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Marginal Utilities and Marginal Costs of Having Children

SUMMARY: When families make decisions about having a child ex ante, they calculate with steeply decreasing marginal utilities. In other words, the 1st baby brings a huge amount of pleasure (utility), while the 2nd and further babies bring less and less utilities. Historically, it hasn't always been this way: in poor societies, the main motive for having children was that children were able to work from a young age. Therefore, marginal utility decreased only slightly, to the point around the average utility. The social utility of having children only has a slight influence on families; however, every new child's social utility is almost the same. This explains politicians' intentions to encourage families to have more children. The final conclusion is that within the factors taken into consideration in the study, there is no equilibrium, and the observable trends will not result in a social optimum. Decreasing population and the aging of the society cannot be eliminated or significantly alleviated on national level, no matter the amount of money the government is willing to spend to take over some of the costs parents bear to have children.¹

KEYWORDS: marginal utilities, marginal costs, contraception, fertility, human capital

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*'Let's make a baby, Flóra,
may it do the round-offs on the floor, aah'*
Attila József: Fragments

This study is built on three modern age innovations: (1) the evolvement of pension systems covering the majority of the population, (2) due to the improvement of living standards and medical developments, the decrease in the number of mother, infant and child deaths and the increase of life expectancy at birth, (3) the emergence of

oral contraceptive pills made family planning much safer than before.

The creators of the systems hardly thought of the anti-natalist consequences: if people expect a sufficient pension, they won't 'need' children to rely on when they get old. Therefore, linking the size of the amount of pensions and the number of grown-up children has been on the agenda of international discourses for a long time (Demény, 1987).² The topic was already in the centre of an academic conference in 2012 in Hungary. My opinion regarding the subject was detailed in a respective study volume (Kovács, 2012). The title of my paper at that time accurately reflected the essence of its content: 'Twenty

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Arguments against Linking the Amount of Pensions with the Number of Children'. My opinion hasn't changed since: I don't think that procreation can be encouraged through the pension system. On the contrary – as this paper will make it clear – , I am also sceptical regarding the question whether the number of children can be increased by any kind of state subsidy.

This paper is not a continuation of my previous one, much rather a step back in a logical sense. It is an attempt to answer a previous question: *'why the majority of Hungarian families hasn't had a third, fourth, fifth, etc. child for fifty years now?'* The added value of this article is that I am analysing the decisions regarding having children along the line of marginal utilities and marginal costs – and this, in the extra-long run, spanning from the start of the theoretical fertile age to death, i.e. from the age of 20 to 80. At the end of the analysis, it will be obvious that unlike traditional equilibrium models, for example, *Becker's* (1976), in this model, the conflict of individual (family-level) and social (or public) interests cannot be resolved. The prevailing stable trends will not result in a social optimum, i.e. the total fertility rate of 2.05, which would ensure a demographic balance will not be restored in the foreseeable future.

THE UBIQUITOUS FAMILY MODEL OF TWO BREADWINNERS AND ONE OR TWO CHILDREN

In modern societies, having children is an individual decision. As *Gál* (2014) put it: *'the decision what economists call (...) fertility decision is in fact an infertility decision. For the most part, people don't decide to have children, they decide to not to have them. Decreasing fertility primarily means that more people go further in their measures to prevent conception.'*

With practical terms, it is about the fact that

- the biologically determined female and male fertility can be overridden by a conscious family planning; when couples find the time is right to have children, women temporarily suspend contraception methods; if necessary, women prevent the unwanted child from being born by an abortion;
- liberal societies increasingly accept genetic exceptions and/or consciously adopted non-binary lifestyles (LGBTQ, singlehood, asexuality, etc.), without forcing people to act 'normal'.³

Ex ante, parents decide to have a baby for the pleasure it brings, and because this genetic programme is not overridden by other considerations.⁴ For parents, a child is valuable for itself. To use an economists' metaphor, children are lifelong durable goods.⁵ A child, once born, remains a source of joy for the remaining decades of parents' lives. To a considerable extent, having children is still a 'female' decision today, but, to simplify this, in this paper, I will consider it as a family decision. The *József Attila* quote I chose as the motto of this writing alludes to this notion.

In optimal material circumstances, which historically were the privilege of only a few, female fertility can be really high. Between ages of 20 and 39, *Maria Theresa*, the ruler of the Habsburg Empire gave life to 16 children; in 79 percent of the calendar years, she had a childbirth event. Today, less than four out of 100 women in the fertile age give birth in a given calendar year in Hungary. This is the so called childbirth probability, the accurate, computed value of which is 3.87 percent.⁶ Compared to *Maria Theresa's* example, the difference is twenty times as much.

In Hungary, a typical family has had one or two children for the last half century. Only 12 percent of women in a completed fertility age (35-39 years) had 3 or more children in 1970,

and in 2016, this rate slightly decreased to 8 percent. The reasons of this are well known, so a summary will suffice here.

1 The biologically ‘ready’ human working capabilities are worth less and less on the labour market. In the past, it was natural that able-bodied men and women were capable of (physical) labour without any formal education. Neoclassical economy categories (Becker, 1992) express this in a way that prior to the industrial revolution, the utility of the labour force (L) was given right from birth, and there was no way to significantly increase it. Moreover, the majority of children were actually working from the age of 5-6 – they took care of animals and/or their little siblings. The sons of lower-class urban residents entered in the workforce as apprentices, possibly before they hit the age of 10. From this point of view, it was a realistic calculation on parents’ part that it’s good to have a lot of children, because they have two hands, but only one mouth. Then, industrialisation changed everything. The development of technology forced boys, and in a few decades, also girls to participate in school-based education.

2 As in many Western European countries, women of the upper classes *de facto* used abortion already between the two wars in Hungary (Mink, 1991). And this became the norm for lower classes, too. Starting in June 1956, termination of pregnancies became legal. Reliable and cheap oral contraceptive pills became widely used in 1968. In the wake of this, regular sexual activity became risk-free for young unmarried men and women, extending the period of mate selection. The possibility to plan the timing and number of children meant for an increase in the relative utility of university education (mainly for women, but also slightly for men), because they didn’t have to factor in an unexpected pregnancy, which would result in the interruption of their studies.⁷ In the

meantime, the number of followers of anti-family-planning idealist religions decreased; therefore, less and less men and women had moral issues related to the new technologies of contraception. Weakening of religiousness is also reflected in the fact that 45 percent of Hungarian children were born out of wedlock at some point.

3 As, due to the studies, the breadwinning age shifted to a later age, it was also necessary that families would be started at a later age, too. However, this change went against evolutionist reasoning. Couples want children at an age past the biologically optimal age. Medical science had long discovered the how’s and why’s of the decrease of the probability of conception after the age of 30. Less is known concerning the reasons and the rate of the decline in middle-aged men’s fertility, but the decrease itself remains a hard-core fact. It is also well-known that out of pregnancies taken on past the parents’ 20s, the probability of having a child with a serious illness exponentially increases.⁸ This is the phenomenon called by the public as ‘couples ran out of time’.⁹

4 It is a frequently cited argument that there is a significant discrepancy between the desired number of children and the actual number of children in families,¹⁰ and many draw the conclusion that this gap could be eliminated by state subsidies.¹¹ There are two problems with this rationale. One of them is that during interviews, people are inclined to give answers of which they think would reflect the opinion of the majority. The other is that we have to take it as natural that the majority of people will never be able to fulfil most of their wishes during their lifetimes. If anyone on the street would be asked how many rooms they wanted in their apartment, how many times a year they wanted to go on vacation, or what would be the amount they would deem a proper salary for themselves, we’d experience

the same discrepancies between the wishes and the actual state of affairs. This typical real-life situation is reflected in an outstandingly concise way in a well-known short story by *Karinthy Frigyes*, the title 'Meeting with a Young Man'. The internationally well-known, Hungarian economist, *János Kornai* argues that people's aspirations and expectations from life cannot be fulfilled, not even on the theoretical level, because they are contradicting goals.¹² Maria Theresa's example is a good one in this aspect, too: she was supported by an army of nannies, cooks and laundresses. This was the reason she could pursue her many goals and tasks at the same time: being a mother and a 'working' politician.

5 Many are prone to assume that choosing to have many children is an ethnic issue. In such cases, Hungarians like to refer to the situation of *Romany* people – erroneously. One cannot emphasise it enough (Husz, 2011) that 'gypsy' birth numbers can be basically attributed to poverty and lack of education.

6 In the United States, inequality types associated with the shift in mate selection customs are widely discussed. Essentially, it is about a phenomenon known for centuries, wherein individuals are likely to mate with individuals with similar backgrounds and interests (in Latin: *Similis simili gaudet*). Today, it is no longer about this traditional formula, much rather about the increase of the proportion of women who completed higher education, and the statistical probability of couples' similar educational levels has also been increasing.¹³ However, if during the years of marriage, women bearing several children¹⁴ withdraw from the labour market for a long time, thus depreciating their own human capital, the gap regarding knowledge, education and social prestige will grow between spouses, which may result in adverse effects in the quality of the marriage. For this reason, it has to be considered natural

that only a few women are willing to surrender their careers for 'full-time motherhood'. However, to have a third, fourth and fifth child in a family, in fact a lot more full time mothers would be needed.

7 It is rarely mentioned that the temporal distance between the time when young people start families and the time of their parents' death has been steadily growing. It is also common that 'young people' only come to inherit the family assets only when they are over 60, so this wealth cannot help when it is needed the most – with the financial burdens of having children. This controversy strongly prevails on the real estate market – and not only in Budapest, but also in Vienna and New York.

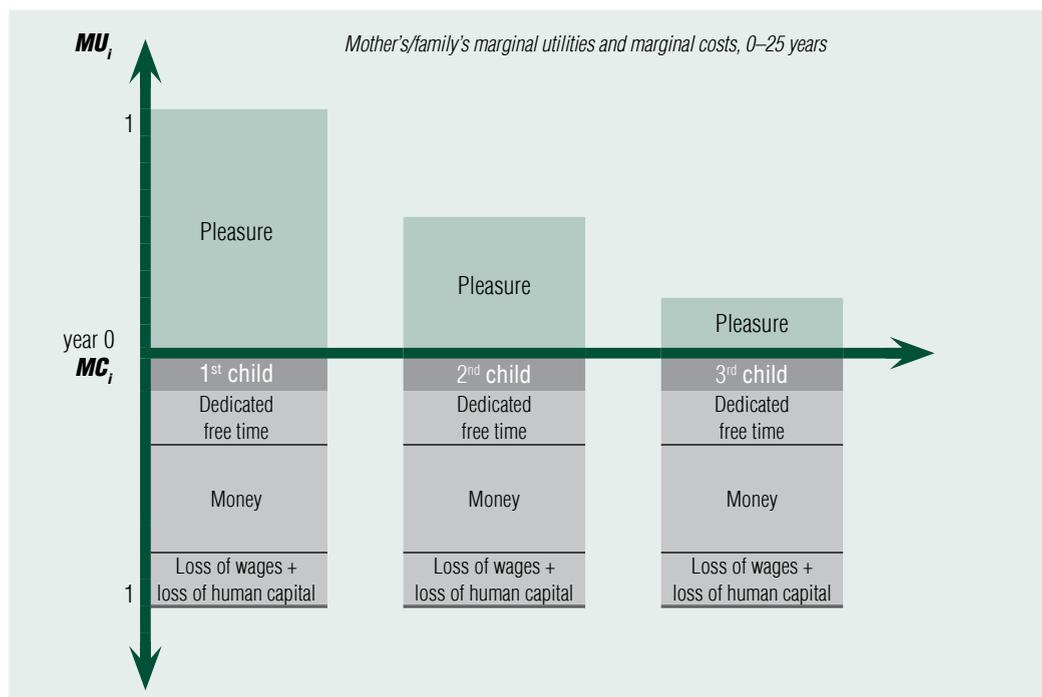
THE NATURE OF INDIVIDUAL UTILITIES AND COSTS

The main assertion of this study is that the decision of having children is made in consideration of the utilities and costs, and on a relatively few occasions. To rephrase it: the decision regarding the number of children is always a marginal decision, but not a customary routine decision. To use the terminology of Kornai's (1971) Anti-equilibrium, it is a basic decision.¹⁵ The decision is the result of the careful juxtaposition of marginal utilities and marginal costs of transiting from being childless into a situation of having one child, of transiting from having one child into having two children, from having two children into having three children, etc.

On *Fig. 1*, the individual marginal utilities (MU) and (net) marginal costs (MC) are compared from the parents' point of view, on a short-term, from the birth of the first child until the last child has grown up. The average situation is depicted here, wherein, in a Hungarian family, upbringing and education

Figure 1

INDIVIDUAL MARGINAL UTILITIES AND NET MARGINAL COSTS OF HAVING CHILDREN (1ST GENERATION)



Source: own edited

of children, and starting a separate household for them takes about 30 years.

The analytical method is simplified to the extreme. Utilities and costs are juxtaposed, but none of the items will be monetised. I.e., no attempts will be made to aggregate different items. We will only compare money with money, and pleasure with pleasure.

It is commonly thought that parents love all of their kids the same. However, this is only valid *ex post* – for children already born. The approach of this study differs from the common approach. We start from the assumption that for parents, *ex ante*, birth of the first, healthy child is an immense pleasure. Primarily, this utility is the reason for procreation.¹⁶ The amount of this pleasure is

considered as a unit, i.e. 1. Compared to this, birth of the second child is a lot less additional pleasure. The marginal utility of the third child is even less, though surveys show that after two children of the same sex, parents often have the desire to have a third child, because they want a girl after the two boys, or vice versa.¹⁷ This picture can be complicated even further by the increasingly common practice of re-marriage, when mothers or fathers of already born children intend to have another child from their second relationship (as they have started a new family) – this may increase the marginal utility of the 2nd or 3rd child. The fact that we assumed a monotonously decreasing utility function in the present paper does not represent anything special – equilibrium

models almost always make this assumption.¹⁸ The novelty of this approach is that we assume a *steeply* decreasing function, because we model today's situation in Hungary, when the majority of families don't plan 3-4-5 or more children by default.

Any circumstance other than the pleasure is considered on the side of the net costs, including all monetary (cash) and in-kind benefits, tax allowances, etc. given to families. These items are reducing the costs. On the other side, of course, the monetary costs of upbringing children, parents' free time dedicated to their children and the loss of (mostly women's) wages lost also appear on the side of costs. Part of the costs can be saved if couples have more kids (part of clothing is re-usable, playing with two kids takes just as much time than playing with one, etc.), but their proportion within the total costs is negligible.

In Hungarian circumstances, when mothers have been entitled to 3 years of paid leave after each child for 50 (!) years, withdrawal from the workforce for several years is an important human capital cost item, making return into the labour market more difficult, ultimately resulting in lower career wages and pension. Risks are also considered a kind of cost factor. When parents decide to have a second and third child, they consider the fact that the dissolution of their marriage or divorce after having two or more kids would result in a very difficult situation for both parties. The parent raising the children alone will face double workload, while the other party (mostly husbands) may face a crisis situation due to the child support payment obligations, which are quite strict in Hungary.¹⁹ This is shown by the indexes of subjective welfare. According to the 2016 survey of the Hungarian Central Statistical Office (HCSO), 75-76 percent of people living in a relationship, marriage or other, with or without children, said they were

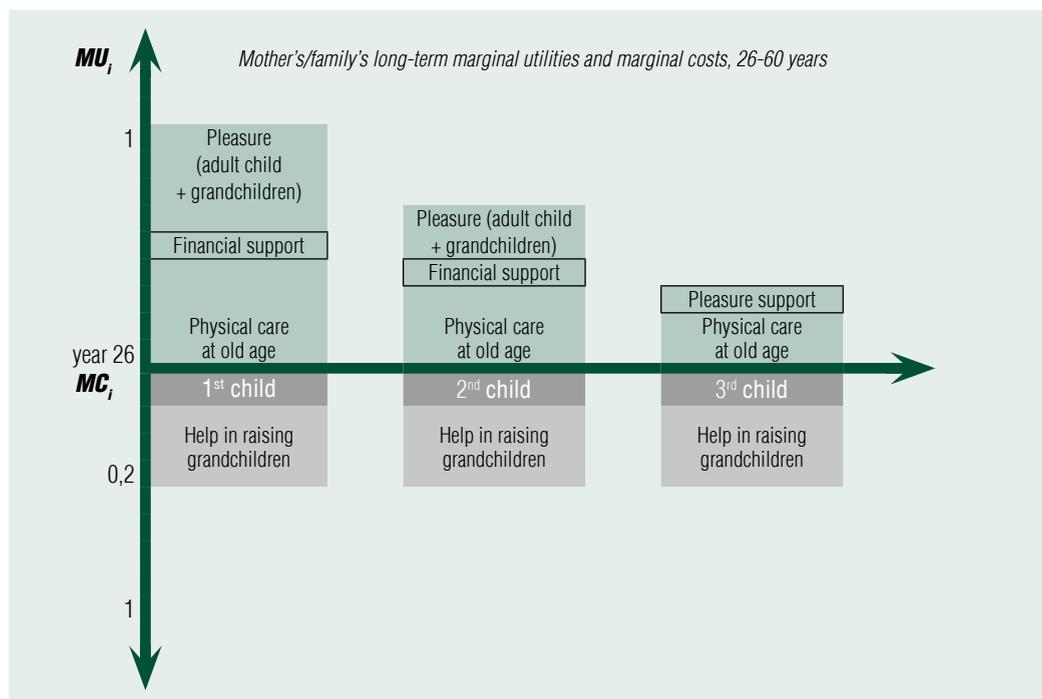
happy or mostly happy. This number for single parents is 55 percent.²⁰

No surprise that the risk of divorce is yet another factor encouraging women to stay in the labour market, because this means a protection against fatal poverty – which hinders them from having the 3rd or 4th child.²¹ To consider all these factors, Fig. 1 is created to make it clear: according to our estimation, individual net marginal costs of having children will not decrease with the increase of the number of children (they may even increase).

Fig. 2 juxtaposes the *ex post* individual marginal utilities and (net) marginal costs of having children in the long run, i.e. between 26 and 60 years (calculated from the birth of the 1st child). This figure compares the utilities and costs that parents have to factor in for the times after they have raised their children. From parents' point of view, several benefits are present: the very existence of the child (professional and other successes, their happiness), and then seeing their grandchildren to come to existence and to grow. Though it is not commonly expressed in words, but it is obvious that only those who have children can have grandchildren. These emotional utilities are – or may be – supplemented by the fact that adult, self-sufficient children are able to help their parents financially (if necessary) or support them with their physical care. More children will give more security to parents than only one child. With the increasing life expectancy, it is also common that part of the physical care of grandparents is taken over by the grandchildren, to help their own parents. Therefore, we estimate that – unlike in the short run – these marginal utilities are decreasing only slightly in the long run. At the same time, in the majority of families, the parents of parents (grandparents) also participate in raising the children.²² This may require extra time and money – but essentially, these net

Figure 2

INDIVIDUAL MARGINAL UTILITIES AND NET MARGINAL COSTS OF HAVING CHILDREN (2ND GENERATION)



Source: own edited

marginal cost are roughly the same for each child. These aspects will not change the fact that the decisions of having children are mostly based on short-term considerations, yet these decisions cannot be changed (retrospectively) in the long run.

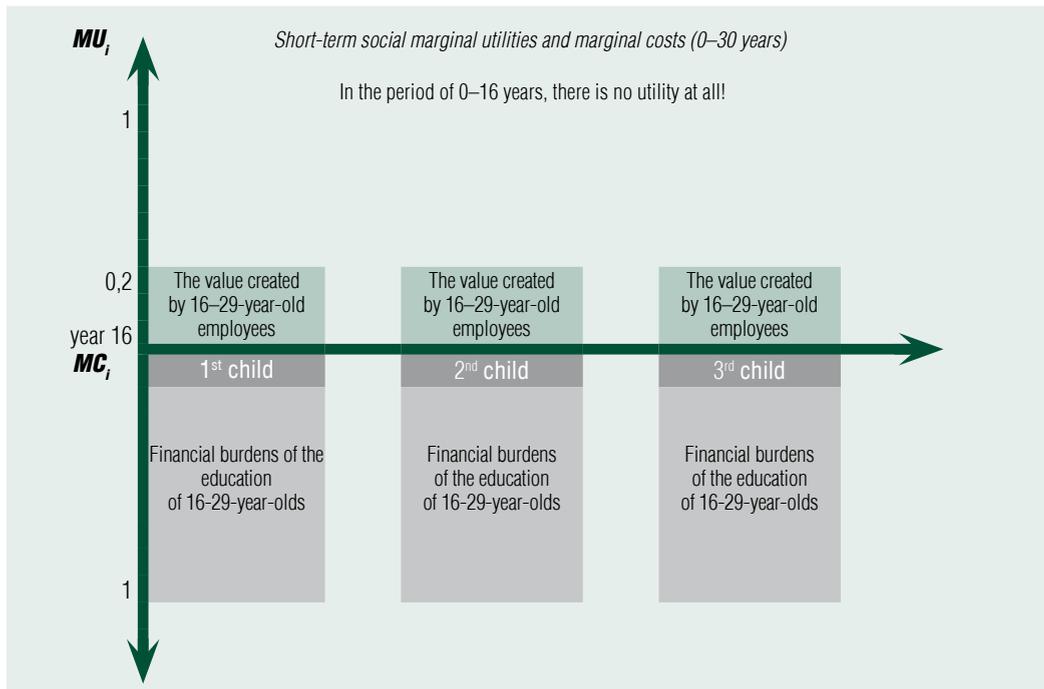
THE NATURE OF SOCIETAL UTILITIES AND COSTS

Obviously, in the first 16-18 years of a child being born, they only mean costs for the society, with no direct utilities. A very interesting example is the otherwise very collectivist Japan, where the decision of having children is considered an individual, unique

and rare decision to the extent that social security does not cover the 9 months of outpatient prenatal care or in-patient childbirth. Parents should sort this to the expense of their private insurance or cash reserves – so the Japanese public opinion. Upon turning 16-18, part of the cohort enters into the workforce, but the majority carries on with their studies. This means that their social utilities will only kick in when they turn 18-29 and finally start working. The size of this social utility is roughly the same in the case of each young person. In this age group, the social costs of child maintenance are considered as the same for each parity²³ (of course, this is a significant simplification). This situation is depicted in Fig. 3.

Figure 3

**MARGINAL UTILITIES AND MARGINAL COSTS AT THE SOCIETAL LEVEL
(1ST GENERATION)**



Source: own edited

An easily acceptable opinion is that there are extreme historical occasions, when increasing of the number of children overrides every other goal. These are the periods of war. But, even in these cases, it is true that many years elapse until a new-born (boy) becomes combat-ready. In the past, wars were quite common – rivalling clans, tribes and countries were waging wars literally on an ongoing basis. Therefore, this long-term factor deeply ingrained in societies’ value systems. However, modern age brought long peaceful periods for developed countries. This resulted in a decline in the significance of this aspect. On the other hand, four-five year election periods became generally common. Fig. 3 shows the dilemma of modern governments. For about two decades, having children results in significantly more costs for

governments representing social interests ‘by default’ than in utilities. In the meantime, it is also clear that exceptions still exist, i.e. there are still countries operating in continuous threats of war. This, at least partially, explains the economically very advanced Israel’s high female fertility (TFR = 2.92).

Apart from military aspects, politicians and the public derive children’s social utility from demographics. But, even within this, a shift in the emphasis is also present. Instead of the absolute population numbers, the focus is now on aging of the society. In their active years (31-65 years), all adult children represent the same value to the society, but after that, for the age group of 66-80-year-olds, in other words, the inactive population is entitled to pension, and also, the social costs of illnesses are also

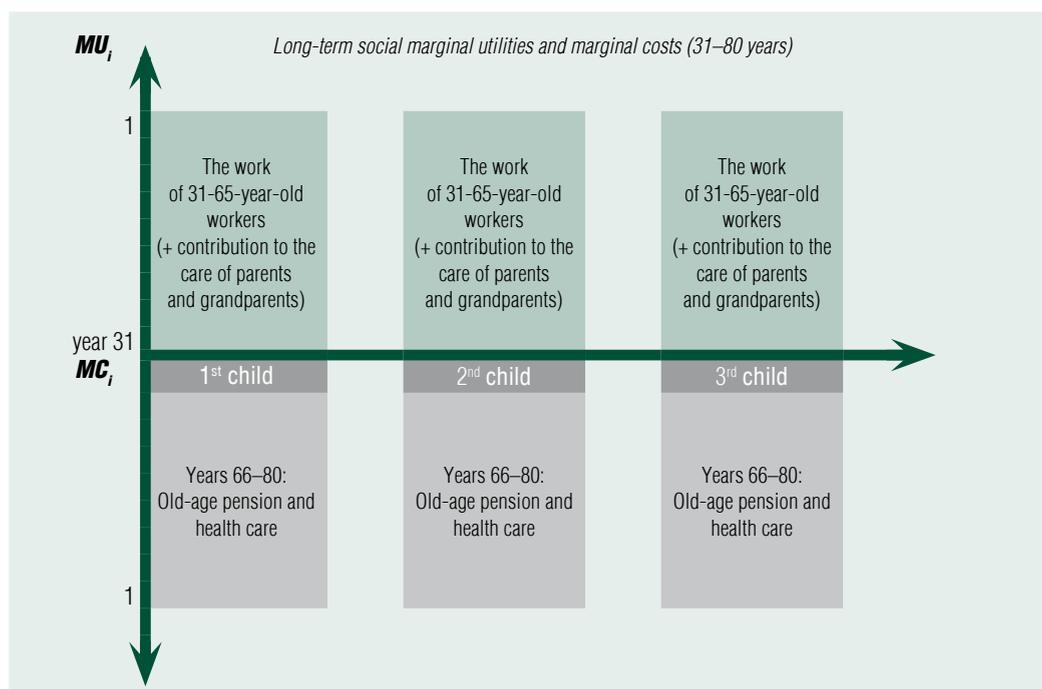
steeply increasing with age. On the other hand, social utilities of pensioners include their contribution to families in raising their grandchildren (see Fig. 4). Generally, it becomes clear that in such a long run (from the 31st year after the 1st child is born until parents' death), the social marginal utilities of each child greatly exceeds their marginal costs.

There is one more account of having children; however, its political relevance cannot be estimated today. The ecologically induced social discourse on very long-term social interests has raised the question in many of us: should we have children at all, when the ever increasing population on Earth makes natural resources more and more scarce, aggravating climate-change-induced

problems, such as potential lack of food and water, climate migration, etc. On international level, this ideology is represented by the movement called *BirthStrike*, originating from the United Kingdom.²⁴ Moreover, arguments exist (Kapelner, 2019) that economic growth will stop; therefore, the living standards of children born today will be a lot worse than ours. Our children will have to live their lives in unprecedented temperature fluctuations, draughts, and lack of food and water. If this is so, may we expose them to these ordeals by giving them life? *Dávid Mihályi* (2019) contends that the generation of today's parents should only have as many children as we can assume of, that with an environmentally aware conduct, they will decrease their carbon-

Figure 4

**MARGINAL UTILITIES AND MARGINAL COSTS AT THE SOCIETAL LEVEL
(2ND GENERATION)**



Source: own edited

dioxide emissions below today' Hungarian average, i.e. in total, the new children will not have an aggregate diverse effect on the planet's climate balance.

CONCLUSIONS

In this study, we discussed why Hungarian families rarely have a second, third and fourth child today. Applying the terms of marginal utilities and marginal costs, we concluded that the individual marginal utility of the 2nd and 3rd child is significantly less than the 1st child's marginal utility both on shorter and longer terms, while marginal costs surely remain the same for the first two decades. Regarding the 16-29-year-olds, the social marginal utility of the 2nd and 3rd child remains constant on the shorter term, but the extent thereof is insignificant. In the meantime, marginal costs are essentially the same on both shorter and longer term. Essentially, the problem is that from the families' point of view, not many arguments are for having a 2nd and 3rd child.

This *bias* – in peacetime and sustainably – cannot be offset, either by money or in-kind social allowances. Especially not, when the majority of potentially affected citizens is not even aware of the family support system, and those who know it, don't trust in its sustainability (Ignits, Kapitány, 2006) and/or deem the government's support tool unsuitable for the purpose. Concerning this latter, the latest report by the State Audit Office of Hungary (2019, p. 10) contains an important warning, calling decision-makers' attention to the fact that 76 (!) percent of interviewed young adults opine that home buying grants don't or hardly affect their willingness to have children (based on a 2017 survey of higher education students). No matter the amount the government is willing to spend on family policy support, they will only bring long-

term changes in the population policy, if the rationale of government regulation is largely identical with the stance of the scientific-professional opinion, and it is not subject of sharp political conflicts.

Slightly surprisingly, an econometric analysis prepared by Hétfa Research Institute (2019) showed that in the short run (0-3 years), the various family support systems tested in Hungary have little effect on the TFR and childbirth probability. Especially, if we consider that several government measures were 'only' good for bringing forward the time already planned first or second children conceive.²⁵ According to their calculations, a 10 percent increase of Child Tax Allowance – which would mean a significant increase in costs – would only result in an increase of the probability of having 'extra children' from 3.87 to 3.97 (supposing that the number of fertile-age women is constant).

An Unreal Dystopia

Harmonising individual and community interests has always necessitated sophisticated social mechanisms in every era. Regarding work, violence-based social conventions had prevailed for long millenniums. Later, it was replaced by paid work. Wars were partially conducted by using market mechanisms – rulers deployed mercenaries. The other possibility was the institution of mandatory conscription. Contribution to the social security system is a legal obligation in most countries. As demonstrated above, ultimately, decrease in the number of children is in direct correlation with the fact that there is no threat of war, contraception is easily available, and due to the prolonged studies of women, the first child is born later in their lives. Moreover, not having children at all is also accepted in modern societies.

Let’s think it over. In today’s circumstances, is it possible to introduce legal regulations to reverse these processes? Is it possible to think of sufficiently Draconian measures? *In abstracto*, a solution could be the ban on all modern forms of contraception and deny the possibility of higher education from women. Obviously, any government that tries this would lose the next election, or possibly be defeated by an uprising in the matter of days. If, for some reason these measures stay, the majority of women would choose to emigrate right after they completed primary school. All in all: decrease in the TFR is irreversible.

Who Benefits from a Pro-natalist Government Policy?

In Hungary, measures taken to encourage childbirth – from creating nursery places

through home-buying support policies to child tax allowances and all sorts of monetary grants – are generally popular both in the opinion of the affected families and the public. However, there is a misunderstanding here: state help is only suitable to – *ceteris paribus* – mitigate the inequalities in income and wealth resulting from having children (Gál, 2014; SAO 2019), but they are not suitable to sustainably increase fertility. As shown in *Table 1*, the Hungarian government is spending a relatively high amount on family support – significantly more than the average in the OECD.

There is a further, significant problem: the forms of family support system applied in the last 10 years were strongly *pro-rich*, which means that among families with the same number of children, families with higher income and more assets would benefit more. Hétfa Institute’s research for 2000-2014 also revealed that family policy expenditures –

Table 1

PUBLIC SPENDING ON FAMILY BENEFITS, AS A PERCENTAGE OF GDP

Country	Percentage
Sweden	3.5
United Kingdom	3.5
France	3.0
Hungary	3.0
Czech Republic	2.0
Slovakia	2.0
Poland	1.5*
Israel	1.9
USA	0.6
OECD average	2.0

Comment: Total monetary and non-monetary support. Out of the listed items, child tax allowance is not considered. This – precisely in the case of Hungary – results in a considerable underestimation.

*2014

Source: OECD: Family benefits public spending, <https://data.oecd.org/socialexp/family-benefits-public-spending.htm#indicator-chart>, downloaded on 30 June 2019.

with an average of quite low positive aggregate effects – encouraged highly educated women between the ages of 30 and 40, living in the western counties the most to have children.

The same goes for the new policies introduced on 1 July 2019. According to a new impact calculation conducted by a financial institute,²⁶ a well-situated family with a total net monthly income of 700 thousand forints, if agrees to have 4 children, buys a new property and avails 15 million forints of supported loan (CSOK), may get almost 50 million forints of non-refundable state subsidy. If a young married couple around 30 years of age agrees to have 4 children, and the husband's only income comes from public work, the wife is on maternity leave and they don't have any savings, they will not be given *any* loan or support; thus, they won't be able to buy any property, new or second-hand. Therefore, in their case, non-refundable grant will amount to 0 forints. If university students get married, agree to have two children, they don't have any own income yet, but take 10M forints of loan to buy a used home, they will get 3.2M forints of budget support. In addition, they get 2.5M

forints of grant to buy a new, *seven-seat car* – but this only means an actual support for large families with an exceptionally high income.

The Optimum Cannot Be Reached in a Closed Economy

Unlike neo-classical equilibrium models, wherein the optimisation of individual/family life strategies lead to the social optimum through the long-term yield of human capital investment spent on education, the most important conclusion of this study is that under the circumstances shown in the study, there is no equilibrium. Individually, every woman and every family 'somehow' manages to balance work and children (one form of this is the option of not having children), but the measurable, stable tendencies will not lead to a social optimum: decrease of the population and aging of the society will remain. Without massive immigration pro-natalist government policies can only change this to a slight extent, and even that, on the expense of increasing social inequalities.

NOTES

¹ I would like to say thank you for the comments regarding the first version of this article to József Banyár, Erzsébet Kovács, András Simonovics and Ágnes Szabó-Morvai, along with the anonymous referees of this journal. Declaration: I didn't receive any direct financial support from any sources for writing the study.

² It's worth mentioning that in the United States, where there is no federal-level regulation on the institution of maternity leave, the exact opposite idea has been prevailing since 2018. A bill put forth by Senator Marco Rubio and Ivanka Trump

aims that young mothers could take a 2-month paid maternity leave on the expense of their own pension time, delaying the time of eligibility. <https://www.vox.com/2018/8/6/17648462/rubio-ivanka-republican-paid-leave>

³ Here and below I will disregard other possibilities that – from the statistical cardinality point of view and each separately – are insignificant or outright negligible (miscarriages, male and female infertility, adopting, surrogate motherhood, twins, rape, baby murder, undetected pregnancies, etc.).

- ⁴ Holtzer (2012) p. 134
- ⁵ Mészáros (2012), p. 9
- ⁶ This is the so called childbirth probability, the accurate, computed value of which is 3.87. See: Hétfa Research Institute (2019).
- ⁷ The study of Goldin, Katz (2002) demonstrates the special reasons why this causal correlation had been especially strong in the United States from the mid-1960s. On one hand, propagation of oral contraceptives was significantly facilitated by the fact that the age of majority was lowered to 18 years (which meant that parental consent was no longer needed), on the other hand, by this time, a significant expansion of higher education capacities took place, the positive impacts of which were mostly leveraged by boys until then. Then, just like in so many other fields, the exemplary effects of the American lifestyle prevailed in every other country of the developed world.
- ⁸ The likelihood of a 20-year old woman having a baby with a Down syndrome is 1 to 525, while this chance is 1 to 65 in the case of a 40-year old woman. <https://www.womenshealthmag.com/health/a21563046/best-age-to-have-a-baby/>
- ⁹ Also, in many cases, men and women seeking a long-term relationship while living alone will never get to the situation that would reveal whether there is a medical limitation to their fertility. It is a fact that between 2001 and 2011, the proportion of 41 to 45 year old Hungarian childless women showed an increase from 7.8 percent to 11.2 percent. As an extreme example, it is worth mentioning that this problem is present even stronger in Japan, a country lot richer than Hungary: in 2015, 24.6 percent of 18-39 year old women had never had any heterosexual relation, while this number was 25.8 percent of men in the same age group. Ghaznavi and co. (2019)
- ¹⁰ The ideal number of children in 2016 would be 2.2 for both men and women, while the planned number of children is an average 2.0 for women, and 1.9 for men.
- ¹¹ Spéder, Kapitány (2007). Out of the latest discourses, see State Audit Office of Hungary (2019), KINCS (2019), Koncz (2019).
- ¹² Kornai (1971) p. 214
- ¹³ In biology, this is called non-random based mate selection, or homogamy. The expression used in social sciences is *assortative mating*. See: Mihályi, Szelényi (2016).
- ¹⁴ The three-year long maternity leave in Hungary was introduced in 1967. The public was told that it was designed to encourage having children. This myth still exists today (State Audit Office of Hungary, 2019, p. 5). Only a few insiders knew that in fact, this measure was part of the 1968 economic reform. Namely, the government assumed that in the wake of the pro-market reforms, firms will make masses of uneducated, young women redundant, and having children earlier would mean an immediate safe haven for them.
- ¹⁵ See Kornai (1971). Sub-chapters 9.3, 10.4, 13.4, 14.6. About the significance of the two different types of decisions, see Mihályi (2013).
- ¹⁶ Of course, the assertion can be reversed: individuals without children will bear huge short- and long-term drawbacks (disutilities).
- ¹⁷ In several cultures, boys are deemed more valuable than girls – this contortion still exist in Hungary today, but only with a marginal significance.
- ¹⁸ Németh (2016, 2017) also introduces a model with similarly decreasing marginal utility.

- ¹⁹ The risk of divorce is significant, and – even if not expressed in the language of demographic categories – people are fully aware of this. In 2016, almost 30 percent of families with children meant that a single parent raised the children. In 24 percent of such families, these single parents raised two, and in 7 percent, three or more kids. Raising kids as a single parent is mostly done by mothers. Their proportion is 86 percent of all single-parent families.
- ²⁰ In reference to the 2016 population census of the HCSO (2019), p. 207
- ²¹ Hétfa Research Institute (2019)
- ²² If the child will have her children in Hungary, which is not to be taken for granted these days.
- ²³ Professional term for live birth sequence.
- ²⁴ Wynes, Kimberly (2017) opines that if 1 less child was born in each developed country, that would mean 20 times of the CO2 emission decrease than the decrease that would result in a total ban on the use of vehicles for a year in the developing countries.
- ²⁵ See Berde, Kovács (2016) and the findings of Hétfa Research Institute (2019), of the latest discourse.
- ²⁶ The calculations of City Hitelbróker Kft. are available in the magazine HVG 2019, 27 June, (pp. 6-10)

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