (1) by country and gender. The dependent variable is a dummy equal to 1 if an individual is employed. We report the interaction terms between the cohort dummies and the married dummy (col 1 and 3) or 'any child' dummy (col 2 and 4). Robust standard errors are obtained with the delta method. Coefficients in bold are statistically significant at least at the 10 percent level. Data source: LIS.

Figure 18: Earnings differentials associated with Marriage and Children: Part A

		Males		Females	
		Marriage	Fatherhood	Marriage	Motherhood
Country	Cohort	Deficit/Surplus	Penalty/Premium	Deficit/Surplus	Penalty/Premium
Australia	1940-49				
Australia	1950-59	**0.123**	0.043	**-0.127**	**-0.318**
Australia	1960-69	**0.110**	**0.043**	-0.033	**-0.277**
Australia	1970-79	**0.089**	0.040	**0.042**	**-0.305**
Austria	1940-49				
Austria	1950-59	**0.138**	-0.025	**-0.168**	**-0.238**
Austria	1960-69	**0.199**	-0.029	**-0.161**	**-0.268**
Austria	1970-79	**0.079**	**0.113**	**-0.177**	**-0.422**
Belgium	1940-49				
Belgium	1950-59	**0.127**	-0.015	-0.049	**-0.171**
Belgium	1960-69	**0.109**	**0.092**	**-0.036**	**-0.077**
Belgium	1970-79	**0.041**	**0.108**	0.012	**-0.149**
Canada	1940-49	**0.253**	0.046	**-0.240**	**-0.189**
Canada	1950-59	**0.159**	**0.075**	**-0.127**	**-0.219**
Canada	1960-69	**0.129**	**0.050**	**-0.069**	**-0.187**
Canada	1970-79	-0.025	**0.165**	**-0.138**	**-0.234**
Chile	1940-49				
Chile	1950-59	**0.167**	-0.001	**-0.067**	**-0.085**
Chile	1960-69	**0.082**	**-0.036**	**-0.040**	**-0.110**
Chile	1970-79	**0.051**	-0.002	0.006	**-0.174**
Denmark	1940-49	**0.340**	0.008	**-0.058**	**-0.004**
Denmark	1950-59	**0.263**	**0.111**	**0.085**	**-0.028**
Denmark	1960-69	**0.186**	**0.164**	**0.122**	**-0.038**
Denmark	1970-79	**0.141**	**0.192**	**0.142**	**-0.083**
Finland	1940-49				
Finland	1950-59	**0.142**	0.020	**-0.077**	**-0.106**
Finland	1960-69	**0.122**	**0.063**	**-0.100**	**-0.182**
Finland	1970-79	0.054	**0.140**	**-0.141**	**-0.281**
France	1940-49	**0.158**	-0.019	**-0.108**	**-0.050**
France	1950-59	**0.148**	0.005	**-0.140**	**-0.066**
France	1960-69	**0.123**	**0.062**	**-0.067**	**-0.069**
France	1970-79	0.053	**0.141**	**-0.110**	**-0.139**
Germany	1940-49	**0.184**	**0.076**	**-0.376**	**-0.464**
Germany	1950-59	**0.181**	**0.082**	**-0.296**	**-0.396**
Germany	1960-69	**0.223**	0.021	**-0.230**	**-0.492**
Germany	1970-79	**0.276**	0.015	-0.039	**-0.652**
Greece	1940-49				
Greece	1950-59	0.099	-0.007	-0.071	-0.030
Greece	1960-69	0.035	**0.092**	0.000	-0.001
Greece	1970-79	0.055	0.059	-0.002	-0.051
Hungary	1940-49				
Hungary	1950-59	**0.170**	0.062	-0.072	-0.079
Hungary	1960-69	0.058	**0.090**	-0.142	**-0.160**
Hungary	1970-79	0.054	-0.033	**-0.187**	**-0.128**

Notes: Sample of men and women aged 25-54 with positive earnings. Entries are based on regression estimates of equation (1) by country and gender. The dependent variable is log(annual earnings). We report the interaction terms between the cohort dummies and the married dummy (col 1 and 3) or 'any child' dummy (col 2 and 4). Robust standard errors are obtained with the delta method. Coefficients in bold are statistically significant at least at the 10 percent level. Data source: LIS.

Figure 19: Earnings differentials associated with Marriage and Children: Part B

		Males		Females	
Country	Cohort	Marriage Deficit/Surplus	Fatherhood Penalty/Premium	Marriage Deficit/Surplus	Motherhood Penalty/Premium
Ireland	1940-49				
Ireland	1950-59	**0.292**	0.049	0.004	**-0.222**
Ireland	1960-69	**0.153**	**0.126**	**0.102**	**-0.237**
Ireland	1970-79	**0.132**	**0.104**	**0.242**	**-0.413**
Italy	1940-49	**0.088**	0.022	**-0.135**	**-0.021**
Italy	1950-59	**0.070**	**0.037**	**-0.063**	-0.006
Italy	1960-69	0.027	**0.063**	**-0.071**	**-0.095**
Italy	1970-79	**0.071**	0.039	**-0.137**	**-0.103**
Mexico	1940-49				
Mexico	1950-59	**0.274**	**-0.079**	**-0.139**	**-0.128**
Mexico	1960-69	**0.170**	**-0.049**	**-0.177**	**-0.072**
Mexico	1970-79	**0.155**	-0.026	**-0.214**	**-0.189**
Netherlands	1940-49				
Netherlands	1950-59	**0.322**	-0.011	**-0.284**	**-0.461**
Netherlands	1960-69	**0.187**	**0.074**	-0.039	**-0.416**
Netherlands	1970-79	**0.192**	**0.228**	-0.050	**-0.361**
Norway	1940-49	**0.244**	**-0.095**	**-0.174**	**-0.151**
Norway	1950-59	**0.191**	0.047	-0.064	**-0.203**
Norway	1960-69	**0.094**	**0.167**	0.034	**-0.213**
Norway	1970-79	**0.038**	**0.251**	0.036	**-0.306**
Poland	1940-49				
Poland	1950-59	**0.331**	**-0.024**	0.014	**-0.057**
Poland	1960-69	**0.289**	**0.011**	**-0.013**	**-0.031**
Poland	1970-79	**0.251**	**0.052**	**0.015**	**-0.043**
Spain	1940-49				
Spain	1950-59	**0.208**	-0.018	**-0.159**	**-0.110**
Spain	1960-69	**0.147**	**0.118**	**-0.113**	-0.049
Spain	1970-79	**0.103**	0.051	-0.027	**-0.130**
Sweden	1940-49				
Sweden	1950-59	**0.279**	**0.065**	0.038	**-0.257**
Sweden	1960-69	**0.243**	**0.049**	0.039	**-0.503**
Sweden	1970-79	**0.209**	**0.058**	0.015	**-0.572**
Taiwan	1940-49				
Taiwan	1950-59	**0.279**	**0.065**	-0.027	-0.004
Taiwan	1960-69	**0.243**	**0.049**	**0.019**	-0.007
Taiwan	1970-79	**0.209**	**0.058**	**0.026**	-0.004
United Kingdom	1940-49	**0.127**	**0.094**	**-0.273**	**-0.238**
United Kingdom	1950-59	**0.114**	**0.039**	**-0.195**	**-0.323**
United Kingdom	1960-69	**0.087**	**0.033**	**-0.080**	**-0.389**
United Kingdom	1970-79	**0.077**	**-0.037**	-0.008	**-0.597**
United States	1940-49	**0.259**	**0.037**	**-0.243**	**-0.279**
United States	1950-59	**0.234**	**0.077**	**-0.136**	**-0.242**
United States	1960-69	**0.187**	**0.099**	**-0.058**	**-0.250**
United States	1970-79	**0.170**	**0.075**	0.000	**-0.260**

Notes: Sample of men and women aged 25-54 with positive earnings. Entries are based on regression estimates of equation (1) by country and gender. The dependent variable is log(annual earnings). We report the interaction terms between the cohort dummies and the married dummy (col 1 and 3) or 'any child' dummy (col 2 and 4). Robust standard errors are obtained with the delta method. Coefficients in bold are statistically significant at least at the 10 percent level. Data source: LIS.

C Policy Data

The main data source for the policy analysis is the OECD Tax Policy Database (https://www.oecd.org/tax/tax-policy/tax-database/), which is the basis for their annual publication Taxing Wages. Specifically, we consider marginal taxes for primary and secondary earners based on family status, income and change in work effort, as reported in the marginal tax database available at https://stats.oecd.org/Index.aspx?DataSetCode=METR. This indicator measures the fraction of any additional earnings that is lost to either higher taxes or lower benefits when an employed person increases marginally their working hours. Incomes are calculated at the family level. The numerator is the change in tax liabilities and benefit entitlements when one working family member increase their working hours. The denominator is the associated increase in gross earnings. For couples, if the partner of the person who is increasing the hours of work is out of work, it is assumed that they do not receive any contributory benefits (e.g. because they have expired) but they do meet any behavioral requirements needed for eligibility to other types of social benefits. Calculations for families with children assume two children aged 4 and 6. Family benefits and in-work benefits are included in the calculations subject to relevant income and eligibility conditions. Neither childcare benefits, i.e. benefits related to the use of centre-based childcare, nor costs for centre-based childcare are considered in these calculations. Adults are aged 40 and are assumed to have full work capacity.

We consider marginal taxes for primary earners and secondary earners. When the spouses have the same wages, their marginal taxes are assumed the same. Additionally, if a partner is not employed, there are no marginal taxes. This is consistent with the increases in effort available in the dataset, which are 33-67%, 67-100% and 50-100% of full time work. We consider only the first and second type of increase in effort. Given the structure of the data, the marginal taxes are to be interpreted as applying to the intensive margin only.

We also consider net childcare costs for parents using childcare facilities, available from https://stats.oecd.org/Index.aspx?DataSetCode=METR. The data starts in the year 2000 and mostly ends in 2018 or 2019. This indicator measures the net costs paid by parents for full-time centre-based childcare, after any benefits designed to reduce the gross childcare fees, as a percentage of the average wage at full time work. Childcare

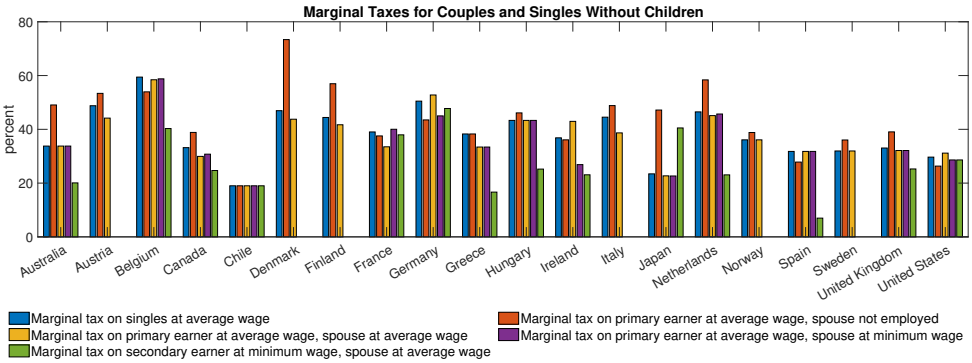
benefits can be received in the form of childcare allowances, tax concessions, fee rebates and increases in other benefit entitlements.

D Cross-Country Variation in Family Policies

D.1 Marginal Income Taxes

Figure 20 reports the marginal labor income tax on married individuals at different wage levels and for single individuals at the average wage for comparison. There is a large variation in marginal taxes across countries both in the level of marginal taxes and in how they vary across types of workers. In countries like Chile and Hungary, marginal taxes for workers at the average wage vary little by marital status and income of the spouse. But in countries like Australia, Austria, Canada, Denmark, Finland, Japan, the Netherlands and the United Kingdom, we see that marginal taxes on a married workers with a non-working spouse are substantially higher than for a single worker at the same wage. This amounts to a marriage penalty, as these workers have the same household income and differ only in marital status. For these countries, marginal taxes for married workers with a working spouse tend to be lower than for those with a non-working spouse, suggesting a regressive structure of taxation as a function of household income.

Figure 20: Marginal taxes for single workers at the average wage and married couples with primary earner at the average wage by earnings of the spouse, 2000-2015 averages.



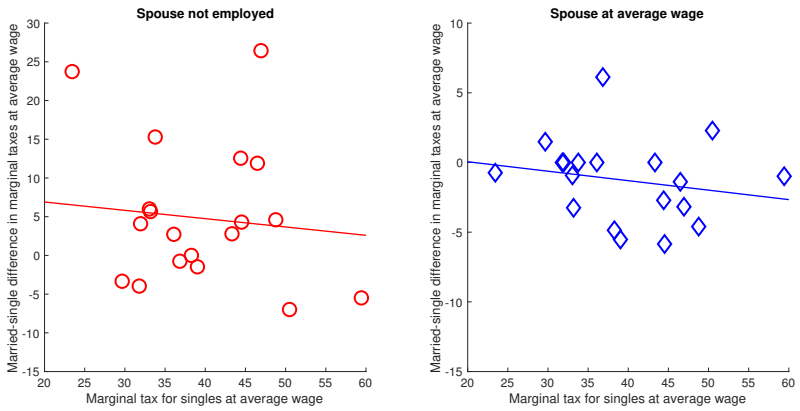
Notes: Marginal taxes calculated for an increase in effort from 50 to 100 percent of full time work for individuals and couples without children. All values in percentage. Source: Author's calculations from OECD Tax Database.

Despite the heterogeneity in the level of marginal taxes and the variation across worker types across countries, there is a systematic pattern of variation which is illustrated in Figure 21, which displays the married-single difference in marginal taxes for married

workers in couples with the primary earner at the average wage against the corresponding marginal tax on singles, by wage of the secondary earner. In low marginal tax countries, marginal taxes on married workers are mostly higher than for singles, while the opposite is true in high marginal tax countries.

In addition, these patterns vary with the spouse's work status. The left panel of Figure 21 displays the married-single difference in marginal taxes when the married workers' spouse is not employed, showing that in most countries married workers face a higher marginal tax than singles at the same household income level. The right panel reports the married-single difference in marginal taxes for workers at the average wage, when the married worker's spouse is also at the average wage. In this case, the marriage-single differential is smaller, and about half of the observations display a negative difference.

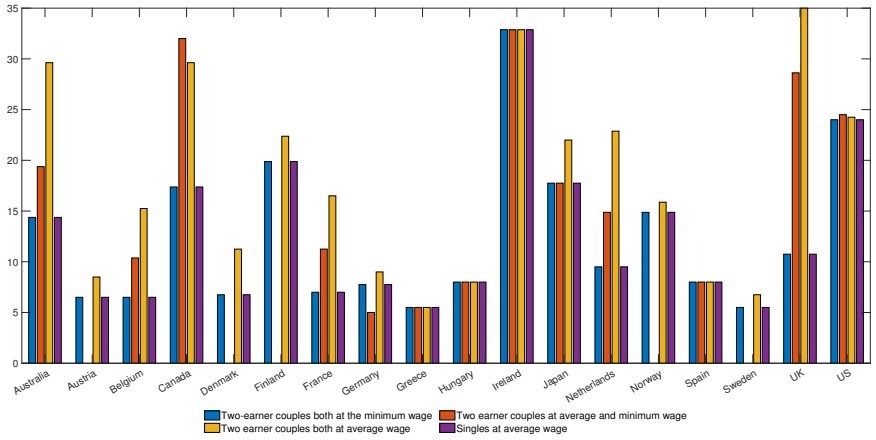
Figure 21: Difference in marginal taxes for married and single workers at the average wage by earnings of the spouse, 2000-2015 averages.



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.

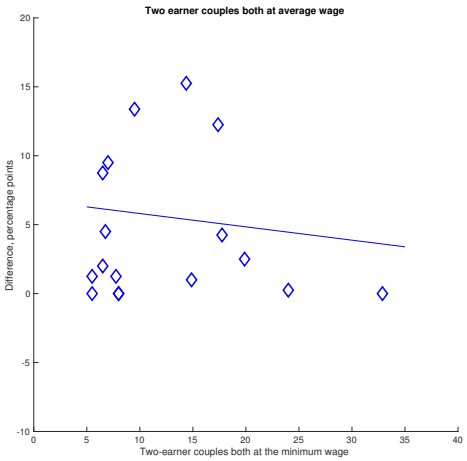
D.2 Childcare Costs

Figure 22: Childcare costs as a fraction of average labor earnings for married couples by income.



Notes: All values in percentage. Source: Author's calculations from OECD Family Policies Database.

Figure 23: Childcare costs for married couples with different income levels as a fraction of average income.



Notes: Horizontal axis measures childcare costs as fraction of average income for two-earner couples working full time at the minimum wage. Vertical axis measures differences in these costs for two-earner couples working full time both at the average wage versus two-earner couples both at the minimum wage. All values in percentage. Source: Author's calculations from OECD Family Policies Database.