GENDER EQUALITY IN THE ITALIAN REGIONS

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1. Introduction

Gender inequality is a recent, important and debated phenomenon. In the last decades it has become a political and academic matter of interest, generating lively debates and plenty of indicators in order to find an objectively and accurate way to measure it (Bozzano, 2012). Indeed, the degree of gender disparity in both developing and developed countries, becoming one of the main requested conditions for an inclusive and sustainable society. Due to feminist movement and equal social policies, the inclusion gap between male and female has been reduced significantly compared to the past decades. Despite these gains, many challenges remain: women are still victims of gender-based violence, discrimination, social exclusion and less represented than men at all levels of political and economic leadership. Due to its discriminating nature, gender inequality is arguably an ethical issue, but also "an important economic, business and societal issue with a significant impact on the growth of nations" (Hausmann, Tyson, and Zahidi, 2007). Gender discrimination, indeed, is one of the causes of an economic slowdown development, social improvement and, more generally, of sustainable and fair nation (Kabeer and Natali, 2013; Moorhouse, 2017; Profeta, 2017; Di Bella, 2021).

A clear and precise definition of gender equality has been given in the United Nations Report of the Economic and Social Council (United Nation, 1997), where the gender equality is described as "The condition in which people receive equal treatment, with equal ease of access to resources and opportunities, regardless of gender… ". Moreover, other authoritative sources that explicitly mention the gender equality as a fundamental right to be guaranteed to all citizens are the Italian Constitution (Art. 3, 1948) and Universal Declaration of Human Rights (Art. 22, 1948). To validate the urgency of the abovementioned problem, in 2015 the Unites Nations countries fixed 17 Sustainable Development Goals (SDGs), including the Gender Equality, 'to achieve a better and more sustainable future for all' by 2030 (Di Bella, 2021).

Bases on these institutional documents, we selected the domains that better allow to describe and analyze this multidimensional and complex phenomenon: Education, Work, Power and Safety (Table 1).

Table 1 – *Sources, target and domains explicitly refer to Gender Equality.*

Source	Target	Domain
ITALIAN COSTITUTION	**Art. 34** – "Schools are open to everyone. Primary education, given for at least eight years, is compulsory and free of tuition. Capable and deserving pupils, even if lacking financial resources, have the right to attain the highest levels of education …"	**Education**
	Art. 37 – "Working women have the same rights and are entitled to equal pay as men for equal work …"	**Work**
	Art. 51 – "All citizens, regardless the gender, are eligible for public offices and for elective positions under equal conditions, according to the rules established by law …"	**Power**
UNIVERSAL DECLARATION OF HUMAN RIGHTS	**Art. 22** – "Everyone, as a member of society, has the right to social security and is entitled to realization, through national effort and international co-operation and in accordance with the organization and resources of each State, of the economic, social and cultural rights indispensable for his dignity and the free development of his personality."	**Safety**
	Art. 26 – "Everyone has the right to education. Education shall be free, at least in the elementary and fundamental stages. Elementary education shall be compulsory. Technical and professional education shall be made generally available and higher education shall be equally accessible to all on the basis of merit."	**Education**
SDG	"End all forms of discrimination against all women and girls everywhere."	**Safety**
	"Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life."	**Power**

From these definitions, we have analyzed the gender phenomenon through a synthetic measure of disparity between male and female based on the methodology of composite indices, which allows us to find a suitable combination of the individual indicators, aimed at yielding a measurement of active inclusion either of male and female in Italian regions.

2. Domains and Indicators

Measuring gender inequality is, therefore, a very challenging task, because of its complex and multidimensional nature.

Analyzing gender accessibility to resources and opportunities, it is important to be aware of the contextual factors. From a statistical point of view, concepts like accessibility, active inclusion and participation are theoretical concepts and so not directly measurable. Consequently, to monitor the gender social inclusion it is necessary to implement statistical indicators to approximate the different dimensions of these concepts.

In accordance with the definition given and the reference sources, we focused the analysis on 4 domains (Table 2):

- **Education**, analyzing the NEETs and the dropout rate of students between 18-24 years[1], the graduation and master's degrees pass rate[2];
- **Work**, represented by the percentage gender gap salary[1], the average of weekly working hours (20-64 years), the employment rate and the percentages of part time contracts[2];
- **Power**, composed of gender percentages at Municipal Councils and Regional Councils, as well as the rate of entrepreneurship[3];
- **Security**, analyzing the quota of voluntary homicides in the family, the percentage of suicides of people aged 15 and over, the percentage of abuses from partners or ex-partners and the percentage of victims calling to 1522 (the anti-violence and stalking number)[2,4]

All indicators have been considered in the period within 2015 and 2017, except for the quota of victims of voluntary homicides in the family, which is taken from the average of this period.

In the table below (Table 2) we show the structure of single domains and indicators with their data source, highlighting their polarity:

- Positive polarity (+), i.e., an increment of the graduation rate will increase the Education rate of the same region;
- Negative polarity (-), i.e., if the NEET rate increase the Education rate will decrease.

[1] https://ec.europa.eu/eurostat/data/database/
[2] https://dati.istat.it/index.aspx?lang=it#
[3] http://amisuradicomune.istat.it
[4] https://www.dati.gov.it/

Table 2 –*Domains and Indicators with data sources. Polarity (+, -) is shown in brackets.*

DOMAINS	INDICATORS	SOURCES
EDUCATION (+)	NEET RATE (-)	Eurostat
	SCHOOL DROPOUT RATE (-)	
	GRADUATION PASS RATE (+)	ISTAT
	MASTER'S DEGREE PASS RATE (+)	
WORK (+)	GENDER GAP PAY (+)	Eurostat
	WEEKLY AVARAGE WORKING HOUR (+)	
	EMPLOYMENT RATE (+)	ISTAT
	PART TIME CONTRACTS (-)	
POWER (+)	MUNICIPAL COUNCILS (+)	ISTAT
	REGIONAL COUNCILORS (+)	
	ENTREPRENEURSHIP (+)	
SAFETY (+)	ABUSE CONSUMED BY PARENTS AND PARTNERS (-)	ISTAT and Ministry of the Interior
	VICTIMS CALLING 1522 (-)	
	QUOTA OF VICTIMS OF VOLUNTARY MURDER COMMITTED BY PARTNERS (-)	
	SUICIDES RATE (-)	

3. Methodology of analysis

The difficulty in finding disaggregated data by gender and by regions, together with the complexity of this phenomenon has led to identify a selection of specific domains that can describe the problem on the basis of the aforementioned theoretical sources.

Although awarded of the risk of simplifying such a complex and delicate issue through a synthetic measure, we considered crucial to have a statistical tool which allows to objectively communicate and compare this fragmented and multidimensional issue.

3.1 Original matrix

Firstly, we constructed the original matrix (40x15) for each year considered (2015-2017), where rows represent Italian regions for both gender (the first 20 rows refer to male and the other 20 to female) and columns represent the elementary indicators.

In the selection of elementary indicators, we also included correlated dimensions. However, since gender inequality is a normative phenomenon, we decided to keep these correlations as they are relevant to the description of this issue (even if they are not statistically informative).

3.2 Normalization of elementary indicators

Since elementary indicators present values with different units of measurement, standardization was necessary to make them comparable. Therefore, the normalization makes sure that an increase in the indicators corresponds to an increase in the composite index, regardless of their polarity. Specifically, we applied the Adjusted Mazziotta-Pareto Index (AMPI) (Mazziotta and Pareto, 2016; Mazziotta and Preto, 2017) approach, which makes it possible to compare distributions with originally different variability over the time.

After the elementary indicators normalization, we compute a composite indicator for each single domain, and then we aggregate them in order to obtain the final composite index (Regional Gender Equality Index - RGEI).

Given the matrix $\mathbf{X}_d = \{x_{ijd}\}$, whose generic element x_{ijd} represents the value of the indicator j for the i-th region in the d-th domain, let *Inf* x_j and *Sup* x_j be respectively the overall minimum and maximum values of the indicator j across all the regions and all time periods considered. Denoting with *Ref* x_j the average of the indicator j all over the Italian regions in 2015 as the reference, the minimum and the maximum value of the possible range for each indicator (goalposts) are defined as:

$$\begin{cases} Min_{x_j} = Ref_{x_j} - \Delta \\ Max_{x_j} = Ref_{x_j} + \Delta \end{cases} \quad (1)$$

where $\Delta = (Sup_{xi} - Inf_{xi})/2$. Given the matrix $X_d = \{x_{ijd}\}$, a normalized matrix $R_d = \{r_{ijd}\}$ is then computed, where the generic element r_{ij} is obtained as follows (in the case of positive polarity of the indicator j):

$$r_{ij} = \frac{x_{ij} - Min_{x_j}}{Max_{x_j} - Min_{x_j}} \; 60 + 70 \quad (2)$$

where $Min\ x_j$ and $Max\ x_j$ are the goalposts for the indicator j. Indeed, if the indicator j has negative polarity, it is necessary to use the complement respect to 200 for computing the normalized value.

The multiplication factor 60 and the translation of 70 units allow to obtain vectors with values almost certainly between 70-130, where 100 corresponds to the reference value. One of the advantages of the AMPI method consists on an easier interpretation of the levels of the phenomenon. It is possible to notice immediately the values above the reference value (values greater than 100), the values with a level below it (values less than 100) and make comparison among them over the time.

3.3 Weighting and aggregation

Since we considered all the indicators equally important, we attributed the same weight to all of them. In order to obtain the composite index for the domain d-th, the elementary indicators for each region have been summarized through an arithmetic average, and for avoiding compensative side effects a penalty correlated to the variance of the indicators values has been applied to it:

$$AMPI\ d_i^{+/-} = Mr_i \pm Sr_i\ cv_i \tag{3}$$

where Mr_i and Sr_i, are respectively, mean and standard deviation of the normalized values of the region i-th, and $cvi = Sr_i/Mr_i$ is the coefficient of variation for the region i-th of the domain d-th. This aggregation method was applied to the four domains of each region, obtaining the gender equality index (RGEI) for each Italian region.

$$GEI = Md_i \pm Sd_i\ cvd_i \tag{4}$$

where Md_i is the arithmetic mean of the domains value of the region i-th, Sd_i their strander deviation and cvd_i represents the coefficient of variation. Since this is a positive polarity phenomenon, the penalty due to variability has been subtracted.

4. Results

The observed values of the RGEI show a marked disadvantage of female respect to male for each considered year (Table 3), confirming that there is a disparity between the two genders. Regarding the analysed domains, we can observe how males in almost all Italian regions have more opportunities and an easier access to social resources, with the exception of the Education domain where women show the highest values in every Italian region.

As far as the Education domain is concerned, we observe that Abruzzo and Molise females have the highest values over the entire period, while the lowest ones are found in the male population of Calabria, Sardegna and Sicilia.

Comparison over the years of the Work domain shows a marked difference between males index in the North regions, where Veneto, Trentino Alto Adige and Lombardia showed the best overall values, and females in the South, where Sicilia, Calabria and Campania displayed the lowest ones.

In the Power domain, given the complementarity of the gender data in the municipal councils and regional councillors, we observe how from 2015 to 2017 the extreme values between genders are shown in Calabria, Campania and Lazio with a marked penalty for females. Indeed, during this period, only two women held the role of President of the Region, specifically in Umbria and Friuli Venezia Giulia (Cottone, 2020).

During this period in the Security domain Veneto and Abruzzo displayed the highest level of safety for male, whilst Calabria and Friuli Venezia females showed the lowest one.

Considering the RGEI for the entire Italian peninsula, a slight but constant growth of the average national index has been recorded. Following ISTAT and Eurostat guidelines for the Italian territorial distinction, we analysed and compared the values of five macro-areas: North-west, North-east, Centre, South and Islands.

Table 3 – *Regional Gender Equality Index (RGEI) in the Italian regions for males and females.*

	RGEI	2015		2016		2017	
		M	**F**	**M**	**F**	**M**	**F**
North-West	PIEMONTE	108.52	99.28	108.70	99.69	108.75	100.03
	VALLE D'AOSTA	107.78	101.37	107.99	100.97	108.02	100.71
	LIGURIA	108.13	99.51	108.85	98.94	109.02	99.29
	LOMBARDIA	108.62	99.67	108.88	99.72	108.85	99.59
North-Est	TRENTINO A.A.	108.79	98.78	108.63	98.91	108.49	98.63
	VENETO	109.72	100.22	110.08	100.08	110.06	100.28
	FRIULI V.G.	109.37	99.25	109.46	99.95	109.00	100.07
	EMILIA ROMAGNA	108.73	100.56	109.13	100.69	109.00	100.78
Centre	TOSCANA	107.81	99.77	107.95	100.22	107.96	100.38
	UMBRIA	109.24	100.00	109.29	100.39	109.08	101.05
	MARCHE	108.94	101.12	109.07	101.43	109.19	101.36
	LAZIO	108.81	99.62	108.44	100.30	108.79	100.56
South	ABRUZZO	108.38	100.09	109.29	100.27	109.22	100.88
	MOLISE	108.55	100.12	107.34	99.59	108.31	100.96
	CAMPANIA	106.47	97.44	106.26	98.01	106.55	98.35
	PUGLIA	107.16	98.24	106.88	98.68	106.94	98.65
	BASILICATA	108.73	100.52	108.01	100.84	107.95	100.81
	CALABRIA	106.26	97.50	106.20	97.56	106.43	97.95
Islands	SICILIA	104.81	97.48	105.14	97.82	104.96	98.43
	SARDEGNA	105.36	97.68	105.87	98.05	105.76	98.18
	ITALY	100.00		100.17		100.26	

Table 3 clearly shows how in all Italian region males display the highest values compared to females of the same regions. More in detail we can observe that all males figures in each analysed year are higher than the national average RGEI with the maximum value reached by Veneto in 2016 (RGEI=110,08) and the minimum one by Sicilia in 2015 (RGEI=104,81). By contrast, the majority of females are below the goalspot ($RGEI_{(2015)}$= 100) with the maximum value represented by Marche in 2016 (REGEI= 101,43) and the minimum by Campania in 2015 (RGEI=97,44). The national average improved constantly gaining 0.17 in 2016 and 0.9 in 2017. This trend is also confirmed by the number of regions with a female RGEI over the goalspot moving from 8 in 2015, to 9 in 2016, reaching 11 in 2017.

For a straightforward and synthetic visualization of the phenomenon, we computed the mean values for macro areas (Table 4).

Table 4 - A*verage of Italian macro areas in 2015, 2016 and 2017*

RGEI	2015		2016		2017		Total	
	M	F	M	F	M	F	M	F
North-west	108.26	99.96	108.60	99.83	108.66	99.90	108.51	99.90
North-east	109.15	99.70	109.33	99.91	109.14	99.94	109.20	99.85
Centre	108.70	100.13	108.69	100.59	108.75	100.84	108.71	100.52
South	107.64	98.97	107.44	99.14	107.75	99.71	107.50	99.25
Islands	103.74	97.54	103.73	97.94	103.66	98.30	105.32	97.94

Accordingly to several studies on Italian society, Table 4 seems to represents an evident inequality level of inclusion between the North and the South of the peninsula (Di Bella, 2021).

Furthermore, the Islands present the lowest values for both genders with an average male RGEI of 105,32 and a female one of 97,94.

North-east instead shows the highest values for male (RGEI=109,19), with Veneto ranking as first all over the three years, while the Centre present the highest level of inclusion for females (RGEI= 100,58), with Marche placing second in 2015, and first in both 2016 and 2017.

5. Conclusions

During the realization of this research work we came across a systematic lack of data regarding gender issues, specifically gender disaggregated data or data composed through collection methods involving social and cultural factors. The RGEI may represent a solid and replicable measure of the phenomenon, with the aim to support the political and administrative decisions on both national and regional level of the country.From the analysis results we can clearly evince how gender gap is a common phenomenon all over Italy highlighting a significant difference between the northern and southern regions. Even if we noticed a slight improvement of the national average over the period, evidence of gender discriminations are still present in our daily society.

For example, although female numbers in the Instruction domain are higher than men in all the Italian regions, this performance is not reflected in the Work domain, where women are generally less paid and earn more part time contracts than men. This biased cultural mindset, based on the a very traditional model of household management, in which female role is relegated to the care of the family and the management of domestic activities, is a deterrence for the reintegration or the access on the labour market.The introduction of the parental leave in 2012 for fathers had a

mild, but significant contribution to reduce gender discriminations, however it impacted the labour system, and an extension of this paid leave may incentivize the reintegration of women on the labour market and the pursuit of their social, political and economic goals (Martino, 2018).

The Power domain also showed some marked inequalities of the presence of women in decision-making bodies. The application of 'gender equality by law' mechanism, as the quotas for women, brought an improvement in rebalancing the management bodies in the economic and political sectors.

The dimension of safety, sees acts of mistreatment and violence spread in a heterogeneous way throughout the peninsula. Even with the introduction of some national and international communication campaigns and the activation of the anti-stalking number (1522), the females are more likely to be victims of abuse than the male and feminicide seems still far to disappear from society.

We hope that a greater understanding of gender gaps, supported by analytical tools such as the one proposed in this article, may help to raise community awareness on an issue that, although it presents in the collective and political debate for several years now and some active policies were implemented in order to reduce the gap, still displays profound injustices and discriminations, in some cases even in its most violent forms.

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SUMMARY

Gender equality in the Italian regions

This paper aims at analyzing the progressive evolution of the gender inclusion condition in the Italian regions over the period 2015-17, examining it across four domains: Education, Work, Power and Security with the goal of increasing knowledge about the topic of gender equality. The Adjusted Mazziotta-Pareto index (AMPI) has been applied to obtain a synthetic measure.

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