Mapping the Reverse Gender Gap in Higher Education in Romania within the European Context

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Abstract

This paper aims to analyse, through a longitudinal quantitative approach using secondary analysis, the phenomenon of the reverse gender gap in education, specifically in higher education. It seeks to document and examine the occurrence and evolution of this phenomenon in Romania and in other European countries. Initially, the gender studies were primarily focused on the challenges faced by women and girls in social structures and institutions that hindered their opportunities in education, the labour market, family life and so on. However, in recent decades, while the participation of girls in higher education has increased significantly, a new trend has emerged: the participation of boys has been declining year after year in the majority of countries around the world. Therefore, this paper studies the quantitative and temporal dimensions of male students' participation in higher education. By mapping this gap, the study tries to uncover the underlying factors contributing to this trend, such as shifts in labour market demands, changes in educational policies, and evolving societal attitudes towards gender roles.

Keywords: higher education, reverse gender gap, male students, Romania

1. Introduction

The phenomenon of 'reverse gender gap' in higher education, observed and documented in various studies, indicates a concerning trend: an increasing number of males are choosing not to pursue higher education, while the participation rate of women continues to rise. Previous studies (Vincent-Lancrin, 2008; Van Bavel, 2012; Klesment & Van Bavel, 2015; Van Bavel, Schwartz & Esteve, 2018; Lauglo & Liu, 2019) have approached this phenomenon predominantly from a quantitative perspective, focusing on statistical data to identify general trends and dimensions of the problem. These analyses have highlighted the fact that boys are less and less present in higher education, but have left mainly unexplored the root causes of this decline.

The relevance of investigating this phenomenon derives from the fact that it is present in Romania, according to data available from official sources (Eurostat, NIS), but has not been investigated at its roots. Through an exhaustive understanding of the factors influencing students' educational and professional decisions, public institutions such as the Ministry of Education, the Ministry of Labour and Social Solidarity and educational institutions can intervene to reduce the gender imbalance in higher education and other forms of education, as well as to prevent or reduce youth unemployment.

Therefore, this study aims to analyse the occurrence and evolution of the reverse gender gap in higher education in Romania within the European context and to identify the precise moment when the reversal took place.

2. Literature Review

2.1 The quantitative and temporal dimension of the reverse gender gap in the European context

Before the 1970s, women were a minority in higher education in Europe, but with significant differences between countries (Mischau, 2001). In Eastern Europe, due to the communist regime,

the percentage of women in universities was higher than in Western Europe. After 1975, as the total number of students increased, the number of women enrolled in higher education also increased, outnumbering men in many European countries by 1996, including in Romania, Bulgaria, France, and Sweden (Michau, 2001).

UNESCO data show that by 1986, women became the majority in higher education in countries such as Bulgaria, France, Hungary, Norway, Poland, and Sweden. In the following years, this trend extended to other countries such as Spain, Italy and Finland. However, in countries such as Germany, the Netherlands, Austria and Greece, women remained below 50% of all students until the late 1990s (European Commission, 2000).

Until the 1990s, on average, more men than women were enrolled in university, a trend also observed in OECD countries, where women were disadvantaged by inequalities in access to education (Vincent-Lancrin, 2008). In Europe, around 1950, participation in higher education was still very low for both men and women, but enrolment rates were more than twice as high for men as for women.

Participation in higher education has increased rapidly since the 1960s. Since the 1970s, the gender gap began to narrow, and by the late 1990s, more women than men were enrolled in higher education (Van Bavel, 2012). According to Vincent-Lancrin (2008), women accounted for 46% of university students in 1985, and in 2005, the average share of women in higher education reached 55% in the OECD area.

From a comparative perspective, in the USA, equality between women and men in higher education was already achieved in 1980, while only three communist countries in Europe had reached this level – Bulgaria, Poland and Hungary (Vincent-Lancrin, 2008). Women have not only outperformed men in higher education participation, but also in graduation rates: women are more likely than men to successfully complete university education and obtain a degree (Van Bavel, 2012; DiPrete & Buchmann, 2013).

Although more women are participating in higher education, this does not result in a majority representation across all fields of study (Van Bavel, 2012). There is a tendency for girls and boys to choose different fields of study, leading to gender segregation, known as horizontal segregation, which is the greater or lesser concentration of women and men in different fields (sectoral segregation) and occupations (occupational segregation) (EIGE, 2021a). This horizontal segregation is also evident in education, where there is an over- or under-representation of one gender in certain subjects and fields of study (European Commission, 2021).

According to a report by the European Commission - She figures (2021), in 2018, for all EU-27 Member States and associated countries except Switzerland, there were more female than male bachelor graduates in every field of study. The ratio of female bachelor's graduates to those entering university varied from 0.6 (Luxembourg) to 1.4 (Hungary), whereas the ratio for males varied from 0.4 (Latvia) to 1 (Ireland). This indicates that, at the national level, girls were more likely than boys to obtain a bachelor's degree.

At the national level, the trend of a widening gap and decreasing participation rates of males in education can be observed (**Table 1**). There has been a decrease in male participation in undergraduate education – bachelor studies – and consequently a widening gender gap over the last 10 years.

While in 2013, the percentage of males enrolled in bachelor education was 47.1%, in 2022 the percentage reached 45.2%, a decrease of 1.9 percentage points. Post-secondary education also saw a decrease in the participation of males. Although the participation of males at this educational level slightly increased after 2013, from 33.3% to 34.1% in the following two years, it followed a downward trend until 2022, reaching 29%. The steepest decrease is observed in vocational education, with the percentage of males falling from 77.5% in 2013 to 65.6% in 2022, a decrease of 11.9 percentage points in 10 years.

Bachelor studies	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Male	47.1%	47.0%	46.7%	46.7%	46.4%	46.1%	45.8%	46.1%	45.2%	45.2%

Post-secondary education	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Male	33.3%	34.1%	34.1%	33.0%	32.1%	31.0%	29.7%	30.7%	28.8%	29.0%

Vocational education	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Male	77.5%	73.9%	71.2%	69.5%	68.7%	68.1%	65.9%	66.8%	65.7%	65.6%

Upper secondary education	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Male	50.4%	49.4%	49.0%	48.4%	48.2%	48.2%	48.1%	48.1%	48.2%	48.3%

Table 1. Distribution of male student population in Romania by level of education

Source: NIS (Tempo online)

Also, these declines in males' participation rates in post-secondary education can be explained by the declining participation rate of boys in upper secondary education. While in 2013, the percentage of boys slightly exceeded that of girls (50.4%), in the following years it started to shrink, reaching 48.3% in 2022, a difference of 2.1 percentage points compared to 2013.

2.2 Key factors driving the reversal of gender gaps in higher education

2.2.1 Demographic factors

Fertility control through the advent of contraceptives, women's choice to marry and have a child later in life are demographic factors that have enabled women to go to university, contributed to lower school drop-out rates and facilitated entry and participation in the labour market (Goldin & Katz, 2002; Bailey, 2006; Vincent-Lancrin, 2008). Goldin & Katz (2002) studied the effects of the introduction of contraceptive pills and found that their widespread use by women resulted in beneficial effects for women who wished to acquire a higher level of education, thus allowing them to have a higher level of autonomy over the timing of marriage and childbearing. Bailey (2006) investigated the effects of the contraceptive pill Envoid, launched in the US in the 1960s, and found that between 1970-1990 access to it contributed to a 14% increase in labour market participation among women aged 16-30.

Another demographic factor that has contributed to the increase in female participation in higher education is the decrease in family size. Averett & Burton (1996) found that the likelihood of pursuing higher education is significantly and negatively affected by the number of siblings of the individual, particularly if female, and not significantly for males.

Therefore, a decrease in the number of siblings in families contributed to an increase in female participation in higher education.

2.2.2 Socio-economic factors

Other causes that may explain this phenomenon based on sociological factors. These would be lesser discrimination in the workplace, changes in social norms regarding women's behaviour in a society that has become increasingly egalitarian, changes in parents' choices in terms of investing in education for their children in a social environment where parents are better educated, with mentalities that promote greater gender equality (Vincent-Lancrin, 2008).

Economic arguments may also explain the reversal of gender gaps in higher education. According to human capital theory, people choose to invest in themselves through education, training or other types of activities that increase their chances of acquiring a better job and higher

future earnings (Becker, 2009). The decision whether or not to attend school, work or enrol in college is considered by proponents of this theory to be a rational decision in terms of costs and benefits. Lauglo & Liu (2019) consider that people who choose to continue their education after completing compulsory education do so until they identify an attractive "exit opportunity". Lauglo & Liu (2019) offer a conflictualist perspective, based on which they believe that girls, unlike boys, perceive fewer "exit opportunities" and for this reason women tend to acquire higher educational attainment in order to cope with gender discrimination in the labour market and to ensure autonomy in their family life, which is also likely to be affected by patriarchal values.

3. Methodology

The research methodology relies on secondary analysis that utilises quantitative data obtained from official statistical sources. This study involves a comprehensive examination of datasets from the Eurostat database and the National Institute of Statistics from Romania (NIS). Thus, the present study provides insights into key trends and patterns by leveraging existing data, thereby enhancing the reliability and validity of the findings.

To process and standardise the data, the absolute values were transformed into percentage values, facilitating a comparative analysis and interpretation of the results. The main indicator used in the analysis is the proportion of males in the total population studied, calculated as a percentage ratio. The proportion of females is determined by the difference of up to 100% of the value of the percentage of males.

The temporal dimension of the analysis was also determined by the criterion of data availability from the sources used (Eurostat, NIS). Therefore, the period analysed includes all years for which there are records in the databases.

In this research there have been followed 2 main dimensions, which have been divided into indicators:

1. Quantitative dimension of participation in higher education:

- percentage of men enrolled in higher education;
- differences between study cycles (bachelor, master, doctorate);
- graduation rate of males.

2. Temporal dimension of participation in higher education:

- historical inflexion point when the reversal occurred;
- pace of change (gradual vs. accelerated);
- persistence/ instability of this reversal.

The data were analysed beginning with a higher level of aggregation (national) and then examined at disaggregated levels (NUTS 1 and NUTS 2). This approach allowed for both an overall view and a deeper focus on the reverse gender gap in the context of higher education in Romania.

4. Results and Discussions

Table 2 presents the distribution of male students enrolled in university education at the bachelor's degree level in European countries. Throughout the period covered by the analysis, Romania has had a higher rate of male student participation in bachelor's degree programmes than the European Union average.

At the European level, out of the 15 countries analysed, 6 of these (Germany, Spain, France, Austria, Romania, Sweden) have registered a downward trend in terms of the rate of participation of men in bachelor's degree programmes, another 6 countries (Bulgaria, Greece, Italy, Poland, Slovakia, Norway) have registered an upward trend, while 3 countries (Hungary, Portugal and Finland) have generally maintained the same trend, with small fluctuations.

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
EU-27	**46.73%**	**46.92%**	**46.99%**	**47.04%**		**46.87%**	**46.93%**	**46.57%**	**46.35%**	**45.85%**
Bulgaria	46.97%	47.40%	47.36%	47.91%	48.02%	48.11%	48.01%	48.18%	47.90%	47.17%
Germany	55.83%	55.22%	54.76%	54.07%	53.62%	53.26%	53.98%	53.30%	52.81%	51.49%
Greece	51.93%	52.13%	51.96%	52.18%	52.65%	52.59%	51.82%	51.65%	51.97%	52.09%
Spain	45.86%	45.70%	45.97%	45.94%	45.83%	45.56%	45.48%	45.10%	44.65%	44.41%
France	41.55%	41.56%	41.63%	41.81%	41.45%	41.05%	40.83%	40.34%	39.79%	40.06%
Italy	44.86%	45.21%	45.64%	45.94%	46.21%	46.27%	46.20%	45.62%	45.72%	45.43%
Hungary	46.58%	46.14%	46.69%	47.16%	47.39%	47.61%	47.47%	47.13%	46.90%	46.28%
Austria	46.91%	47.19%	47.34%	47.28%	47.41%	47.15%	46.27%	45.95%	45.32%	44.98%
Poland	42.85%	43.43%	43.81%	43.73%	43.66%	43.53%	43.26%	44.08%	44.59%	44.26%
Portugal	46.65%	46.35%	46.16%	46.12%	45.62%	45.39%	45.05%	45.28%	45.61%	46.80%
Romania	**48.61%**	**48.51%**	**48.71%**	**48.48%**	**48.44%**	**48.16%**	**47.98%**	**48.00%**	**47.72%**	**47.10%**
Slovakia	41.12%	40.97%	41.15%	41.38%	41.67%	41.98%	42.51%	42.76%	42.75%	42.26%
Finland	47.80%	47.83%	47.93%	48.07%	48.23%	48.57%	48.43%	47.90%	47.72%	47.15%
Sweden	36.85%	36.99%	37.01%	36.80%	36.54%	35.97%	36.09%	36.05%	35.65%	35.55%
Norway	38.17%	39.40%	39.19%	39.14%	39.31%	39.68%	39.82%	39.71%	39.69%	39.69%

Table 2. Distribution of male students enrolled in bachelor's degree programmes (% of total) in European countries

Source: Eurostat [educ_uoe_enrt06] (own calculations)

Among all the countries analysed, Germany stands out for having more than half of all students enrolled in bachelor's degree programmes being male. During the first period analysed, the data showed values between 55-54%, but these values stagnated for four years, remaining around 53%. In the last two years, there has been a slight decline, with values recorded at 52.81% in 2021 and 51.49% in 2022.

At the national level, the participation rate of male students in the bachelor's program has gradually decreased, reaching from 48.6% in 2013 to 47% in 2022.

At a higher educational level, master's degree programmes, (**Table 3**) the data have lower values compared to the bachelor's cycle, which means that men do not necessarily want to have a higher educational level, but rather view college from an instrumental point of view, with the main goal of obtaining a university degree, in this case a bachelor's degree, which would give them an advantage on the labour market. Compared to people who did not attend higher education, with the aim of specialising

in a certain field, men who graduated from university (bachelor's degree) would have more opportunities for employment and professional advancement compared to those who only have a high school education.

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
EU-27	**42.71%**	**42.85%**	**42.98%**	**43.17%**		**43.18%**	**43.02%**	**42.82%**	**42.54%**	**41.89%**
Bulgaria	41.68%	41.76%	41.00%	41.87%	42.37%	42.47%	41.75%	41.39%	40.45%	39.22%
Germany	46.19%	46.30%	46.47%	46.80%	46.86%	46.61%	46.14%	45.77%	45.41%	45.12%
Greece	42.03%	41.78%	42.37%	42.19%	40.35%	40.09%	40.10%	40.05%	38.51%	37.74%
Spain	44.82%	44.86%	44.35%	43.27%	42.42%	41.52%	41.46%	40.63%	40.76%	40.91%
France	46.53%	46.41%	46.40%	46.33%	46.53%	46.73%	46.81%	46.53%	47.03%	46.33%
Italy	39.63%	39.73%	40.15%	40.48%	40.80%	41.01%	40.95%	40.82%	40.40%	39.88%
Hungary	42.74%	42.48%	42.80%	42.59%	42.90%	43.30%	43.15%	43.41%	43.71%	43.23%
Austria	45.09%	45.18%	45.15%	45.49%	45.92%	46.07%	46.01%	45.57%	45.10%	44.69%
Poland	34.31%	34.34%	34.57%	34.72%	34.80%	34.42%	34.06%	34.32%	33.16%	32.04%
Portugal	47.64%	47.48%	47.66%	47.34%	47.14%	46.52%	45.85%	45.47%	45.38%	42.31%
Romania	**40.07%**	**41.02%**	**40.70%**	**40.56%**	**40.45%**	**40.43%**	**39.95%**	**39.66%**	**39.08%**	**38.59%**
Slovakia	37.61%	37.87%	38.00%	38.67%	38.22%	38.52%	38.01%	38.41%	38.61%	38.21%
Finland	40.11%	40.51%	40.82%	41.90%	42.43%	41.87%	41.84%	41.00%	40.52%	40.25%
Sweden	43.08%	43.58%	44.12%	43.66%	43.46%	42.88%	42.82%	42.64%	42.10%	41.58%
Norway	43.46%	43.87%	43.78%	43.40%	43.13%	42.65%	41.87%	41.23%	40.48%	39.77%

Table 3. Distribution of male students enrolled in master's degree programmes (% of total) in European countries

Source: Eurostat [educ_uoe_enrt06] (own calculations)

According to **Table 3**, Romania has lower values throughout the analysed period, unlike the EU-27 average. The most pronounced decreases in the participation rate in the master's program in the 10 years analysed are observed in Portugal - 47.64% in 2013 vs. 42.31% in 2022, a decrease of 5.33 percentage points, Greece – 42.03% in 2013 vs. 37.73% in 2022, a decrease of 4.29 percentage points, Spain – 44.82% in 2013 vs. 40.91% in 2022, a decrease of 3.91 percentage points and Norway – 43.46% in 2013 vs. 39.77% in 2022, a decrease of 3.69 percentage points.

At the national level, although an increase of 0.95 percentage points was observed in 2014 compared to 2013, in the following years, the data tend to gradually decrease, but they remain

slightly higher than in 2013. Since 2019, the percentage of male students enrolled in the master's degree program has begun to have a more pronounced downward trend, reaching 38.59% in 2022.

In the doctoral programs (as shown in **Table 4**), participation among men is higher compared to women in most countries during the initial period analysed. However, this trend tends to decrease over time, with men's participation falling below that of women in more recent years. Throughout the entire period analysed, the proportion of men enrolled in doctoral programs remains over 50% in countries such as Germany, Greece, France, Hungary, Austria, and Slovakia. Additionally, the EU-27 average for the percentage of men enrolled in doctoral programs has consistently been above 50% during the years studied.

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
EU-27						51.96%	51.94%	51.47%	51.17%	51.00%
Bulgaria	48.91%	49.35%	48.65%	48.74%	48.06%	47.70%	46.87%	47.45%	47.41%	48.04%
Germany						55.59%	55.65%	53.57%	53.03%	52.50%
Greece	52.49%	52.93%	54.69%	54.57%	52.53%	51.16%	51.56%	52.08%	52.18%	51.64%
Spain	51.90%	50.54%	50.36%	50.34%	50.33%	50.11%	50.04%	49.99%	49.91%	49.84%
France	52.84%	52.74%	53.10%	53.00%	53.24%	52.96%	52.60%	52.79%	52.57%	52.72%
Italy	48.43%	48.59%	49.10%	49.41%	49.61%	49.97%	50.74%	51.32%	52.04%	52.14%
Hungary	51.20%	49.91%	49.60%	49.67%	50.92%	52.59%	51.55%	51.57%	51.93%	50.87%
Austria	52.86%	53.13%	53.53%	53.74%	54.02%	54.48%	54.54%	54.70%	54.17%	54.31%
Poland	46.91%	46.17%	45.74%	45.31%	44.95%	45.09%	45.20%	45.35%	45.97%	46.74%
Portugal	46.51%	46.10%	46.79%	47.35%	47.54%	47.76%	47.97%	47.77%	47.96%	47.47%
Romania	**50.66%**	**50.12%**	**51.91%**	**50.70%**	**51.50%**	**51.01%**	**49.49%**	**48.99%**	**48.62%**	**48.46%**
Slovakia	52.41%	52.55%	52.18%	52.13%	52.53%	52.45%	52.13%	52.03%	52.37%	52.13%
Finland	47.88%	48.12%	47.31%	47.29%	46.94%	47.24%	46.93%	46.75%	46.83%	46.76%
Sweden	51.26%	51.64%	52.03%	52.48%	52.39%	51.80%	51.69%	50.76%	49.99%	49.08%
Norway	48.87%	48.18%	48.57%	48.84%	47.70%	47.33%	47.03%	46.28%	46.04%	45.96%

Table 4. Distribution of male students enrolled in Doctorate programmes (% of total) in EU countries

Source: Eurostat [educ_uoe_enrt06] (own calculations)

The countries that indicate a reversal of the gender gap in participation in doctoral programs are Spain, Romania and Sweden. A downward trend was recorded in the 10 years analysed in

Bulgaria, Hungary, Poland, Finland, Norway. Italy is the only country that had an upward trend and went from under half of male doctoral students to over half (48.43% in 2013 to 52.14% in 2022).

In Romania, the gender gap at the doctoral level began to reverse after 2019, with males representing 49.49% of doctoral students in 2019, being at parity with women. By 2022, this figure slightly decreased to 48.46%.

When comparing different study programs, a notable discrepancy is observed between master's and doctoral programs regarding the participation of men and women. At the master's level, women have significantly higher participation rates, while at the doctoral level, men outnumber women, both nationally and across Europe. The year 2019 marks a pivotal moment as it signifies the reversal of the gender gap in doctoral university programs at the national level.

Figure 1 depicts the distribution of male upper secondary education pupils and male undergraduate students in Romania over a 28-year period between 1955 and 2023. As can be observed, the reversal of the gender gap in undergraduate studies occurred in 1998 when the percentage of male undergraduate students decreased to 48.97% from 50% in 1997. Since 1998, male participation in undergraduate programs in Romania had a downward accelerated trend until 2004, recording values of 46.49% in 2000, 45.52% in 2002 and 44.14% in 2004.

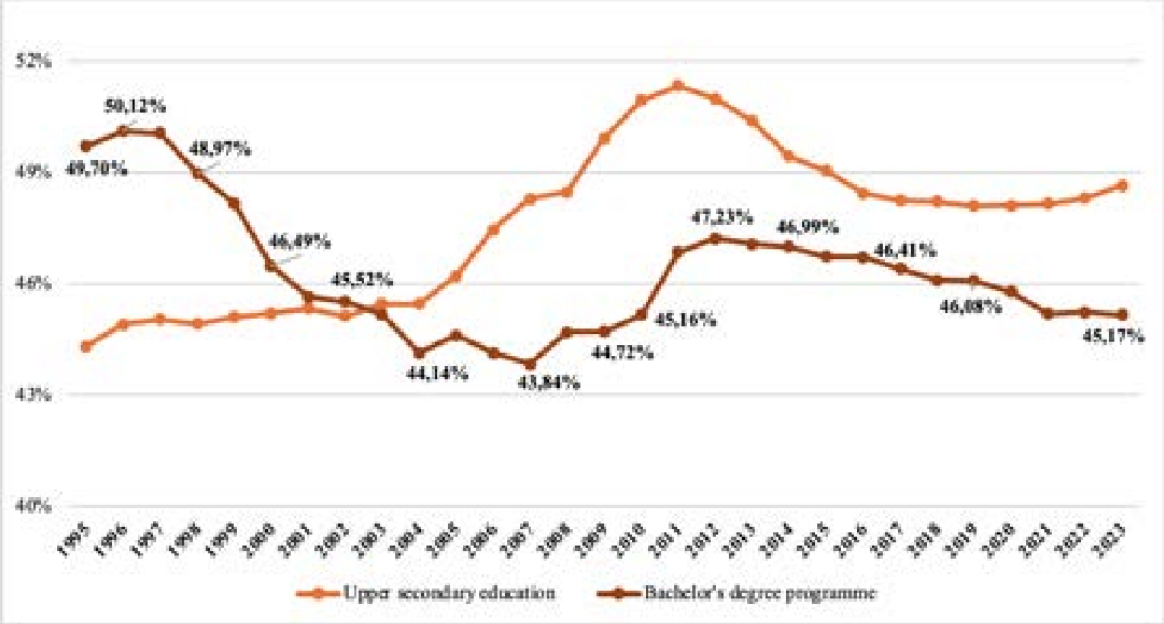

Figure 1. Distribution of male pupils and students in Romania (% of total) – Upper secondary education and bachelor's degree programme – 1995-2023

Source: NIS - Tempo Online (own calculations)

In 2005, the values were slightly higher (44.62%), but then dropped again, reaching 43.84% in 2007, the lowest percentage recorded in the period analysed. From 2009, the data started to gradually increase again until 2012 (45.16% in 2010, 46.86% in 2011 and 47.23% in 2012). From 2013, the participation of males in undergraduate higher education gradually decreased, as can be seen in the graph, reaching 45.17% in 2023. Therefore, from 1996, when the participation of males in undergraduate programs was at parity with that of girls (50.12%), it reached a gap of 4.95 pp in 2023.

In terms of upper secondary education at the national level, there is an upward trend in the participation of boys, with the highest percentage in 2011 (51.33%). For 4 years, boys have had a higher participation in upper secondary education than girls (50.94% - 2010; 51.33% - 2011; 51% - 2012 and 50.39% - 2013). Looking from the point of view of the variability of the data

over time, it can be observed a slow increase in the period 1995-2004 from 44.31% (1995) to 45.46% (2004).

At the same time, the analysis shows a rapid evolution of the data from 2005, which was maintained for 6 years. From 2012, the data had a downward curve until 2019 (48.10%), starting again to increase slightly, reaching 48.64% in 2023. Despite the fluctuating trend in the data over the period analysed, overall there has been an increase in the participation of boys in upper secondary education from 1995 (44.31%) to 2023 (48.64%).

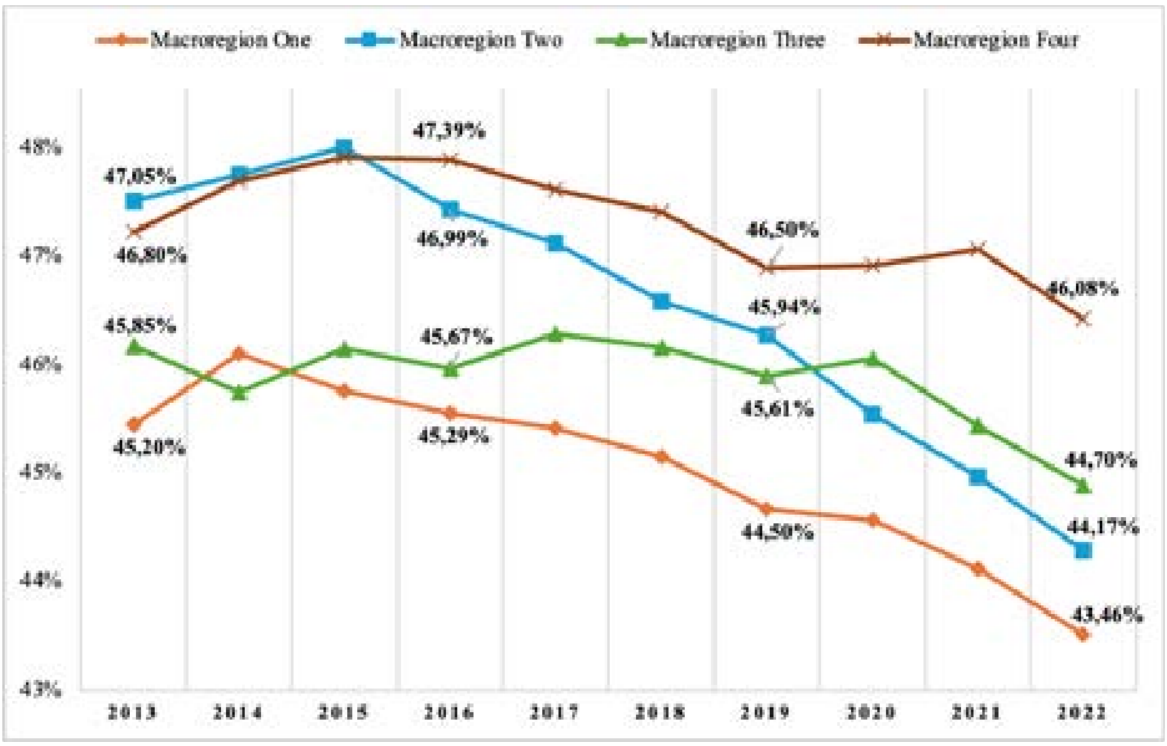

Figure 2. Distribution of male students enrolled in higher education in Romania by macro-region - NUTS 1 - (% of total)

Source: Eurostat [educ_uoe_enrt06] (own calculations)

Figure 2 above shows the distribution of male students enrolled in higher education in Romania by macro-region (NUTS 1 disaggregation level). Overall, there is a decrease in male

participation in higher education in all 4 macro-regions over the analysed period. Macro-region Four (includes Sud-Vest Oltenia and West region) is the only one that remains at the same values of 46.80-46% between 2013-2022, unlike the rest of the macro-regions which show more pronounced downward trends. Macro-region Two (includes North-East and South-East) had the steepest downward trend over the analysed period, falling from 47.05% (2013) to 44.17% (2022) in 9 years. Macro-region Three (includes South-Muntenia and Bucharest-Ilfov) had a fluctuating path over the analysed period, registering increases and decreases every year. The last recorded increase was in 2020 (45.47%), after which it gradually declined to 44.70% in 2022.

Regarding Macro-region One (includes North-West and Centre), only two moments are observed when the values increased, namely 2014 (45.79%) and 2020 (44.41%). For the rest period, the data present a downward trend that culminated with the value of 43.46% in 2022.

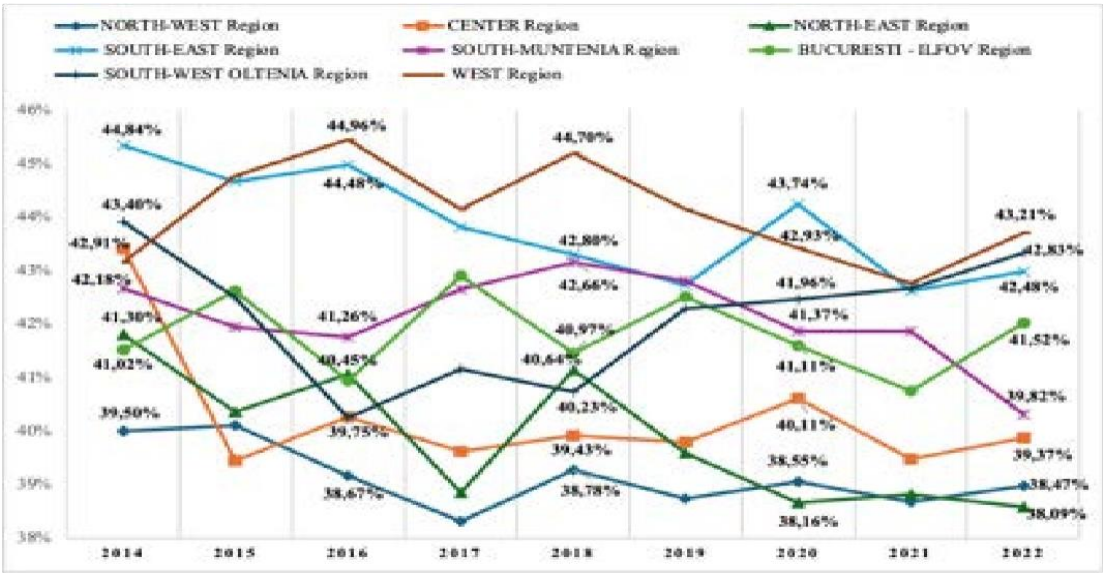

Figure 3. Distribution of male higher education graduates in Romania by development regions– (NUTS 2) (% of total)
Source: NIS – Tempo Online (own calculations)

Figure 3 shows the distribution of male higher education graduates by development region. The North-West and Center regions, which belong to Macro-region One, are at a significant distance in 2014

in terms of the percentage of male higher education graduates (42.91% - Center vs. 39.50% - North-West), but immediately the following year the Center region shows a sharp decrease, reaching 38.94% and approaching the profile of the North-West region. In the following years, the Center region slightly starts to have slightly higher values, while the North-West region starts to show decreases. In the last year captured in the analysis (2022) the Center region has a value of 39.37% and the North-West region has 38.37%, both with lower values than at the beginning of the analysis.

The North-East and South-East Regions, belonging to Macro-region Two, have very different paths in the 9 years analysed, the South-East Region having in general much higher values than the North-East Region, but being characterized by a downward trend, starting from 44.48% in 2014 and reaching 42.48% in 2022. On the other hand, the North-East Region has in 2014 the value of 41.30%, registers in the following year a decrease of 1.16 percentage points, and then every year has an increase followed by a decrease until 2018, when it reaches the value of 40.64%, being the highest value for this region in the period analysed, having after an annual downward trend, reaching 38.09% in 2022, the lowest percentage in that year compared to the other regions.

The regions of Sud-Muntenia and Bucharest-Ilfov, which belong to Macroregion Three, show different trends, although their values are generally similar. A more stable trend is recorded by the Sud-Muntenia region, while the Bucharest-Ilfov region has an unstable path, characterized by annual increases and decreases. The moments in which the two regions have similar values are the years in which the Bucharest-Ilfov Region registers increases in the male higher education graduation rate. Two moments stand out in the values recorded by the two regions, namely the year 2018, when the South-Muntenia region has an increase in the graduation rate, with a value of 42.66%, and the Bucharest-Ilfov region has a decrease compared to the previous year, with a value of 40.97%, and the year 2022, when the South-Muntenia region records a decrease, reaching 39.82%, and the Bucharest-Ilfov region has an increase, reaching 41.52%. From a longitudinal perspective, despite the fluctuations recorded by the Bucharest-Ilfov region, it does not have a large difference between the values at the beginning and at the end of the period analysed; and even has a slight increase of 0.5 percentage points in 2022, compared to 2014. In the case of the Sud-Muntenia region, the longitudinal analysis shows that, despite 4 years of higher values compared to the beginning of the analysis, it has a decrease of 2.36 percentage points in 2022 compared to 2014.

The South-West Oltenia and West regions belong to Macro-region Four. Compared to the other regions, the West region has among the highest values of higher education completion rates for males in the analysed period. Although in 2014, the higher education completion rate for males had an average value in the West region (42.65%), at the end of the analysed period, it had the highest value since 2022 (43.21%). Also, the South-West Oltenia region had a value of 43.40% in 2014, but it experienced an accelerated decrease in the following two years, reaching 39.75% in 2016. Nevertheless, it managed to recover and gradually record annual increases, except for 2018 when it had a small decrease, and reach the value of 42.83%, very close to that of the West region in the same year (43.21%).

5. Conclusions

The analysis of these data indicates that they are consistent with the findings of previous studies that have investigated this phenomenon. The study identified that the historical inflexion point when the reversal of the gender gap occurred in Romania (1997-1998 period) corresponds to the moment when this phenomenon was also identified in other European countries, according to studies conducted previously (Vincent-Lancrin, 2008; Van Bavel, 2012; DiPrete & Buchmann, 2013; Klesment & Van Bavel, 2015; Van Bavel, Schwartz & Esteve, 2018; Lauglo & Liu, 2019).

Within the European context, Romania had a higher participation rate of male students in undergraduate programs (bachelor's degree) than the EU average for the same period. For university master's education, the data from all the countries analysed have lower values than for bachelor's education, which means that men do not necessarily aim to have a higher educational level, but rather look at university from an instrumental point of view, with the main goal of obtaining a university degree, in this case a bachelor's degree, which gives them an advantage in the labour market. In contrast to people who have not attended a university with the aim of specializing in a particular field, men with a university degree (bachelor's degree) would have significantly more opportunities for employment and career advancement than those with only a high school education. The steepest declines in the participation rate in master's programs over the 10 years are observed in Portugal, Greece, Spain and Norway. Romania has lower values over the whole period analysed (2013-2022) in contrast to the EU-27 average in terms of the percentage of male students enrolled in master's programs.

In Romania, the gender gap reversal at the doctoral program level started in 2019 (49.49%), reaching 48.46% in 2022. As a comparison between the study programs, a larger discrepancy is observed between the master's and doctoral programs in terms of the percentage of men enrolled in the two programs. While at the master's level, women tend to have a much higher participation, at the doctoral level, the opposite is observed, with men outnumbering women at both the European and national levels.

At the regional level, Macro-region Four had the highest participation rates in higher education for males compared to the rest of the region over the period analysed. At the opposite pole was Macro-region One, which recorded the lowest values regarding male participation rates in higher education.

The limitations of this study include its reliance entirely on secondary data, whereas some complementary data collected might provide deeper insights into the causes of the reverse gender gap. Also, the data sources are limited to Eurostat and NIS, which might not capture all relevant variables. For example, the study focuses primarily on enrolment and graduation rates without exploring performance metrics or dropout rates. While this study maps the quantitative trends, it offers a limited explanation of the causal factors driving the reverse gender gap in higher education in Romania specifically. Even though this study provides a context for the European comparison, it doesn't fully explain why some countries show different patterns than others.

It should be noted that this analysis is still in the early stages of investigation, and future directions should identify detailed and varied explanations for the evolution of the data in relation to the political, economic and social context in Romania over the last 30 years. Further investigation should be conducted into the phenomenon of gender gap reversal in higher education, using additional data to highlight the causes of this phenomenon. Other research directions would be to analyse the promotion rate in the Baccalaureate exam by gender in recent years, the results of PISA tests in recent years by gender, the participation of students by gender in Romanian universities and faculties according to macro-regions, development regions, to identify which universities have the lowest participation rates of male students in the four macro-regions and development regions, analysing data from gender barometers and other databases such as WVS, EVS, to see how social values on the importance of education have evolved according to gender dimension.

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