POPULATION AND SOCIAL-ECONOMIC DEVELOPMENT

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Abstract

The economic phenomena in society are strongly connected with social development. The aim of this paper is to investigate relationship between population and social-economic development from long-term point of views. Results of the analyses of demographic transition in economic context as well as the results of cross-sectional correlation between fertility rate and three socio-economic indicators show that the higher GDP per capita, the education level of women, and the whole human development are associated with lower natality. In the group of the high and very high developed countries (HDI higher than median), there is total fertility rate mostly below replacement level (ca. 1.6 children per woman). The determinants of the decreasing fertility are changes in women status in society, their higher education and financial independency together with richer opportunities in labor market which leads to higher opportunity costs of bearing children in terms of lost income, social prestige, social contacts, and professional growth.

Keywords

Demographic Transition, Education, Economic Growth, Fertility, Human Development Index, Standard of Living

I. Introduction

The economic phenomena in society are strongly connected with social development. Events in the economy affect the behavior of households not only in their purely economic decision-making, such as whether to save more or spend, but economic environment is one of the factors that affect many areas of social development. At the same time, the opposite causality can be observed - movements in society and changes in household behavior are subsequently reflected in economic developments. The close link between economic and social development can be observed in the case of population development. Demographic research not only provides a credible picture of population structure and population development over time but also analyzes the general relationships and patterns of demographic phenomena related to social and economic realities.

The aim of this paper is to investigate relationship between population and social-economic development from long-term point of views.

The first chapter describes this development during ages in term of 5 stages of demographic transition in economic context. In the second part of the study, there is used cross-sectional correlation between fertility rate and three socio-economic indicators: GDP per capita, education level of women, and Human development index.

Theoretical background of population growth in connection with economic development is based on economic approach of Becker and Schultz. Family behavior including fertility in economic context was analyzed by Becker (1960) who used economic principles in the population research. He analyzed parents' decision-making process and declared that children are specific goods, while the reproductive behavior is the customers' response to the demand of their children. Another theoretical framework for understanding of the determinants of the number of children in the family was provided by Schultz (1973) who declared that growth of family income increases the opportunity costs of children raising. With higher income, the parents do not want to sacrifice their lost wages and job opportunities to a large extent, and therefore their demand for children is decreasing.

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Furthermore, in society with higher educated women and totally better standards of living, there are improvements in child health which reduces child mortality. Educated woman has better information on effective using of contraception which causes the increasing female autonomy and bargaining power in fertility decisions.

II. Population and economic development: historical point of view

Thomas Malthus, in his famous *An Essay on the Principle of Population* dealing with population growth, economic growth and the standard of living, assumed that with the rising wealth of society associated with livelihood growth, the population could be expected to grow. Malthusian model explains the causation between population and economic growth in both directions. Firstly, higher economic growth causes population growth by stimulating earlier marriages and higher birth rates, and by lower mortality. On the other hand, higher population depressed economic growth due to diminishing returns. This interaction between population and economic growth implies a stationary population in the long-run equilibrium, as mentioned by Glaeser, Becker, and Murphy (1999). However, Malthus's vision has been only partially correct.

Experts on economic demography point out that huge increases in social and economic development in Europe during second half of the 20th century had been accompanied by considerable declines in fertility (e.g. Myrskylä, Kohler, and Billari 2009). Also, according to Galor and Weil (2000) or Doepke (2004), economic growth has a negative effect on fertility. In the long-term point of view, the relationship between economic growth and the natural population increase, that is affected by natality and mortality rates, is not so straightforward. Development of natural population increase in economic context is explained by demographic transition model which describes one demographic-economic paradox: the higher society welfare and richer standard of living, the lower number of children per woman (total fertility rate).

Population changes in social-economic context are described by figure 1. There are 5 stages of the development of the society. The first stage is typical of agrarian society with low economic performance and standard of living, poor hygiene, nutrition, and low knowledge of medicine and high infant mortality. The role of woman in the society is seen primarily as a mother and housekeeper, she is uneducated and financially dependent on her husband. Children are regular workforce in households, on family farms, or even in manufactories. Their role is seen also as a caregiver for the sick, old parents due to absence of state social care. Due to these factors, family needs a lot of children despite the limited means of subsistence. Moreover, means of family planning are limited and religion has strong influence on society and family life. The first stage of population development was typical for Europe until the late 18th century when mortality and natality rate were very high. At present, it concerns only a few of the poorest and least developed countries in Africa.

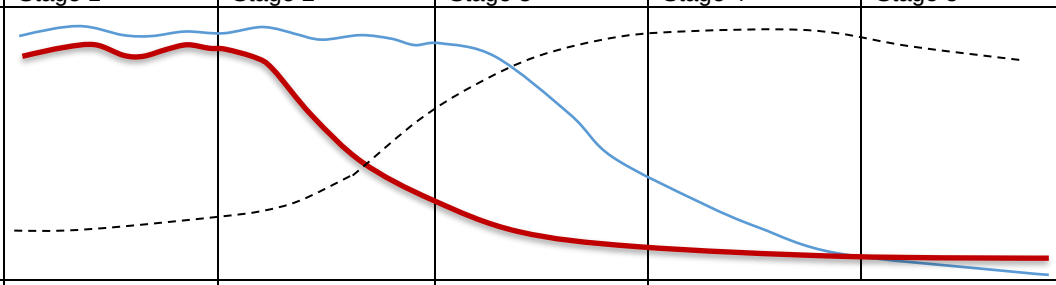
The second stage is characterized by growth of economic performance caused by increasing in agricultural productivity and industrialization. Hygiene, water supply, sanitation, and nutrition are improved, therefore mortality (namely infant mortality) is rapidly declining, but natality remains high due to persisting traditional family model and status of low educated woman in society affected by tradition and religion. Thanks to high natality and declining mortality, natural increase (difference between natality and mortality) is very high which leads to population explosion. Nowadays, this stage is typical of many African and Asian developing countries.

The stage 3 is associated with the first changes in status of family and woman in society. This period is characterized by the beginning of woman emancipation, she becomes more educated and her labor market opportunities are slowly expanding. Also due to lower infant mortality and more accessible social care, family do not need a lot of children for survival and natality is declining. Initially maybe only slowly but with further enhancing the education of women and their involvement in the labor market, decreasing in natality is more rapid.

The stages 4 and 5 concern post-industrialized countries with very high standard of living, increasing labor productivity and the whole economic performance when the society focuses on individual

success associated with great pressure on performance, rapid adaptation to technology changes and lifelong learning. Women are studying for longer, and in the most developed European countries, more than 50% of students at universities are women. Change of the status of woman in society is huge, she is very high educated, financially independent and needs self-fulfillment at work, so employment rate of women is high. And moreover, highly educated parents prefer a high standard of living to a larger number of children. In comparison with low educated parents, they more focus on future and want to provide their children with the same or even higher standard of living. As mentioned above, the opportunity costs of children raising is too high for well-educated parents with high income. And because they have strong instrument for family planning in the form of hormonal contraception, total fertility rate is ca. 1.5 children per woman and natural increase is about zero (stage 4), or even negative (stage 5). The increase in the population is affected mainly by migration.

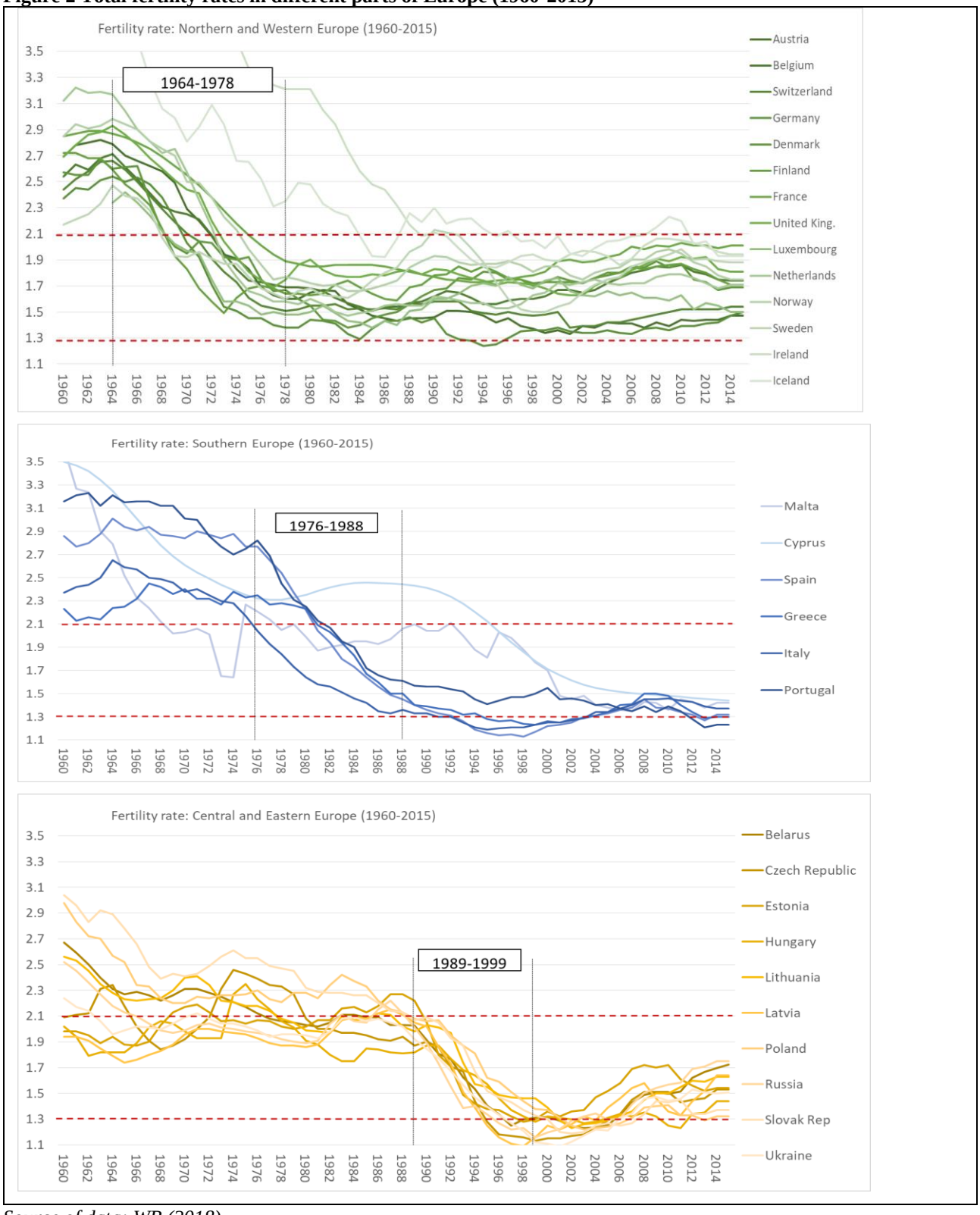
Figure 1 Scheme of population development in the economic context

	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Natality **Mortality** **Population size**					
Social and economic development	Agrarian society - low economic performance and standard of living	Industrialization - growth of economic performance	Growth of economic performance and society welfare	Post-industrialized countries High standard of living Growth of labour productivity and efficiency	
Determinants of mortality	Poor hygiene, nutrition and health care	Improvements in hygiene, water supply, sanitation Better nutrition, basic health care		Progress in medicine, emphasis on prevention ... Extended social care	
Determinants of natality	High infant mortality; Children – labour force, Woman – uneducated, mother financially dependent on a man, Absence of state social care		Women more educated Lower infant mortality Basic social care	Change of the status of women in society: education, financial independence, higher employment rate, self-fulfillment at work… Hormonal contraception	
Population growth	*High natality and mortality* Population: stable size or slow growth	*High natality but rapid decrease in mortality* Population: high natural increase	*Rapidly declining natality and low mortality* Slow population growth	*Low mortality and declining natality* Low or zero natural increase	Negative natural increase, size of population is affected mainly by migration

Note: Natural increase is difference between natality and mortality (without migration flows).
Source: Own elaboration

The last stages 4 and 5 are typical of the most developed European countries which have experienced important changes in population and family behavior namely within the second half of the 20th century (see Sobotka 2008). Population development includes changes both in size of population and changes in age structure. Majority of very high-developed countries faces to low fertility rate and demographic aging. However, the speed and timing of the changes during the second half of the 20th century were not the same in all parts of Europe, compare charts in figure 2. Demographic changes were delayed namely in Central and Eastern Europe where they were significant during 1989-1999 period, i.e. after collapse of communist regimes. The reasons for the later onset of demographic changes are as follows: slower growth of economic performance, worse standards of living during communist period, which was connected with total enclosure to external influences. In comparison with west Europe, women in socialist countries were low share of university level of education and there were larger gender differences in wages which meant high financial dependency on men. But after 1989 the changes were very rapid. While population changes in Western countries occurred during the 60's and 70's, in the case of post-communist countries it has taken place over 10 years after 1989.

Figure 2 Total fertility rates in different parts of Europe (1960-2015)[2]



Source of data: WB (2018)

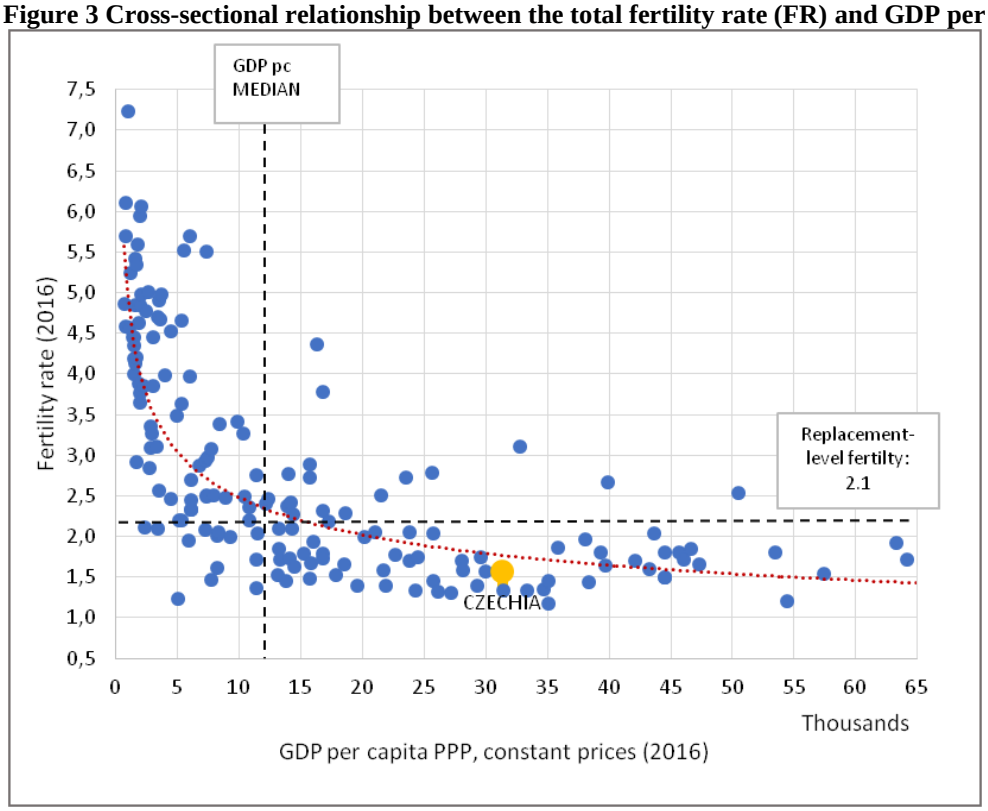
[2] TFR (total fertility rate) is the number of children a woman can expect to have over her lifetime given current rates of age-specific fertility. Value of 2.1 is replacement-level of fertility needed for stationary size of population. Value of 1.3 is lowest-low fertility which means that population is not able to reproduce at all in long-term point of view.

III. Relationship between fertility and socio-economic development

Relationship between fertility rate and economic performance depends on short-run or long-run point of view and choice of economic indicator. While relationship between fertility rate and economic development (measured by e.g. GDP per capita or HDI) is quite clear, relationship between fertility rate and GDP growth (year-on-year changes in GDP within the business cycle) is not so straightforward, see e.g. Barro and Becker (1989), Bryant (2007), or Sobotka, Skirbekk, and Philipov (2011). This paper is not focused on short-term fluctuations in production, but on long-term, i.e. on total fertility rate and economic level measured by GDP per capita which is result of long-term development. As mentioned by Myrskylä, Kohler, and Billari et al. (2009), the negative correlation of fertility with economic and social development is generally accepted empirical regularities in the social sciences.

As shown by figure 3, the decline in total fertility rate is very rapid namely within the countries with GDP p.c. below median value. The most of the countries with higher economic level than the median has the fertility rate below replacement level 2.1 which means that during long-term development, the natural increase would not be above zero and only positive net migration could equalize population size.

Figure 3 Cross-sectional relationship between the total fertility rate (FR) and GDP per capita (2016)



Source of data: WB (2018)

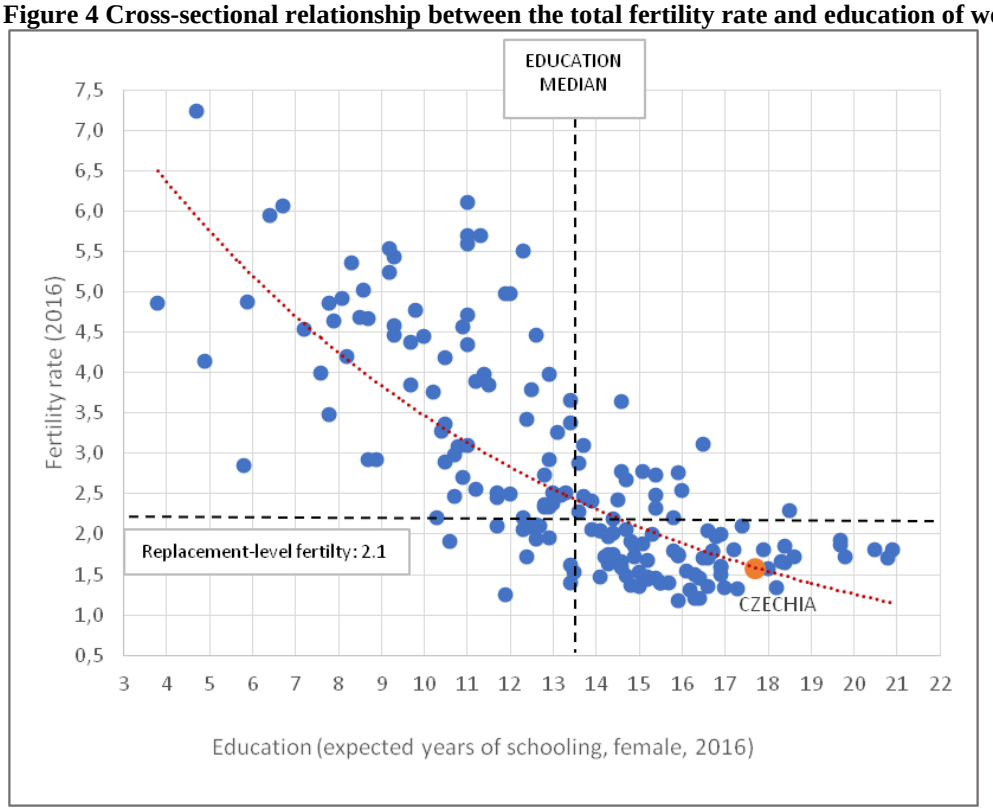
As mentioned above (figure 1), one of the main determinants of changes in the fertility is education of women, see figure 4.[3] Data show that the higher the level of a woman's educational attainment, the fewer children she is likely to bear. Higher female education is connected with higher wages of women and, as mentioned by Galor and Weil (1996), increasing women's wages reduces fertility. The effect of higher education is namely seen within developing countries, e.g. according to Pradhan and Canning (2015), study on fertility in Ethiopia estimated that an additional year of schooling in Ethiopia would lead to a 7 percentage point reduction in the probability of teenage birth and a 6

[3] Expected years of schooling are the number of years during which a child entering infant school can expect to spend in full-time and part-time schooling in the course of their life cycle, based on the school enrolment rates of the time. These expected years are calculated on the young people of less than 30 years old.

percentage point decrease in the probability of marriage. These are large effects suggesting that women with eight years of schooling would have a fertility rate 53 percentage points lower than those with no schooling at all.

Explanation of the decreasing fertility of the higher educated women by Schultz's economic approach (mentioned above) is based on the suggestion that more educated women have higher opportunity costs of bearing children in terms of lost income. The household bargaining model suggests that more educated women are better able to support themselves and have more bargaining power, including on family size. More educated women may learn different ideas of desired family size through school, community, and exposure to global communication networks. Finally, more educated women know more about prenatal care and child health, and hence might have lower fertility because of greater confidence that their children will survive (Pradhan and Canning (2015).

Figure 4 Cross-sectional relationship between the total fertility rate and education of women (2016)

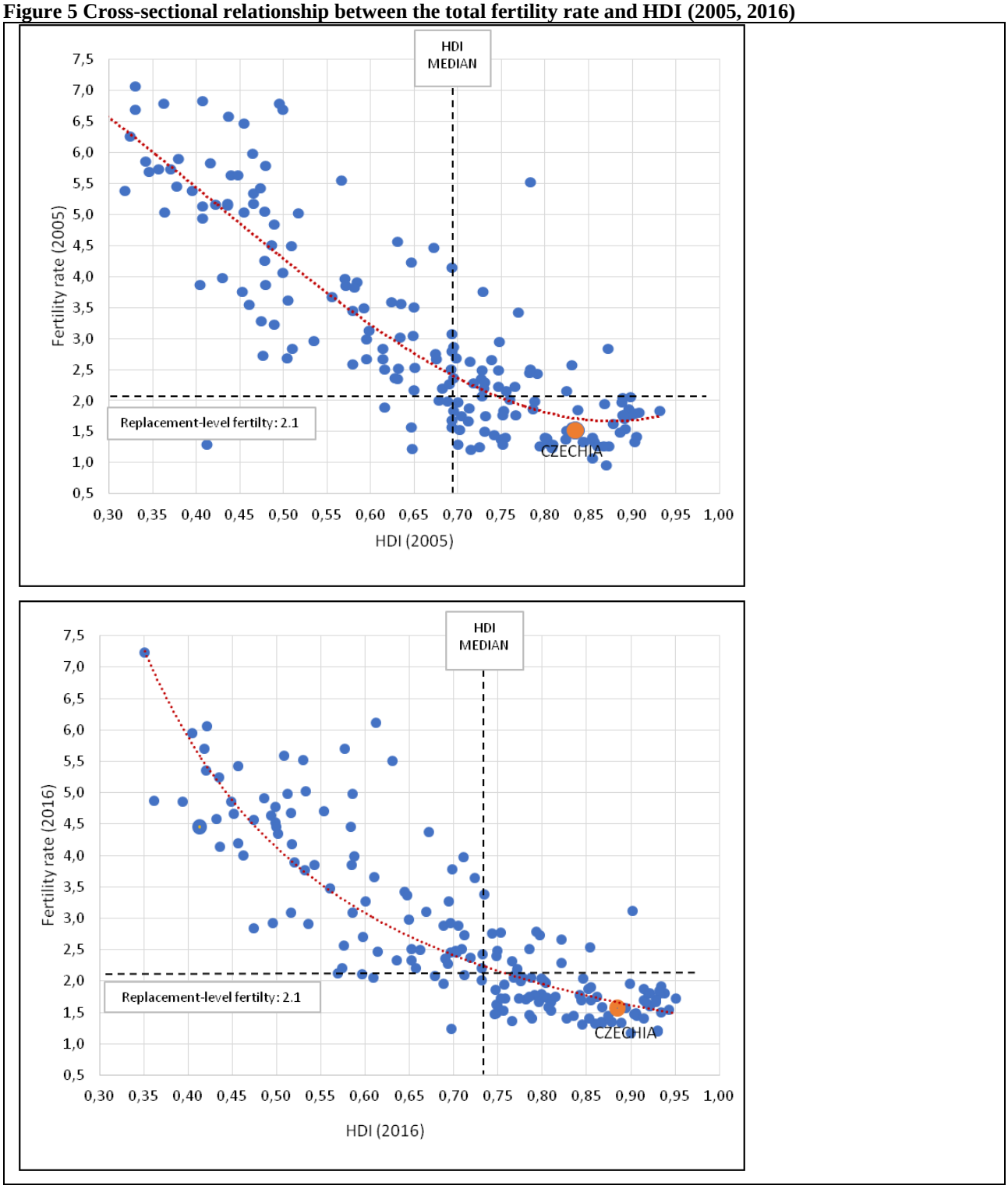


Source of data: WB (2018), UNDP (2018)

Both economic and education level are included in *Human development index*; its correlation with the total fertility rate in 2005 and 2016 is shown in figure 5. According to a study of Myrskylä, Kohler, and Billari (2009) who analyzed this relationship in 1975 and 2005, negative correlation between fertility and HDI is observed at low and medium HDI levels but in the case of the advanced HDI levels, it is not so clear. As mentioned by Myrskylä et al., data from 1975 and 2005 suggest that negative development-fertility relationship has become J-shaped and HDI is positively associated with fertility among highly developed countries. They presume that the reversal of fertility decline is a result of continued economic and social development which has the potential to slow fertility decline and also population ageing.

But the latest 2016 data are not so optimistic. In the group of the high and very high developed countries (with HDI higher than median) there is total fertility rate mostly below replacement level. Compared this group of countries in 2005 and 2016, the total fertility rate decreased from 1.95 (2005) to 1.79 (2016) children per woman despite the fact that value of their education and GDP level increased. Therefore, the expectation that further social and economic growth in rich countries can stop fertility decline has not yet been met.

Figure 5 Cross-sectional relationship between the total fertility rate and HDI (2005, 2016)



Source of data: WB (2018), UNDP (2018)

IV. Conclusion

Looking at history, it is obvious that the reproductive behavior of inhabitants is changing with the increasing economic level of countries. Or, an example from the other side - changes in the position of women in society and the whole family behavior are reflected in many economic areas: most notably in the labor market, but also in the context of social policy, especially in the adjustment of the pension system or education. Changes in population growth and family behavior also respond to family policy measures. At present, the most of the high-developed countries (not only in Europe) faces to demographic-aging caused by prolonging life expectancy and low natality. Some simplified assessments of this situation assume that family policy financial instruments (such as higher child

allowances) can increase birth rates. But it is not so clear because generally, the cause of low natality does not lie in financial deficiency or poor standard of living. On the contrary, in the group of the high and very high developed countries (with HDI higher than median) there is total fertility rate mostly below replacement level (ca. 1.6 children per woman) and it continues to decline. The main determinants of the decreasing fertility are changes in women status in society, their higher education and financial independency together with richer opportunities in labor market which leads to higher opportunity costs of bearing children in terms of lost income, social prestige, social contacts, and professional growth. Furthermore, highly educated parents prefer a high standard of living to a larger number of children. They more focus on future and want to provide their children with the same or even higher standard of living. Therefore, policy makers should think about the family policy tools that make it possible to combine a career with childcare.

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