

Radó Márta¹

The short term and the long term effect of fertility on subjective well-being in Hungary

Extended abstract

Extended abstract prepared for European Population Conference 2016

Draft and incomplete – Please do not cite without authors' permission

Abstract:

This paper aims to answer to how fertility affects subjective well-being in the short run and in longer run as well. This issue have received considerable interest from policy makers who are concerned about the declining fertility rate. Although, growing number of international studies have analyzed how fertility affect the individual's well-being in the short run, there is still a vacant scholarship about the long term effects. However, extending the research to a longer lifespan would enable us to gain deeper understanding of motivations for having a child.

This analysis is based on the dataset of the Turning Points of Life Course program (Hungarian GGS), which is a longitudinal research program (between 2001, 2004 and 2012).

Since the effect of fertility mainly measured by observational data, ruling out confounding variables plays a key role in the analysis. In case of the short term effect matching method is applied on the longitudinal data. However, this method cannot be employed for estimating long term effect due to the absence of sufficiently long longitudinal dataset. Therefore, this paper uses a random proxy variable to overcome the methodological challenges, namely, the gender of the child. This variable captures the quality of the relationship between child and elderly parents (based on *gender socialization*, *social support*, and *normative expectations theories*) instead of the quantity of children. Female children tend to provide more support for the elderly parents than males; thus, the gender of the children is a good proxy for having a grateful child.

Broadly speaking, the present paper has found that fertility initially increases the subjective well-being in a large extent; however, this effect decline with time. Moreover, the analysis of the long term effect of fertility has shown that children may become a new source of subjective well-being as the parents get older.

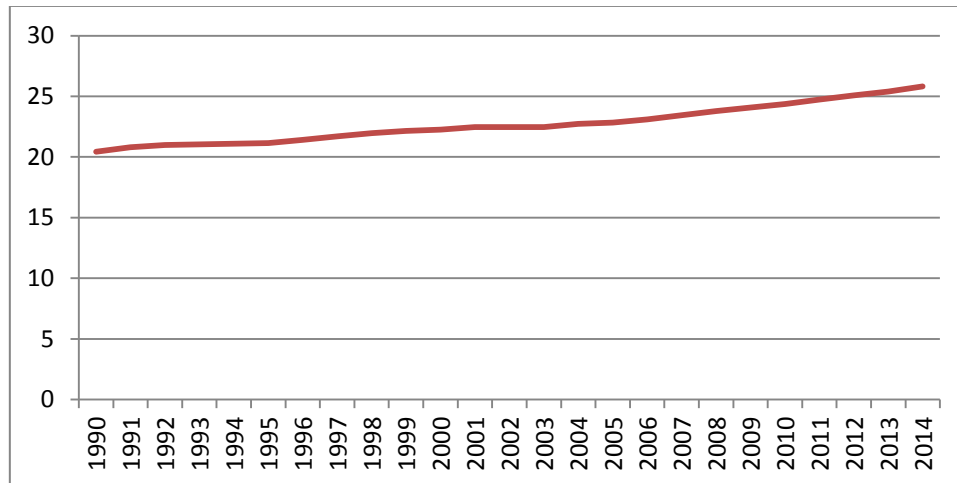
Keywords: fertility, matching, subjective well-being, natural experiment

¹ PhD student at the Corvinus University of Budapest, Research assistant at the Hungarian Academy of Science

1 Introduction

My paper focuses on Hungary where population aging is an ongoing problem. In this country the fertility rate is decreasing for more than 30 years, whereas the life expectancy has risen from 70 to 75 in the last 20 years (World Bank 2015). Figure 1 shows how the age dependency ratio has changed in Hungary between 1990 and 2014. This measurement is defined as the ratio of older people (those who are older than 64) to the working-age people (those who are between 15 and 64). As this graph shows this indicator has increased by 6 percent points in the last 25 years which indicates a dynamic aging.

Figure 1. Age dependency ratio in Hungary between 1990 and 2014²



This paper aims to reveal certain micro mechanisms, which are underlying macro level demographic phenomena. Therefore, the effects of fertility is examined on the individual level. By doing this one can understand more the individual level reasons and motivations which trigger macro changes, namely, the declining fertility rate.

Consequently, the following two research questions will be posed in this paper:

- (1) How does fertility affect subjective well-being in the short run?³
- (2) How does fertility affect subjective well-being in the long run?⁴

2 Background

McLanahan and Adams (1987) have argued that the effect of fertility on subjective well-being may change over the life course. In line with this theory, the present paper would like to observe both the short term effect and the long term effects as well. Firstly, let me briefly review the theories about the effect of fertility.

First of all, *evolutionary theory* explains the effect of fertility in a universal way. This theory does not recognize that the effect of fertility changes with age. Evolutionary biology says that all humans have evolved a predisposition towards childbearing, thus, having a child is always a positive event in the individual's life. As a result, this theory argues that fertility always raises the subjective well-being. (Foster 2000, Rodgers et al. 2001). In contrast, other non-universal theories provide rather differentiated explanations for the effect of fertility.

² Data source: World Bank 2015, own elaboration

³ 12 years after the born of the children

⁴ After the parents' retirement

Based on the *value of children theory*, children can fill different parental needs. Hoffmann and Hoffmann (1973) have proposed several functions how children can modify the parental satisfaction. For example, they have mentioned such a functions as strengthening primary group ties, entertaining, expanding the self, creating social identity, providing the sense of achievement, ensuring economic utility or giving advantages in social comparison. Nonetheless, the importance of these functions may differ among social groups and situations. In other words, the *value of children theory* already differentiates between social groups and situations regarding the effect of fertility.

However, psychologists have also drawn attention to the negative side effects of having children. It has been recognized that fertility increases financial-related stress (Zimmerman and Easterlin 2006, Stanca 2009), decreases leisure time (Sanchez and Thomson 1997), decreases the quality of partnership (Lavee et al. 1996), sometimes it weakens psychological well-being (McLanahan and Adams 1987). Furthermore, fertility often worsens the mothers' labor market position (Becker 1993, Even 1987, Joesch 1994, Ranson 1998). Studies have shown that not only the value of the children changes over the life course but also the cost of the children. Nonetheless, Baranowska (2010) argues that the costs are usually higher in the beginning of parenthood and decrease over time.

2.1. Short term effect of fertility

Empirical results are inconsistent about the effect of fertility on subjective well-being in the short run. Some studies have found positive effect (Kohler et al. 2005, Baranowska and Matysiak 2011), and some have found non-significant effect (Clark and Oswald 2002, Angeles 2009) and in certain cases fertility can have even negative effect (Clark et al. 2008). Moreover, some studies analyzed how the effect of fertility changes over time. Mainly these studies have found that fertility has a positive initial effect, which later on decreases (Clark et al. 2008, Keizer et al. 2010, Pouwels 2011, Myrskylä and Margolis 2014, Pollmann-Schult 2014).

International studies have applied several methodologies in order to estimate the short term causal effect of fertility on subjective well-being in the short run, which include regressions adjustment (Clark and Oswald 2002, Myrskylä and Margolis 2014, Pollmann-Schult 2014, Keizer et al. 2010) matching methods (Arpino and Aassve 2009, Sironi and Billari 2013), and instrumental variable methods (Mu and Xie 2014, Conzo et al. 2015). Also several studies could already rely on longitudinal data (Arpino and Aassve 2009, Clark and Oswald 2002, Myrskylä and Margolis 2014, Pollmann-Schult 2014, Keizer et al. 2010, Sironi and Billari 2013), which also improves the estimation of causality in a large extent compare to cross-sectional studies. Longitudinal data makes it possible to control for variable before having a child; and moreover, it also enables us to control for time-invariant variables (More about this in the methodological chapter). This paper is based on the Arpino and Aassve's (2009) approach to estimate the effect of fertility, namely, matching method on a longitudinal dataset.

In Hungary no research project aimed at evaluating the overall effect of fertility on subjective well-being so far. However, there have been some studies which observed correlations. For example, Molnár and Kapitány (2013) have found that people on parental leave have significantly higher subjective well-being than the rest of the population. Furthermore, Molnár and Kapitány (2006) have pointed out that fertility is negatively associated with the satisfaction with income. However, in case of these studies drawing causal conclusion is not possible since confounding variables are not ruled out properly.

2.2. Long term effect of fertility

Retirement of the parents may influence the relationship between children and parents; as a result, children may have new functions to serve the elderly parents' subjective well-being. Based on the life course theory, work and family spheres are interdependent, and consequently, change in one sphere can influence the other sphere as well. Therefore, retirement is not only a turning point in the individual's own life course but it may affect the life of his or her relatives as well. In other words, children-parents contract is not stable through the life course and such an event as the parents' retirement modifies this contract to a large extent. For example, Szinovacz and Davey (2001) have pointed out that the frequency of visits changes after the parents' retirement. They have found that after retirement mothers' visits tend to decrease, whereas father's visits tend to increase in those cases when children living within 10 miles. However, they found no significant effect on the telephone calls. Further, Townsend-Battenhas (2002) has observed that how the geographic distance between the elderly parents and adult children is associated with increasing contact through IT technics.

In order to understand the declining fertility rate one needs to observe a wide range of possible motivation behind having children. There are two competing theories which describe why someone has a child. The first one says that parents are altruistic toward their children, in other words, children are considered as *consumption good*. (Becker and Barro 1988, Barro and Becker 1989) The other theory argues that children are considered as *investment in old age security*. (Leibenstein 1957, Neher 1971, Caldwell 1978, Caldwell 1982, Cain 1981, Boldrin and Jones 2002) Several studies have tested the old age security motives; however, this research projects mainly focused on financial well-being of the elderlies (Billari and Glasso 2014). However, financial position is only one dimension of well-being. Other studies pointed out that social relationships, especially strong ties such as family, increase the quality of life in old age. (Lennartson 1999 Netuveli et al. 2006) Therefore, observing subjective well-being instead of economic status may be beneficial since it can cover a wider definition of investment in old age, particularly since it can capture non-market transfers as well.

Recently, a growing number of research projects deal with how fertility affects subjective well-being in the short-run (similar to the first chapter of the dissertation). However, the longest period have been considered by a longitudinal study was 18 year after the birth of the children (Myrskylä and Margolis 2014). Cross-sectional studies or longitudinal studies which consider only old age cannot rule out confounding variables. In other words these studies cannot distinguish whether the children increase the subjective well-being at the old age or those people had children who have higher subjective well-being in the first place. For estimating causality, ideally, one would need to have access to a longitudinal study which contains information both before the individual had a child (hence fore this time is referred as t_1) and after this individual retired (hence fore this time is referred as t_2) as well. In this way differences due to confounding variables in t_1 can be controlled for, which ensures that parents and childless people do not differ from each other. After ruling out the possible confounding variables, simple difference in subjective well-being can be observed between parents and childless people in t_2 . However, this ideal case would require a longitudinal study which embraces 40 years. Such a study has never been made yet (in comparison the British Household research has 25 years so far). This means that research on the joint effect of fertility and retirement is basically non-existent.

Due to methodological concerns, this paper will apply proxies for estimating the long term effect of fertility. The basic idea is that I attempt to capture the quality of the relationship between the adult child and the elderly parents instead of trying to measure the quantity of the

children. Namely, this paper analyzes how the gender of the children affects subjective well-being. This would be a solution for the methodological concerns of estimating long term effect of fertility, since the gender of the child is a random variable; therefore, no systematic difference can be traced between those who had a boy and those who had a girl.

As the *gender socialization, social support, and normative expectations theories* argue, one could expect that elderly parents benefit more from having a daughter than having a son in terms of caregiving. Adult females tend to keep more frequent and closer contact with the elderly parents (Dykstra and Fokkema 2011, Silverstein and Bengtson 1997, Sutor and Pillemer 2006), they provide more care giving for the elderly parents (Dwyer and Coward 1991, Stone et al. 1987, Pushkar Gold et al. 1994, Brody et al. 1990, Horowitz 1985) and they are less willing to institutionalize elderly parents (Zhan et al. 2006). Moreover, Atchley (1999) has argued that since daughters have closer relationship with the parents; therefore, they may pursue more meaningful activities with the elderly parents which are important in maintaining a sense of self in retirement. Hungarian research projects have also pointed out that female adults tend to take care more of their elderly parents than males (Hungarian Central Statistical Office 2010). However, in terms of financial transfers the case is not that simple. Pursuing the logic of Trivers–Willard model, males are more beneficial financially for the parents when conditions are good and females are better when conditions are poor since low status females have better marriage prospects than their brothers. (Cronk 2007)

To sum up, based on the literature having a girl over having a boy is a better investment in old age security in terms of receiving social support. Therefore, the rate of girl offspring can be a good proxy of having a grateful child who provides caregiving for the elderly parents.

3. Data and methods

3.1. Data

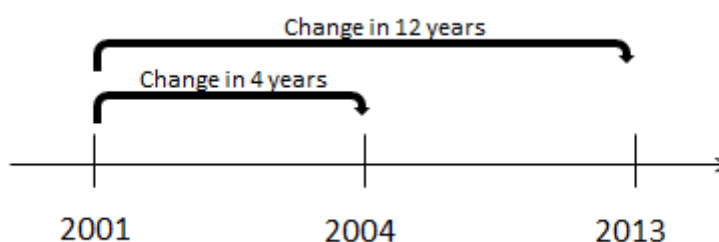
In short, my research is based on the dataset of the *Turning Points of Life Course* program (Hungarian GGS⁵), which was a longitudinal research done by the Hungarian Central Statistical Office. The first wave has been collected in 2001, the second in 2004, the third in 2008 and the fourth in 2012. Overall, 16363 people responded in the first wave, 13540 in the second wave, 11769 in the third wave and 12443 in the fourth wave. However, between the first and the fourth waves 8263 people have dropped out from the panel due to different reasons (e.g. 1244 people died and 3300 people denied to respond). Therefore, in the third wave and in the fourth wave supplementary sample was taken to boost the sample size.

In my dataset the outcome variable, subjective well-being, is measured in the first (2001), second (2004) and fourth (2013) waves with the following question: “On an eleven point scale how satisfied are you with the story of your life so far?” The outcome variable⁶ is the change in subjective well-being between the first (2001) and the second (2004) waves and between the first (2001) and the fourth (2013) waves. Thus change in a four-year period and change in a twelve-year period is observed.

⁵More about GGS in Vikat et al. (2007)

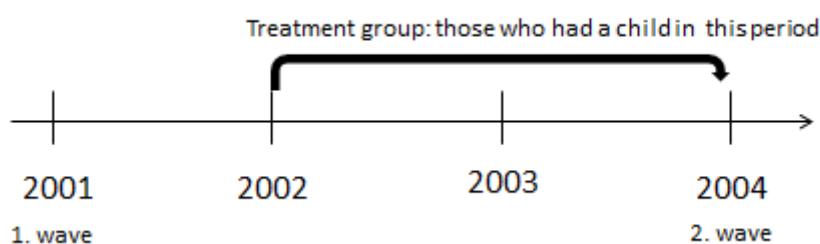
⁶ Henceforth, change in subjective well-being will be indicated as subjective well-being for the sake of simplicity.

Figure 2. Observed changes in subjective well-being



In case of the short term effect of fertility, the treatment variable is whether the respondent had a child between 2002 and 2004. One can identify those who had a child in this period by considering the child's year of birth in the second wave (2004). I only include to the analysis those who had a child between 2002 and 2004 (and not between the first two waves) in order to rule out the *anticipation effect*. *Anticipation effect* refers to the phenomenon that fertility increases the subjective well-being even before the birth of the child. For those who had child between 2001 and 2002, it would be misleading to compare the subjective well-being in the first wave (2001) with the subjective well-being in the second wave (2004), because the first measurement of subjective well-being would not be independent from the fact that that time the respondent already expects a baby.

Figure 3. Measuring fertility as a treatment variable



In the second research question I analyze the long term effect of fertility. First, I observe how many female and how many male children the respondent have. Also I separate the children who are living together with the respondent and those who live apart.

I control for age, partnership status, income, education, settlement type, employment status, sex, health status and attitudes about

3.2. Methods

A causal conclusion would theoretically require the comparison of individual's subjective well-being in case of having a child and in case of not having a child. Let Y_i denote subjective well-being for a given individual i and J denote a binary variable about life-cycle groups which would take 0 if the individual is not in the observed life stage and 1 if the individual is in that given life stage. To investigate life-cycle effects, we need to determine the extent to which the subjective well-being of an individual i with a child ($j = 1$) would differ if she/he had not got any child ($j = 0$). Let me denote the difference between the two subjective well-beings by Δ_i^k (Kézdi 2004).

Given that any one individual can only have or not have a child at any one time, this type of comparison is not possible in practice. Econometricists refer to this phenomenon as an identification problem. Although Δ_i^k is not identified, the expected value of this change can actually be determined (Kézdi 2004). The experimental design can be used to estimate the expected value $E[\Delta_j^k]$, which signifies the extent to which the subjective well-being of an individual with a child(ren) would change if this person did not have a child (*average effect of the treatment on the treated*). The expected value $E[\Delta_j^k]$ is estimated by the difference

$$E[\Delta_j^k] = E(Y_{0i}) - E(Y_{1i})$$

In case of the long term effect, I use a random variable as a proxy; therefore, a simple difference in the mean provides the estimation. However, oftentimes the above procedure is not feasible or simply not beneficial, despite the numerous advantageous properties of experiments. The first research question represents exactly this type of case. Researchers must not arbitrarily decide who should give birth and who should not. Therefore we cannot use experiments to examine child effects, but observational data only (Ho et al. 2007).

As regards observational data, however, the treatment and control groups fundamentally differ from one another, that is, J_i being a non-random variable, the individuals who have a child ($j = 1$) systematically differ from the individuals who have not ($j = 0$). For observational data, therefore, the effect cannot be estimated by simply comparing the mean of the control group with that of the treatment group, as was the case with our imaginary experimental design above. With regard to the present study, the individuals with a child(ren) differ from individuals without a child (e.g. have a different level of education), and therefore the difference between their respective subjective well-being is not solely determined by having a child or not. The present study employs a combination of matching and regression adjustments to make causal inferences.

Matching methods offer an opportunity to use statistical means to produce the best possible approximation of the experimental arrangement using observational data. The method entails matching each treated individual with one or more non-treated individuals who is/are similar to the given treated individual in all aspects except for the treatment itself. In other words, the initial database is reduced to a database in which the control and treatment groups are similar on all observable variables. The expected value $E[\Delta_j^k]$ is reproduced by comparing the outcome variables within the matched pairs.

Finally, this paper apply matching methods on longitudinal data. The longitudinal design gives an opportunity to apply pre-post treatment settings which has the following advantages: First of all, (1) it is possible to use only those covariates (X_{it}) which are measured before the exposure to the treatment; therefore, these covariates are less likely affected by the treatment. Secondly, (2) lagged value of the outcome variable also can be involved in the matching procedure, which further increase the balance between the treated and the control group. Finally, longitudinal design makes it possible to (3) define the dependent variable as the difference between the levels of the outcome after and before the treatment ($Y_{it_2} - Y_{it_1}$). To sum up, Arpino and Aassve (2013) suggest that individuals in the treatment group should be matched with individuals in the control group having similar values (including the outcome variable itself before the treatment), and their changes in outcomes should be compared. Based on their argument this method would improve the robustness of the matching method through elimination of possible time-invariant unobservable variables.

4 Preliminary results

Firstly, I have observed how fertility affects subjective well-being in the short run. Two periods were observed; 4 years after the birth of the children and 12 years after the birth of the children. The raw model aims to capture correlation between fertility and subjective well-being. And the matched model refers to the analysis which is conducted on the matched dataset. The latter model already controls for confounding variables and it aims to estimate causality between fertility and subjective well-being. As Table 1 indicates fertility has positive effect in the first 4 year and non-significant effect in 12 years based on the raw data. While the later model also shows significant strong increase in subjective well-being due to fertility, but this model also shows significant effect even 12 years after the birth of the child.

Table 1: Fertility in the Raw and Controlled Data (Regression Coefficients and Significance⁷)

| | 4 years after the birth of the children | 12 years after the birth of the children |
|---------------|---|--|
| Raw model | 0.58 *** | 0.14 |
| Matched model | 0.63 *** | 0.28 * |

The long term effect of fertility is based on a proxy variable which captures the quality of the relationship between the adult children and elderly parents thru the gender of the children. (More about this in the Background chapter.)

Firstly, I have found that the number of the daughter has no significant effect on subjective well-being at old age. However, it make sense to reduce the analysis for those children who are living apart from the parents since in Hungary living together with the elderly parents are usually considered as a constrain. I have found that the number of daughter who living apart from the parents has significant effect even after controlling for the total number of children and the number of the sons who are not living apart from the parents (See in Table 2).

Table 2 Gender of the children who are living apart from the parents effects on change in subjective well-being (Regression Coefficients and Significance⁸)

⁷ *: significant difference at the 90% confidence level

** : significant difference at the 95% confidence level

*** significant difference at the 99% confidence level

⁸ *: significant difference at the 90% confidence level

| | Model 1 | Model 2 |
|---|----------|---------|
| Number of daughters not living together | 0.89 *** | 0.97** |
| Number of son not living together | | 0.25 |
| Number of all children | | -0.56 |

This result indicates that children may be a new source of subjective well-being as the parents get older.

Reference List:

Angeles L. (2009) Children and Life Satisfaction, *Journal of Happiness Studies* 11(4): 523- 538.

Arpino, B. and Aassve, A. (2009) Estimating the Causal Effect of Fertility on Economic Wellbeing: data requirements, identifying assumptions and estimation methods, *Empirical Economics* 44:355–385

Balbo, N. and Arpino, B. (2014) The Role of Family Orientations in Shaping the Effect of Fertility on Subjective Well-being, *Collegio Carlo Alberto*, Internet Access: <http://www.carloalberto.org/assets/working-papers/no.365.pdf> (Downloaded 12.10.2015)

Baranowska, A. (2010) Family Formation and Subjective Well-being. A Literature Overview, Working Paper, Instytut Statystyki i Demografii SGH, Internet Access: https://ssl-kolegia.sgh.waw.pl/pl/KAE/struktura/ISiD/publikacje/Documents/Working_Paper/ISID_WP_5_2010.pdf (Downloaded 12.10.2015)

Baranowska, A. and Matysiak, A. (2011) Does Parenthood Increase Happiness? Evidence from Poland, *Vienna Yearbook of Population Research* 9: 307-325

Barro, R. J. and Becker, G. S. (1989) Fertility Choice in a Model of Economic Growth, *Econometrica*, 57 (2): 481-501.

Becker, G. S. and Barro, R. J. (1988) A Reformulation of the Economic Theory of Fertility, *Quarterly Journal of Economics*, 103 (1): 1-25.

Becker, G. S. and Gregg, L. H. (1973) On the Interaction between the Quantity and Quality of Children, *The Journal of Political Economy* 81(2): 279-288.

Billari, F.C. and Galasso, V. (2014) Fertility Decisions and Pension Reforms. Evidence from natural experiments in Ital, *IdEP Economic Papers*

Boldrin, M., De Nardi, M. and Jones, L. (2005) Fertility and Social Security, NBER w.p. 11146

** : significant difference at the 95% confidence level

*** significant difference at the 99% confidence level

- Brody, E. M., Dempsey, M. P. and Pruchno, R. (1990) Mental Health of Sons and Daughters of the Institutionalized Aged. *The Gerontologist*, 30, 212–219. doi:10.1093/geront/30.2.212.
- Cain, M. (1981) Risk and Insurance: Perspectives on Fertility and Agrarian Change in India and Bangladesh, *Population and Development Review*, 7: 435-474.
- Caldwell, J.C. (1982) *Theory of Fertility Decline*, New York: Academic Press.
- Caldwell, J.C. (1978) A Theory of Fertility: From High Plateau to Destabilization, *Population and Development Review*, 4: 553-577.
- Clark, A. E. and Oswald, A. J. (2002) Well-being in Panels, Working Paper, University of Warwick, United Kingdom
- Conzo, P., Fouchi, G. and Mencarini, L. (2015) Fertility and Life Satisfaction in Rural Ethiopia, Collegio Carlo Alberto, Internet Access: <http://www.carloalberto.org/assets/working-papers/no.417.pdf> (Downloaded 12.10.2015)
- Cronk, L. (2007) Boy or Girl: Gender Preferences from a Darwinian Point of View, *Reproductive BioMedicine Online*, 15 (2): 23-32. Internet Access: <http://anthro.rutgers.edu/downloads/faculty/275-rb2854-cronk/file> (Downloaded 12.10.2015)
- Diamond, A. and Sekhon, J. S. (2012) Genetic Matching for Estimating Causal Effects: A General Multivariate Matching Method for Achieving Balance in Observational Studies, *Review of Economics and Statistics*, Internet Access: <http://sekhon.berkeley.edu/papers/GenMatch.pdf> (Downloaded: 02.02.2014)
- Dwyer, J. W., and Coward, R. T. (1991) A Multivariate Comparison of the Involvement of Adult Sons versus Adult Daughters in the Care of Impaired Parents, *Journal of Gerontology: Social Sciences*, 46: 259– 269.
- Dykstra, P. A., and Fokkema, T. (2011) Relationships Between Parents and Their Adult Children: A West European Typology of Late-Life Families, *Ageing and Society*, 31: 545–569. doi:10.1017/ S0144686X10001108.
- Foster, C. (2000) The Limits to Low Fertility: A Biosocial Approach Source, *Population and Development Review* 26(2): 209-234.
- Ho, D.E., Imai, K., King, G., Stuart, E.A. (2007) Matching as Nonparametric Preprocessing for Reducing Model Dependence in Parametric Causal Inference, *Political analysis*, 15(3): 199– 236.
- Hoffman, L.W., and Hoffman, M. L. T. (1973) *The Value of Children to Parents*. In J.T. Fawcett Eds. *Psychological perspectives on population*. New York: Basic Books
- Horowitz, A. (1985) Sons and Daughters as Caregivers to Older Parents: Differences in Role Performance and Consequences, *The Gerontologist*, 25: 612–617. doi:10.1093/geront/25.6.612.
- Hungarian Central Statistical Office (2001) *Életünk Fordulópontjai (Társadalmi Demográfiai Panelfelvétel) 1. hullám*, Internet Access: http://www.demografia.hu/letoltes/dpa/Kerd_1hull.pdf (Downloaded: 10.10.2015)
- Hungarian Central Statistical Office (2004) *Életünk Fordulópontjai (Társadalmi Demográfiai Panelfelvétel) 2. hullám*, Internet Access: http://www.demografia.hu/letoltes/dpa/Kerd_2hull.pdf (Downloaded: 10.10.2015)
- Hungarian Central Statistical Office (2008) *Életünk Fordulópontjai (Társadalmi Demográfiai Panelfelvétel) 3. hullám*, Internet Access: http://www.demografia.hu/letoltes/dpa/Kerd_3hull.pdf (Downloaded: 10.10.2015)
- Hungarian Central Statistical Office (2010) *Munkavégzés és Családi Kööttségek*, Internet Access: <https://www.ksh.hu/docs/hun/xftp/idoszaki/pdf/munkavegzescsalad.pdf> (Downloaded: 10.10.2015)
- Keizer, R., Dykstra, P.A. and Poortman, A.R. (2010) The Transition to Parenthood and Well-being: The impact of Partner Status and Work Hour Transitions, *Journal of Family Psychology*, 4: 429-438.

- Kézdi, G. (2004) Az Aktív Foglalkoztatáspolitikai Programok Hatásvizsgálatának Módszertani Kérdései. Budapesti Munkagazdasági Füzetek, BWP, 2004/2. Internet Access: <http://mek.oszk.hu/02300/02343/02343.pdf> (Downloaded: 09.10.2014)
- Kohler, H.,P., Behrman, J.R. and Skytthe, A. (2005) Partner + Children = Happiness? An Assessment of the Effect of Fertility and Partnerships on Subjective Well-being in Danish Twins, *Population and Development Review* 31(3): 407-445.
- Lavee, Y., Sharlin, S. and Katz, R. (1996) The Effect of Parenting Stress on Marital Quality: an Integrated Mother-Father Model, *Journal of Family Issues* 17(1): 114-135.
- Leibenstein, H. (1957) *Economic Backwardness and Economic Growth*, New York: John Wiley
- Lennartson, C. (1999) Social Ties and Health Among the Very Old in Sweden, *Research on Aging* 21: 657-681.
- Margolis, R. and Myrskylä, M. (2010) A Global Perspective on Happiness and Fertility, MPIDR Working Papers WP-2010-025, Max Planck Institute for Demographic Research, Rostock, Germany
- McLanahan, S. and Adams, J. (1987) Parenthood and Psychological Well-being. *Annual Review of Sociology* 13(5): 237-257.
- Molnár, Gy. and Kapitány, Zs. (2006) Mobilitás, Bizonytalanság és Szubjektív Jólét Magyarországon. *Közgazdasági Szemle*, 53(10): 845—872.
- Molnár, Gy., and Kapitány, Zs. (2013) Miért Elégedetlenek Annyira a Magyarok az Életükkel?, Discussion Paper, Hungarian Academy of Science, Internet Access: <http://econ.core.hu/file/download/mtdp/MTDP1347.pdf> (Downloaded 12.10.2015)
- Mu, Z. and Xie, Y. (2014) Motherhood Penalty and Fatherhood Premium: Fertility Effect on Parents in China, *Population Studies Center, Research Report*, Internet Access: <http://www.psc.isr.umich.edu/pubs/pdf/rr14-825.pdf> (Downloaded 11.10.2015)
- Neher, P.A. (1971) Peasants, Procreation, and Pensions, *American Economic Review*, 61: 380-389.
- Netuveli, G, Hildon, Z., Montgomery, S., Wiggins, R. and Blane, D. (2006) Quality of Life at Older Ages: Evidence from English Longitudinal Study of Ageing. *Journal of Epidemiology and Community Health* 2006;60:357-363.
- Pollmann-Shult, M. (2014) Parenthood and Life Satisfaction: Why Don't Children Make People Happy?. *Journal of Marriage and Family*, 76: 319–336.
- Pouwels, B. J. (2011) *Work, Family and Happiness: Essays on Interdependencies Within Families, Life Event and Time Allocation Decisions*. PhD Dissertation, Utrecht University.
- Pushkar G. D., Franz, E., Reis, M., and Senneville, C. (1994) The Influence of Emotional Awareness and Expressiveness on Caregiving Burden and Health in Women and Men, *Sex Roles*, 31: 205–224. doi:10.1007/BF01547715.
- Ranson, G. (1998) Education, Work and Family Decision Making: Finding the Right Time to Have a Baby, *The Canadian Review of Sociology and Anthropology* 35(4): 517-533.
- Rodgers, J. L., Kohler, H.P., Kyvik, K. and Christensen K. (2001) Behavior Genetic Modeling of Human Fertility: Findings from a contemporary Danish twin study, *Demography* 38(1): 29-42.
- Sanchez, L. and Thomson, E. (1997) Becoming Mothers and Fathers: Parenthood and the Division of Labor, *Gender and Society* 11 (6): 747-772.
- Silverstein, M., and Bengtson, V. L. (1997) Intergenerational Solidarity and the Structure of Adult Child-Parent

Relationships in American Families. *American Journal of Sociology*, 103: 429–460.

Siron E., and Billari, F.C. (2013) Do Union Formation and Childbearing Improve Subjective Well-being? An Application of Propensity Score Matching to a Bulgarian Panel, [Advances in Theoretical and Applied Statistics, Studies in Theoretical and Applied Statistics](#), 351-360

Stanca, L. (2009) Suffer the Little Children: Measuring the Effects of Parenthood on Well-being Worldwide, Department of Economics Working Papers 173. Milano: University of Milano-Bicocca

Stone, R., Cafferata, G. L., and Sangl, J. A. (1987) *Caregivers of the Frail Elderly: A National Profile*, Rockville, MD: U.S. Department of Health and Human Services, Public Health Service, National Center for Health Services Research and Health Care Technology Assessment.

Suitor, J. J., and Pillemer, K. (2006) Choosing Daughters: Exploring Why Mothers favor Adult Daughters over Sons, *Sociological Perspectives*, 49, 139–160. doi:10.1525/sop.2006.49.2.139.

Thomas, W. I. and Thomas, D. S. (1928) *The Child in America: Behavior Problems and Programs*. New York: Alfred A. Knopf.

Townsend-Batten B. (2002) Staying in Touch: Contact Between Adults and Their Parents, *Statistics Canada — Catalogue*, 11-008

Turley, L. R. N. (2003) Are Children of Young Mothers Disadvantaged Because of Their Mother's Age or Family Background? *Child Development* 74 (2): 465-474.

Wooldridge, J. (2009) *Introductory Econometrics: A Modern Approach*, 4th Edition, South-Western Learning

Zhan, H. J., Liu, G., and Guan, X. (2006) Willingness and Availability: Explaining New Attitudes Toward Institutional Elder Care Among Chinese Elderly Parents and Their Adult Children, *Journal of Aging Studies*, 20, 279–290. doi:10.1016/j.jaging.2005.09.006.