Competing subsidies? The impact of various policy measures on second births in contemporary Hungary

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Abstract

Europe is a region of ageing societies, hence the issue of whether policies can make a difference with respect to fertility is of great importance. Also, studying policy contexts beyond the most developed West- and North European economies will contribute to a better understanding of whether and how various policy measures influence fertility behaviour. As policy effects are likely to be parity-specific, we focus on the second birth which has increasingly become a choice. In this paper, we study Hungary, given major changes in family policies since the late 1980s, making it an ideal case to address critical junctures and their impacts as an optimal way to examine policy effects on fertility. 1989 to 2012/2013 is the period we study, benefiting from the Hungarian Generations and Gender Survey. The event in focus is conception leading to the second birth for women and men. The tool of analysis is piecewise constant proportional hazards model. Our main variables of interest are three policy measures: the Bokros package during which there were major cut-backs in family policy provisions; tax relief which was provided for a limited period, and family allowance. Our results show that the risk of second conception was lower during the period when the Bokros package was in effect, but when we include tax relief in the model, the negative effect gets mitigated. Hence, the introduction of the tax relief halted the decrease in second-birth risk, which however showed when the tax relief was abolished. The family allowance has a small but positive effect on second conception for the entire period. The findings suggest that second-birth rates in Hungary have been shaped by the competing impacts of various policy measures over the past two decades, some of which have mitigated / halted the general decline in fertility to some extent.

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Introduction

Europe is a region of ageing societies due to fertility below the replacement level over many decades. The concern over rapid population ageing is especially pronounced in the Mediterranean and Central-East European countries where period fertility rates declined to, and in many cases below, the so-called critical level of low fertility (i.e. 1.5 children per woman on average), resulting in an accelerated ageing process, both with respect to the population age structure and that of the work-force (McDonald 2006). Very low rates are not confined to period fertility but in a large number of countries also apply to cohort fertility for women and men born in the late 1960s and later (Oláh 2015). Hence, the long-term outcome of fertility development can jeopardize not only the economic competitiveness but also the future of the welfare state in Europe. The issue of whether policies can make a difference is therefore of great importance, that needs to be addressed carefully. Also, studying policy contexts beyond the most developed West- and North European economies will contribute to a better understanding of whether and how various policy measures influence fertility behaviour. As policy effects, if any, are likely to be parity-specific, in this paper we focus on the second birth which has increasingly become a choice (Klesment et al. 2014) even in countries where childlessness has remained relatively low, such as Central-Eastern Europe. We study Hungary, given major changes in family policies there since the late 1980s, making it an ideal case to address critical junctures and their impacts as suggested by Neyer and Andersson (2008) as an optimal way to examine policy effects on fertility. 1989 to 2012/2013 is the period we study, benefiting from high-quality individual-level panel data available via the Hungarian Generations and Gender Survey.

The Hungarian context (to be extended, incl. changes in the demographic profile of fertility and the economic restructuring)

Policy changes
The first shock families in Hungary have ever been exposed to given changes in family policies, took place in June 1995, due to the introduction of the so-called "Bokros package"[5]. The primary aim was to get a better balance in the state budget (to reduce state debt), and among other areas, even family policy provisions were cut. As such move was unimaginable until then, the package sent an important signal to families, such as not to be sure that benefits

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[5] The package was named after the Minister of Finances of the first Socialist government of the transition period in Hungary, who introduced major changes in family policies. The 'Bokros package' was introduced first in June 1995, but was challenged at the Constitutional Court. The Minister was instructed to change the date when the package entered into force, so children already conceived by the time the package was first announced, would not be affected by it. Thus, the package was in force from April 1996. Nevertheless, as prospective parents were aware, since June 1995, of the reductions to come in the family policy measures, we use this date as marking the 'critical juncture' affecting childbearing decisions.

and transfers will always be available while raising children; provisions can be reduced or abolished any time. The package introduced several restrictions in the previously generous family policy provision in Hungary:
- The benefit paid during maternity leave was reduced from 100% of previous earnings to 70% or 60% during the first 26 weeks after a birth, although mothers became eligible for an additional 26 weeks with 50% of the previous earnings.
- The earnings-related parental benefit, called *childcare fee* (GYED), that a parent caring for a child at home could receive until the child's 2nd birthday after the end of the maternity leave, was abolished.
- The flat-rate parental benefit, called *childcare allowance* (GYES) that a parent caring for a child at home could receive until the child's 3rd birthday – usually following the GYED -, became means-tested.
- Also the family allowance became means-tested, except for families with 3 or more children.
- Finally, all tax-relief for families with children was abolished.

Tax relief to families with children
In the late 1980s , families with three or more children were eligible for tax deduction of quite limited amount in Hungary. In 1991 this was extended to all families with children, replaced by a small tax relief in 1993, abolished by the "Bokros package". In 1999, the tax relief was reintroduced with a higher amount than earlier, for all families with children. The amount was raised further in the following years. In 2006-2010, one- and two child families became ineligible, but since 2011 all families with children are again eligible and the amount of the tax relief is rather generous.

Theoretical considerations (to be written)

Data and methods

For the empirical analysis we use data from the "Turning Points of the Life Course" panel survey, which is the Hungarian Generations and Gender Survey (Wave 2 of the Hungarian survey corresponds to Wave 1 of GGS). The initial (Wave 1) sample was representative of the population born between 1 January 1926 and 31 December 1983 (aged 18-75 at Wave 1), permanently residing in Hungary, by sex, age, region and settlement size. The panel survey already had four waves (Table 1).

Table 1: Main characteristics of the "Turning Points of the Life Course" (Hungarian Generations and Gender Survey) panel survey

Waves	Dates of fieldwork	N	Response rate (%)*	Response rate excluding deaths (%)	Age range
Wave 1	2001/2002	16,363	67.9	-	18-75
Wave 2	2004/2005 (between Oct 2004 and May 2005)	13,540	82.7	85.8	21-78
Wave 3	2008/2009 (between Oct 2008 and Feb 2009)	10,641	78.6	83.3	25-82

Wave 4	2012/2013 (between Nov 2012 and March 2013)	8,103	76.1	82.2	29-86

Note: * compared to the reference population (in Wave 1) or to the previous wave.

Our *working sample* is based on Wave 2 of the panel survey, i.e. it includes respondents who participated in Wave 2 (it means 13,540 respondents). Respondents who dropped out after Wave 2 are censored at the date of the last interview.

The working sample contains:
- women below age 31 and men below age 34 at first birth;
- respondents living in co-residential partnership at the start of observation or no later than by12 months after the first birth;
- individuals having a first child after 1 January 1989;
- those who had no twins at first birth;
- those whose first child was not adopted (if the respondent also had a birth, respondent is excluded if the date of starting to live with the adopted child preceded the start of the pregnancy with the 2nd child);
- those born in or after 1960.

The working sample consists of 2,308 respondents (1,289 women and 1,019 men). The number of person-months is 100,453. Reasons for exclusion are listed in Table 2.

Table 2: Reasons for exclusion from the working sample and the number of cases

Reasons for exclusion	*n*
Respondent was born before Jan 1960	7,417
Invalid partnership history (negative union length, marriage before the start or after the end of the union, no end date but there is a next relationship, union without start date but with end date, start of a union precedes the end of the previous one)	617
Women older than 30 and men older than 33 at 1st birth	2,020
Not living in a co-residential partnership at the start of observation, i.e. the date of the first birth or at least no later than 12 months after the first birth	210
Having a first child before 1 January 1989	915
Having twins at 1st birth	35
Invalid birth history (9 months or less difference between the 1st and the 2nd birth, R was below age 15 at 1st birth)	15
1st child was adopted (if R also had a birth, R is excluded if the date of starting to live with the adopted child preceded the start of the pregnancy with the 2nd child)	3
Total number of excluded cases	11,232
Final n of the working sample	2,308

The observation period starts at the date of the first birth and is censored at partnership disruption, eight years after the first birth, at the date of starting living together with an adopted child or at interview, whichever happened earlier. The event of interest is the start of the pregnancy leading to the second birth (i.e. the date of the second birth minus nine months). The number of events (pregnancies leading to the second birth) is 1,552 in our sample. The duration variable is age of the first child in months and it has four categories: <15, 15–27, 28–51, 52+.

Time-fixed *covariates* include birth cohort, ethnicity (roma or not), religiosity (religious in his/her own way or follows the teaching of the church vs. not religious or do not know) and highest educational attainment at first birth. Individual-level time-varying covariates include partnership status (married or cohabiting) and activity status (employed, unemployed, on parental leave or other inactive). The activity status variable is gender-specific because there

are very few person-months in our sample when the woman is unemployed or the man is on parental leave. Consequently, activity status is interacted with sex in the regression models.

We have two time-varying policy period variables. The first one differentiates between three periods: before the Bokros package (January 1989 – May 1995), during the Bokros package (June 1995 – December 1998) and after the Bokros package (after January 1999). The second policy period variable differentiates the period during which there was tax relief for families with children (January 1999 – December 2005) from all the other periods (January 1989 – December 1998 and after January 2006). The descriptive statistics of the independent variables can be found in Table 3.

Table 3: Descriptive statistics of the working sample (%)

	Total	Women	Men
Birth cohort			
1960-1964	7.1	5.0	9.7
1965-1969	23.1	19.7	27.3
1970-1974	33.2	33.0	33.4
1975-1979	27.6	31.0	23.4
1980-1983	9.1	11.4	6.3
Ethnicity			
Roma	6.5	6.0	7.2
Non-roma	93.5	94.0	92.8
Religiosity			
Not religious	33.3	28.9	38.9
Religious (in any way)	66.7	71.1	61.1
Highest educational attainment			
Primary or less	12.6	11.5	14.0
Vocational training school	33.4	25.5	43.4
Secondary	31.7	36.5	25.5
Tertiary	22.4	26.5	17.1
Age of 1st child in months (time-varying)			
<15	30.2	30.4	30.0
15-27	21.8	22.2	21.3
28-39	14.6	14.6	14.4
40-51	11.3	11.1	11.5
51+	22.1	21.7	22.7
Activity status (time-varying)			
Employed	66.0	44.3	93.7
Unemployed		-	3.7
GYES/GYED (parental leave)	28.6	48.1	-
Other inactive	5.4	7.6	2.6
Partnership status (time-varying)			
Married	79.2	81.3	76.8
Cohabiting	20.8	18.7	23.2
Policy period 1 (time-varying)			
Before the Bokros package (Jan 1989 – May 1995)	22.2	24.2	19.7
Bokros package (June 1995 – Dec 1998)	20.5	21.2	19.7
After the Bokros package (Jan 1999 – interview)	57.3	54.7	60.6
Policy period 2 (time-varying)			
Tax relief for families with children (Jan 1999 – Dec 2005)	39.2	37.3	41.5
No tax relief for families with children (Jan 1989 – Dec 1998 and Jan 2006 – interview)	60.8	62.7	58.5

Note: % for time-constant covariates, % distribution of exposure time for dynamic covariates

In addition to the policy period variables, a third policy measure, namely family allowance index is also used. This index shows how the real value of family allowance per child in a two-child family has changed since 1990 (Figure 1).

Figure 1: Change in the real value of family allowance per child in a two-child family (family allowance index), 1990-2010 (1990=100%)
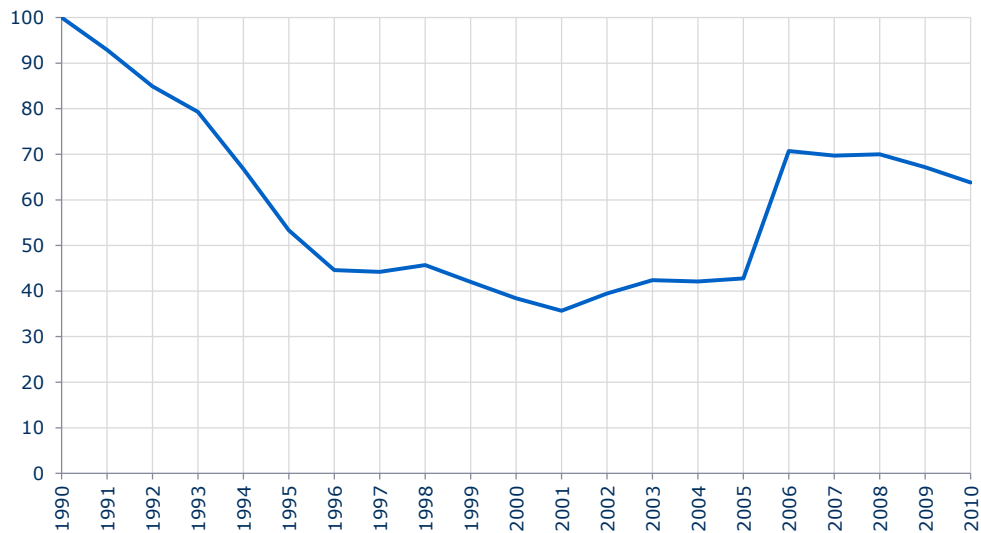
One macro-economic measure, the total activity rate of men aged 15-59 and women aged 15-54 is also included in some of our models in order to control for changes in the general economic climate of Hungary since 1990 (Figure 2). The family allowance index and the activity rate variables are grand-mean centred.

Figure 2: Labour market activity rate of men aged 15-59 and women aged 15-54, 1990-2012 (%)
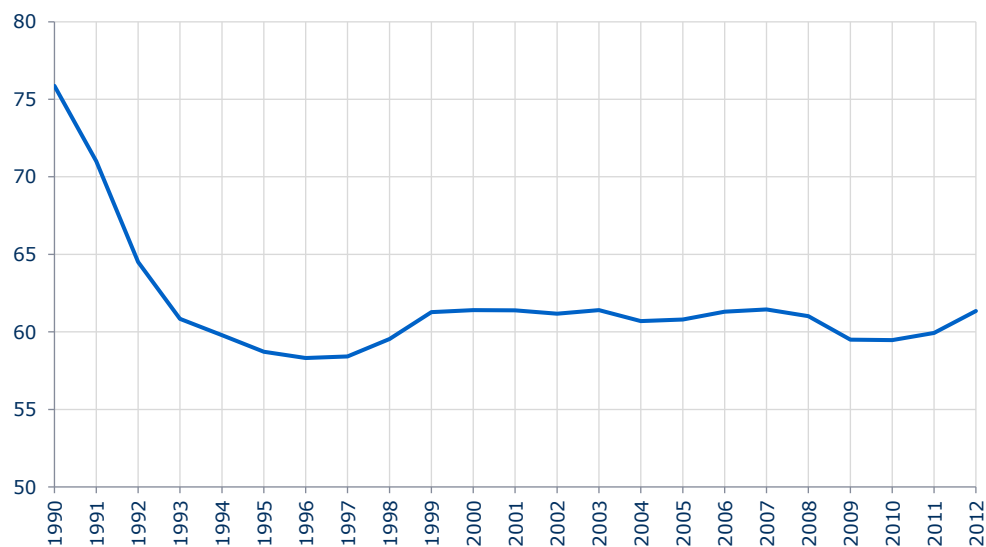
Source: Fazekas et al. 2013, authors' calculations.

The *method* of analysis is event history models with piecewise constant proportional hazards. We follow a stepwise procedure. Model 1 includes only the individual covariates; then we add the policy period variables one by one (Model 2 and 3). Model 4 also includes family allowance index; activity rate is controlled for in Model 5. Then in the final model (Model 6) macro-level activity rate is interacted with the individual-level activity variable, supposing that macro-economic context has a differential effect on childbearing for people in different labour market position.

Results (to be extended)

Results of the event history models (Table 4) show that the risk of a second conception is the highest 15-39 months after the first birth, i.e. the second child is the most likely to be born 2-4 years after the first one. The risk is lower during the first two years after the first birth and it decreases if more than four years have passed.

Regarding the effect of individual covariates, birth cohort has a very limited effect and it disappears after policy measures are added. Education has a U-shaped effect, with respondents with at most primary education and especially with tertiary education having higher risk of second birth than individuals with vocational or secondary schooling. Married persons are more likely to have a second child than cohabiting ones. Compared to employed women, women on parental leave, employed men and other inactive men have higher risk of a second conception. Roma and religious respondents are also more likely to have a second child.

Compared to the earlier period, the risk of the second conception was lower during the period when the Bokros package was in effect (Models 2 and 3). However, the risk further decreased after January 1999. If the period of tax relief and family allowance index are also included (Model 4), the negative effect of the Bokros package disappears. Since the period of tax relief overlaps with the period after the Bokros package, we have to multiply the two coefficients with each other to see the policy effect for the period between January 1999 and December 2005. This multiplication still results in a negative coefficient, meaning that the introduction of the tax relief probably halted or mitigated the decrease in second birth risk that started with the Bokros package.

Family allowance index has a positive effect on the risk of second conception for the whole period.

Activity rate has an effect only among inactive women, and this effect is negative. In other words, when the activity rate is higher, inactive women probably (try to) enter the labour market, and when the activity rate is lower, they choose to continue their childbearing career.

Table 4: The impact of various policy measures on second births: results of event history models

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
INDIVIDUAL COVARIATES												
Age of 1st child in months (duration)												
<15	0.462	***	0.450	***	0.448	***	0.443	***	0.449	***	0.448	***
15-27	(ref.)											
28-39	0.946		0.976		0.980		0.991		0.988		0.990	
40-51	0.691	***	0.738	**	0.744	**	0.757	**	0.755	**	0.763	**
51+	0.498	***	0.564	***	0.574	***	0.585	***	0.587	***	0.591	***

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
Birth cohort												
1960-1964	1.173		0.938		0.927		0.895		0.904		0.911	
1965-1969	1.191	*	1.024		1.015		0.995		0.997		1.004	
1970-1974	(ref.)											
1975-1979	0.863	*	0.966		0.996		1.003		1.007		0.997	
1980-1983	1.005		1.188		1.265	†	1.288	†	1.295	*	1.280	†
Highest educational attainment												
Primary education or less	1.280	*	1.207	†	1.196	†	1.189	†	1.187	†	1.198	†
Vocational training school	0.976		0.949		0.944		0.942		0.941		0.944	
Secondary education	(ref.)											
Tertiary education	1.390	***	1.434	***	1.443	***	1.447	***	1.449	***	1.456	***
Partnership status (dynamic)												
Cohabiting	(ref.)											
Married	1.232	**	1.213	**	1.203	*	1.199	*	1.200	*	1.194	*
Activity status (dynamic) & sex interaction												
Employed, women	(ref.)											
Gyes/gyed, women	1.249	**	1.255	**	1.250	**	1.249	**	1.247	**	1.266	**
Other inactive, women	1.163		1.144		1.142		1.140		1.141		1.085	
Employed, men	1.154	†	1.240	**	1.248	**	1.258	**	1.258	**	1.253	**
Unemployed, men	1.091		1.185		1.187		1.196		1.200		1.213	
Other inactive, men	1.606	*	1.652	*	1.644	*	1.658	*	1.648	*	1.654	*
Ethnicity												
Non-Roma	(ref.)											
Roma	1.739	***	1.673	***	1.664	***	1.655	***	1.654	***	1.648	***
Religiosity												
No	(ref.)											
Yes, in any way	1.137	*	1.143	*	1.142	*	1.145	*	1.144	*	1.149	*
POLICY VARIABLES												
Policy periods												
Before the Bokros package (Jan. 1989 – May 1995)	-		(ref.)									
Bokros package (June 1995 – Dec. 1998)	-		0.817	*	0.808	*	0.951		1.079		1.087	
After the Bokros package (Jan. 1999 – interview)	-		0.663	***	0.586	***	0.611	***	0.627	***	0.639	**
Tax relief												
No tax relief (before Jan. 1999 and after Dec. 2005)	-		-		(ref.)							
Tax relief (Jan. 1999 – Dec. 2005)	-		-		1.135		1.331	*	1.669	*	1.680	*
Family allowance index	-		-		-		1.005		1.012	*	1.012	*
MACROECONOMIC VARIABLES												
Activity rate	-		-		-		-		0.977		0.978	
Activity (dynamic) & sex & activity rate interaction												
Employed, men # Activity rate	-		-		-		-		-		1.024	
Unemployed, men # Activity rate	-		-		-		-		-		1.017	
Other inactive, men # Activity rate	-		-		-		-		-		1.003	
Gyes/gyed, women # Activity rate	-		-		-		-		-		0.977	
Other inactive, women # Activity rate	-		-		-		-		-		0.888	†
Log likelihood	-2783.8		-2773.7		-2772.8		-2771.1		-2770.0		-2763.5	

Notes: † p<0.1; * p<0.05; ** p<0.01; *** p<0.001

Discussion and conclusion (to be written)

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