RESEARCH ARTICLE

ANALYSIS OF THE RELATIONSHIP BETWEEN WORKING TIME AND RETIREMENT TIME IN THE NUTS 2 REGIONS OF HUNGARY IN THE LIGHT OF GENDER AND REGIONAL DISPARITIES

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Manuscript Info

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Abstract

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This paper examined the effects of raising the statutory retirement age at NUTS 2 levels, differentiated by gender in Hungary. The evaluation criterion was the ratio of working time to retirement time concerning adults' average life expectancy. This criterion was used to examine whether and to what extent regional and gender disparities exist at NUTS 2 levels and whether these disparities should be considered in policy measures. The empirical results indicated differences between the genders and regions regarding the burden of raising the retirement age. Women spend more time in retirement than men in terms of average adult life expectancy. This finding illustrates the difference in life expectancy between the sexes in Hungary. Besides, regional disparities in participation in the pension system have been observed for both women and men. These disparities can cause unintended distributional effects when the retirement age is increased. In this context, it is recommended that further policy measures are taken to address gender and regional disparities.

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Introduction:-
The Hungarian pension system has undergone significant reforms since the system change in 1989/90. These were mostly in response to financial challenges. The current challenge posed by demographic change also creates financing and performance problems within the system. Raising the statutory retirement age is one policy answer towards this challenge. This policy measure aims to increase the labour force participation so that the population pays longer into the pension system and receives shorter benefits. It could indeed help to reduce financial burdens. The increasing average life expectancy usually justifies this decision.

A blind spot in these considerations are differences that exist in the life expectancy between the sexes and on a regional level. Therefore, it is unclear how and if so to what extent the increase in the statutory retirement age will affect the regions and sexes. Correspondingly, this study examines whether there is an unintentional redistributional effect from regions with low average life expectancy to regions with high average life expectancy. As part of this, the regions are also analysed for gender-specific differences.

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For that purpose, the paper concentrates on an empirical evaluation of the effects of increases in the statutory retirement age on the relationship between working and retirement time on a NUTS 2 level. The following research question is asked:

1. How does the increase of the statutory retirement age in the Hungarian pension system affect the relationship between working and retirement time on a regional level and differentiated by sexes?

The objective of the answer to this question is to test the following two hypotheses:

1. The increase of statutory retirement age leads to an unintended redistribution effect from weak NUTS 2 regions with a low average life expectancy to strong NUTS 2 regions with a high average life expectancy, measured by the ratio of working time to retirement time in relation to average adult life.
2. Sex-specific disparities and regulatory differences lead to various participation levels of men and women in the Hungarian pension system.

Given the demographic change, the answers to these questions and the hypotheses' testing are of high social relevance. Eventually, Hungarian politics' task is to adapt the pension systems to a rapidly changing demographic environment. In the search for political answers, both distributional effects and gender disparities must be considered.

Due to the regional perspective, in connection with the focus on gender, this work makes a significant research contribution, which provides additional information about the effects of the increase of the statutory retirement age in Hungary. This approach narrows the research gap regarding the increase of statutory retirement age with respect to the impact on Hungarian regions and the sexes. On the other hand, the insight gained is also strictly limited to this specific aspect and is only a first exploratory approach.

To achieve this, in section 2. the chosen methodological approach is presented. Section 3. follows with a brief overview of the current state of the political and scientific debate. The empirical evaluation and discussion of the effect of the reform of the statutory retirement age in Hungary take place in section 4. The paper concludes in the end.

Methodological Approach:-

The paper is a classical comparative policy analysis as set out, for example, by Dunn (2018[6]). Thus, this paper's methodological approach is based on the principles recommended by Blum, Schubert (2018[3]: 70f.) or Knoepfel et al. (2007: 9). The use of projections is in line with policy modelling, as outlined by Crawford (2006: 771). According to Kraft and Furlong (see 2018[3]: 9), the analysis addresses five points: policy, policy alternative, evaluation criterion, evaluation of alternatives and conclusion.

The increase in the standard retirement age on the ratio of working time to retirement time at the regional level in Hungary will be empirically analysed. In the course of this, a distinction is made between the sexes. It should be emphasised that this paper focuses on the empirical identification and evaluation of potentially unintended distributional effects, which could arise because of the increases in the standard retirement age. The evaluation criterion is defined as the length of a lifetime spent in retirement as a proportion of an average adult's lifetime. There are, of course, numerous other influencing factors. However, this paper does not claim to provide a definitive picture but instead focuses on analysing the criterion defined here as an exploratory approach. Transferred and adapted, this results in the following analytical steps and framework:[1]

1. Policy: measures to adjust the statutory retirement age.
2. Policy alternatives: continuum between the status quo, reduction, or increase of the legal retirement age.
3. Evaluation criterion: ratio of working time to retirement time in relation to average adult life. The following equation expresses this ratio:[2]

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[1]A limiting factor for the used terms "women" and "men" is that individual working and retirement behaviour is not used, but a standardised working life is considered within the framework of the legal and regulatory requirements.

[2] Life expectancy at 65 was chosen because of data accessibility and more accurate values than life expectancy at birth. The transition to adulthood at 20 years was chosen based on the OECD approach (see OECD 2019a: 28).

$$RatioWorkPensionTime = \frac{[(\text{life expectancy at } 65 + 65 - \text{statutory retirement age})}{(\text{life expectancy at } 65 + 65) - 20)]}$$

4. Evaluation: empirical investigation, discussion, and comparison of the consequences of the change in retirement age based on the evaluation criterion as well as regarding spatial, temporal dimensions and differentiated by sexes.
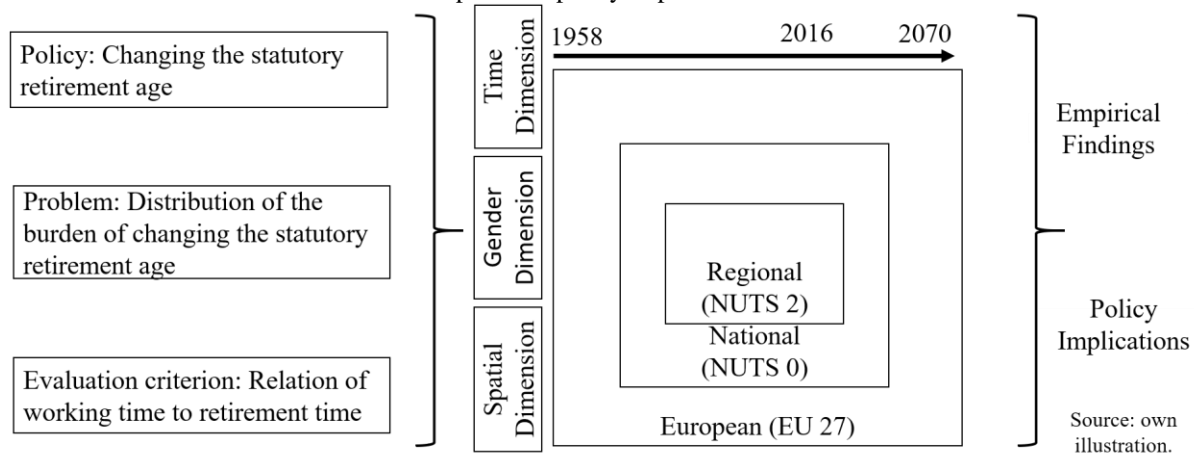5. Conclusion: outline of results and potential policy implications

Figure 1:- Analytical framework

As Figure 1 shows, three dimensions of analysis are interconnected: The first is the time dimension, where indicators of historical and future developments of the statutory retirement age, demographic change, and its effects between different points in time are examined. The second is the spatial dimension, which is used to empirically analyse and compare regional differences between the NUTS 2 levels, NUTS 0 level and the European level (EU 27). Finally, the differentiation by sexes, to evaluate the differences in average life expectancy and the legal and regulatory framework. All in all, this is an interdisciplinary work operating at the interface of economic and social policy and regional economics. Primary sources of empirical data are the United Nations (2019), the Organisation for Economic Co-operation and Development (2020), the European Commission (2017, 2018) and Eurostat (2020a).

The statutory retirement age in the political and scientific debate:
In the wake of the 2008 financial crisis, the discussion revolved around regulatory changes regarding the second-pillar mandatory private pensions scheme, also known as "switchback reform" (Freudenberg et al. 2016: 8; Futz 2012; Simonovits 2011). At present, much of the debate is focusing on demographic change (e.g., Németh et al. 2020; Kenichi, 2011). The same applies to this paper, which deals with regional aspects of raising the statutory retirement age in Hungary.

Some general literature reviews on the topic of statutory retirement age and pension reforms are provided by Álvarez-García et al. (2020), Pilipiec et al. (2020) or Jantan (2020). One of the findings is that raising statutory retirement ages could improve the sustainability of public finances. Among others, Jorgensen and Jensen (2010), Moog and Müller (2011), or Dolls et al. (2016) come to this conclusion. From a general point of view, studies by Vogel et al. (2013) or Tyrowicz et al. (2016) seem to empirically validate this effect. These findings are accordingly incorporated in the European Commission's policy objectives (European Commission 2010, 2012; Carone et al. 2016). Specific studies for the Hungarian system seem to support this approach. Németh et al. (2020: 168-169) and OECD (2019b: 103-105) conclude accordingly that a further increase in the statutory retirement age is an essential measure for the financial sustainability of the Hungarian pension system.

Potential means of achieving this are a further static increase in the statutory retirement age or linking the statutory retirement age to average life expectancy. The latter is advocated by authors such as Németh et al. (2020). Under the current legal and regulatory framework, the pension age increases will continue successively until 2022. It is recommended by the OECD (2019b: 105) to let the age rise after that coupled to the life expectancy.

However, regional and gender-specific perspectives have not been considered in previous research. Thus, Hungary lacks information at NUTS 2 level for the evaluation of these political measures. This research gap, regarding regional and sex-specific effects, is to be narrowed by this work.

The ratio between working and retirement time concerning an average adult lifetime at NUTS 2 level in Hungary:-

Demographic change and financial pressure:

The reason for raising the statutory retirement age in the Hungarian pension system is to reduce financial pressure, which is linked to demographic change. A driving force of demographic change is the ageing process, which is driven by rising life expectancies, low fertility rates, and emigration.

Figure 2:- Hungary's ageing population

Figure 2 illustrates that the proportion of over-65s in the Hungarian population has risen significantly between 1950 and 2020. Among women, the figure increased from 8.45% to 23.87%. Within the male population, the percentage of over-65s is currently at a 16.08% all-time high. An acceleration of the ageing process in the mid-1980s can be observed for both sexes. This acceleration will continue to speed up in the future. For example, the forecasts suggest almost exponential growth until 2040. According to United Nations forecasts (2019), this will increase the proportion of 65+-year-olds in Hungary's female population to 28.33% and in the male population to 21.03%. As a result of this ongoing ageing process, more than one woman in four and one man in five will be 65 or older by 2040. Furthermore, the observation reveals existing differences between the sexes in the ageing process. Although the proportion of over-65s in the female population has always been relatively higher than within the male population, this gap has steadily widened. In 1950, the gap was at 1.33% and had increased to 7.79% by 2020. The forecasts indicate that this gender gap will continue and increase to 8.3% until 2040. These numbers reflect the fact that life expectancy is developing differently for the sexes despite continuous increases.

Two trends are the driving force behind this pronounced ageing dynamic in Hungary: rising life expectancy and decreasing/stagnating birth rate.
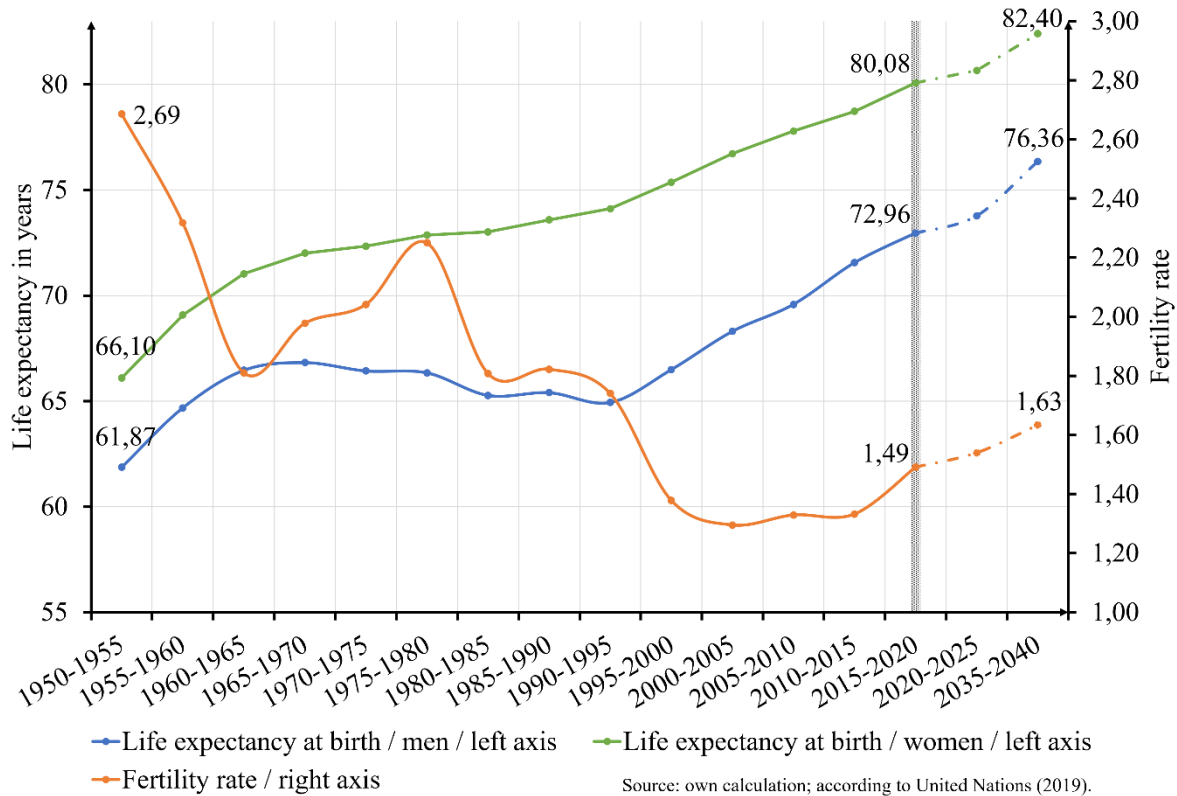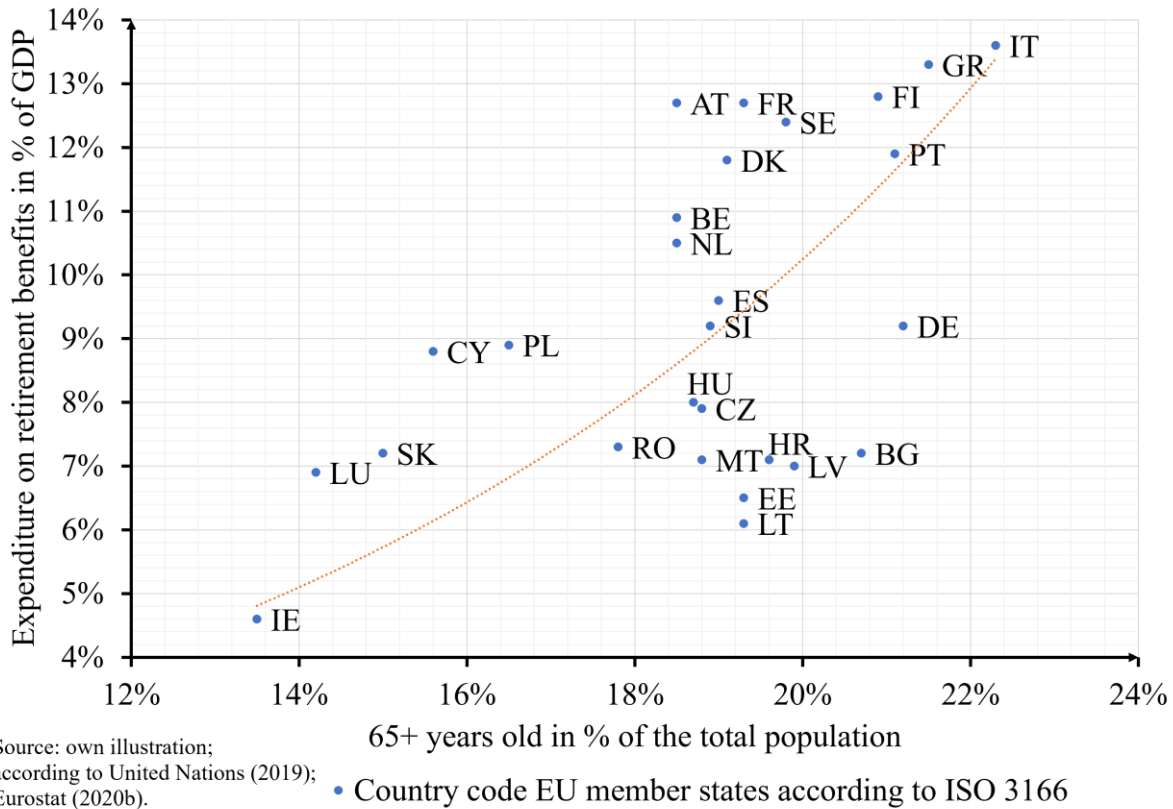
Figure 3:- Life expectancy and fertility in Hungary

Figure 3 reflects both trends for Hungary. Average life expectancy at birth was 66.10 years for women in the 1950-55 cohort and has increased up to 80.08 years for the 2015-20 cohort. Also, life expectancy at birth for men has increased from 61.87 years to 72.96 years. Projections indicate that this growth trend will continue in the coming years. Essential information is that the data reveals gender differences in Hungary. These differences correspond to findings on the proportion of the population aged 65 and over (see Figure 2). The gender gap in life expectancy was significantly lower in the 1950s. This gap was only 4.23 years for the 1950-55 cohorts and has now reached 7.12 years. However, this gender gap seems to be slowly closing in the future as the male population's life expectancy is increasing to a greater extent relative to the female population. It is predicted that this gap between women and men in Hungary could narrow to 6.04 years by 2040.

In contrast, the fertility rate developed in the opposite direction. This rate has fallen steadily in the 1950s until the end-1960s, from 2.69 to 1.81. Also, the effects of communist population policy became apparent. Specifically, the Ratkó policy effects are seen, which banned abortion and imposed special taxes on single people until the mid-1950s. These birth cohorts, the so-called "Ratkó children", had a correspondingly high birth rate. Their children, in turn, combined with a drastic reduction in infant mortality in the 1970s, led again to an increase in the birth rate. As a result, the birth rate rose to 2.25 but fell quickly to 1.81 when the policy was abandoned (Pongrácz 2013: 3). In the wake of the system change in 1989/90, the birth rate fell even faster to an all-time low of 1.30. Finally, however, it is also apparent that this rate has been rising continuously since 2010 and is now back at 1.40. The numbers indicate a change in family planning in Hungary since 2010 (Tálas 2020: 70).

Overall, these demographic processes create complex challenges for Hungary. One aspect is increasing financial needs resulting from the ageing process.

Figure 4:- Population and cost EU27 in 2017

As Figure 4 shows, an ageing population is likely to increase costs for society. This is mainly due to cost increases in the old-age pension systems. As society ages, these systems require more resources in terms of gross domestic product. For Hungary, the cost of ageing is around 8% of GDP with a share of 65+ aged around 19% in 2017. However, there are also country-specific differences, as countries such as Hungary and Austria, for example, have quite different cost levels, although they have a comparable degree of ageing. This finding comes as expected; after all, the European Union member states are "masters" of the historically developed systems of old-age provision. These systems are correspondingly differently differentiated and efficient. Nevertheless, in a ranking of 70 countries by Allianz and Euler Hermes (2020: 4), the Hungarian pension system ranks only 45th regarding financial and demographic starting position, sustainability, and performance level.
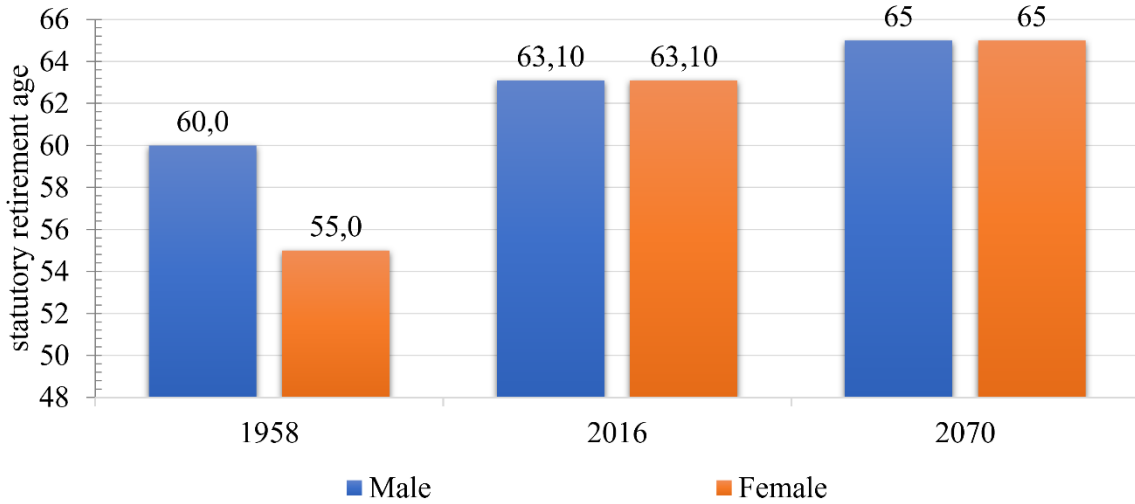
The overall conclusion remains that the Hungarian population's ageing is linked to cost increases in terms of GDP. This finding is independent of the country's specific structures, such as the degree of ageing and the security system. Addressing these cost increases is an urgent task. Benefit levels, contribution levels, the statutory retirement age and productivity could be used as starting points for reforms.

To this end, the adjustment of the retirement age in Hungary by raising the statutory retirement age for both women and men is already in progress (European Commission 2018: 56). Intra- and intergenerational fairness is used to justify this approach, as raising the statutory retirement age would only keep the ratio of working time to retirement time constant (OECD 2019a: 28). Hence, the statutory retirement age would only be adjusted to the increased average life expectancy. Whether this justification stands up to empirical scrutiny will be examined below.

Supra- and national Perspective - Effects of the reforms of the statutory retirement age on the ratio of working time to retirement time:
In Hungary, the statutory retirement age for women and men has been and will be raised in the coming years. Between 1958 and 2016, the statutory retirement age for women was raised from 55 to 63.1 years. That of men also rose during this period from 60 to 63.1 years. Thus, previous reforms have already balanced out legal and regulatory
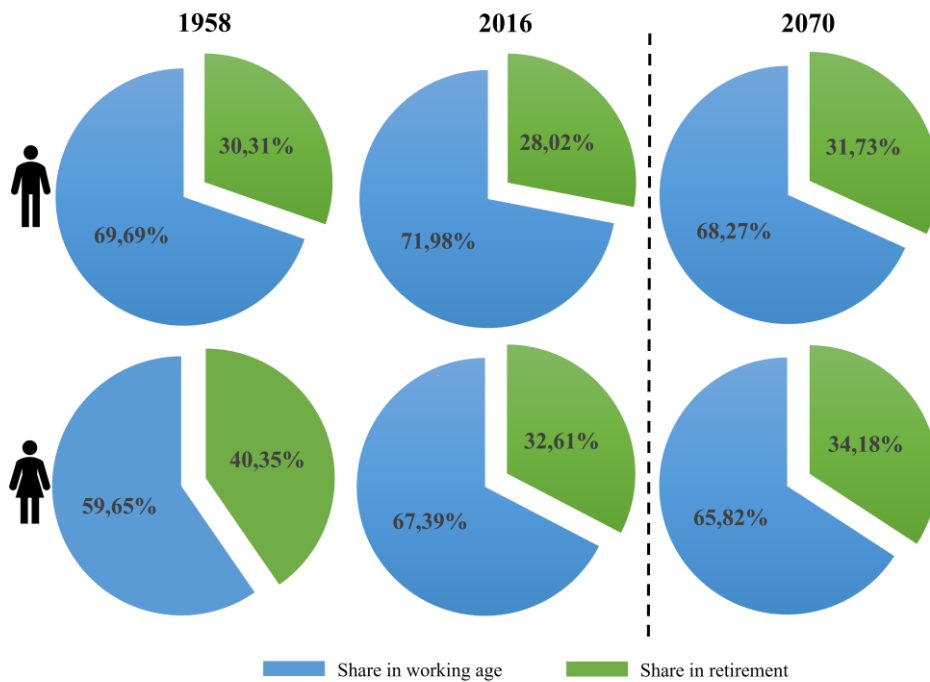
differences between the sexes. According to current regulations, the retirement age will continue to rise to 65 for both men and women until 2022. Discussions are already underway, and there are recommendations to further raise the statutory retirement age (OECD 2019b: 105). However, the current legal and regulatory framework is used as a benchmark for comparison and projections to 2070.

Source: own calculation; according to OECD (2011: 30), European Commission (2018: 56), Láng (1997).
Figure 3:- Statutory retirement age in Hungary

There are two intended effects of raising the statutory retirement age: longer working life and shorter time to receive benefits. As a result, the Hungarian population will participate longer in the labour market, thus reducing the financial burden and improving the pension system's sustainability. The justification for the measure is increased life expectancy. Raising the retirement age would, therefore help to keep the ratio of working time to retirement time constant. This ratio would otherwise shift and, without reform, would be unilaterally at the younger population's expense.
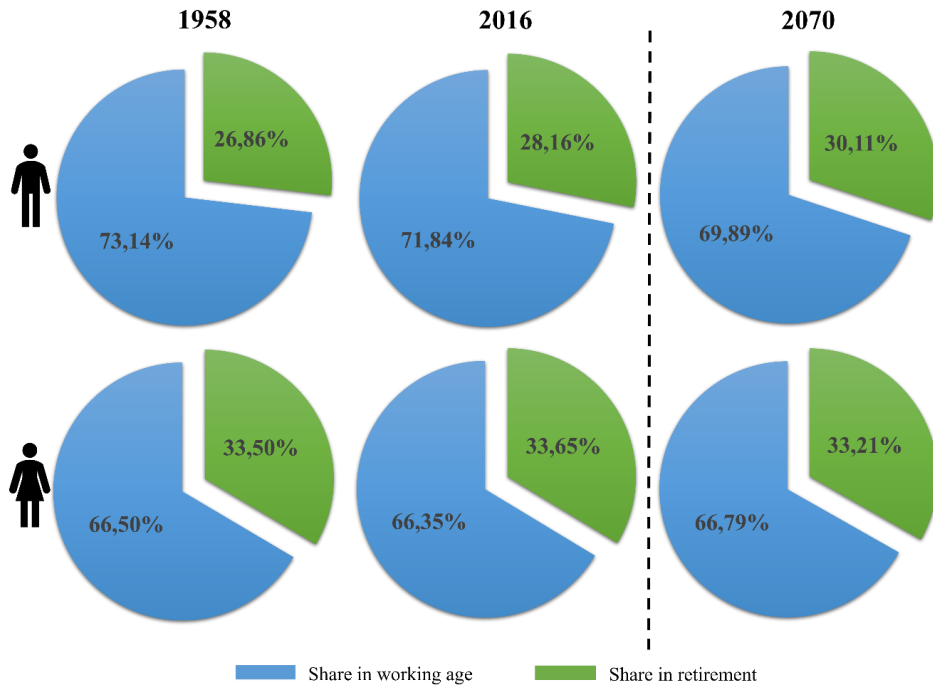
Source: own calculation; according to OECD (2011: 30), OECD (2019: 28), European Commission (2018: 56), United Nations (2019), Láng (1997).

Figure 4:- Ratio of working time and retirement age concerning the average adult life in Hungary

Data analysis in Figure 6 challenges the approach whereby the retirement age of women and men has been adjusted only to the increased life expectancy. The relationship between working time and the retirement age has shifted significantly. The proportion of an average adult life that men spend in retirement decreases between 1958 and 2016 from 30.31% to 28.16%. The time women spent in retirement has also fallen from 40.35% to 32.61%. As a result, the percentage of retirement time as a percentage of average adult life has fallen for both women and men, despite increasing life expectancy. It must be noted that the retirement age of women (55 years) in 1958 was low compared to that of men (60 years) and this regulatory inequality has now been levelled out. This regulatory difference has a strong effect, which is expressed in the disproportionate reduction in time spent in retirement by women (reduction of 7.74%). Thus, this result initially shows that both sexes will have to work longer in future than before, despite increasing life expectancy. It means that the increase in retirement age is disproportionately high concerning the gain in an average adult lifetime. This discrepancy is somewhat more pronounced in the female population.

A glance at the forecast also clarifies that the ratio which men and women spent in retirement is likely to rise again until 2070. It appears that a ratio of 1/3 working time to 2/3 retirement time is likely to be reached. It can also be seen that this ratio is higher for women than men.

The latter reflects the gender differences in average life expectancy. Women in Hungary live longer as men, so they also spend more time in retirement than the time spent working. This gender gap was 10.04% in 1958 and has already narrowed to 4.59% by 2016. Based on the projections, this gap will continue to shrink in the future, so that it could be 2.45% in 2070.

Source: own calculation; according to OECD (2011: 30), OECD (2019: 28), European Commission (2018: 56), United Nations (2019), Láng (1997).

Figure 5:- Relation of working time to retirement time related to average adult life in EU-27

Comparing the EU data with the Hungarian figures (see Figure 6 and 7) reveals further country-specific aspects. Firstly, it is striking that in 1958 the retirement period for women and men in Hungary was far above average. This is due to the low retirement age during the communist era. Comparing the values of women in 2016, the ratio of working time to retirement time in Hungary is in line with the European average. However, they experienced a disproportionate reduction in their retirement time between 1958 and 2016. The same picture appears when the values of the male population are compared. Eventually, forecasts for 2070 indicate that the convergence process within the EU continues in the future.
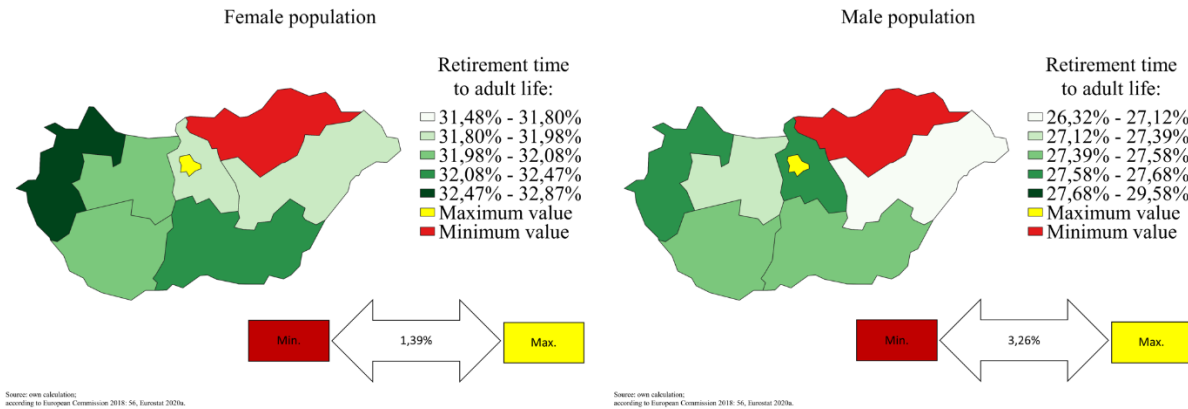
To sum up, the data provide a first indication that women and men are burdened differently within the Hungarian pension system. The gender gap between time spent in retirement relative to average adult life is the first evidence

of this. It also indicates that the increase in the retirement age was more than an adjustment to rising life expectancy. The lifetime gain of the population is added disproportionately to working life. Furthermore, it should be highlighted that due to the country's communist past, the relatively low retirement age was applied in Hungary in the 1950s. However, a comparison with the EU also shows that values have converged. Nonetheless, the question arises if this finding, based on supra- and nationally aggregated data, is also valid at a regional level.

Regional Perspective - Relation of Working Time to Pension Time NUTS 2 level:
A closer look at the regions below should help to validate the supra- and national findings. The analysis is differentiated according to the sexes male and female and the NUTS 2 level. The evaluation criterion is still the relation of working time to retirement time measured against an average adult life.

Figure 8:- Length of retirement as a proportion of the adult lifetime at NUTS 2 level

The regional perspective in Figure 8 shows differences both between regions and genders. Differences become apparent when looking at the extreme values: Women have the most extended relative retirement periods concerning average adult life in the NUTS 2 region Budapest (HU11) with 32.87% and the lowest in Észak-Magyarország (HU31) with 31.48%. There is a gap of 1.39% between these two regions, with women in Budapest spending longer in retirement than women from Észak-Magyarország. As for men, the most pronounced regional differences are also found between Budapest and Észak-Magyarország. Men from Budapest spend 3.26% more time in retirement than men from Észak-Magyarország concerning the average adult life.

The empirical results underline that, despite the uniform regulations in force in the NUTS 2 regions of Hungary, there are regional differences in retirement periods' relative length. This research provides empirical evidence of the regional disparities resulting from the interaction between the statutory retirement age and regional life expectancy. After all, citizens in different regions spend different lengths of time in retirement concerning their life expectancy. Consequently, although the retirement age is the same in all Hungary regions, citizens receive pensions of relatively different lengths. The greater the regional differences in average life expectancy, the greater the relative burden on the regions with lower life expectancy in terms of the ratio defined here if the retirement age is further increased. Thus, the research question is confirmed, and the first hypothesis is supported: The NUTS 2 regions in Hungary are burdened differently. This result should be considered when discussing further increases in the statutory retirement age.

As part of the overall picture, regional disparities are small at 1.32% for women. This means that the average life expectancy for women in the regions is close together. This result can be interpreted as an indication of comparable living conditions with only minor differences. The difference of 3.26% is more striking for the male than the female population. This is the first indication of more significant regional disparities within the male population. Accordingly, a second key finding is that there is a gender gap in terms of average life expectancy, which contributes to unequal participation in the pension system. A comparison of the regions with the maximum and minimum values of women and men highlights these differences. The gap between the maximum values is 3.29%, and the gap between the minimum values is 5.16%.

Consequently, the empirical evidence shows that Hungarian citizens spend different amounts of time in retirement, depending on gender and region. Thus, the differences in life expectancy led to different levels of participation in

the pension system. As a result, regions and genders are burdened to different degrees when the retirement age is raised. These aspects should be considered in future reforms. In any case, policy approaches should be pursued that aim to close the gap in life expectancy between the sexes and regions.

Conclusion:-

Based on the ageing of the Hungarian population, it has been argued that this causes cost increases for society. One way to reduce these costs is to increase the statutory retirement age. The study shows that policy measures have already been taken to this end. Lack of information on the regional and gender impact of the measure was addressed in this paper. It was asked how the increase of the statutory retirement age in the Hungarian pension system affects the relationship between working time and retirement time on a regional and gender-differentiated level. The two hypotheses could be confirmed by answering the question, according to which Hungarian citizens at NUTS 2 level and regarding their gender are burdened differently by the increase of the statutory retirement age.

The key finding is that, due to average life expectancy differences, women and men participate differently in retirement life. Moreover, it has been shown that the increase in the retirement age is more significant than the increase in average life expectancy. As a result, the share of retirement time in average adult life is decreasing. This applies to both men and women. However, it has been pointed out that, in the long term, the figures are converging towards the European average. There were also apparent regional differences in the length of time spent in retirement. It means that, depending on region and gender, some citizens would be more burdened than others if the retirement age was to be raised. Consequently, a policy implication is to balance regional and gender disparities if the retirement age is to be raised further. Ultimately, this equalisation requires investment in the regional equivalence of living conditions to advance gender equality in terms of average life expectancy.

From these remarks arise many starting points for further research. On the one hand, there are differences between the sexes. In this context, other variables, such as the level of income or the proportion of insured persons, could be examined in the context of participation in retirement life. On the other hand, the causes of regional differences should be further investigated.

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