# Motherhood and women's labor market trajectories in Türkiye

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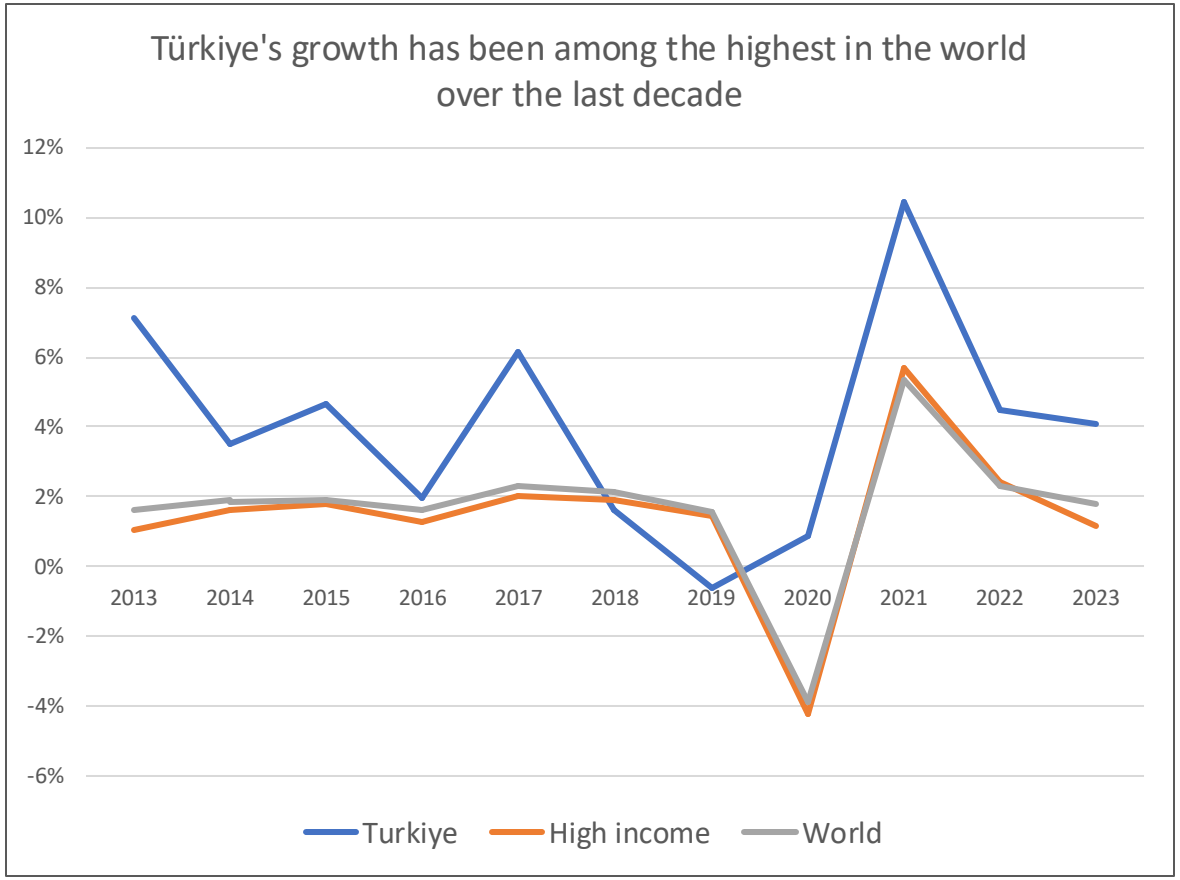
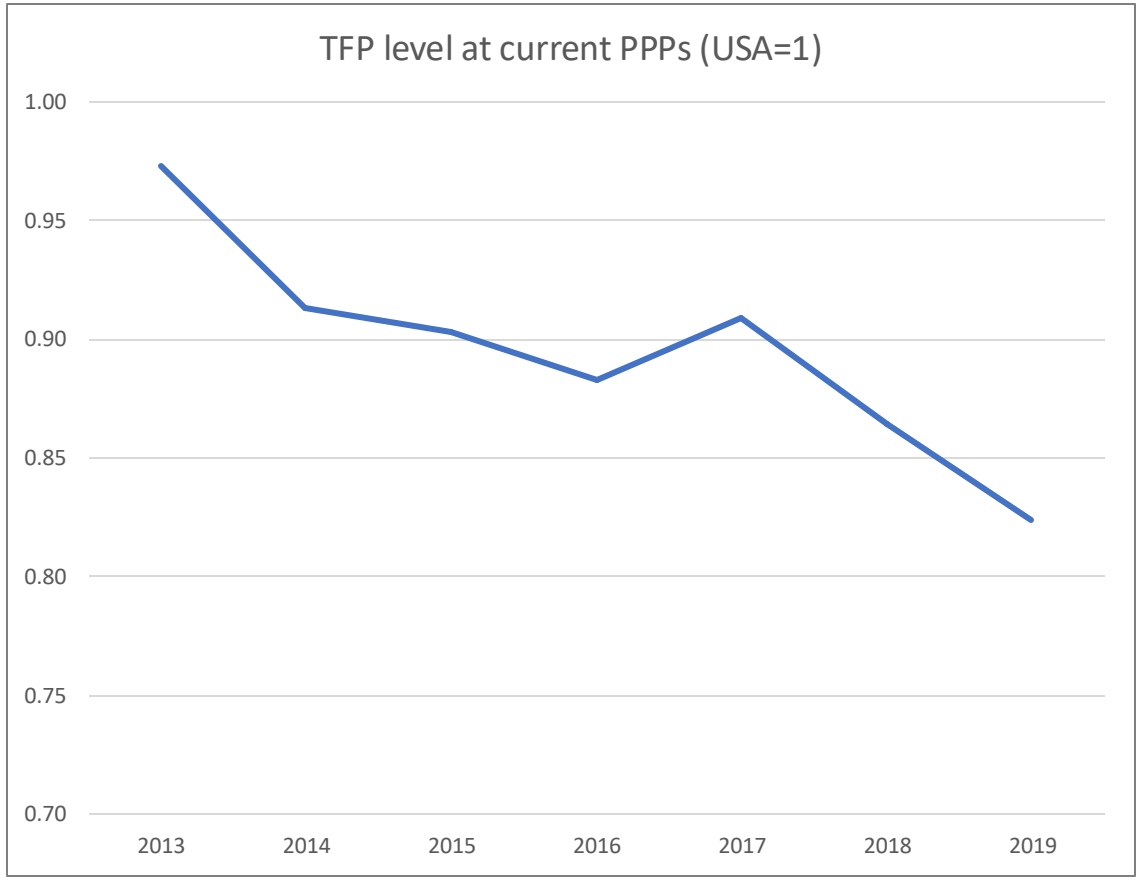
# Motivation: Türkiye has enjoyed high growth, but the sources of growth may be losing momentum




*Source: World Development Indicators*




*Source: Penn World Tables*

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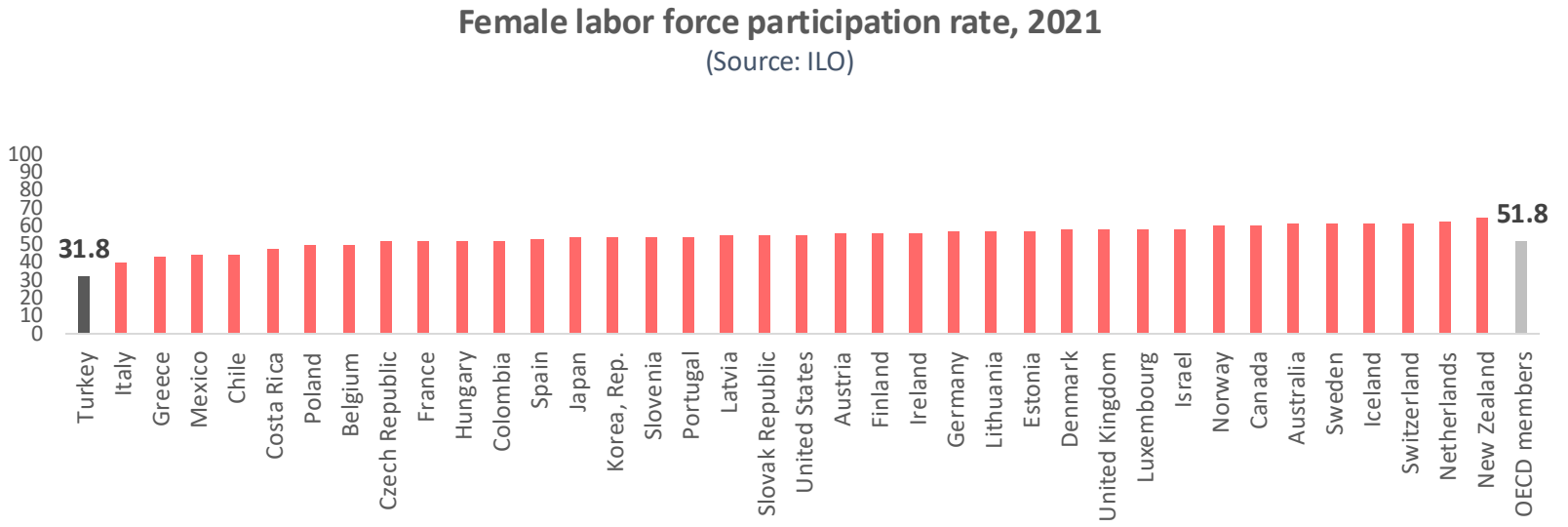
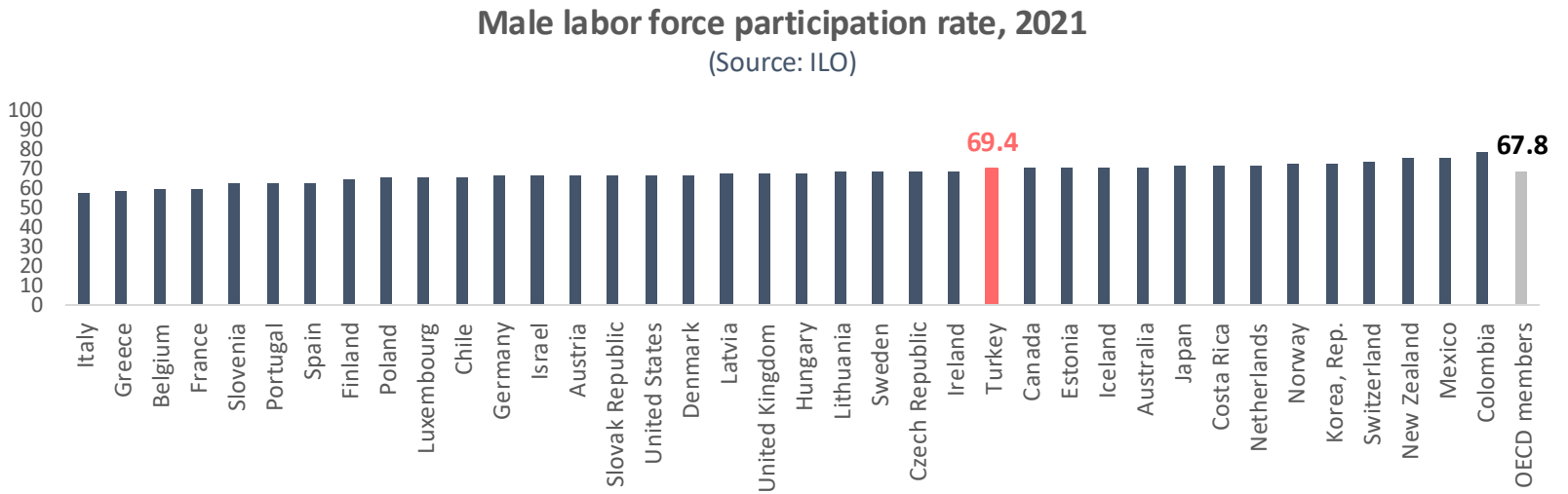
# Motivation: Türkiye has the lowest female labor force participation rate among the OECD countries.

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# Contributions :

- The paper estimates child penalty in Türkiye: building on the work of Kleven, Landais, and Leite-Mariante (2024), it provides insights into its persistence in the country (more recent data, wider range of outcomes).

- Assesses robustness of estimates that do not account for individual fixed effects, by combining including panel and cross-sectional data.

- Examines the mechanisms underlying the child penalty in an upper-middle income country.

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# Road map:

1

## Event Study with panel data

- SILC panel (2006-2021)
- Documented child penalty in
  - [a] LFP
  - [b] Employment
  - [c] Working hours
  - [d] Informal employment
  - [e] Non-registration to social security
- Robustness check with alternative samples
  - [a] Full panel (four data points for each individual)
  - [b] At least one data point before and after the event
  - [c] At least two data points

2

## Event Study with Pseudo Panel

- SILC Cross Section (2014-2021)
- Validated pseudo panel approach
  - by comparing results from SILC panel and national level results of SILC cross section

3

## Heterogeneity analysis

- Individual
- Household
- Regional level

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# Panel-based empirical estimates of child penalty

## Specification

$Y_{ist}$ is the outcome of interest for individual ***i*** of gender ***g*** in year ***s*** and at event time ***t*** → *run the following regression separetely for men and women:*

$$Y_{ist}^{g} = \sum_{j \neq -1} a_j^g . I[j = t] + \sum_{k} \beta_k^g . I[k = age_{is}] + \sum_{y} \gamma_y^g . I[y = s] + \mu_{ist}^g$$

(i) event time dummies
(ii) age dummies – control non-parametrically for underlying life-cycle trends
(iii) year dummies – control non-parametrically for time trends such as wage inflation and business cycles

Gender specific child penalty at year *t:*

$$P_t^g = \frac{\tilde{\alpha}_t^g}{E[\bar{Y}_{ist}^g | \, t]}$$

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# Data:

**Table 1: Descriptive statistics for the SILC panel**

| | t = -1 | | t = 1 to 2 | |
|---|---|---|---|---|
| | **Mothers** | **Fathers** | **Mothers** | **Fathers** |
| | **(I)** | **(II)** | **(III)** | **(IV)** |
| ***Analytical sample*** | | | | |
| Median year of birth | 1988 | 1986 | | |
| Median age one year prior to the first birth | 26.5 | 29 | | |
| Have tertiary education | 38% | 32% | | |
| | (0.49) | (0.47) | | |
| Living with an extended family | 17% | 36% | | |
| | (0.37) | (0.48) | | |
| Labor force participation | 48% | 99% | 31% | 99% |
| | (0.50) | (0.11) | (0.44) | (0.11) |
| Employment rate | 43% | 91% | 29% | 90% |
| | (0.50) | (0.29) | (0.44) | (0.27) |
| **Conditional on being employed** | | | | |
| Usual working hours per week | 43.94 | 52.95 | 40.49 | 52.45 |
| | (11.94) | (13.61) | (12.71) | (13.17) |
| Informal employment | 20% | 31% | 22% | 27% |
| | (0.40) | (0.46) | (0.41) | (0.44) |
| Non-registered to social security | 15% | 22% | 19% | 17% |
| | (0.36) | (0.42) | (0.39) | (0.37) |
| Number of individuals | 950 | 1322 | 878 | 1197 |

Note: Table 1 reports the demographic and labor market characteristics of both mothers and fathers in the analytical sample. Standard deviations are given in parentheses. Columns (I) and (II) present the time-variant and time-invariant characteristics one year prior to birth, while the remaining columns show labor market characteristics averaged over t=1 and t=2. Number of observations are less in columns (III) and (IV) since the analytical sample restricted to parents observed at least one year before and after the birth. Own elaboration based on SILC panel (2006-2023).

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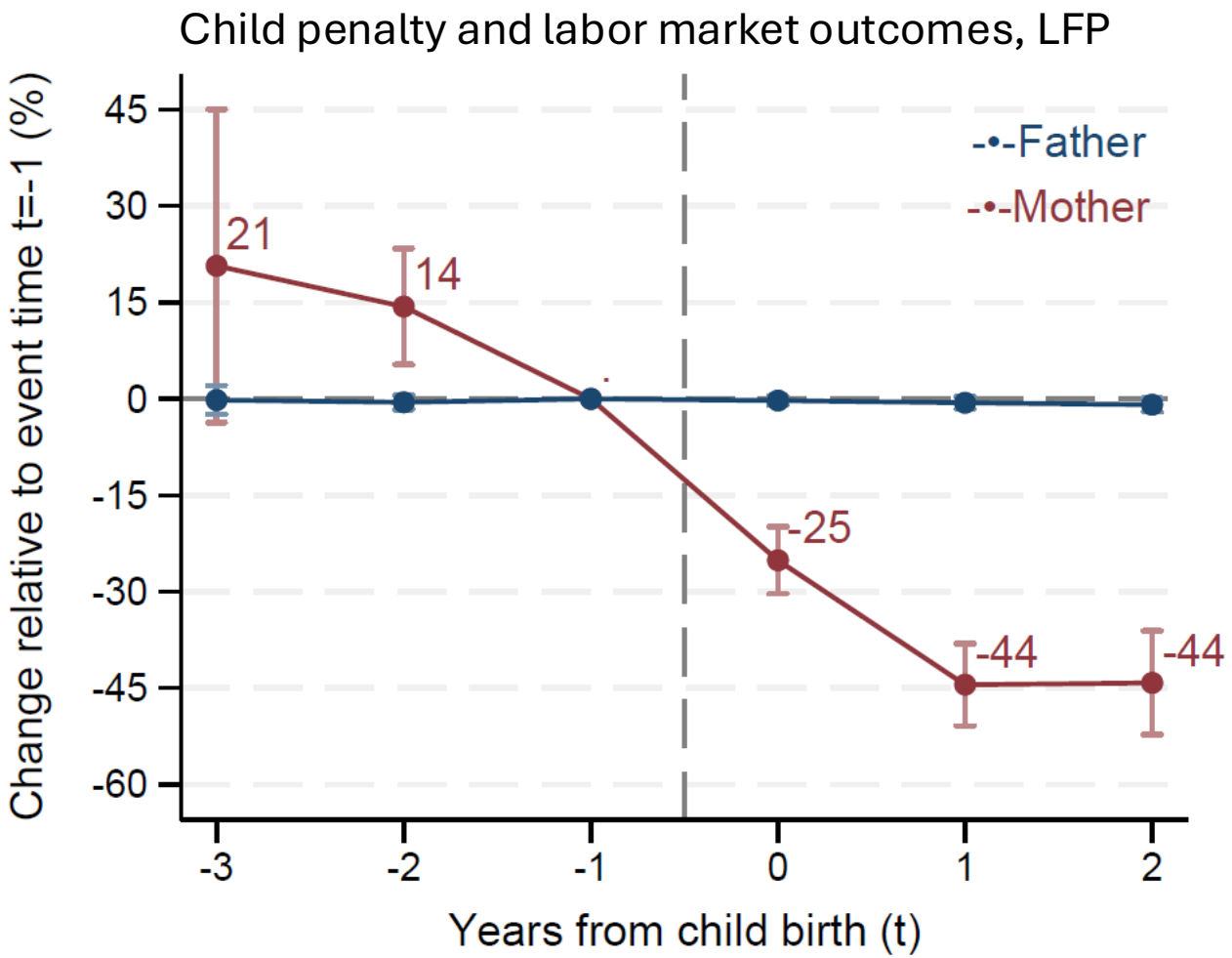
# Panel-based empirical estimates of child penalty:




Note: Figure 2 illustrates the estimated child penalties for men and women separately o labor force participation. The gender-specific child penalties, $P_t^g$ , as defined in Equation 2, are shown on the y-axis, reflecting the impacts of having children on labor market outcomes relative to one year before the first childbirth. Point estimates are accompanied by 95% confidence intervals. Standard errors are clustered at the individual level. Own elaboration based on SILC panel (2006-2023).

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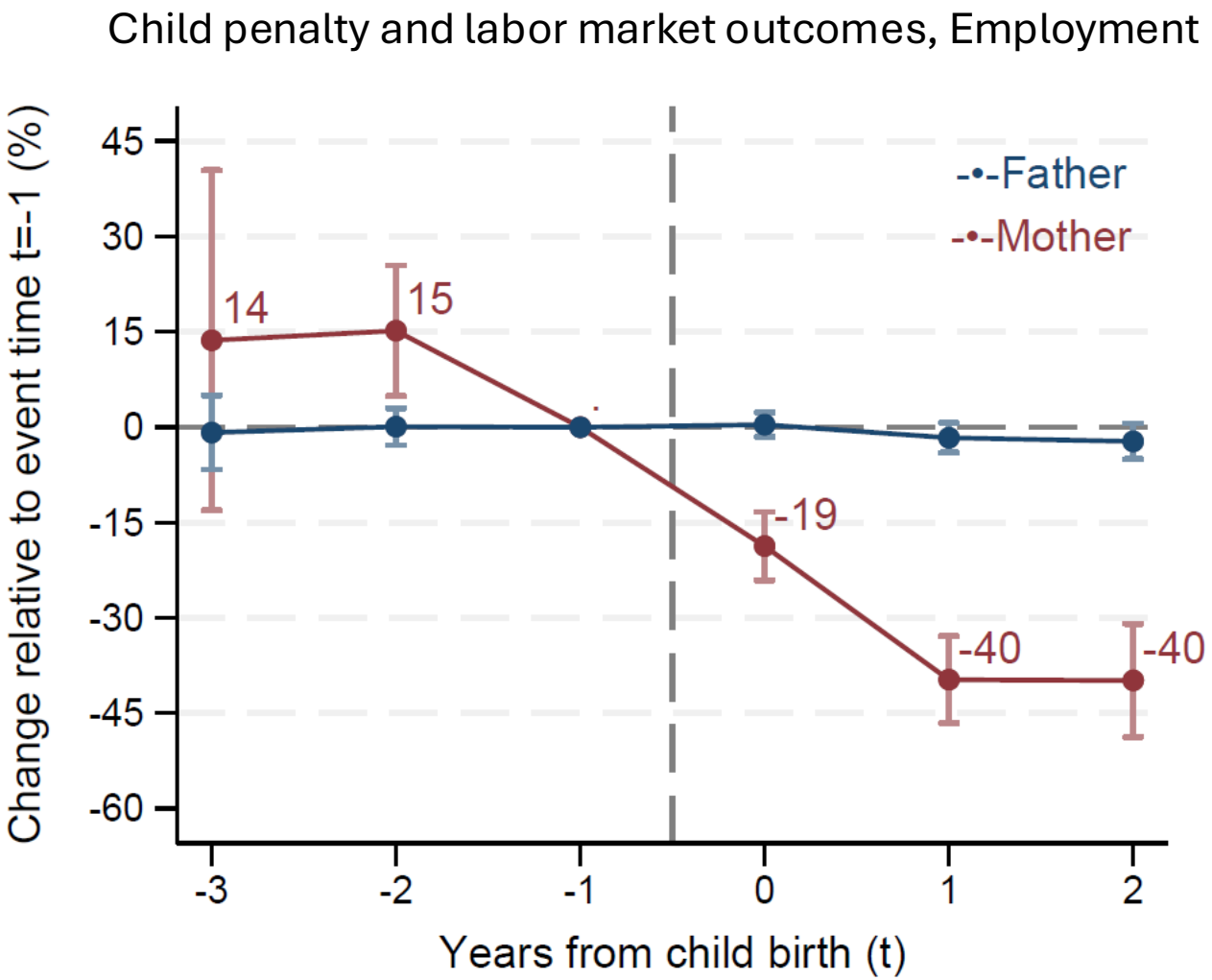
# Panel-based empirical estimates of child penalty:




Note: Figure 3 illustrates the estimated child penalties for men and women separately on employment. The gender-specific child penalties, $P_t^g$ , as defined in Equation 2, are shown on the y-axis, reflecting the impacts of having children on labor market outcomes relative to one year before the first childbirth. Point estimates are accompanied by 95% confidence intervals. Standard errors are clustered at the individual level. Own elaboration based on SILC panel (2006-2023).

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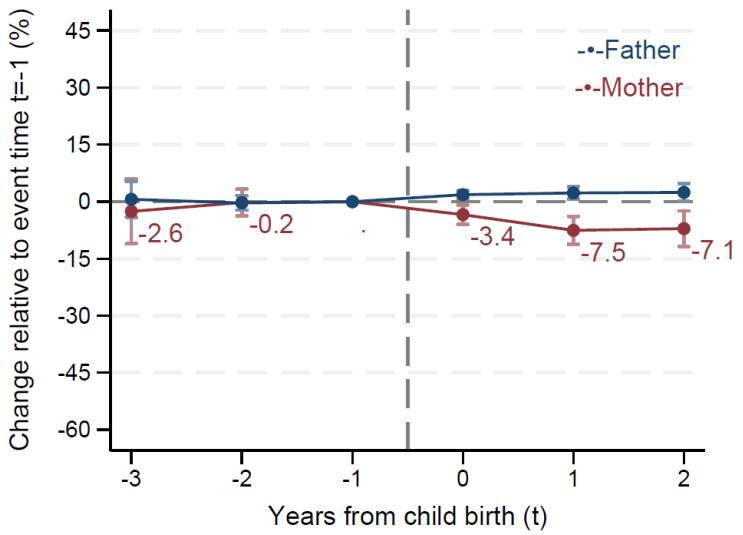
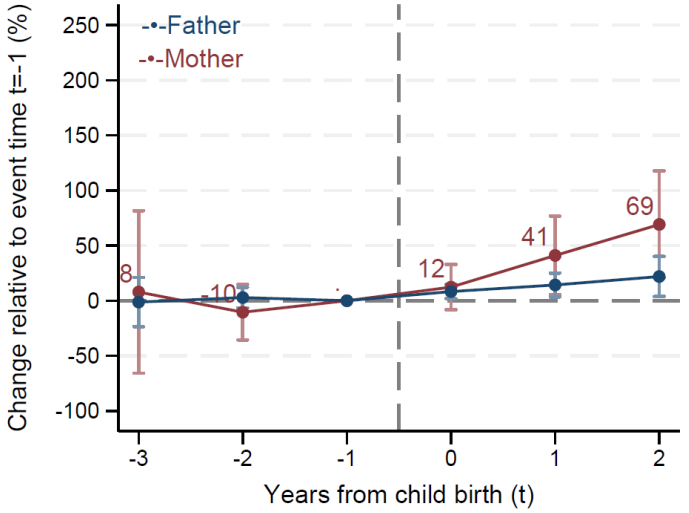
# Panel-based empirical estimates of child penalty:

## Child penalty and labor market outcomes

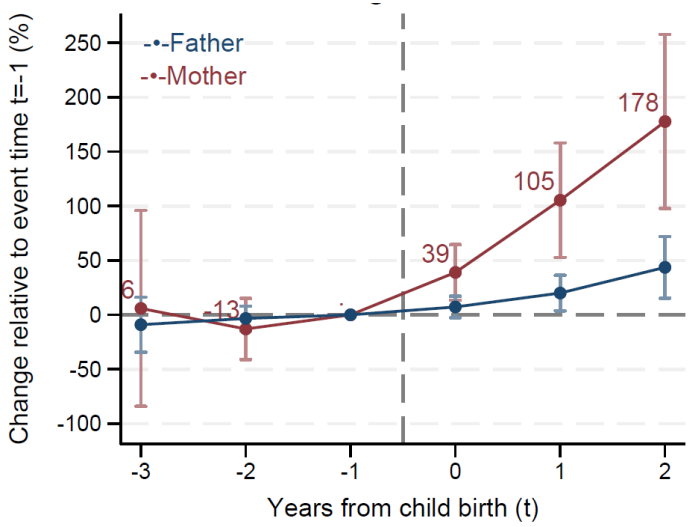
### a. Usual working hours




### b. Informal employment




### c. Non-registered jobs




Note: Figure 4 illustrates the estimated child penalties for men and women separately on the following labor market outcomes: (a) usual working hours, (b) informal employment, and (c) social security registration. The gender-specific child penalties, $P_t^g$ , as defined in Equation 2, are shown on the y-axis, reflecting the impacts of having children on labor market outcomes relative to one year before the first childbirth. Point estimates are accompanied by 95% confidence intervals. Standard errors are clustered at the individual level. Figures 4a, 4b, and 4c are estimated conditional on being employed. Own elaboration based on SILC panel (2006-2023).

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# Construction of pseudo-panels based on matching techniques:

With child (at t=0)

matched

Childless

- Calendar year: 2014
- Age 28
- Female
- Location: TR3 Agean
- Married
- High Education

- Calendar year: 2013
- Age 27
- Female
- Location: TR3 Agean
- Married
- High Education

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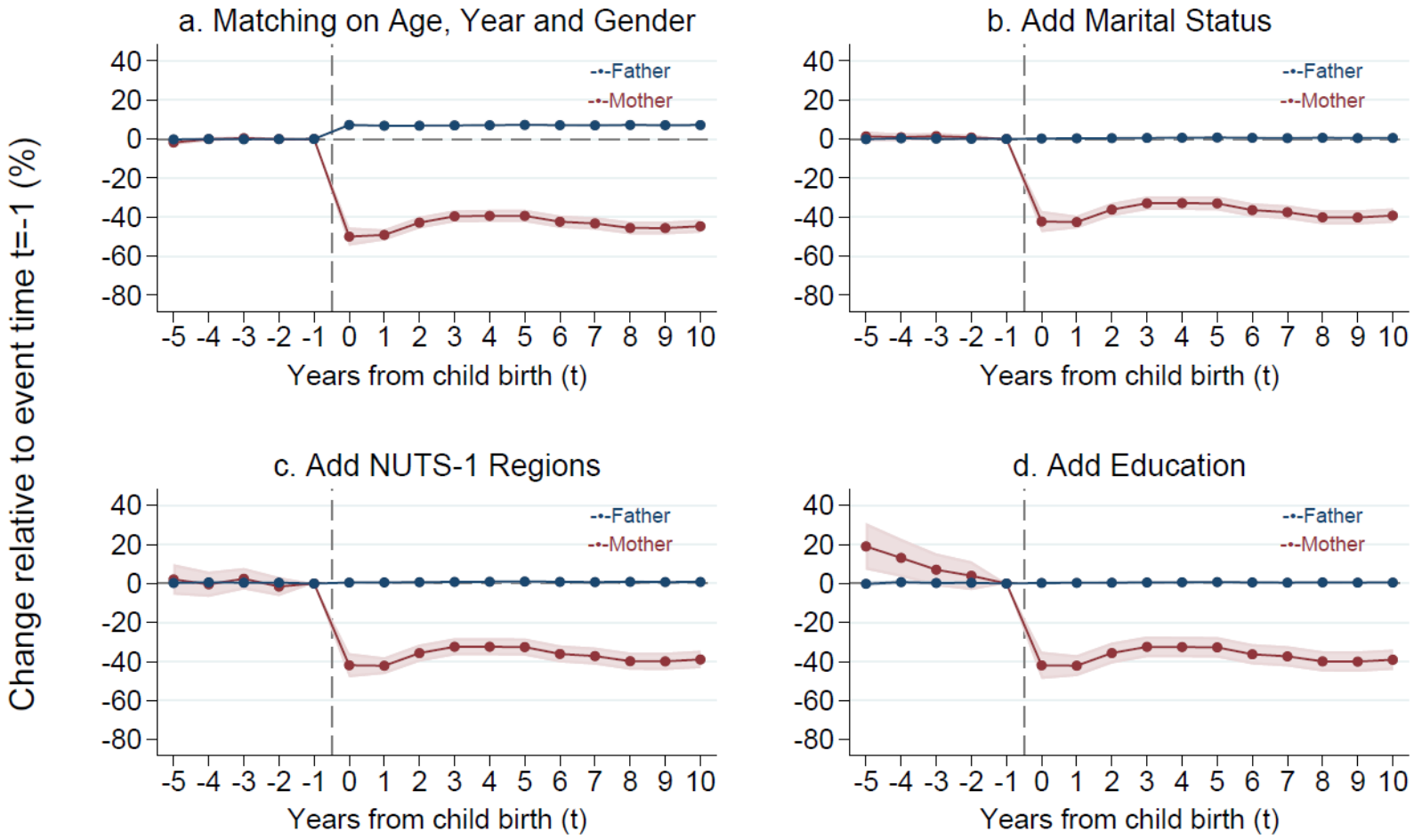
# Construction of pseudo-panels based on matching techniques:

## Different matching specifications (Labor force participation)




Note: Figure 7 presents the child penalties ($P_t^g$) on labor force participation under alternative matching specifications for men and women separately. Figure 7a illustrates the estimates based on the less restrictive specification, where only year, age, and gender are used in the matching procedure. Each sub-figure incorporates an additional variable into the baseline specification. In this context, Figure 7d reports the estimates under the most restrictive specification, where the matching procedure is based on year, age, gender, education, marital status, and region. 95% confidence intervals based on robust standard errors are reported. Own elaboration based on SILC cross-section (2012-2023).

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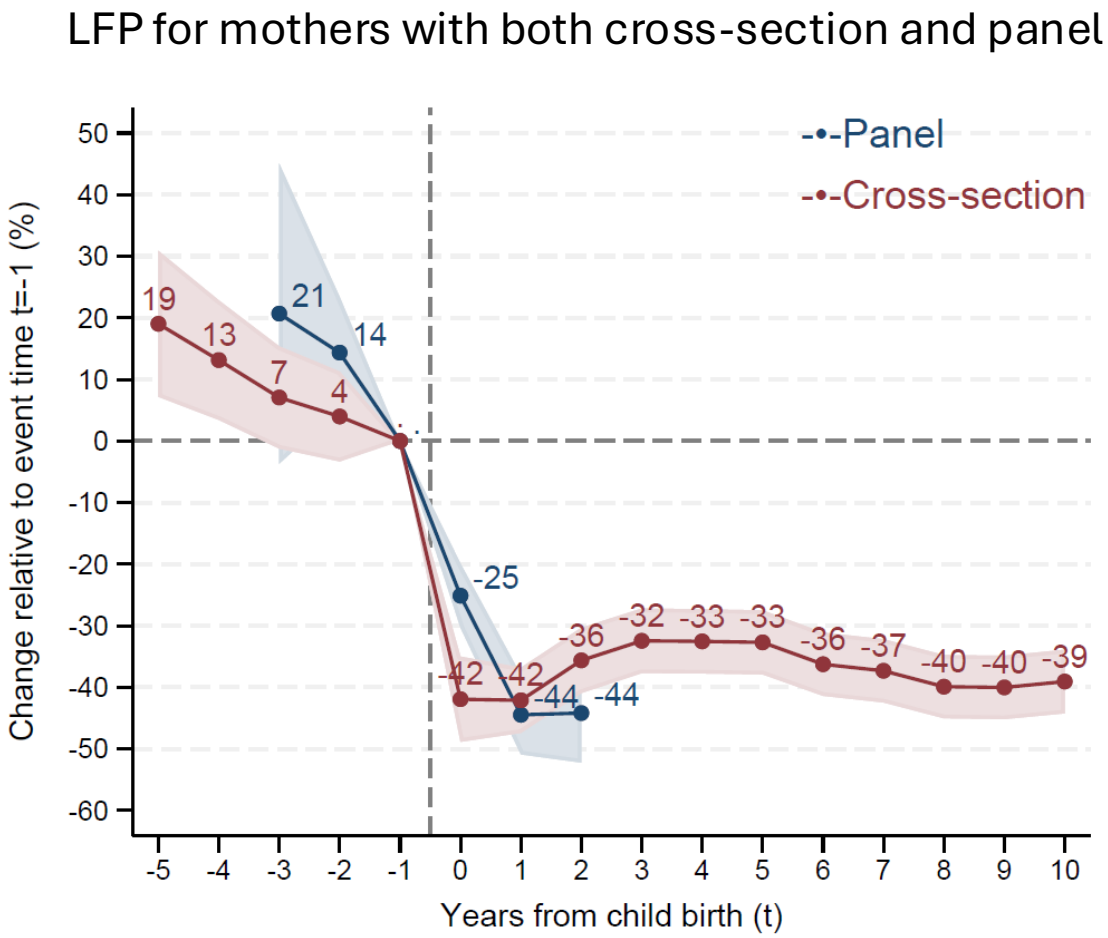
# Pseudo-panel validation:




Note: Figure 6 illustrates the effects of having children on women`s labor force participation relative to one year prior to first childbirth, utilizing two distinct data sources: actual panel and pseudo-panel. Point estimates, $P_t^w$ , are presented with 95% confidence intervals. Own elaboration based on SILC panel and SILC Cross-section.

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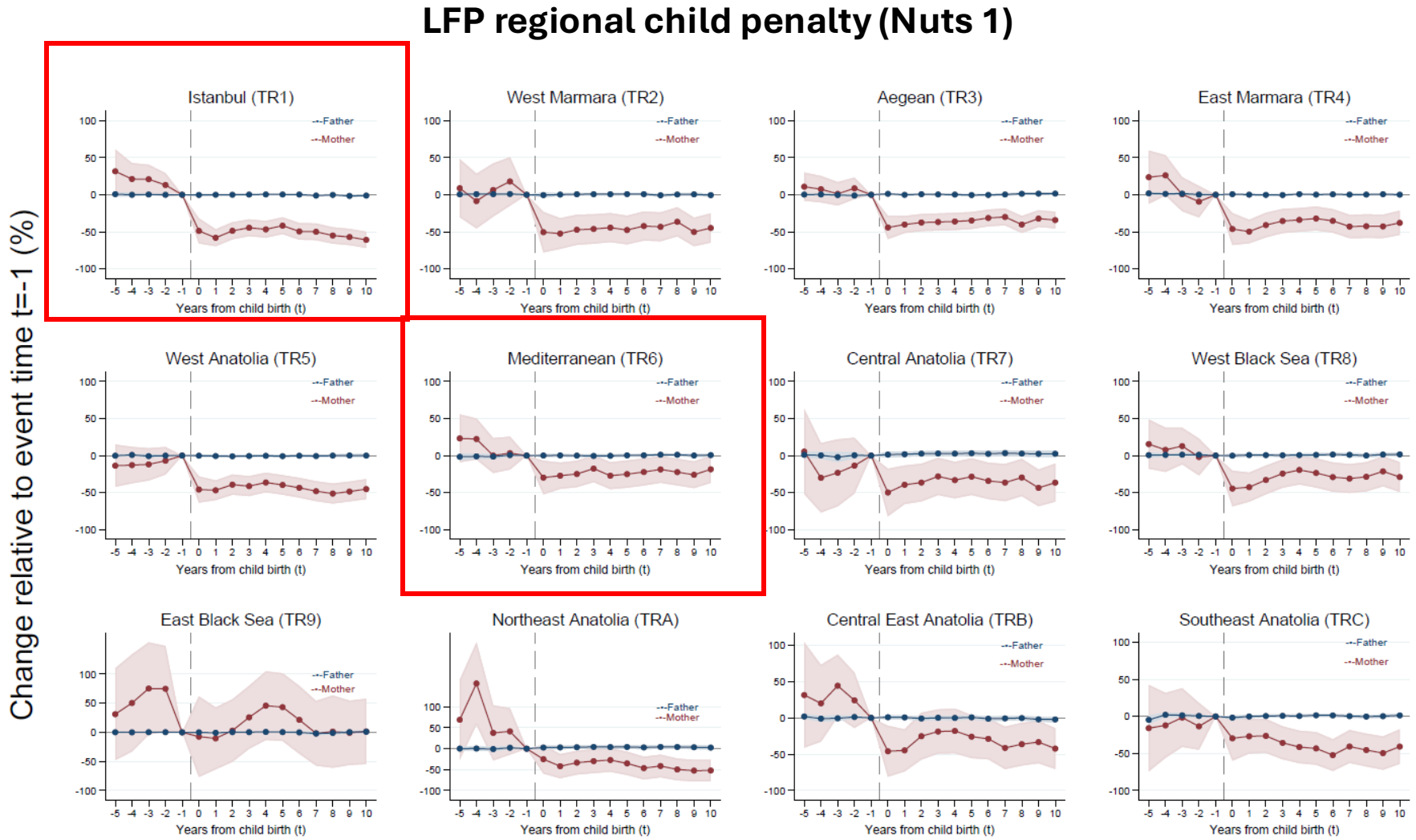
# Construction of regional estimates




Note: Figure 8 illustrates the child penalties ($P_t^g$) on labor force participation for men and women separately, across the 12 NUTS-1 regions. Point estimates are accompanied by 95% confidence intervals based on robust standard errors. Own elaboration based on SILC Cross-section (2012-2023).

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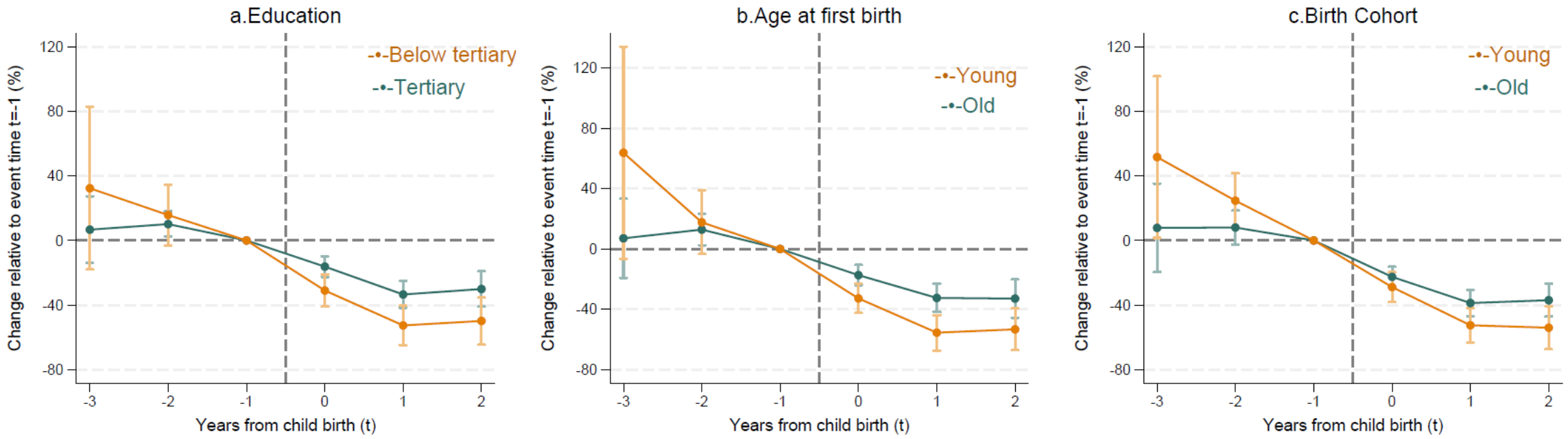
# Heterogeneity in child penalty

## Heterogeneities: Labor force trajectories before and after the birth (women)




Note: Figure 9 illustrates the effects of having children on women`s labor force participation ($P_t^w$ ), showing relative change compared to one year prior to first childbirth across several demographic characteristics: (a) education, (b) age at the first birth, and (c) birth cohort. Thresholds utilized in defining sub-groups include having tertiary education or higher, median age at first birth, and the median birth cohort. Own elaboration based on SILC panel (2006-2023).

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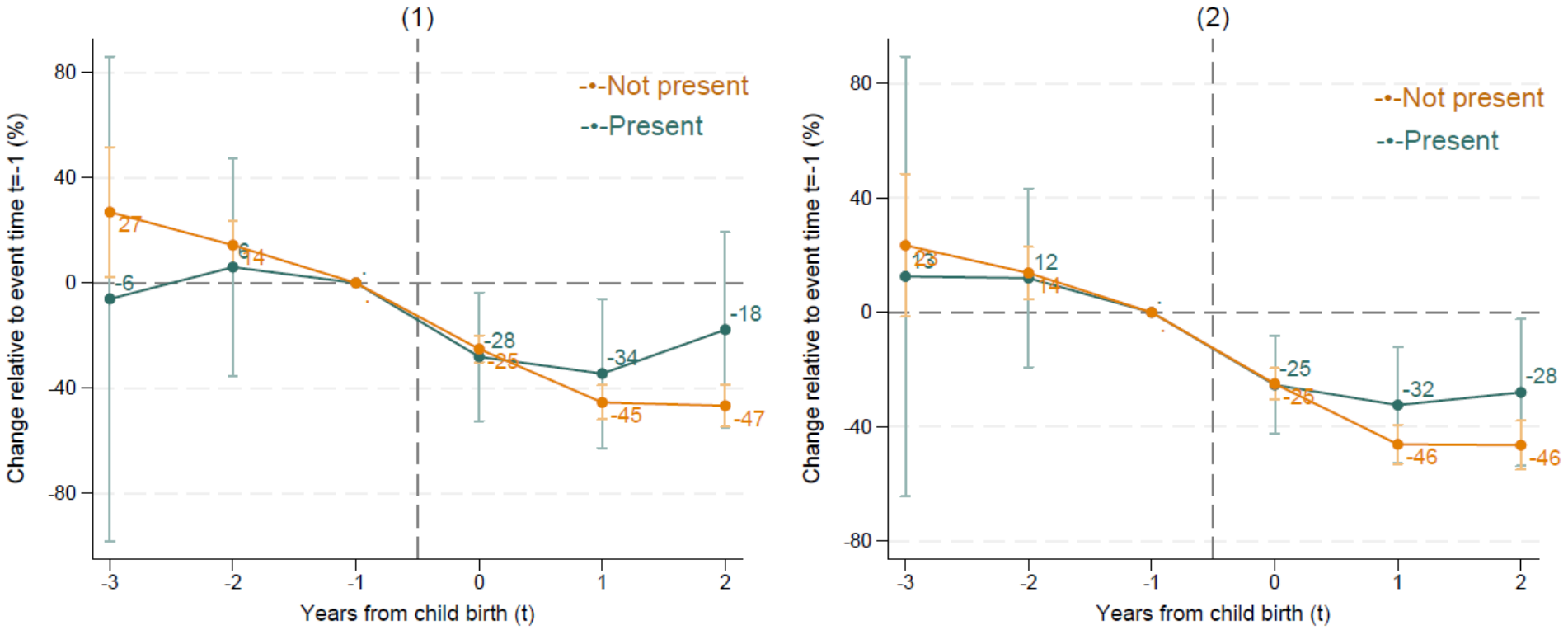
# Heterogeneity in child penalty

## Availability of Informal childcare: Labor force trajectories before and after the first birth (women)




Notes: Figure 10 illustrates the effects of having children on women`s labor force participation ($P_t^w$) by the presence of grandparents, showing the relative change compared to one year prior to first childbirth. In Figure 10a, presence of grandparents indicates instances where at least one grandparent (grandmother or grandfather) resides in the household for each year of the panel. In Figure 10b, presence of grandparents indicates instances where at least one grandparent (grandmother or grandfather) resides in the household for one year or more. The latter does not impose any restriction on the timing of the presence, including instances where the grandparents are present only before the childbirth. Point estimates, $P_t^w$, are presented alongside the 95% confidence intervals. Own elaboration based on SILC panel (2006-2023).

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# What drives the regional variations?

1 Gender norms

2 Availability of childcare services

3 Type of work

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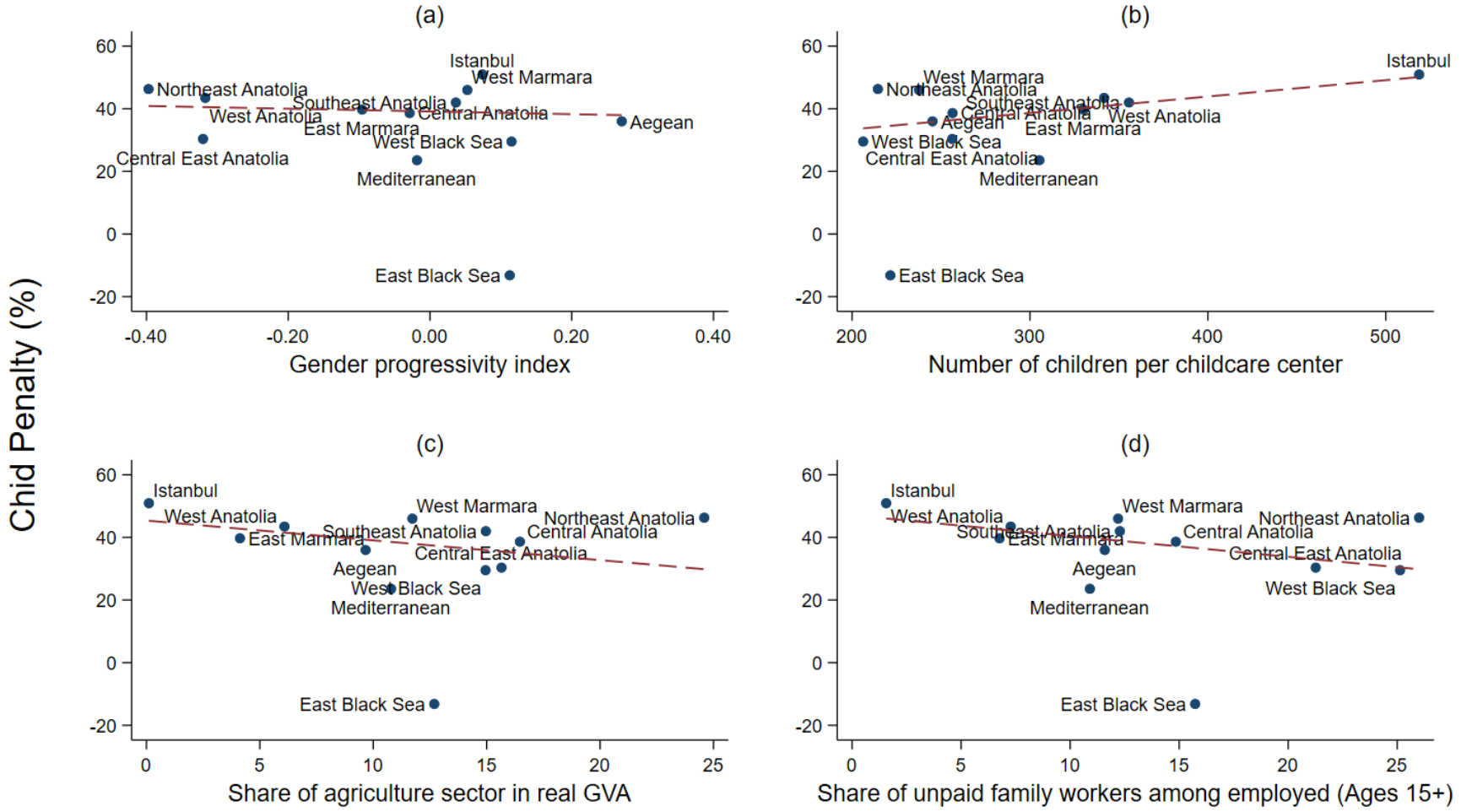
# Heterogeneity in child penalty

## Drivers of child penalty: regional heterogeneity analysis




Note: Figure 11 demonstrates the estimated child penalties on labor force participation along with the regional characteristics. For each time point t, child penalty is characterized with $P_t$ as defined in Equation 3. Then the average child penalty ($E[P_t|t \geq 1]$), reported on the y-axis of the Figure 11, is calculated separately for each NUTS-1 region. Own elaboration based on SILC Cross-section (2012-2023).

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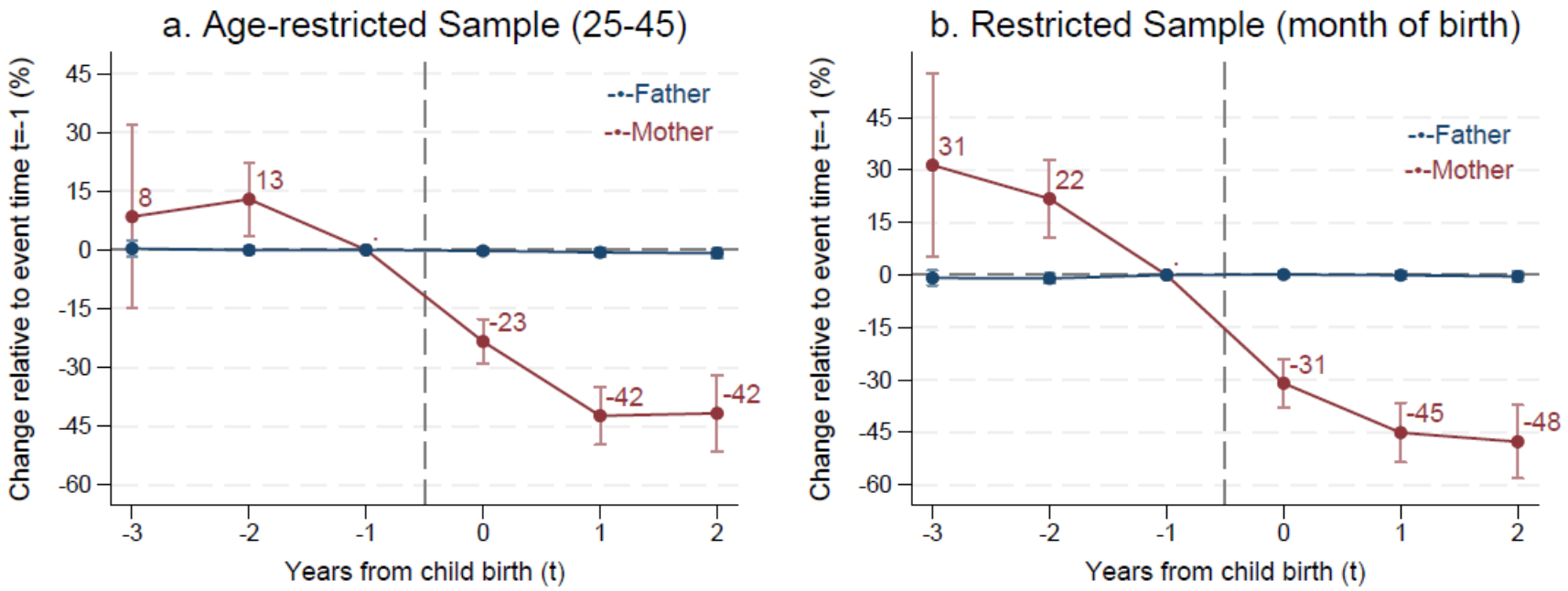
# Robustness checks

## Child penalty across more restrictive specification of the analytical sample
## Labor force participation




Note: Figure B.2 demonstrates child penalties, ($P_t^g$) on labor force participation for men and women separately across subsamples of the analytical sample. The Age-restricted Sample (Figure B.2a) includes observations from 688 women and 1175 men whose age at first childbirth ranges from 25 to 45. Figure B.2b illustrates a replication of the same analysis for 597 women and 820 men, by excluding parents whose first child was born after the last month of the data collection period in a given year. 95% confidence intervals are reported along with the point estimates. Standard errors are clustered at the individual level. Own elaboration based on SILC panel (2006-2023).

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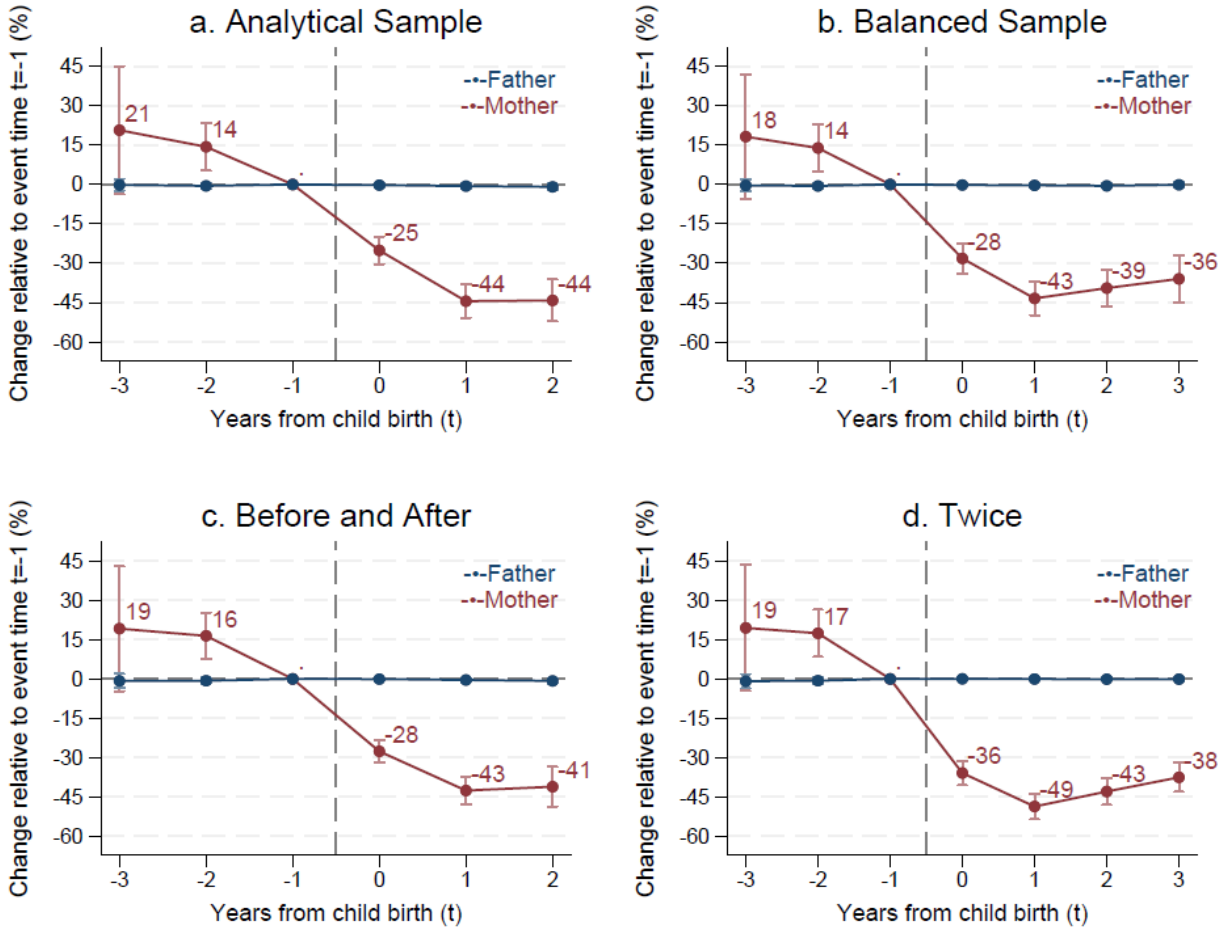
# Robustness checks

## Child penalty across alternative sample definitions Labor force participation




Note: Figure B.1 illustrates the child penalties on labor force participation for men and women separately, utilizing following samples: (a) Analytical Sample, (b) Balanced Panel, (c) Before and After, and (d) Twice. The sample definitions differentiate according to two dimensions: total number of years an individual observed, and the timing of the observations based on the first childbirth. The Analytical Sample (a), the most restrictive version, is utilized as the primary sample of this study. Point estimates, $P_t^g$, are presented with the 95% confidence intervals. Standard errors are clustered at the individual level. Own elaboration based on SILC panel (2006-2023).

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# Conclusions :

Child penalty is likely mutable to policy action

Possible options for Türkiye, based on heterogeneity analysis, include:

- expanding availability of childcare services
- changing social norms about care work and women's market work
- expanding access to flexible jobs
- investing in women's human capital

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# Thank you!

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# Additional Sources & References

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