The short run effects of childbirth on parents' earnings in the Baltics

Černiauskas, Nerijus

Veröffentlichungsversion / Published Version
Zeitschriftenartikel / journal article

Empfohlene Zitierung / Suggested Citation:
Černiauskas, N. (2023). The short run effects of childbirth on parents' earnings in the Baltics. *Baltic Journal of Economics*, *23*(1), 45-63. https://doi.org/10.1080/1406099X.2023.2187946

Baltic Journal of Economics

ISSN: (Print) (Online) Journal homepage: www.tandfonline.com/journals/rbec20

The short run effects of childbirth on parents' earnings in the Baltics

Nerijus Černiauskas

To cite this article: Nerijus Černiauskas (2023) The short run effects of childbirth on parents' earnings in the Baltics, Baltic Journal of Economics, 23:1, 45-63, DOI: 10.1080/1406099X.2023.2187946

To link to this article: https://doi.org/10.1080/1406099X.2023.2187946

Published online: 27 Mar 2023.

BALTIC JOURNAL OF ECONOMICS
2023, VOL. 23, NO. 1, 45–63
https://doi.org/10.1080/1406099X.2023.2187946

Routledge
Taylor & Francis Group

The short run effects of childbirth on parents' earnings in the Baltics

Nerijus Černiauskas

Faculty of Economics and Business Administration, Vilnius University, Vilnius, Lithuania

ABSTRACT

Having a child can have a heavy toll on parents' earnings, especially in the first years after childbirth, with mothers often being more affected than fathers. This is particularly true in the three Baltic states, with relatively generous parental leave benefits compared to the EU and norms encouraging mothers to care for children. I carry out an event study to estimate the effect of having a child on the earnings of both genders and find that the earnings of females reduce by half in the first calendar year after childbirth and by 20% to 33% in the second, while male earnings do not change in either period. This results in a widening earnings gap in the Baltics, more so than in several comparison countries (Denmark, Finland, Sweden, the Netherlands, and Norway), in the first two years after the birth of the first child.

ARTICLE HISTORY
Received 6 April 2021
Accepted 24 February 2023

KEYWORDS
Childbirth; earnings; Baltics; early childhood education and care; family benefits

JEL CODES
J13; J31; I24; D31

1. Introduction

Taking care of children at a very young age is a demanding task that commonly falls on mothers. In the short run, it means that women are not able to participate in the labour market: they accumulate less work experience and exhibit more career interruptions (Cukrowska-Torzewska & Matysiak, 2020). Studies show that there are long-run effects as well, i.e. earnings of females with children are lower for many than earnings if the females were childless (Angelov et al., 2016; Kleven et al., 2019). This loss of earnings, especially in the long run, is often referred to as the child penalty, motherhood penalty, or parenthood penalty. Since men's earnings remain relatively unchanged, having children contributes to a large share of the earnings gap between the genders (Kleven et al., 2019) – a pressing issue in contemporary European policy.

In this paper, I focus on the short-run effects of having children in the Baltics and compare them with the estimate of 5 comparison countries (Denmark, Finland, Sweden, the Netherlands, and Norway). Baltics are an interesting case study because they are characterized by a high gender inequality[1] which their governments are keen to reduce (see, e.g. ESTEP Vilnius, 2020). Baltics are also interesting from a societal point of view since women are the main childcare providers as well as are expected to

CONTACT Nerijus Černiauskas nercern@gmail.com

contribute financially – a tradition inherited from Soviet times – although men are increasingly expected to help raise children (Michoń, 2010). Furthermore, short-term and long-term effects have been barely estimated for this region. One exception is by Anspal et al. (2011), who studies Estonia and found that females with children earn on average 1.2% lower wages than females without children, while male earnings do not change. The choice in this paper of comparison countries is guided by data quality and the ability of these countries to achieve the lowest loss of earnings out of all the countries that were examined by Cukrowska-Torzewska and Matysiak (2020) and Kleven et al. (2019). This achievement is partly explained by parental leave policies that are designed to help women return to work early and norms in which employment of working women with children is accepted (Cukrowska-Torzewska & Matysiak, 2020).

I estimate the short-run effects of having children on parent's earnings and other labour market variables (hours and months worked, wages) of both genders as in Kleven et al. (2019), who conducted an event study by observing the dynamics of male and female earnings before and after the birth of a child. This method relies on longitudinal data and, unlike (Anspal et al., 2011), can partly address the issue of reverse causality by including pre-birth variables in the regression (especially earnings before the birth of the child). I use European Union Statistics on Income and Living Conditions (EU-SILC) data, which allows the results to be comparable across the countries. Additionally, the survey has information on both wages and self-employment income, as well as parental benefits before and after the birth of the child. The shortcoming of this data is that it allows estimating only the short-run effects on earnings because the same individual is only observed for up to four consecutive years. I find that total household disposable income does not change in the first two years after the birth of the child due to high parental benefits which compensate for reduced earnings. At the same time, I observe that female earnings fall, on average, by 50% in the first calendar year after the birth of the child in the Baltics and by 20% to 33% in the second calendar year. Male earnings barely change in this period. This female earnings decrease is 24–28% points greater than in the comparison countries in the first calendar year after the birth of the first child and by 9–19% in the second. However, the latter difference is not statistically significant. This would suggest that the short-run effects on the labour markets are much larger in the Baltics than in the comparison countries.

The remainder of the paper is structured as follows. The context that encourages parents to stay at home with their children is presented in Section 2. The effects of childbirth on parental earnings and other labour market variables are estimated in Section 3, where the data used, the methodology applied and the results are presented in separate subsections. The conclusions are formulated in Section 4.

2. Context of raising children in the Baltics in the first few years after childbirth

In this section, I describe the context of raising children in the first calendar years after childbirth in the Baltics and compare it to the context of comparison countries. Specifically, I focus on early childhood education and care (ECEC), family benefits, and norms related to employment and child upbringing.

2.1. Early childhood education and care

Both formal and informal early childhood education and care (ECEC) play an important role in the Baltic countries, even for children between 1 and 2 years old. Formal ECEC largely includes education at preschool and compulsory school, while informal ECEC includes childcare by grandparents, other household members (outside parents), other relatives, friends, or neighbours.

According to national statistics, Lithuania's enrolment rate in formal ECEC has increased from about 20% of all children aged 1–2 in 2005 to 40% in 2017. Estonia's rates increased from around 37% to 50%. While national statistics data is unavailable for Latvia, EU-SILC statistics suggest that enrolment rates also rose. In all three states, the vast majority of formal ECEC services are public and are provided by the municipalities (OECD, 2016, 2017, 2020). Childcare is also available for children who are 0 years old. However, very few parents decide to put their children there (e.g. 63 children aged zero were in preschool in 2017 in Lithuania, compared with 4756 one-year-olds and 20659 two-year-olds according to national statistics).

Additionally, the public ECEC services are offered at a very low cost in the Baltics. Formal ECEC is free in Latvia (for children 18 months old and older) and in Lithuania (from birth, but only 20 hours per week, although some municipalities offer 40-hour services free of charge), and the fees are very low in Estonia, where parent contributions are capped at 20% of the minimum wage and low-income families are exempted from payment (Motiejunaite-Schulmeister et al., 2019, see). Parents in all three countries must pay additional expenses (such as transport and food), but these are relatively low (Motiejunaite-Schulmeister et al., 2019). Provision of formal ECEC services is guaranteed for children 18 months old and older in Latvia, which means that the municipalities must provide enough places for the children under their parents' request.

Although formal childcare is becoming increasingly important in the Baltics, it is far below the level observed in the comparison countries. Judging from EU-SILC figures presented in Table 1, around half of parents in the Baltics send their young children to formal

Table 1. Data on childcare, parental leave policies and norms.

Country	Childcare[a]			Parental leave[b]		Norms			
	formal	informal	any	weeks	payment	job importance[c]	male job priority[d]	home stay[e]	child suffers[f]
EE	54	41	74	62	100	37	9	–	21
LT	41	45	68	44/140	78/55	41	15	31	52
LV	56	7	58	78	49	48	12	43	46
DK	99	0	99	32	52	35	1	6	9
FI	52	1	53	144	19	52	2	17	14
NL	75	73	89	0	0	21	4	29	17
NO	83	10	85	68	33	46	4	12	26
SE	100	5	100	42	57	62	3	12	15

Source: EU-SILC, World Values Survey (WVS), OECD, and author calculations. [a] Percent of those who have used childcare services at least one hour per week in EU-SILC. [b]Paternity leave benefits available to mothers in number of weeks and percent of average payments in 2020 (OECD, 2022c). [c]Percent of female respondents who answered 'Very important' when asked 'Important in life: Work' in 2017–2020 WVS. [d]Percent of female respondents who answered 'Agree' to statement 'Men should have more right to a job than women' in 2017–2020 WVS survey. [e]Percent of respondents who answered 'Stay at home' when asked 'Do you think that women should work outside the home full-time, part-time or not at all when there is a child under school age?' in 2010–2014 WVS. [f]Percent of respondents who answered 'Agree' or 'Strongly agree' with statement 'When a mother works for pay, the children suffer' in 2017–2020 WVS.

childcare, which is less than in the comparison countries[2]. The reason why there is relatively lower enrolment into formal ECEC is partly because of relatively low resources devoted to ECEC in the Baltics (see European Commission et al., 2018). For example, from 2012–2017 the Baltic states devoted under 0.8% GDP of public expenditure to ECEC per year, while Finland allocated 1.1% and others even more so (OECD, 2022b). While the unequal quality of ECEC services has also been pointed out as a factor discouraging less successful families from making use of formal ECEC (European Commission et al., 2018), the available data does not indicate that parents with lower incomes or lower education are less likely to send their children to formal ECEC (OECD, 2022a).

While formal childcare is less prevalent in the Baltics than in the comparison countries, much of formal childcare in the Baltics is substituted by informal childcare. The data on informal childcare comes from EU-SILC, although this data is not very reliable (European Commission et al., 2018). Nevertheless, the data presented in Table 1 suggest that informal childcare was important in this period, especially in Lithuania and Estonia. In contrast, it does not seem to be important in the comparison countries, with the Netherlands being the exception.

2.2. Parental, maternity, and paternity leave policies

Although paternal, maternity, and parental leave policies are available in the Baltics, the design of parental leave benefits matters most for parents' labour market activity. This is because one or both parents can be on parental leave for a long time. Parental leave is usually taken by females. Parental benefits paid during parental leave available to women ranged from 44 weeks in Lithuania (although this could have been extended to 140 weeks with a lower earnings replacement rate) to 78 weeks in Latvia in 2021. Benefits in Estonia were paid for 62 weeks in 2021 but used to be paid for 146 weeks before 2020. Parental leave benefits in the Baltic states are paid for much longer than in all comparison countries except for Finland (see Table 1). Furthermore, females in the Baltics took parental leave much more often than males, although males were increasingly willing to take parental leave. According to national statistics, in 2011, females were 16 times more likely to go on parental leave than males in Estonia. However, this ratio fell steadily to 10 by 2017. In Lithuania, the situation is more nuanced. As long as the child did not reach one year of age, females in Lithuania were 12 times more likely to be the ones on parental leave throughout the 2011–2017 period. However, females are increasingly less likely to be on parental leave in the second year after childbirth. The ratio of females to males taking parental leave in the second year fell from 15 in 2011 to 1,9 in 2017[3]. While females in the comparison countries are also more likely to take out parental benefits than males, the difference is not that great (Van Belle, 2016).

Parental benefits guarantee higher earnings replacement rates in the Baltics than in comparison countries unless parents choose to take parental leave for an extended duration. In Estonia, the parent on parental leave was compensated for 100% of previous earnings for the first 1.5 years but received a small monthly benefit until the child was three years old (see, e.g. Karu & Bražienė, 2014). In Latvia, the parent on parental leave had a choice whether to receive 60% of previous earnings for the first year and a small benefit for the next half of the year or receive 43% of previous earnings for 1.5 years.

In Lithuania, parents on parental leave could choose whether to receive 100% of the previous year's earnings for the first year or receive only 70% for the first and 40% for the second year. The parental leave benefits are less generous in the comparison countries, where the earnings replacement rates range from 0 to 57% (see Table 1).

In all Baltic countries, parental benefits are relatively widely accessible. In Estonia, all parents are eligible; in Latvia – only the employed/self-employed; and in Lithuania – only those with a social insurance record.

Additionally, there are no paternity benefits reserved for fathers in the Baltics. While this is common in most countries, several of the comparison countries do reserve weeks for fathers with relatively high earnings replacement rates. Norway is the prime example because it reserves 15 weeks of parental leave for parents with 96% of earning replacement rates. Less generous reservations are also available in Sweden and Finland also (OECD, 2022d).

The Baltics also have maternity and parental policies, although they do not differ much from the comparison countries. In all countries, the maternity duration ranges between 13 to 20 weeks while replacements exceed 77%, with Denmark being the exception with 52% (OECD, 2022c). Paternity leave is very short, with a maximum of 4 weeks available in Lithuania out of the countries studied (OECD, 2022d).

2.3. Societal norms of female employment and child upbringing

In the Baltics, women are expected to participate in the labour market – a legacy norm that dates back to the Soviet era, where working women were seen as a form of emancipation – and contribute substantially to household incomes (Michoń, 2010). At the same time, they are also expected to be primarily responsible for raising children. According to an analysis done in 2010, one-third of women in the Baltic states were satisfied with this role, allowing men to focus on generating earnings (Michoń, 2010).

The importance of work for women in the Baltics is evident in the 2017–2020 edition of the World Values Survey (WVS). Specifically, 37–48% of female respondents in the Baltic states said that a job is 'very important' in life (see Table 1 for country-specific numbers), a similar percentage said that it is 'rather important,' and just 11–13 % said that it is either 'not very important' or 'not at all important'. These figures are similar to that of comparison countries, suggesting that work is just as important for women in both groups of the countries (work was valued as more important in the Baltics than in the Netherlands and Denmark, although not as important as in Finland, Norway, and Sweden). At the same time, 9–15% of female respondents agreed that men should have more rights to a job than women in the Baltics, but only 1–4% in the comparison countries. The difference was even larger when males were asked the same question (11–30% agreed in the Baltics while only 3–7% in the comparison countries). Hence, a view in the Baltics is shared by a substantial part of the society that believes that jobs are more important for males.

The WVS also confirms that women in the Baltics are encouraged to raise children. Based on the question 'Do you think that women should work outside the home full-time, part-time, or not at all when there is a child under school age?' asked in 2010–2014, 31–41% of respondents in the Baltic states said that women should 'stay at home' (see Table 1). In contrast, only 6–29% of respondents in the comparison countries believed that women should 'stay at home' with children under school age. The reason for

the view that women should stay at home with under school age children is perhaps linked to the statement 'when a woman works for pay, the child suffers' presented in the 2017–2020 WVS. 21–52% of respondents in the Baltics 'agreed' or 'strongly agreed' with this statement, while only 9–26% did so in the comparison countries.

3. Estimating the effect of childbirth on parents' earnings in the Baltics in the short run

Short-run effects of having a child on earnings are estimated in this section. I also compare the results for the Baltics with those in five comparison countries (Denmark, Finland, Sweden, the Netherlands, and Norway). I start the section by describing the data. Then, I present the descriptive statistics. Furthermore, I introduce the method to estimate effect. Finally, I present the results.

3.1. EU-SILC data

I obtain data on earnings of males and females, the year of birth of the first child and, other relevant demographics and labour market variables from the yearly longitudinal version of the European Union Statistics on Income and Living Conditions (EU-SILC) instrument[4]. Having the longitudinal version allows tracking the individual over time and conducting an event type study.

In this paper, I use EU-SILC data from 2012 to 2017. The main reason for starting from 2012 is that Lithuania and Latvia have started using registered data on incomes during this period (Jantti et al., 2013), which greatly increases data precision. Including the three Baltic countries allows for utilizing a larger comparable sample. Each year, around 5 thousand households per Baltic country with around 10 thousand persons over 16 years old who agree to share information on their income are included. My sample is much smaller, as I only focus on those households which experience first childbirth. Specifically, I observe households one year before ($t = -1$) and one year after childbirth ($t = 1$) to see how their incomes change[5]. For example, in 2015 in Lithuania, there were 8.4K observations, out of which 66 had children under the age of 3. Only 25 of the observations, however, were in the sample because the rest were surveyed both before and after the birth of the child. Table 2 shows that the sample size for an individual country is small, especially for Lithuania, but remains reasonable for

Table 2. Number of observations by event time and sex.

	Female					Male				
Event time *t*	−2	−1	0	1	2	−2	−1	0	1	2
EE	26	59	59	59	28	19	46	46	46	25
LT	7	15	15	15	8	5	10	10	10	5
LV	19	51	51	51	27	16	41	41	41	20
Baltics	52	125	125	125	63	40	97	97	97	50
DK	19	35	35	35	15	16	34	34	34	18
FI	50	124	124	124	65	51	119	119	119	58
NL	25	75	75	75	29	20	68	68	68	29
NO	21	49	49	49	24	21	45	45	45	20
SE	–	19	19	19	18	NA	17	17	17	16
Comparison countries	115	302	302	302	151	108	283	283	283	141

Note: Event time denotes the number of years before ($t < 0$), during ($t = 0$) and after ($t > 0$) birth of first child.

the region as a whole. At the moment, it is the only publicly available way to obtain comparable panel data for the three Baltic states. The sample size is shown for comparison countries also.

While the EU-SILC data is explained by Eurostat (2018), several features that are relevant for this paper are highlighted here. Most variables were recorded at the time of the interview, but income variables and number of months worked (in employment or self-employment) for each respondent were recorded for the previous year (the reference year). Going forward, all years represent reference years in this paper. Age is recorded at the end of the reference year. Unfortunately, the number of weekly hours worked by the respondents was recorded during the survey year, which means that the sample size shrinks when calculating actual wage rates for the reference year (income from year t must be merged with hours of year $t+1$, resulting in only three observations per an individual). Some of the data is available on the individual level, but some (notably family benefits) at the household level. Finally, survey weights are used to form conclusions on the population from the sample data[6].

Earnings consist of employee cash or near cash income (EU-SILC variable PY010G) and cash profits or losses from self-employment (EU-SILC variable PY050G). While the variables mainly include salaries and self-employment incomes, they also may include part of what should be considered benefits. Specifically, they include additional payments made by employers to their employees or former employees and other eligible persons to supplement the maternity leave from social insurance schemes, where such payments cannot be separately and clearly identified as social benefits as well as payments made by employers to an employee in lieu of wages and salaries through a social insurance scheme when unable to work through maternity leave where such payment cannot be separately and clearly identified as social benefits (European Commission 2020). To the extent that maternity benefits are included, the effect of childbirth on earnings is underestimated. However, in most cases, such benefits are correctly allocated to the family/children-related allowances variable (EU-SILC variable HY050G), which should not be a major issue for this research. Furthermore, when analysing the effect of family benefits on earnings, I focus on children who are one or two years old, by which time maternity benefits are no longer relevant.

3.2. Descriptive statistics

Before presenting statistics of earnings of males and females separately, I observe the dynamics of earnings and other income at a household level. Household earnings and other types of income for the Baltics are presented in Figure 1. Event time is on the x-axis denoting the number of years before ($t < 0$), during ($t = 0$) and after ($t > 0$) birth of the first child. Income, which consists of earnings, family benefits, and other income, is on the y-axis. Income is demeaned to the average income of that country for that year. The general observation is that overall household income is similar before and after a child's birth. While earnings fall at $t = 0$, the decline is compensated by family benefits. Therefore, households lose little, if any, income.

The fact that household income remains constant can be seen as both a blessing and a curse. On the one hand, this suggests that the social benefit systems in place are relatively generous and able to maintain similar levels of income and, presumably, consumption

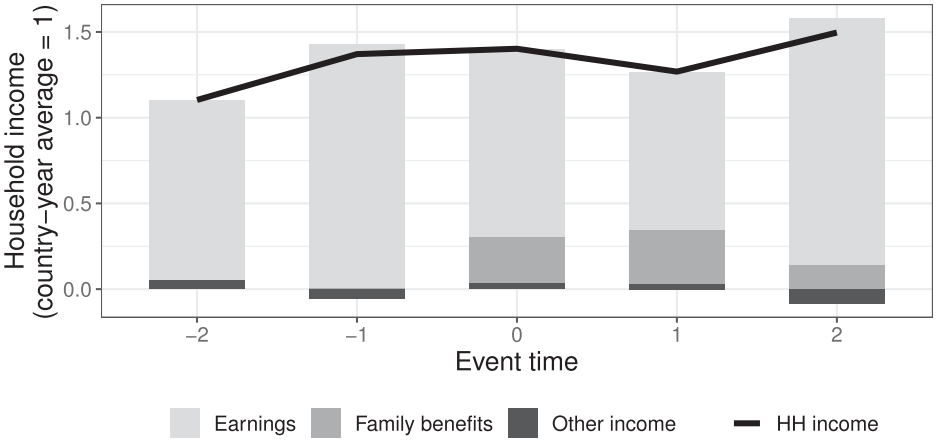

Figure 1. Household income and event time in the Baltics.
Note: event time denotes the number of years before ($t < 0$), during ($t = 0$) and after ($t > 0$) birth of first child.

and welfare. On the other hand, this creates a large incentive for parents to stay out of the labour market, which may translate to long-run negative consequences (labour skill deterioration, lower work history, and lower pensions down the line). To the extent that childcare is not evenly shared by the household members, it could result in long-term inequality between the genders.

The descriptive statistics from the EU-SILC survey for the Baltics for females and males separately are presented in Table 3. The columns indicate event time. The rows refer either to variable values of females or to the difference in values between females and males.

The descriptive statistics suggest a large impact of childbirth on labour market activities of females. For example, 87–92% of females earn positive earnings two years and one year prior to the birth of the child – a sign of high participation in the labour market. At $t = 0$, the year of the first child's birth, fewer females earn any earnings (74%), and the share falls further in $t = 1$ to 39%. The decline is followed by a partial recovery in $t = 2$ when 73% of females participate in the labour market. Other labour market activity variables (normalized mean earnings, months worked, and weekly hours) also follow a similar pattern.

Descriptive statistics also indicate a widening labour market activity gap between females and males around the time the child is born. Two years prior to the birth of a child, 7 percent points fewer females earn positive earnings compared to males. This gap widens to 58 percentage points by $t = 1$, which could be expected for the first year. By $t = 2$, the gap shrinks to 27% but still remains larger than before the child's birth. Widening of the labour market outcome gaps can be observed by comparing other labour market variables as well, such as mean earnings, mean monthly earnings, mean months worked, and mean weekly hours worked (regardless of whether the hours kept as the survey year or are lagged to the reference year). This suggests that females' labour market activities are more affected by childbirth as compared to that of males.

Finally, descriptive statistics suggest that several female variables that do not measure labour market outcomes also differ from those of males before childbirth. It is important

Table 3. Descriptive statistics by sex and event time.

Event time t	−2	−1	0	1	2
Positive earnings during the reference year					
Females	0.87	0.92	0.74	0.39	0.73
Females-Males	−0.07	0.00	−0.23***	−0.58***	−0.27**
Mean earnings during the reference year (1 represents mean earnings for each country)					
Females	0.49	0.57	0.30	0.12	0.30
Females-Males	−0.14	−0.39**	−0.62***	−0.82***	−1.04***
Mean monthly earnings during the reference year					
Females	0.84	0.95	1.11	0.60	0.61
Females-Males	−0.20	−0.62**	−0.33	−0.89***	−1.40***
Mean hourly earnings (hours of the survey year)					
Females	0.86	0.93	0.95	0.63	0.61
Females-Males	−0.20	−0.58*	−0.44	−0.82***	−1.30**
Mean hourly earnings (hours of the reference year)					
Females	–	0.97	1.02	0.50	0.78
Females-Males	–	−0.15	−0.33	−0.94***	−1.15**
Mean months worked during the reference year					
Females	9.38	9.77	5.98	4.30	7.85
Females-Males	−0.94	−0.73	−5.17***	−6.84***	−4.03***
Weekly hours worked during the survey year					
Females	32.64	25.15	12.00	18.14	31.16
Females-Males	−0.30	−11.77***	−25.55***	−19.53***	−7.87***
Weekly hours worked during the reference year					
Females	–	32.61	25.83	13.67	18.48
Females-Males	–	−0.83	−11.20***	−24.09***	−20.77***
Highest education attained					
Females	0.70	0.63	0.64	0.65	0.64
Females-Males	0.12	0.03	0.05	0.03	−0.09
Age at the end of the reference year					
Females	26.08	26.38	27.52	28.42	29.17
Females-Males	−2.71**	−3.29***	−2.93***	−3.02**	−3.47
Number of months spent in paid work during lifetime					
Females	62.89	66.50	74.53	81.72	90.17
Females-Males	−35.50***	−35.74***	−35.42***	−34.17**	−41.43
Number of months spent studying in the reference year					
Females	1.46	0.86	0.25	0.07	0.00
Females-Males	1.14**	0.83***	0.25**	0.07*	0.00

Note: event time denotes the number of years before ($t < 0$), during ($t = 0$) and after ($t > 0$) birth of first child. Stars, based on clustered standard errors calculated using R Survey package and Z critical values, indicate significance at the 1%, 5%, and 10% levels.

to control for these differences to better estimate the correlation between childbirth and labour market outcomes. On average, females are younger; more of them are still in education, have less work experience, and tend to be more educated than males. Females and males also work in different sectors and in different occupations (see Table A1 in appendix). Males tend to work in construction, transport, and industry sectors, while females tend to work in public administration, education, and the health sector. Similarly, males tend to occupy more management, craft, and plant positions, while females occupy more professional, service, and sales positions before childbirth.

Another issue to consider is that males and females receive different returns for the same observable. For example, Boll and Lagemann (2019) find that females receive higher returns for the same level of education in Lithuania and Latvia, although less so in Estonia. The same study also finds that the returns to industry and occupation are much larger for males than females in all three Baltic countries. These findings suggest that it is worth looking at males and females separately because the coefficients of control variables are likely to differ.

3.3. Methodology

The effect on earnings following the birth of the first child is estimated by treating childbirth as an event time study following Kleven et al. (2019). To do so, I observe the individual's labour market variables before $t<0$, during $t=0$, and after $t>0$ birth of the first child[7]. I do this separately for males and females using an equation specification

$$Y^g_{icst} = \sum_{j\neq -1} \alpha^g_j \cdot \mathbb{I}[j=t] + \sum_k \beta^g_k \cdot \mathbb{I}[k=age_{ics}] + \sum_y \gamma^g_y \mathbb{I} \cdot [y=s] + \sum_{cnt} \delta^g_{cnt} \mathbb{I} \cdot [cnt = c] + \nu^g_{icst} \quad (1)$$

where Y represents earnings or another labour market outcome variable (e.g., hours or months worked). The letter g represents gender, which allows the regression to be run separately for males and females. At one moment in time, I observe individual i in country c at year s and event time t. The key variable of interest is α in front of the event time dummies, $\mathbb{I}[\blacksquare = \blacktriangle]$. If α_j takes on different values for $j=t\geq 0$ as compared to $j=t<0$ this would mean that the birth of a child had an impact on labour market outcomes. Without any other controls, the results of (1) would be the same as those in Table 3. However, adding controls allows a more accurate estimate of the effect on earnings. The added controls are the age, year, and country dummies, and the coefficients in front of them are denoted β, γ, and δ, respectively. The intercept is also included, although not shown in the equation. Dummy trap is prevented by omitting the event time $t=-1$ from the regression. This technique effectively sets α_{-1} to zero and allows comparing the effect of childbirth on labour market activities before and after childbirth.

While (1) is the *baseline* specification and similar to the equation used by Kleven et al. (2019), with the addition of country dimension, I construct an *extended* specification to account for additional controls. I fix two of the controls (occupation and sector) at their $t=-1$ levels. I also include highest education attained dummies and a work history variable, but these are not fixed. Admittedly, it is not clear whether any of these controls should be included. On one hand, they allow to control for more factors, but on the other hand, they may also increase the risk of under-evaluating the effect on earnings. This would be the case if males and females prepare for childbirth differently and well in advance.

I then follow (Kleven et al., 2019) and use (1) to visualize the effect of childbirth on earnings. I use the regression coefficients from the Equation (1) to estimate two versions of $\hat{Y}^g_{icst}$ for males and females. In the first version, I model the counterfactual $\hat{Y}^g$ where there is no effect (i.e. set $\alpha_j = 0 \forall j$). In the second, I estimate the effect by setting all other estimated coefficients to zero.

While (1) allows looking at how labour market activity changed for males and females separately, it does not allow for testing whether the changes are statistically significantly different for males and females. For this, I modify (1) by pooling males and females together. I add a dummy variable *male*, which takes the value of 1 if the observation is a man and zero otherwise. I also interact the *male* dummy with event time dummies as summarized in (2)

$$Y_{icst} = male_{icst} + \sum_{j\neq -1} g_j \cdot \mathbb{I}[j=t \cap male=1] + \sum_{j\neq -1} \alpha_j \cdot \mathbb{I}[j=t] + \cdots \quad (2)$$

The third and final specification tests whether the decline in labour market activity following childbirth in the Baltic countries is significantly different from that of comparison countries. To test this, I modify the regression (2) with a three-way interaction term (Baltic-male-event_time) as well as the three two-way interaction terms (Baltic-male, Baltic-event_time, event_time-Batlic). Additionally, instead of including country and year dummies, I include country-year dummies (a dummy for each country in each year) to control for country-year specific events. The main downside to this regression is that I force other coefficients to be equal for males and females, while there is evidence that the returns differ between genders (Boll & Lagemann, 2019). Therefore, it is important to consider the results of regressions based on (1) and (2) as well.

$$Y_{icst} = male_{icst} + \sum_{j \neq -1} z_j \cdot \mathbb{I}[j = t \cap male = 1 \cap baltics = 1] + \cdots \tag{3}$$

I set (normalised) mean yearly earnings throughout the study as my main dependent variable in the study. These earnings are normalized by the average disposable income in the country. I then substitute earnings with other labour market variables to understand if earnings change because of real values (months and hours worked) or nominal values (monthly or hourly wages).

3.4. Results

Starting with the regression based on (1), the results suggest that earnings decline substantially in the Baltics for females. As shown in Table 4, normalized earnings are only slightly smaller for females leading up to childbirth (the coefficient in front of $t = -2$ is barely statistically different from zero, hence, from $t = -1$). However, normalized earning start declining rapidly thereafter. Female earnings fall by around a third in the year the first child is born and even more when the child is one year old (50 to 54 percentage points depending on the number of controls). Although earnings partly rebound in the period $t = 2$, the decline remains large (33–37%).

There is no statistically significant effect on male earnings. In columns 3 and 4, of Table 4 male earnings do not change significantly before or after the birth of the child. Hence, the earnings gap increases for the first two years after childbirth, as shown visually in Figure 2. The earning gap is also statistically significant, as confirmed by the pooled regression based on (2). The pooled results are displayed in the final two columns of Table 4. After the birth of the child, the earnings gap widens as observed by event time – male interaction term. At $t = 1$, males earn 27 to 29% more than females. This falls slightly by period $t = 2$ to around 20% in $t = 2$ under the extended specification. The baseline specification suggests that this could be 62%, but this is likely driven by outliers (similarly as was the case in column 3 in the period $t = 2$).

I then run the regression based on model (3) to test whether the widening gap in the Baltics is similar to comparison countries. The results in Table 5 suggest that while female earnings fall more than that of males in the comparison countries as well, the gap is much more pronounced in the Baltics in the periods $t = 0$ and $t = 1$. The first four columns and the first four rows indicate that female earnings fall while male earnings do not in Baltic and comparison countries. Specifically, female earnings are 17 to 19% lower in $t = 0$, 24–

Table 4. Estimating effect of childbirth on earnings.

	Normalised earnings (1 represents average earnings for the country in that year)					
	Female		Male		Pooled	
	(1)	(2)	(3)	(4)	(5)	(6)
$t = -2$	−0.126*	−0.104*	−0.117	−0.103	−0.095	−0.077
	(0.067)	(0.054)	(0.135)	(0.082)	(0.088)	(0.059)
$t = 0$	−0.294***	−0.323***	−0.044	0.046	−0.282***	−0.276***
	(0.054)	(0.054)	(0.093)	(0.084)	(0.069)	(0.057)
$t = 1$	−0.499***	−0.544***	0.062	0.180	−0.520***	−0.456***
	(0.073)	(0.079)	(0.172)	(0.150)	(0.086)	(0.081)
$t = 2$	−0.328***	−0.362***	0.399	0.171	−0.261*	−0.223**
	(0.093)	(0.097)	(0.314)	(0.164)	(0.155)	(0.107)
$t = -2$:male					−0.150	−0.052
					(0.160)	(0.101)
$t = 0$:male					0.294***	0.274***
					(0.075)	(0.076)
$t = 1$:male					0.570***	0.492***
					(0.128)	(0.123)
$t = 2$:male					0.624***	0.198*
					(0.148)	(0.112)
male					0.211	0.190
					(0.180)	(0.127)
age dummies	Y	Y	Y	Y	Y	Y
year dummies	Y	Y	Y	Y		
country dummies	Y	Y	Y	Y		
country-year dummies					Y	Y
education dummies		Y		Y		Y
occupation dummies		T		T		Y
work experience		Y		Y		Y
sector dummies		Y		Y		
constant	0.012	0.081	−0.018	−0.850**	0.114	−0.637***
	(0.084)	(0.165)	(0.302)	(0.321)	(0.154)	(0.236)
Observations	490	476	381	377	871	853
Log Likelihood	−268.894	−220.338	−539.153	−332.162	−1,009.689	−668.216
Akaike Inf. Crit.	617.787	562.676	1,158.307	792.323	2,133.378	1,500.432

Note: clustered standard errors (found in parenthesis) incorporate information on the strata (country) and primary sample unit (individual). *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

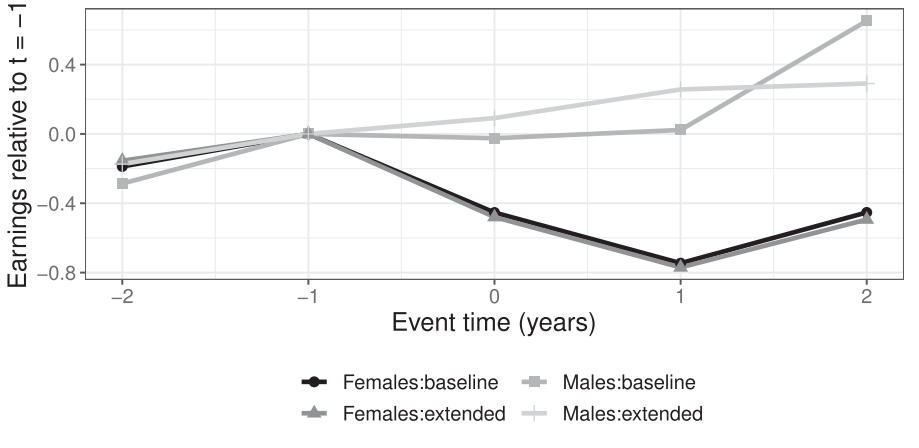

Figure 2. Estimating effect of childbirth on parent's earnings in the Baltics.

Note: Baseline specifications refer to regression specification (1) and (3) in Table 4 for females and males in the Baltics respectively, while the extended specifications refer to columns (2) and (4).

Table 5. Estimating effect of childbirth on parent's earnings.

	Normalised earnings					
	(1 represents average earnings for the country in that year)					
	Female		Male		Pooled	
$t = -2$	−0.002	−0.036	−0.053	−0.119**	−0.007	−0.069
	(0.050)	(0.040)	(0.054)	(0.056)	(0.054)	(0.049)
$t = 0$	−0.190***	−0.166***	−0.021	0.022	−0.186***	−0.154***
	(0.024)	(0.022)	(0.032)	(0.034)	(0.022)	(0.021)
$t = 1$	−0.290***	−0.241***	0.029	0.098	−0.269***	−0.201***
	(0.043)	(0.037)	(0.062)	(0.067)	(0.038)	(0.037)
$t = 2$	−0.299***	−0.218***	0.123	0.261**	−0.220***	−0.129**
	(0.063)	(0.048)	(0.101)	(0.111)	(0.060)	(0.054)
$t = -2$:baltics	−0.101	−0.091	−0.251	−0.143	−0.117	−0.058
	(0.065)	(0.058)	(0.181)	(0.143)	(0.107)	(0.091)
$t = 0$:baltics	−0.127***	−0.124***	0.008	0.012	−0.076	−0.101
	(0.046)	(0.045)	(0.072)	(0.073)	(0.069)	(0.064)
$t = 1$:baltics	−0.238***	−0.237***	−0.007	0.028	−0.204**	−0.238**
	(0.059)	(0.060)	(0.156)	(0.140)	(0.100)	(0.093)
$t = 2$:baltics	−0.094	−0.091	0.248*	0.109	−0.018	−0.054
	(0.064)	(0.059)	(0.136)	(0.094)	(0.158)	(0.134)
$t = -2$:male					−0.008	−0.014
					(0.071)	(0.067)
$t = 0$:male					0.145***	0.150***
					(0.024)	(0.024)
$t = 1$:male					0.228***	0.212***
					(0.032)	(0.032)
$t = 2$:male					0.253***	0.265***
					(0.055)	(0.052)
$t = -2$:baltics:male					−0.142	−0.063
					(0.183)	(0.157)
$t = 0$:baltics:male					0.140*	0.125
					(0.080)	(0.084)
$t = 1$:baltics:male					0.283*	0.272*
					(0.148)	(0.143)
$t = 2$:baltics:male					0.413**	0.193
					(0.165)	(0.121)
Age dummies	Y	Y	Y	Y	Y	Y
baltics:male					0.097	0.127
					(0.189)	(0.166)
baltics	0.093	0.082	0.633	0.533	−0.269	−0.416**
	(0.070)	(0.072)	(0.441)	(0.325)	(0.249)	(0.205)
male					0.148***	0.152***
					(0.035)	(0.036)
year dummies	Y	Y	Y	Y		
country dummies	Y	Y	Y	Y		
country-year dummies					Y	Y
sector dummies		Y		Y		Y
occupation dummies		Y		Y		Y
education dummies		Y		Y		Y
constant	−0.059	−0.352**	−0.117	0.132	0.173	0.380*
	(0.059)	(0.156)	(0.122)	(0.360)	(0.164)	(0.219)
Observations	1,662	1,634	1,479	1,443	3,141	3,077
Log Likelihood	−782.510	−521.957	−1,383.458	−1,177.334	−2,361.395	−1,949.286
Akaike Inf. Crit.	1,671.020	1,199.915	2,894.916	2,532.668	4,944.790	4,170.571

Note: clustered standard errors (found in parenthesis) incorporate information on the strata (country) and primary sample unit (individual). *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

29% lower in $t = 1$ and about 22–30% lower in $t = 2$ while male earnings do not change significantly (apart from the increase in $t = 2$ in the extended specification). The next four rows, showing the interaction between event time and the Baltics dummy, tell us that the female earnings fall by an additional 12 to 13% in $t = 0$ and 24% in $t = 1$ in the

Baltic countries. There is a smaller (9%) and insignificant decline in $t = 2$. Male earnings do not change significantly throughout the period, apart from the marginally significant decline in $t = 2$ under the baseline specification.

The pooled regression results also suggest that earnings drop more in Baltic countries than in the comparison countries. The first four rows indicate that male and female earnings decline after childbirth in Baltic and comparison countries. Additionally, earnings in the Baltics fall further by 20–24% lower in $t = 1$, as indicated by row 7. Male earnings rebound, however, as indicated by the event time and male dummy interaction terms on rows 10–12. The rebound is stronger for males in the Baltics than in comparison countries (13-14% in $t = 0$, 27-28% in $t = 1$ and up to 41% in $t = 2$). Again, $t = 2$ results should be treated with caution.

The regression results for comparison countries are relatively in line with previous studies. Columns 1 and 2 suggest that female earnings fall by 24–29% in the period $t = 1$ and 22–30% in the period $t = 2$ in the comparison countries. This is slightly higher than (Kleven et al., 2019), who estimate that earnings decline by around 20–25% in the period for Denmark, although is lower than the 40-60% estimated for Sweden. Since my estimate is a weighted average of the five comparison countries, the estimated effect seems believable.

While the above examples centered around earnings, I conduct similar analsyses for other labour market variables. Appendix Table A2 contain results for regressing on three monetary variables (monthly wages, hourly wages and lagged hourly wages) and three real values (months, weekly hours and lagged weekly hours worked) with the extended pooled specification (akin to column six of Table 5). The results suggest that females' earnings in the Baltics drop more than those in the comparison countries largely because of real values (fewer months and fewer lagged weekly hours worked) and not because of monetary values.

4. Conclusion

This paper describes the context of raising children and estimates the effect of the first child's birth on parents' earnings in the first two calendar years after childbirth in the Baltics. The context and the estimates are compared to that of 5 comparison countries (Denmark, Finland, Sweden, the Netherlands, and Norway).

Prevailing norms in the Baltics still center on females being the primary child-carer, even though they are also expected to contribute substantially to the household budgets (and are willing to do so). The parental leave policies in the Baltics – being relatively lengthy, with high replacement rates (foregone earnings are replaced by paternity leave benefits) and absence of governmental reservations for farther to take parental leave – provide incentives for females to stay at home with their children in line with these norms. The share of females in the Baltics using available formal early childhood education and care (ECEC), although rising in the past decade, is still relatively small. However, the latter is likely to be less important in terms of women's participation in the labour market because of the comparatively large informal ECEC in the Baltics. For these reasons, females face larger earnings losses following the birth of the child when compared to the comparison countries with more labour market favouring norms and parental policies.

In line with this context, I find that the female labour market is more affected by childbirth than males in the Baltics. Earnings of females reduce by half in the first calendar year and by 20% to 33% in the second calendar year after the birth of the first child, while males' earnings are barely affected. The widening earnings gap is due to females taking time off work (they tend to work fewer months and fewer weekly hours) rather than females earning lower wages.

I also find that women in the Baltics have larger labour market consequences than women in five comparison countries. Even though female earnings drop in both regions, they tend to drop by an additional 20 to 24% in the Baltics in the first calendar year after the birth of the child. At the same time, male earnings tend to be similarly affected in the Baltics compared to the comparison countries. However, the decline of female earnings in the Baltics in the second year after the birth of the child, when compared to the earnings before the child is born, is only 9% larger than in the comparison countries. Furthermore, this difference is not significant. This suggests that in the long term, the consequences for the labour market might partly converge in both regions.

The conclusions, however, rest on a small number of observations, even after pooling all three Baltic countries. This also restricts the researcher's ability to credibly differentiate households (e.g. analyse either only households with multiple children or single parents). Few years of observation per each individual also prevents examining when and to what extent this earnings gap diminishes. Hopefully, improving access to registered data in the Baltic countries will allow addressing these issues in a more comprehensive manner.

Notes

1. females tend to work fewer months, fewer hours per month, and earn less per hour. Specifically, in 2019 the unadjusted gender pay gap – the difference between male and female average gross hourly earnings as a percent of average gross hourly earnings of males – was 21.7% in Estonia (the highest in the EU) and 21.2% in Latvia, which is above the EU27 average of 14.1% (Eurostat, 2021). The unadjusted gender pay gap was smaller in Lithuania (13.3%), however, a measure of the 'adjusted' gender pay gap, when observables such as industry, occupation, hours worked, age, and education are controlled for, reduced the pay gap for Estonia and Latvia but increased that of Lithuania (Boll & Lagemann, 2019). The adjusted gender pay gap may be higher than the unadjusted one if females have better endowments than males (e.g. are more educated) but receive fewer returns from the endowments.
2. EU-SILC statistics align with the national register's data of the comparison countries: 59% of two-year-olds participate in formal ECEC in Finland, 87% in the Netherlands and Denmark, and over 90% in Sweden and Norway (Motiejunaite-Schulmeister et al., 2019).
3. 'Parental leave benefits' in the Baltics could be partly considered as 'childcare benefits' because it is possible for parents to work and still receive (part of the) benefits. In Latvia, 30% of benefits are still paid if a parent starts working. In Lithuania, entering employment lowers parents' benefits in the first year but not in the second year. This may explain why males are increasingly likely to take parental leave in the second year.
4. The main reason for not using the Structure of earnings survey (SES), which is mostly used to examine earnings, is largely because SES does not have sufficient data on the presence of children.
5. As the EU-SILC is a yearly survey, it is not possible to state the actual age of the child. For example, if the child is born at the start of the previous year, he or she will be one year and one day old at the beginning of $t = 1$ and two years old at the end of $t = 1$. If born at the end of the year, then the child may be just one day old at the start of $t = 1$ and one

year and one day by the end of $t = 1$. On average, the child is expected to be one year old, but the parent will have periods when the child is much younger and older. Due to similar reasoning, the child is expected to be two years old in period $t = 2$.

6. In the case of Norway, survey weights are only supplied for the household which was interviewed this year but not previous years (for example, if a household was interviewed in 2017, there will be a weight for 2017 but not previous years). I copy the same weights for previous years as well to keep Norway in the sample.
7. This implies that I can only use data for which the event did occur – i.e. individuals with a first childbirth. Including individuals without children would not allow me to look at earnings changes before and after childbirth.

Acknowledgments

I express my gratitude to researchers at Vilnius University who have helped me with helpful comments. This paper is based on data from Eurostat, EU Statistics on Income and Living Conditions [2012:2017]. The responsibility for all conclusions drawn from the data lies entirely with the author. This project was supported by a joint NCN-LMT DAINA initiative (grant number S-LL-19-3).

Disclosure statement

No potential conflict of interest was reported by the author(s).

Notes on contributor

Nerijus Černiauskas received his PhD in Economics in Vilnius University while investigating the role of taxes and transfers on reducing income inequality in Lithuania. At the time of writing he is working at the Ministry of Finance in the Republic of Lithuania carrying out micro modeling and analysis of individual tax data.

ORCID

Nerijus Černiauskas http://orcid.org/0000-0003-4001-3677

References

Angelov, N., Johansson, P., & Lindahl, E. (2016). Parenthood and the gender gap in pay. *Journal of Labor Economics*, *34*(3), 545–579. https://doi.org/10.1086/684851

Anspal, S., Rõõm, T., Anspal, S., Kraut, L., & Rõõm, T. (2011). Gender pay gap in Estonia: empirical analysis. Report for the Estonian ministry of social affairs. Tallinn: Ministry of Social Affairs.

Boll, C., & Lagemann, A. (2019). The Gender Pay Gap in EU Countries — New Evidence Based on EU-SES 2014 Data (2014). *Luxembourg, Publication Office of the European Union. Intereconomics*, *54*, 978935. https://doi.org/10.1007/s10272-019-0802-7

Cukrowska-Torzewska, E., & Matysiak, A. (2020). The motherhood wage penalty: A meta-analysis. *Social Science Research*, *88–89*, 102416. https://doi.org/10.1016/j.ssresearch.2020.102416

ESTEP Vilnius (2020). ES fondų investicijų ir kitų valstybės intervencijų poveikio visuomenės gyvenimo kokybės augimui vertinimas.

European Commission. (2020). *Methodological guidelines and description of EU-SILC target variables.* (Version 4_09/12/2020). https://circabc.europa.eu/sd/a/f8853fb3-58b3-43ce-b4c6-a81fe68f2e50/Methodological%20guidelines%202021%20operation%20v4%2009.12.2020.pdf

European Commission, Directorate-General for Education, Youth, Sport and Culture, Lenaerts, K., Vandenbroeck, M., Beblavý, M. (2018). *Benefits of early childhood education and care and the conditions for obtaining them*. Publications Office. https://doi.org/10.2766/20810

Eurostat (2018). European Union Statistics on Income and Living Conditions (EU-SILC). Online https://ec.europa.eu/eurostat/web/microdata/european-union-statistics-on-income-and-living-conditions.

Eurostat (2021). Gender pay gap in unadjusted form. Accessed January 6 https://ec.europa.eu/eurostat/databrowser/view/sdg_05_20/default/table?lang=en.

Jantti, M., Törmälehto, V., & Marlier, E. (2013). The use of registers in the context of EU–SILC: challenges and opportunities. Publications Office of the European Union.

Karu, M., & Bražienė, R. (2014). Comparing leave policies across the Baltic States. 11th International LP & R seminar in Tallinn.

Kleven, H., Landais, C., & Egholt Søgaard, J. (2019). Children and gender inequality: evidence from Denmark. *American Economic Journal: Applied Economics*, *11*(4), 181–209. https://doi.org/10.1257/app.20180010

Kleven, H., Landais, C., Posch, J., Steinhauer, A., & Zweimuller, J. (2019). Child penalties across countries: evidence and explanations. *AEA Papers and Proceedings*, *109*, 122–126. https://doi.org/10.1257/pandp.20191078

Michoń, P. (2010). 'Stay at home, dear'–mothers, labour markets and state policy in Poland and the Baltic States. Welfare states and gender in Central and Eastern Europe 151.

Motiejunaite-Schulmeister, A., Balcon, M., & Coster, I. (2019). Key data on early childhood education and care in Europe, 2019 Edition. Eurydice Report. Education, Audiovisual and Culture Executive Agency, European Commission.

OECD (2016). Early childhood education and care in Latvia. https://doi.org/10.1787/9789264250628-5-en.

OECD (2017). Šalių švietimo politikos apžvalgos: Švietimas Lietuvoje. https://www.upc.smm.lt/naujienos/europa/apzvalga/Svietimas-Lietuvoje-EBPO-.pdf.

OECD (2020). Early learning and child well-being in Estonia 167. https://doi.org/10.1787/15009dbe-en.

OECD (2022a). Participation rates in early childhood education and care by income, 0- to 2-year-olds. https://www.oecd.org/els/family/database.htm.

OECD (2022b). Public spending on early childhood education and care. https://www.oecd.org/els/family/database.htm.

OECD (2022c). Summary of paid leave entitlements available to mothers. https://www.oecd.org/els/family/database.htm.

OECD (2022d). Summary of paid leave entitlements for fathers. https://www.oecd.org/els/family/database.htm.

Van Belle, J. (2016). *Paternity and parental leave policies across the European Union*. RAND.

Appendix

Table A1. Descriptive statistics by sex and event time.

	Event time t	−2	−1	0	1	2
			Sector (Nace 1.1)			
Agriculture	Females	0.00	0.00	0.01	0.01	0.02
Agriculture	Females-Males	0.00	0.00	0.00	0.01	−0.05
Construction	Females	0.01	0.02	0.00	0.00	0.00
Construction	Females-Males	−0.06	−0.06	−0.09**	−0.13*	−0.18
Finance	Females	0.02	0.01	0.00	0.01	0.00
Finance	Females-Males	0.02	0.01	0.00	0.01	0.00
Hotels	Females	0.03	0.04	0.03	0.00	0.21
Hotels	Females-Males	0.03	0.03	−0.01	−0.03	0.19
Industry	Females	0.01	0.07	0.03	0.05	0.14
Industry	Females-Males	−0.19*	−0.17**	−0.19***	−0.16**	−0.04
Other	Females	0.00	0.01	0.02	0.02	0.01
Other	Females-Males	−0.04	−0.02	0.00	0.00	0.00
Public	Females	0.19	0.17	0.09	0.13	0.24
Public	Females-Males	0.16	0.10	0.01	0.10**	0.11
Real estate	Females	0.07	0.03	0.01	0.02	0.07
Real estate	Females-Males	0.07**	−0.01	−0.01	−0.01	0.00
Transportation	Females	0.02	0.02	0.00	0.03	0.01
Transportation	Females-Males	−0.06	−0.04	−0.04**	0.02	0.00
Wholesale	Females	0.04	0.06	0.05	0.05	0.01
Wholesale	Females-Males	0.01	−0.01	−0.09	−0.02	−0.07*
			Occupation			
Armed forces	Females	0.00	0.00	0.00	0.00	0.00
Armed forces	Females-Males	0.00	−0.03	0.00	0.00	0.00
Managers	Females	0.08	0.05	0.03	0.09	0.00
Managers	Females-Males	0.00	−0.14**	−0.14***	−0.10	−0.29**
Professionals	Females	0.28	0.31	0.27	0.22	0.40
Professionals	Females-Males	0.18*	0.14*	0.07	−0.01	0.20
Technical	Females	0.15	0.12	0.19	0.19	0.17
Technical	Females-Males	0.00	0.00	0.04	0.05	−0.03
Clerical	Females	0.11	0.09	0.07	0.08	0.03
Clerical	Females-Males	0.11	0.08*	0.06*	0.07	0.00
Service	Females	0.19	0.26	0.27	0.26	0.33
Service	Females-Males	0.18**	0.20***	0.19**	0.20**	0.21
Skilled agricultural	Females	0.00	0.00	0.00	0.00	0.00
Skilled agricultural	Females-Males	0.00	−0.02	−0.02	−0.01	−0.01
Craft	Females	0.01	0.02	0.02	0.01	0.01
Craft	Females-Males	−0.38***	−0.21***	−0.25***	−0.19***	−0.10**
Plant workers	Females	0.04	0.01	0.03	0.04	0.00
Plant workers	Females-Males	−0.18**	−0.12***	−0.06	−0.04	−0.03*
Elementary	Females	0.04	0.06	0.06	0.05	0.02
Elementary	Females-Males	0.02	0.04	0.03	0.00	0.01

Note: event time denotes the number of years before ($t < 0$), during ($t = 0$) and after ($t > 0$) birth of first child. Stars, based on clustered standard errors calculated using R Survey package and Z critical values, indicate significance at the 1%, 5%, and 10% levels.

Table A2. Estimating effect of childbirth on other labour market variables.

	Monetary			Real		
	Normalized earnings per			Months	Hours	Hours (lag)
	month (1)	hour (2)	hour (lag) (3)	(4)	(5)	(6)
$t = -2$	0.031	0.047		−0.721	−2.453	
	(0.063)	(0.059)		(0.707)	(2.516)	
$t = 0$	−0.119**	−0.077	−0.163***	−0.782**	−8.370***	−1.285
	(0.047)	(0.064)	(0.061)	(0.361)	(1.225)	(1.601)
$t = 1$	−0.132*	−0.072	−0.166**	−0.966	−8.087***	−10.130***
	(0.073)	(0.085)	(0.075)	(0.643)	(1.571)	(2.047)
$t = 2$	−0.112	−0.020	−0.134	−0.821	−7.154***	−7.933***
	(0.094)	(0.111)	(0.091)	(0.794)	(2.280)	(2.627)
baltics	−0.075	−0.115	−0.658*	0.155	−1.083	4.387
	(0.396)	(0.374)	(0.388)	(1.715)	(5.993)	(5.780)
male	0.079	0.017	−0.069	−0.024	5.935***	1.754
	(0.065)	(0.066)	(0.085)	(0.448)	(1.241)	(2.090)
$t = -2$:baltics	−0.259**	−0.190		0.464	8.882***	
	(0.130)	(0.139)		(0.992)	(3.322)	
$t = 0$:baltics	0.281*	0.291	0.272	−3.229***	−5.890**	−5.117*
	(0.146)	(0.409)	(0.166)	(0.599)	(2.701)	(2.940)
$t = 1$:baltics	−0.260	−0.242	−0.248	−5.053***	−0.419	−10.375***
	(0.168)	(0.194)	(0.239)	(0.928)	(3.520)	(4.004)
$t = 2$:baltics	−0.067	−0.109	−0.039	−2.597**	8.831*	−6.743
	(0.250)	(0.249)	(0.252)	(1.220)	(4.980)	(4.795)
$t = -2$:male	−0.141	−0.154*		0.040	−1.101	
	(0.086)	(0.090)		(0.770)	(2.664)	
$t = 0$:male	0.236***	0.184**	0.264***	0.816**	7.137***	4.073**
	(0.074)	(0.076)	(0.102)	(0.340)	(1.212)	(1.995)
$t = 1$:male	0.237***	0.174**	0.299***	0.956*	7.669***	11.391***
	(0.062)	(0.069)	(0.092)	(0.514)	(1.266)	(2.198)
$t = 2$:male	0.348***	0.173*	0.374***	1.720**	7.272***	10.884***
	(0.082)	(0.094)	(0.107)	(0.706)	(1.842)	(2.610)
baltics:male	0.306	0.359	0.206	0.129	1.985	−3.808
	(0.228)	(0.241)	(0.212)	(0.724)	(2.449)	(3.491)
$t = -2$:baltics:male	0.072	0.079		0.123	−8.162**	
	(0.206)	(0.220)		(1.179)	(3.916)	
$t = 0$:baltics:male	−0.402**	−0.407	−0.286	3.750***	7.758***	5.319
	(0.169)	(0.403)	(0.225)	(0.706)	(2.854)	(3.626)
$t = 1$:baltics:male	0.213	0.205	0.299	5.452***	1.824	12.496***
	(0.239)	(0.244)	(0.282)	(0.930)	(3.230)	(4.458)
$t = 2$:baltics:male	0.042	0.156	0.236	2.077*	−9.772**	8.034
	(0.208)	(0.209)	(0.293)	(1.114)	(4.071)	(5.076)
constant	−0.144	1.235***	2.430***	6.001**	7.608	0.886
	(0.291)	(0.410)	(0.511)	(2.451)	(9.490)	(9.688)
Observations	1,935	1,685	1,246	3,077	3,077	2,295
Log Likelihood	−2,146.404	−2,035.385	−1,300.899	−9,198.755	−12,725.420	−9,516.444
Akaike Inf. Crit.	4,538.808	4,312.770	2,817.797	18,669.510	25,722.840	19,274.890

Note: clustered standard errors (in parenthesis) contain information on the strata (country) and primary sample unit (individual). *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$. Results are based on the extended specification (i.e. they include country-year dummies, age, sector, occupation, education dummies and work history).