

ANALYSIS OF THE FISCAL AND SOCIO-ECONOMIC IMPACT OF THE SOCIAL NATIONAL IVF PROGRAM IN ROMANIA: A GENERATIONAL ACCOUNTING MODEL

Ancuceanu R.

Carol Davila University of Medicine and Pharmacy,
Bucharest, Romania



INTRODUCTION

Romania recorded its lowest fertility rate in 2002 and has continued to have relatively low fertility rates since then¹⁻⁵, in line with a tendency manifested in many countries nowadays⁶⁻⁷. The Romanian Gov. runs a national program with vouchers for IVF⁸.

This **GENERATIONAL ACCOUNTING MODEL** evaluates to what extent are the costs associated with the program justified by the benefits that future children born bring to society?

✓ Such models are widely used. They assess the net tax value of a person conceived using assisted reproductive technology and calculates the total gross income that the state will obtain from the individual, subtracting direct transfer expenses over lifetime⁹⁻¹¹.

OBJECTIVE

The Romanian Government runs a national social program to boost Romania's birth rate by offering financial support to couples and individuals.

It provides two vouchers: 1.000 EUR voucher for infertility treatments and a 2.000 EUR voucher for specific medical procedures⁸.

This analysis assessed whether social and economic benefits of future children justify the investment.

METHOD

A generational accounting model considered a cohort of 10,000 in vitro fertilization (IVF) treatments, with an assumed average success rate defined at a level of 30% (20%-40% in the sensitivity analyses). Although specialized scientific articles¹⁸⁻¹⁹ and websites of medical service providers in the field²⁰, and even partial public data made available to the public by the ministries involved in the implementation of the National Interest Social Program to Support Couples and Single Persons, to Increase the Birth Rate²¹, state or suggest success rates of at least 45% and even 55%, given the uncertainties regarding the methodology used to define and estimate the success rate, based on expert opinion, a much more conservative success rate was used, namely 30%.

The model accounted for various costs, including those related to:

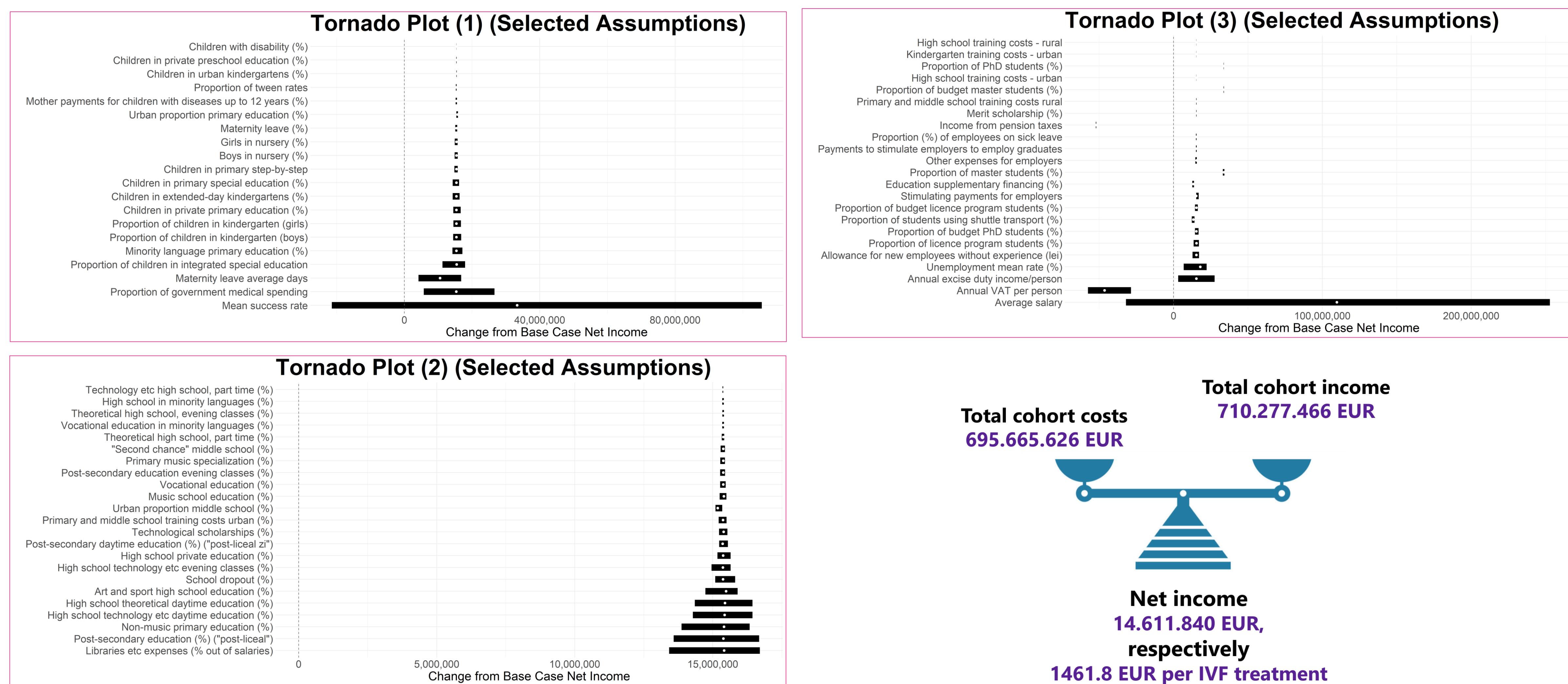
- pregnancy and childbirth monitoring,
- birth expenses,
- lifetime medical costs,
- maternity and parental leave,
- educational expenses from nursery to post-doctoral studies,
- unemployment and other social protection benefits, sick leave, and pensions.

The model considered revenues from wages and salaries, VAT, pension taxes, and excise duties. All of these costs were sourced from government health and education reports, national statistics, labour market studies, and official budget documents¹²⁻¹⁷.

RESULTS

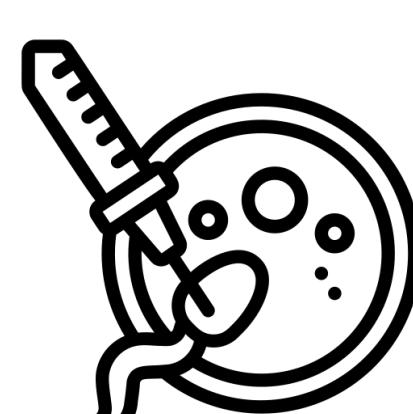
Total costs per cohort were estimated at 695,786,227EUR, whereas total income at 770,080,000EUR, resulting in a net income estimated at 74,294,658EUR, or 7,429.5EUR for each IVF treatment supported by the program.

The comprehensive sensitivity analysis, comprising 10,000 simulation runs with simultaneous random variation of 108 assumptions, revealed a wide distribution of potential net income for the cohort outcomes, ranging from -5,885,867 EUR (minimum) to 705,084,156 EUR (maximum), and notably, even the first quartile showed a positive value of 172,546,273 EUR, strongly suggesting that positive net income results persist across the vast majority of potential assumption combinations.



CONCLUSIONS

The IVF social national program represents a useful investment in Romania's future from a socio-economic standpoint.



While the model has not included quantification of significant psychological benefits for recipients and intangible advantages for the state, these factors remain highly relevant considerations.

REFERENCES (selection)

1. Cirlotel AA, De Rose A, Arezzo MF. Childbearing intentions in a low fertility context: the case of Romania. *Genus*. 2019 Jan;18;75(1):4; 2. Keil TJ, Andreescu V. Fertility policy in Ceausescu's Romania. *Journal of family history*. 1999 Oct;24(4):478-92; 3. Serbanescu F, Morris L, Stupp P, Stanescu A. The impact of recent policy changes on fertility, abortion, and contraceptive use in Romania. *Studies in family planning*. 1995 Mar;1:76-87; 4. Cărăstă AL, Domnaru CD. Analysis of the Demographic Phenomenon of Fertility in Romania from 1950-2021. *Acta Medica Transilvanica*. 2021 Dec;1:26(4):3-6; 5. Hărăguș M. Notes on the Level of Fertility in Romania, as Shown by International Statistical Data. *Romanian Journal of Population Studies*. 2022;16(2):129-40; 6. Aitken RJ. The changing tide of human fertility. *Human Reproduction*. 2022 Apr;1:37(4):629-38; 7. Ince Yenilmez M. Economic and social consequences of population aging the dilemmas and opportunities in the twenty-first century. *Applied Research in Quality of Life*. 2015 Dec;10:735-52; 8. Order of the Minister of Labor and Social Solidarity and of the Minister of Family, Youth and Equal Opportunities No. 2155/20917/2022, on the approval of the Methodological Norms for the application of the Social Program of National Interest to Support Couples and Single Persons, to Increase the Birth Rate, amended and supplemented by Order No. 1601/20565 of 2023; 9. Moolenaar LM, Connolly M, Huisman B, Postma MJ, Hompes PG, van der Veen F, Mol BW. Costs and benefits of individuals conceived after IVF: a net tax evaluation in The Netherlands. *Reprod Biomed Online*. 2014 Feb;28(2):239-45. doi:10.1016/rbmo.2013.10.002. *Epab* 2013 Oct 10. PMID: 24365025. 10. Matorras R, Villoro R, González-Domínguez A, Pérez-Camarero S, Hidalgo-Vega A, Polanco C. Long-term fiscal implications of funding assisted reproduction: a generational accounting model for Spain. *Reproductive Biomedicine & Society Online*. 2015 Dec;1:1(2):113-22. 11. Connolly MP, Panda S, Mburu G, Matsaseng T, Kiarie J. Estimating the government public economic benefits attributed to investing in assisted reproductive technology: a South African case study. *Reproductive Biomedicine & Society Online*. 2021 Mar 1:12:14-21. 12. National Institute of Statistics. Statistical Yearbook of Romania. 2023. Available online at: <http://statistici.inse.ro/8077/tempo-online/#/pages/tables/inse-table> (Date of access: 29.09.2024). 13. National Institute of Statistics. Tempo Online (statistical database). Available online at: <http://statistici.inse.ro/8077/tempo-online/#/pages/tables/inse-table> (Date of access: 29.09.2024). 14. World Bank Group. Romania. Available at: <https://data.worldbank.org/country/romania?locale=ro> (Date of access: 29.09.2024). 15. CNAS. Report on the situation of medical leaves granted and settled from the budget of the Single National Health Insurance Fund. Available online at: <https://sgg.gov.ro/1/wp-content/uploads/2023/07/RAPORT-2.pdf> (Date of access: 29.04.2024). 16. National Institute of Statistics. Regional distribution of the school population by level, in the school/university year 2022/2023. Available online at: https://inse.ro/cms/statistic/comunicate/com_anuale/sistemul_educational/sistemul_educational_2023_xis (Date of access: 29.09.2024). 17. Ministry of Education. Press release: details regarding the number of scholarships, at national level, by categories. Available at: https://www.edu.ro/comunicat_presă_93_2023_informare_acordare_burse_scolare (Date of access: 29.09.2024) 18. Adamson GD, Norman RJ. Why are multiple pregnancy rates and single embryo transfer rates so different globally, and what do we do about it? *Fertility and Sterility*. 2020 Oct;1:114(4):680-9. 19. Romanian Medical Journal https://rmj.com.ro/articles/2015_3/RMJ_2015_3_Art-03.pdf 20. Regina Maria. Success rates of the Fertility and IVF Center Columna. 27.03.2023. Available online at: <https://www.reginamaria.ro/articole-mediceale/ratele-de-sukses-ale-centrului-de-fertilitate-si-fiv-columna> [Date of access: 29.09.2024]. 21. Ministry of Family, Youth and Equal Opportunities. FIV Report no. 50, 29.08.2024. Available online at: <https://mfamilie.gov.ro/1/wp-content/uploads/2024/08/Raportare-2023-29.08.2024.pdf> [Date of access: 29.09.2024]

CONTACT INFORMATION

Prof. Robert Ancuceanu, PharmD, PhD
Carol Davila University of Medicine and Pharmacy, Faculty of Pharmacy, Bucharest
E-mail: robert.ancuceanu@umfc.ro