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The Family 500+ benefit and changes in female employment in Poland

Abstract
This paper investigates the relationship between the implementation of the Family 500+ benefit, changes in female employment and female economic inactivity. The analysis is based on macro data and is focused on the years 2016–2019. To examine the relationship, this study uses decomposition of the employment-to-population ratio change into labour supply and unemployment components, analysis of changes in the structure of nonparticipants and the shift-share method. Considering that the reaction to the child benefit may differ across age groups, this study found that since the introduction of the Family 500+ benefit, the employment-to-population ratio for women aged 25–39 (the most likely age group to be raising children and therefore to receive the benefit) stagnated, their labour force participation rate decreased and the percentage of nonparticipants due to family and household responsibilities increased.

Keywords
female employment | child benefits | family policy | employment-to-population ratio

JEL Codes
E24, J21, J16, H24

1. Introduction

Over recent decades, the value of child cash benefits in Poland has been relatively low. However, the family policy changed in April 2016 when policymakers introduced the relatively generous Family 500+ benefit. As a result of this benefit, family or child allowances significantly and rapidly increased from 0.2 to 1.4% of GDP, and Poland joined the ranks of the EU countries with the highest child benefits (Figure 1). The Family 500+ benefit aims to 'increase the fertility rate, invest in human capital, [and] reduce poverty among the youngest Poles'.[1] However, this cash benefit may also reduce employment among women as non-labour incomes may encourage lower-paid women who are balancing a job with family responsibilities to exit the labour market or reduce their working hours. This raises the question of whether the significant and rapid increase in child benefits was accompanied by a decline in women's employment.

This question is important in the Polish context. Poland's low fertility rate falls below the replacement rate, and the implementation of policies that encourage fertility are necessary. The working-age population is shrinking, however, and this may contribute to slowing economic growth and increasing stress on public finances, so any economic policy should be designed to mitigate a decline in labour supply. Increasing the relatively low women's employment rate is one of the approaches that may alleviate labour force shortages. While the Family 500+ benefit may increase fertility and labour supply in the long run, it may also reinforce downward pressure on female employment in the short run and exacerbate current challenges resulting from adverse demographic changes. It is therefore crucial to understand the current consequences of the child benefit for women's employment.

The effects of the Family 500+ benefit have been the subject of intense debate (e.g., Myck, 2016; Ruzik-Sierdzińska, 2017; Myck & Trzciński, 2019; Magda et al., 2020; Bartosik, 2020; Krajewski & Zalega, 2020; Gromadzki, 2021; Premnik, 2022). Most studies have used individual data, microeconomic approaches and

1 The Minister of Family and Social Policy, E. Rafalska (2016), defined these aims while presenting the Family 500+ benefit act in the Polish Parliament.

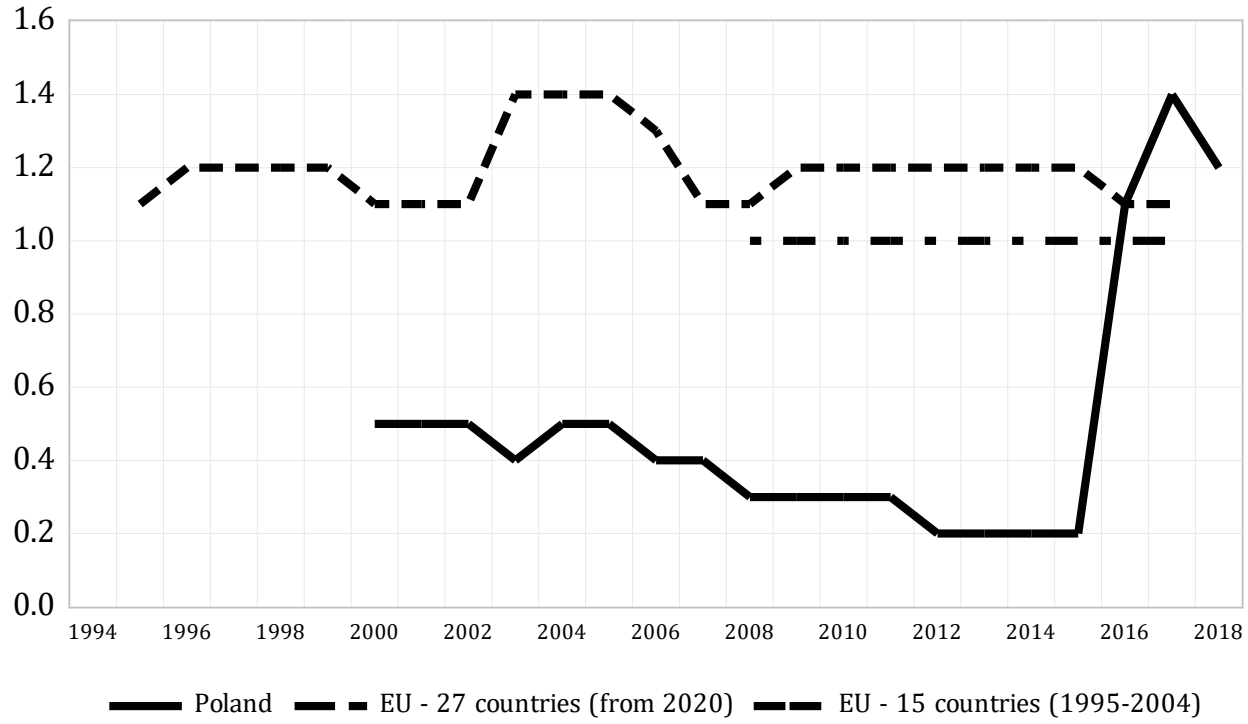

Figure 1. GDP share of family or child allowances in Poland and the EU (in percentages, 2000–2018)
Note: 'Family or child allowance' is defined as periodical payments to a member of a household with dependent children to help with the costs of raising children (Eurostat, 2019, pp. 68–69)
Source: Eurostat, ESSPROS database

analysis of changes in female employment or labour supply. This paper supplements earlier analyses by following the work of Bartosik (2020) to examine macroeconomic trends and the relationship between changes in women's employment, labour supply and economic inactivity. This study investigates whether the implementation of the child benefit coincided with a decline in women's employment and labour supply and an increase in women's economic inactivity.

This work uses the employment-to-population ratio (EPR) as the main indicator of employment. First, considering that the reaction to the child benefit is potentially heterogeneous across age groups, this analysis identifies changes in the women's aggregate EPR and EPRs by age group after the introduction of the child benefit. Second, to examine whether changes in the EPR were associated with a drop in labour supply and an increase in economic inactivity, a decomposition of the EPR changes into labour supply and unemployment components is conducted. Also, changes in the structure of nonparticipants by age and reasons for inactivity are examined. Finally, to assess the contribution of changes in the EPRs of the age sub-groups to aggregate EPR, a shift-share analysis is performed. This study focuses on the years 2016–2019, which is the period between the introduction of the Family 500+ benefit and the start of the COVID-19 pandemic, although it does include some time before this period for comparative purposes.

The remainder of this article is organised as follows: section two presents the literature review; section three describes the elements of the Family 500+ benefit that affect women's labour market attachment; section four presents the research methodology and data utilised in the study; section five reports and discusses the results; and finally, section six presents conclusions.

2. Literature review

Evidence regarding the effect of child benefits on female labour market activity in industrialised and transition countries is unclear. For instance, some cross-country studies have shown that child benefits reduce women's employment rates (Bassanini & Duval, 2006; Christiansen et al., 2016), working hours (Abendtroth et al., 2012) and labour supply (Jaumotte, 2003). Thévenon (2013) suggested that the impact in

the OECD depends on the welfare regime, while in contrast, Gehringer and Klasen (2017) found no clear relationship between child benefits and the female labour supply in the EU. They did, however, find that child benefits encourage part-time employment.

The evidence provided by country-case studies also is mixed. However, previous studies suggest that the effect of cash benefits on female labour market activity is heterogeneous. It depends on the characteristics of the beneficiaries (e.g., educational attainment, marital status or the number of children). Tamm (2009) and Hener (2016), in their examination of the 1996 child benefit reforms in Germany, found that they contributed to the reduction of women's working hours. Further to this, Naz (2004), Stadelmann-Steffen (2011), Shirle (2016) and Koebel and Shirle (2016) demonstrate that child benefits negatively affected the labour supply of women in Norway, Switzerland and Canada, respectively. In contrast, Sánchez-Mangas and Sánchez-Marcos (2008) provide evidence that cash benefits introduced in Spain in 2003 actually increased the female labour supply. Hernandez et al. (2017) also found that benefits introduced in Spain in 2007 positively affected the female labour supply. In Australia, however, Guest and Parr (2013) found that cash benefits have no significant impact on labour supply.

Earlier Polish studies provide divergent assessments of the impact of the Family 500+ benefit on the economic activity of women. Several studies (e.g., Myck, 2016; Ruzik-Sierdzińska, 2017; Magda et al., 2020; Myck & Trzciński, 2019; Krajewski & Zalega, 2020) suggest that the child benefit reduced the female labour supply, particularly for those who are less educated, live in regions (towns) with low per capita income, and are younger. For instance, according to Magda et al. (2020), the Family 500+ benefit caused a drop in labour force participation rate of mothers by 2 to 3 percentage points by mid-2017. Conversely, however, recent works by Gromadzki (2021) and Premik (2022) show that child benefits either only slightly decrease labour supply or have no significant effect.

3. Design of the Family 500+ benefit

The Family 500+ benefit provides parents and caregivers of children under 18 with a monthly cash benefit of PLN 500 for each child. In the case of divorced parents, support is provided to the parent who has primary custody of the child. The child benefit may induce an income effect and reduce employment incentives because the amount is relatively high, can be disbursed for a long time (for up to18 years, depending on the age of the child when the benefit was first received) and is received by a large number of households.

When the child benefit was introduced in 2016, it represented 37% and 17.5% of the minimum and average net wages, respectively.[2] Amounting to approximately EUR 115, the payment was also relatively generous compared to other countries. In comparison, the monthly cash benefit for working mothers introduced in Spain in 2003 amounted to EUR 100 per child aged under 3 years and represented 13.0% of the earnings of females with an elementary education (Sánchez-Mangas & Sánchez-Marcos, 2008, p. 1130).

Since the payments increase according to the number of eligible children, are tax-free and do not reduce other social payments, the increase in non-labour income was most significant in large and low-income families.[3] The average income effect was also substantial, as most Polish workers received remuneration equal to or below the average wage, particularly for women (see, e.g., Statistics Poland, 2018b, p. 159, Table 12). The income effect of the child benefit was reinforced by other less significant changes in family policy, which were introduced concurrently.[4] Beyond this, the child benefit was not indexed, while consumer prices increased by about 6% between 2016 and 2019, which could slightly reduce the real value of the benefit as well as any negative employment incentives.

Initially, all families were eligible to receive the child benefit for every second and subsequent child under 18 years of age, and additionally families who met the income criterion (i.e., a monthly income of PLN 800, or PLN 1,200 net in the case of a disabled

2 Authors' calculations using the INFOR net wage calculator and based on the government's ordinance on the minimum wage and the announcements of the President of Polish Statistics on the average monthly gross wage and salary in the national economy.

3 This is confirmed by the decline in income inequality after 2015 (see, e.g., Statistics Poland, 2021, p. 5).

4 Such as the new parental benefit (*świadczenie rodzicielskie*) of PLN 1,000 monthly for a year for uninsured parents (e.g., students, farmers, the unemployed or those under atypical contracts), the one-off 'Pro-Life' payment of PLN 4,000 when a disabled child is born and the one-off 'Good Start' payment of PLN 300 for every school-aged child at the beginning of the school year.

child) for their first child. In mid-2019, however, the programme was extended to include every child under the age of 18. The original income criterion may have discouraged some women from entering the labour market or encouraged some households to adjust their incomes to meet the statutory criterion by, for example, quitting work or reducing working hours. The universality of the benefit has ambiguous consequences for employment incentives; while it removes the incentive for families to adjust their income to meet the statutory criterion, it also increases families' non-labour income, possibly reducing their need for employment outside the home.

In 2016, the monthly average number of children receiving benefits was 3.8 million (the monthly average number of families receiving benefits was 2.52 million, including 1.89 million families with two and more children and 0.63 million families with one child). After the income criterion was abolished, the benefit became universal, which increased the scope of the programme from 3.59 million to 6.07 million children in 2019. Benefit payments increased from 22 to 40 billion PLN in the following years (Statistics Poland, 2020, p. 159; Statistics Poland, 2021, p. 160).

4. Research methodology and data

This study investigates whether the implementation of the child benefit coincided with a decline in women's employment and supply of labour and an increase in women's economic inactivity.

The measure of employment is the EPR, defined as the ratio of employed persons to the population. EPR describes what percentage of the population is employed – in other words, to what extent the economy is using the available labour resources:

$$EPR_t = \frac{E_t}{P_t} \tag{1}$$

where *EPR* is the employment-to-population ratio, *E* is employment, *P* is population, and *t* is the time subscript.

This measure provides a useful indicator for labour market analysis. It can be used to make meaningful comparisons among age groups and over time. The EPR can be also related to other labour market indicators by helping to analyse the consequences of changes in employment and the determinants of employment. For instance, changes in the EPR can be decomposed into changes in unemployment and the labour force or changes in the age structure of the population and age-group economic activity (see Donovan, 2015).

First, the analysis identifies changes in women's aggregate EPR and EPRs by age groups after the introduction of the child benefit. Because the reaction of women's employment to the child benefit may differ across age groups (as the share of women receiving the benefit and caring for children differs), it seems plausible that women of childbearing age or who have small children are more likely to reduce their economic activity.

Next, to verify whether changes in employment were associated with a decline in labour market participation, the relationship between the EPR, labour force participation rate (LFPR) and the unemployment rate is examined by decomposing the EPR changes (in log points) into labour supply and unemployment components. To decompose the EPR the following formula is used:

$$\Delta ln(EPR_t) = \Delta ln(LFPR_t) + \Delta \ln(1 - U_t) \tag{2}$$

where *EPR* is the employment-to-population ratio, *LFPR* is the labour force participation rate, *U* is the unemployment rate, Δ is a change over the sample period and *t* is the time subscript.

Additionally, changes in the structure of nonparticipants by age and reasons for inactivity are examined, because the child benefit may increase the number of economically inactive individuals – for instance, those who are inactive as they take care of children or other family members.

Finally, to quantify the contribution of changes in the individual age group EPRs to women's aggregate EPR, the shift-share method is employed:

$$\Delta EPR_{t1,t0} = \sum_i s_{i,t0}\Delta EPR_{t1,t0} + \sum_i \Delta s_{t1,t0} EPR_{i,t0} + \sum_i \Delta EPR_{i,t1,to}\Delta s_{i,t1,t0} \tag{3}$$

where *EPR* is the employment-to-population ratio, *s* is a share in the population, *i* is the age group index, Δ is a change over the sample period, t_0 is the beginning and t_1 is the end of the sample period.

Table 1. Women's employment-to-population ratio by age (in percentages, 2013, 2015 and 2019)

Age	15–64	15–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64
2013	53.4	19.5	64.6	70.1	74.2	76.6	75.4	67.4	46.9	13.7
2015	56.6	21.3	69.8	72.9	76.2	77.5	76.5	70.7	52.4	18.1
2019	61.1	27.8	69.9	73.2	75.4	81.5	81.4	76.3	62.0	19.9
					Change in percentage points					
2013–2015	3.2	1.8	5.2	2.8	2.0	0.8	1.2	3.3	5.4	4.4
2015–2019	4.5	6.5	0.1	0.3	-0.8	4.0	4.9	5.7	9.7	1.8

Source: Authors' calculations using *Eurostat* data.

The advantage of this specification is that it takes changes in economic activity and the age structure of the population into account. The latter factor is important because over the past decade, population ageing has influenced the size of age groups, and hence, the EPR. The components of equation 3 describe contributions to the aggregate EPR. The first component captures the contribution of individual age groups (assuming constant shares) to changes in the EPR, the second captures the contribution of the age structure of the population (assuming constant EPRs) and the third captures the contribution of interactions between changes in EPR and the age structure of the population.

The study uses publicly available data from Eurostat and Statistics Poland (Główny Urząd Statystyczny). The Eurostat database provides the data on women's population, labour supply, employment and unemployment, while the Polish Labour Force Survey provides the data on the structure of women's economic inactivity.

5. Results and discussion

5.1. Changes in employment

This study begins by analysing whether there is a correlation between the implementation of the Family 500+ benefit and changes to women's employment. Table 1 presents changes in the aggregate EPR of women (15–64 years) of various age groups (15–24, 25–34, 35–39, 40–44, 45–49, 50–54, 55–59 and 60–64). This analysis covers the period between 2013 and 2019, when labour market outcomes were improving (e.g., the unemployment rate for women decreased from 10.5% to 3.2%), and compares changes in the EPRs during the two sub-periods: 2013–2015 and 2015–2019, before and after the introduction of the 500+, respectively. The Family 500+ benefit was introduced in 2016, so 2015 is used as the last year of the pre-treatment period and the baseline year for assessing changes after its introduction.

Table 1 shows that between 2015 and 2019 the aggregate EPR (for women aged 15–64) increased by 4.5 percentage points (versus an increase of 3.2 percentage points between 2013 and 2015). However, the aggregate EPR masks different trends across age groups. While the EPR for women under 25 and over 39 increased, the EPR for women aged 25–39 stagnated (i.e., small increases or decline). Between 2015 and 2019, the EPR for women aged 25–29, 30–34 and 35–39 changed by 0.1, 0.3 and -0.8 percentage points, respectively. In contrast, at the same time, males' EPR increased significantly (see Table 1A in Annex). Furthermore, throughout the previous period, women's EPRs increased by 5.2, 2.8 and 2.0 percentage points, respectively. These preliminary findings suggest that age-specific and gender-specific factors contributed to the stagnation of employment among women aged 25–39. It seems that the child benefit may be one such factor, as it could reduce employment among women of childbearing age and women who have small children. These findings are in line with previous studies suggesting a negative relationship between child benefits and women's employment (e.g., Bassanini & Duval, 2006; Christiansen et al., 2016) and other studies that suggest that the Family 500+ benefit negatively affected the economic activity of younger women (see Magda et al., 2018; Krajewski & Zalega, 2020).

5.2. Relationship between changes in employment, labour supply and nonparticipants

The cash benefit may have encouraged women to exit the labour market, but did the stagnation of the EPR in the 25 to 39 age group coincide with a decline in labour supply and an increase in economic inactivity? To answer this question, this section decomposes the EPR changes into labour supply and unemployment components and examines changes in the structure of nonparticipants by age and reasons for inactivity.

As before, the decomposition of EPR changes for each age group (15–64, 15–24, 25–34, 35–39, 40–44, 45–49, 50–54, 55–59 and 60–64 years) was conducted. The analysis also compares the two sub-periods: 2013–2015 and 2015–2019. The results shown in Table 2 suggest that in the years following the introduction of the child benefit, the stagnation of the EPR in the 25–39 age group was associated with a decline in the labour supply (i.e., a rise in inactivity) for this group.

Table 2 highlights the differences between the two sub-periods. First, the decomposition reveals that the implementation of the child benefit coincided with the shift in the age structure of the women who became economically inactive. Before its introduction, economically inactive women were mainly from the 15–24 and 35–49 age groups. After its introduction, they were mainly women aged 25–39 (i.e., those who were more likely to be raising children). Second, the implementation coincided with the decline in labour supply. Between 2013 and 2015, the EPR in the 25–34 age group increased; this was matched by a drop in unemployment rates and an increase in labour supply. In contrast, between 2015 and 2019, when EPR growth slowed, both unemployment rates and LFPR declined. In the case of the 35–39 age group, the drop in LFPR was significantly greater than in the pre-treatment period. Moreover, between 2015 and 2019, changes in LFPRs were significantly greater than those in EPRs. For the 25–29, 30–34 and 35–39 age groups, LFPR fell by 0.047, 0.033 and 0.039 log points (or by 3.6, 2.6 and 3.1 percentage points), respectively, while EPR changed by 0.002, 0.004 and -0.011 log points (or by 0.1, 0.3 and -0.8 percentage points), respectively. This suggests that the implementation of child benefits coincided with the stagnation of employment growth and a decline in labour supply. This result is consistent with previous studies that demonstrate a negative impact of the Family 500+ child benefit on women's labour market participation (Myck, 2016; Ruzik-Sierdzińska, 2017; Myck & Trzciński, 2019; Magda et al., 2020; Krajewski & Zalega, 2020).

This analysis concludes with a look at the structure of female nonparticipants by age and reasons for inactivity. The findings reported in Table 3 confirm that after the introduction of the child benefit, the percentage of economically inactive women in the 25–39 age group increased due to family and household responsibilities.[5]

Table 3 shows that between 2015 and 2019, the percentage of all economically inactive women between the ages of 15 and 64 tends to decrease in almost all categories. In contrast, the percentage of women who became inactive due to family and household responsibilities shows an upward trend, increasing significantly by 1.6 percentage points between 2015 and 2019, while it only increased by 0.6 percentage points before the introduction of the child benefit. The percentage of women who became inactive due to retirement also increased, though this trend likely reflects changes to the statutory retirement age (its increase in 2013 and reduction in 2017).

The results also suggest that since the introduction of the Family 500+ benefit, the share of economically inactive women only increased in the 25–34 and 35–44 age groups by 3.1 and 1.3 percentage points, respectively (versus -0.9 and 0.8 percentage points between 2013 and 2015).[6] This increase is the result of an increase in the number of women who joined the inactive category due to family and household responsibilities. Between 2015 and 2019, the share of this category increased by 4.1 and 2.4 percentage points for the 25–34 and 35–44 age groups, respectively. For comparison, between 2013 and 2015, the first share decreased by 1 percentage point and the second increased by 0.5 of a percentage point.

The rise in economic inactivity among women corresponds to the Family 500+ policy reform and the

5 'The category includes: looking after children or other persons requiring care and other personal or family reasons' (Statistics Poland, 2019, Labour force survey in Poland IV quarter 2019, Economically inactive population, Table 4.1).

6 Due to the availability of data, population is broken down into different age groups than were used for the previous analysis: 15–64, 15–24, 25–34, 35–44, 45–54 and 55–64 years.

Table 2. Decomposition of changes in the employment-to-population ratio into labour supply and unemployment rate components (in log points, 2013–2015 and 2015–2019)

					2013–2015					
Age	**15–64**	**15–24**	**25–29**	**30–34**	**35–39**	**40–44**	**45–49**	**50–54**	**55–59**	**60–64**
Δln(EPR)	0.059	0.087	0.078	0.039	0.026	0.011	0.015	0.048	0.110	0.276
Δln(LFPR)	0.021	-0.036	0.012	0.015	-0.006	-0.015	-0.007	0.029	0.087	0.259
Δln(1-U)	0.038	0.123	0.066	0.024	0.032	0.025	0.022	0.019	0.022	0.016
					2015–2019					
Age	**15–64**	**15–24**	**25–29**	**30–34**	**35–39**	**40–44**	**45–49**	**50–54**	**55–59**	**60–64**
Δln(EPR)	0.076	0.267	0.002	0.004	-0.011	0.051	0.062	0.077	0.169	0.096
Δln(LFPR)	0.032	0.140	-0.047	-0.033	-0.039	0.012	0.017	0.037	0.138	0.076
Δln(1-U)	0.044	0.127	0.048	0.037	0.028	0.039	0.045	0.040	0.031	0.021

Source: Authors' calculations using data from Eurostat.

Table 3. Changes in the share of inactive women in the population by age and reasons for economic inactivity (in percentage points; 2013–2015, 2015–2019)

				2013–2015		
Age	**15–24**	**25–34**	**35–44**	**45–54**	**55–64**	**15–64**
Total	0.9	-0.9	0.8	-0.6	-3.2	-1.0
Discouragement caused by inefficiency of job seeking	-0.2	0.1	0.0	-0.7	0.1	-0.1
Education, training	0.7	-0.2	.	.	.	-0,5
Family and household responsibilities	0.5	-1.0	0.5	0.9	1.9	0.6
Retirement	.	.	.	-0.1	-5.5	-1.0
Illness, disability	-0.1	0.1	0.2	-0.7	0.3	0.0
				2015–2019		
Age	**15–24**	**25–34**	**35–44**	**45–54**	**55–64**	**15–64**
Total	-4.1	3.1	1.3	-1.9	-1.6	-1.6
Discouragement caused by inefficiency of job seeking	-0.4	-0.6	-1.1	-1.8	-2.5	-1.3
Education, training	-4.1	-0.3	.	.	.	-1,7
Family and household responsibilities	0.4	4.1	2.4	0.9	-0.5	1.6
Retirement	.	.	.	-0.1	4.4	0.6
Illness, disability	0.0	-0.1	0.0	-1.0	-2.9	-0.9

Note: 'Inactive' describes persons not seeking a job.

Source: Authors' calculations using data from the Polish Labour Force Survey and Eurostat.

higher fertility observed after 2015. It is important to note, however, that the consequently higher number of women on maternity and parental leave due to higher fertility does not explain the rise in inactivity, as according to the Polish LSF, the inactive category does not include women on maternity and parental leave (see Statistics Poland, 2018a, p. 21).

5.3. Contribution of changes in the age group EPRs to women's aggregate EPR

Earlier analysis has shown that EPR growth in the 25–39 age group slowed down, while the women's aggregate EPR increased significantly. This section evaluates the contribution of changes in the age

Table 4. Results of the shift-share analysis by age group (2013–2015, 2015–2019)

					2013–2015					
Age	**15–24**	**25–29**	**30–34**	**35–39**	**40–44**	**45–49**	**50–54**	**55–59**	**60–64**	**Sum (15–64)**
ΔEPR*s	0.30	0.55	0.31	0.21	0.08	0.10	0.34	0.63	0.47	3.0
Δs*EPR	-0.17	-0.39	0.22	0.38	0.52	0.01	-0.40	0.01	0.07	0.2
ΔEPR*Δs	-0.02	-0.03	0.01	0.01	0.01	0.00	-0.02	0.00	0.02	-0.0
Sum	0.12	0.13	0.54	0.61	0.60	0.11	-0.09	0.65	0.56	3.2
Contribution	3.6	3.9	16.6	18.8	18.6	3.4	-2.7	20.1	17.5	100
					2015–2019					
Age	**15–24**	**25–29**	**30–34**	**35–39**	**40–44**	**45–49**	**50–54**	**55–59**	**60–64**	**Sum (15–64)**
ΔEPR*s	1.05	0.01	0.03	-0.10	0.40	0.43	0.54	1.13	0.21	3.7
Δs*EPR	-0.34	-0.12	-0.42	0.56	1.31	1.00	-0.37	-0.84	0.13	0.9
ΔEPR*Δs	-0.10	0.00	0.00	-0.01	0.07	0.06	-0.03	-0.16	0.01	-0.1
Sum	0.61	-0.11	-0.39	0.46	1.78	1.49	0.14	0.13	0.35	4.5
Contribution	13.7	-2.4	-8.7	10.3	39.9	33.4	3.2	3.0	7.7	100

Source: Authors' calculations using data from Eurostat.

group EPRs to the aggregate EPR. As before, the decomposition was performed for the following age groups: 15–24, 25–34, 35–39, 40–44, 45–49, 50–54, 55–59, and 60–64. The analysis is conducted for the sub-periods of 2013–2015 and 2015–2019. The results shown in Table 4 indicate that the slowdown of employment growth in the 25–39 age group negatively contributed to the aggregate EPR, but only slightly. This contribution was counteracted by the increased EPR of other age groups and changes in the population's age structure.

Table 4 presents a shift-share calculation of the contributions of changes in within-group EPRs and changes in groups' shares in population to the growth of aggregate EPR. By this calculation, during both periods the increase in within-group EPR was the main driver of the growth of aggregate EPR. However, the results of the age breakdown suggest a decrease in the contribution of the 25–39 age group. Between 2013 and 2015, this group's EPR increase accounted for approximately 33% of the aggregate EPR growth (1.07 out of 3.2 percentage points), whereas between 2015 and 2019, the EPR decline among the 25–39 age group decreased the aggregate EPR by approximately -1.2% (-0.05 out of 4.5 percentage points). The rise of the shares partly compensated for the negative contribution by 0.6% (0.03 out of 4.5 percentage points).

The second important finding from this analysis is that between 2015 and 2019, the 40–49 age group was the main contributor to the aggregate EPR growth – this age group was responsible for an aggregate EPR increase of 73.2% (3.3 out of the 4.5 percentage points). The increase in the group's EPR, assuming constant shares, accounts for 18.5% of this increase, while 51.7% can be attributed to the increase in its share in the population by, assuming constant labour market activity, 3% results from the interaction. This result suggests that, to an important extent, the growth of the women's aggregate EPR reflects a positive contribution of the demographic change. The ageing of the Polish population significantly increased shares of age groups that are characterised by high labour market participation, and thus increased the aggregate EPR (see Figure 1A in the Appendix and Table 1).

6. Conclusions

The analysis of the macro data revealed that implementation of the Family 500+ benefit coincided with a decline in economic activity of women in the age group more likely to receive the benefit and be raising children. In the years following the introduction of the child benefit, the growth of employment for those in the 25–39 age group slowed down, labour supply decreased and the number of nonparticipants due

to family and household responsibilities increased. However, the contribution of negative changes in employment to the aggregate EPR was offset by an increase in labour market participation by other age groups and a shift in demographics. Nevertheless, a decline in women's economic activity suggests that child benefits may exacerbate current problems resulting from the shrinking of the working-age population. This macro data–based study supports previous studies that used microdata to find that the Family 500+ benefit negatively affected female labour market activity, particularly among younger women.

In future research, it would be interesting to extend this study by using more disaggregated data, which would allow for a more detailed analysis. For instance, it would be useful to uncover the extent to which changes in unemployment and employment contribute to increased economic inactivity due to family and household responsibilities.

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Appendix

Table 1A. Male employment-to-population ratio by age (in percents, 2013, 2015 and 2019)

Age	15-64	15-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64
2013	66.6	28.6	80.9	86.6	87.5	85.0	80.3	74.3	64.4	36.1
2015	69.2	30.5	81.4	89.0	89.0	87.7	84.2	76.4	67.1	39.7
2019	75.3	35.4	88.7	92.3	91.7	91.3	87.9	81.1	72.5	50.8
Change in percentage points										
2013-2015	2.6	1.8	0.5	2.3	1.5	2.6	3.8	2.1	2.8	3.6
2015-2016	6.1	5.0	7.3	3.4	2.7	3.7	3.8	4.7	5.3	11.0

Source: Authors' calculations using *Eurostat* data.

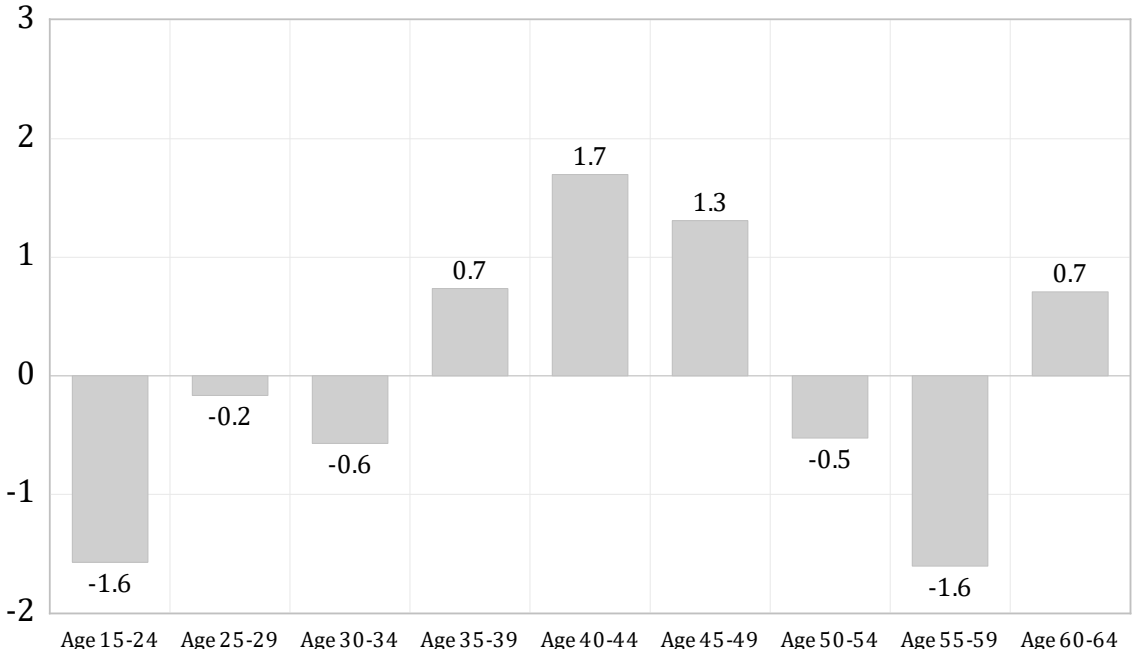

Figure 1A. Changes in the women's population (15–64) structure by age (in percentage points, 2015–2019)
Source: Authors' calculations using *Eurostat* data.