

Gender Equality as EU Strategy



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1 The EU Framework on Gender Equality

Gender equality is an increasingly topical issue, but it has deep historical roots. The principle of gender equality found its legitimacy, even if limited to salary, in the 1957 Treaty of Rome, establishing the European Economic Community (EEC). This treaty, in Article 119, sanctioned the principle of equal pay between male and female workers. The EEC continued to protect women's rights in the 1970s through equal opportunity policies. These policies referred, first, to the principle of equal treatment between men and women regarding education, access to work, professional promotion, and working conditions (Directive 75/117/EEC); second, to the principle of equal pay for male and female workers (Directive 76/207/EEC); and finally, enshrined the principle of equal treatment between men and women in matters of social security (Directive 79/7/EEC). Since the 1980s, several positive action programmes have been developed to support the role of women in European society. Between 1982 and 2000, four multiyear action programmes were implemented for equal opportunities. The first action programme (1982–1985) called on the Member States, through recommendations and resolutions by the Commission, to disseminate greater knowledge of the types of careers available to women, encourage the presence of women in decision-making areas, and take measures to reconcile family and working life.¹ The second action programme (1986–1990) proposed

¹De Vivo, A. *Uno sguardo di genere sull'Europa: cinquant'anni di politiche di genere*, edited by Fondazione Nilde Iotti

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interventions related to the employment of women in activities related to new technologies and interventions in favour of the equal distribution of professional, family, and social responsibilities (Sarcina, 2010). The third action programme (1991–1995) provided an improvement in the condition of women in society by raising public awareness of gender equality, the image of women in mass media, and the participation of women in the decision-making process at all levels in all areas of society. The fourth action programme (1996–2000) strengthened the existing regulatory framework and focused on the principle of gender mainstreaming, a strategy that involves bringing the gender dimension into all community policies, which requires all actors in the political process to adopt a gender perspective. The strategy of gender mainstreaming has several benefits: it places women and men at the heart of policies, involves both sexes in the policymaking process, leads to better governance, makes gender equality issues visible in mainstream society, and, finally, considers the diversity among women and men.² Among the relevant interventions of the 1990s, it is necessary to recall the Treaty of Maastricht (1992) which guaranteed the protection of women in the Agreement on Social Policy signed by all Member States (except for Great Britain), and the Treaty of Amsterdam (1997), which formally recognised gender mainstreaming. The Treaty of Amsterdam includes gender equality among the objectives of the European Union (Article 2) and equal opportunity policies among the activities of the European Commission (Article 3). Article 13 introduces the principle of non-discrimination based on gender, race, ethnicity, religion, or handicaps. Finally, Article 141 amends Article 119 of the EEC on equal treatment between men and women in the workplace. The Charter of Fundamental Rights of the Nice Union of 2000 reaffirms the prohibition of ‘any discrimination based on any ground such as sex’ (Art. 21.1). The Charter of Fundamental Rights of the European Union also recognises, in Article 23, the principle of equality between women and men in all areas, including employment, work, and pay. Another important intervention of the 2000s is the Lisbon strategy, also known as the Lisbon Agenda or Lisbon Process. It is a reform programme approved in Lisbon by the heads of state and governments of the member countries of the EU. The goal of the Lisbon strategy was to make the EU the most competitive and dynamic knowledge-based economy by 2010. To achieve this goal, the strategy defines fields in which action is needed, including equal opportunities for female work.³ Another treaty that must be mentioned is that of Lisbon in 2009, thanks to which previous treaties, specifically the Treaty of Maastricht and the Treaty of Rome, were amended and brought together in a single document: the Treaty on European Union (TEU) and the Treaty on the Functioning of the European Union (TFEU). Thanks to the Lisbon Treaty, the Charter of Fundamental Rights has

²Council of Europe (1998). *Gender Mainstreaming: Conceptual framework, methodology and presentation of good practices*. Available at: <http://www.unhcr.org/3c160b06a.pdf>

³The other core thematic areas recognised by the Lisbon strategy are innovation and entrepreneurship, welfare reform and social inclusion, human capital and job retraining, liberalisation of labour and product markets, and, finally, sustainable development.

assumed a legally binding character (Article 6, paragraph 1 of the TEU) both for European institutions and for Member States when implementing EU law. The Treaty of Lisbon affirms the principle of equality between men and women several times in the text and places it among the values and objectives of the union (Articles 2⁴ and 3 of the TEU). Furthermore, the Treaty, in Art. 8 of the TFEU, states that the Union's actions are aimed at eliminating inequalities, as well as promoting equality between men and women, while Article 10 of the TFEU provides that the Union aims to 'combat discrimination based on sex, racial or ethnic origin, religion or belief, disability, age, or sexual orientation'. Concerning the principle of gender equality in the workplace, the Treaty, in Article 153 of the TFEU, asserts that the Union pursues the objective of equality between men and women regarding labour market opportunities and treatment at work. On the other hand, Article 157 of the TFEU confirms the principle of equal pay for male and female workers 'for equal work or work of equal value'. On these issues, through ordinary procedures, the European Parliament and the Council may adopt appropriate measures aimed at defending the principle of equal opportunities and equal treatment for men and women. The Lisbon Treaty also includes provisions relating to the fight against trafficking in human beings, particularly women and children (Article 79 of the TFEU), the problem of domestic violence against women (Article 8 of the TFEU), and the right to paid maternity leave (Article 33). Among the important documents concerning gender equality is the Roadmap (2006–2010). In 2006, the European Commission proposed the Roadmap for equality between women and men,⁵ in addition to the priorities on the agenda, the objectives, and tools necessary to achieve full gender equality. The Roadmap defines six priority areas, each of which is associated with a set of objectives and actions that makes it easier to achieve them. The priorities include equal economic independence for women and men, reconciliation of private and professional life, equal representation in the decision-making process, eradication of all forms of gender-based violence, elimination of stereotypes related to gender, and promotion of gender equality in external and development policies.⁶ The Commission took charge of the commitments included in the Roadmap, which were indirectly implemented by the Member States through the principle of subsidiarity and the competencies provided for in the Treaties (Gottardi, 2013). The 2006–2010 strategy of the European Commission is based on a dual approach: on the one hand, the integration of the gender dimension in all community

⁴ 'The Union is founded on the values of respect for human dignity, freedom, democracy, equality, the rule of law and respect for human rights, including the rights of persons belonging to minorities. These values are common to the Member States in a society in which pluralism, non-discrimination, tolerance, justice, solidarity, and equality between women and men prevail' (TEU, Article 2).

⁵ The Roadmap for Gender Equality (2006–2010) derives from the framework strategy for equality between women and men (2001–2005) and takes stock of this strategy, underlining the improvements required.

⁶ For further details, see the Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions, titled 'A Roadmap for equality between women and men 2006–2010' (COM (2006) 92).

policies and actions (gender mainstreaming), and on the other, the implementation of specific measures in favour of women aimed at eliminating inequalities. In 2006, the European Council approved the European Pact for Gender Equality which originated from the Roadmap. The European Pact for Gender Equality identified three macro areas of intervention: measures to close gender gaps and combat gender stereotypes in the labour market, measures to promote a better work–life balance for both women and men, and measures to strengthen governance through the integration of the gender perspective into all policies. In 2006, Directive 2006/54/EC of the European Parliament and Council regulated equal opportunities and equal treatment between male and female workers.⁷ Specifically, the Directive aims to implement the principle of equal treatment related to access to employment, professional training, and promotion; working conditions, including pay; and occupational social security approaches.⁸ On 21 September 2010, the European Commission adopted a new strategy to ensure equality between women and men (2010–2015). This new strategy is based on the experience of Roadmap (2006–2010) and resumes the priority areas identified by the Women’s Charter⁹: equal economic independence, equal pay, equality in decision-making,¹⁰ the eradication of all forms of violence against women, and the promotion of gender equality and women’s empowerment beyond the union. The 2010–2015 Strategic Plan aims to improve the position of women in the labour market, but also in society, both within the EU and beyond its borders. The new strategy affirms the principle that gender equality is essential to supporting the economic growth and sustainable development of each country. In 2010, the validity of the Lisbon Strategy ended, the objectives of which were only partially achieved due to the economic crisis. To overcome this crisis, the Commission proposed a new strategy called Europe 2020, in March 2010. The main aim of this strategy is to ensure that the EU’s economic recovery is accompanied by a series of reforms that will increase growth and job creation by 2020. Specifically, Europe’s 2020 strategy must support smart, sustainable, and inclusive growth. To this end, the EU has established five goals to be achieved by 2020 and has articulated the different

⁷ Directive 2006/54/EC derives from the Roadmap and the European Stability Pact.

⁸ For further details, see Directive 2006/54/EC of the European Parliament and of the Council of 5 July 2006 on the implementation of the principle of equal opportunities and equal treatment of men and women in matters of employment and occupation, available at [DIRECTIVE 2006/54/EC](#).

⁹ It is a declaration by the European Commission which renews its commitment to promoting the principle of equality between women and men, in Europe and the rest of the world. The Women’s Charter was adopted on the 2010 International Women’s Day and in commemoration of the 15th anniversary of the UN World Conference on Women. See the Communication from the Commission COM (2010) 0078 for more details.

¹⁰ Concerning equality of decision-making, the Commission notes that in most member countries, women continue to be under-represented in decision-making places and company management, both in the public and private sectors, despite making up almost half of the workforce and more than half of the new university graduates (Chamber of Deputies, Gender equality: initiatives of the parliaments of the European Union, n. 107 XVI Legislature, 25 September 2012).

types of growth (smart, sustainable, and inclusive) in seven flagship initiatives.¹¹ Among the latter, the initiative ‘an agenda for new skills and jobs’, in the context of inclusive growth, is the one most closely linked to gender policies and equal opportunities; in fact, it substantially aims to increase employment rates for women, young, and elderly people. The strategic plan for 2010–2015 was followed by a strategic commitment in favour of gender equality 2016–2019, which again emphasises the five priority areas defined by the previous plan. Strategic commitment, which contributes to the European Pact for Gender Equality (2011–2020),¹² identifies the key actions necessary to achieve objectives for each priority area. In March 2020, the Commission presented a new strategic plan for equality between women and men for 2020–2025. This strategy defines a series of political objectives and key actions aimed at achieving a ‘union of equality’ by 2025. The main objectives are to put an end to gender-based violence and combat sexist stereotypes, ensure equal opportunities in the labour market and equal participation in all sectors of the economy and political life, solve the problem of the pay and pension gap, and achieve gender equality in decision-making and politics.¹³ From the summary of the regulatory framework presented, for the European Economic Community first, then for the European Community, and finally for the European Union, gender equality has always been a fundamental value. Interest in the issues of the condition of women and equal opportunities has grown over time and during the process of European integration, moving from a perspective aimed at improving the working conditions of women to a new dimension to improve the life of the woman as a person, trying to protect her not only professionally but also socially, and in general in all those areas in which gender inequality may occur. The approach is extensive and based on legislation, the integration of the gender dimension into all policies, and specific measures in favour of women. From the non-exhaustive list of the various legislative interventions, it is possible to note a continuous repetition of the same thematic priorities which highlights, on the one hand, the poor results achieved by the implementation of the policies, but, on the other hand, the Commission’s willingness to pursue the path initially taken. Among the achievements in the field of gender equality obtained by the EU, there is certainly an increase in the number of women in the labour market and the acquisition of better education and training. Despite progress, gender inequalities have persisted. Even though women surpass

¹¹For further details, see the Communication from the Commission, titled ‘Europe 2020—A European strategy for smart, sustainable and inclusive growth’ (COM (2010) 2020).

¹²The European Pact on Gender Equality 2011–2020 of the Council of the European Union reaffirms the Union’s commitment to promoting the principle of equality between women and men and defines three priority objectives aimed at eliminating the gender gaps in employment and social protection, promoting a better work–life balance for women and men, combat all forms of violence against women. The Union urges all Member States to pursue these objectives in the development of their gender policies.

¹³For further details, see the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, ‘A Union of Equality: Gender Equality Strategy 2020–2025’ (COM (2020) 152).

men in terms of educational attainment, gender gaps still exist in employment, entrepreneurship, and public life (OECD, 2017). For example, in the labour market, women continue to be overrepresented in the lowest-paid sectors and underrepresented in top positions (according to the data released in the main companies of the European Union, women represent only 8% of CEOs¹⁴).

2 Measuring Gender Equality and Monitoring the Progress of EU Policies

The principle of gender equality is fundamental to achieving the EU's objectives of growth, employment, and social cohesion. The existence of a positive relationship between gender equality, growth, and employment was confirmed by several studies, such as that published by the European Institute for Gender Equality¹⁵ and titled 'Gender Equality Boosts Economic Growth'.¹⁶ As we have just seen, gender equality is one of the fundamental principles of EU law. Initially, policies on gender equality concerned economic perspectives, including pay and employment; however, attention has been focused on all aspects of social life. In 1996, the European Commission implemented a strategy of gender mainstreaming, in addition to specific measures directed at women, to reach the goal of gender equality. In 2006, the Council of the European Union on the review of the implementation by the Member States and the EU institutions of the Beijing Platform for Action—indicators of institutional mechanisms¹⁷ declared that a formal commitment to the strategy of gender mainstreaming is not sufficient to reach the goal of gender equality and that practical action in all government policy areas at all levels is needed.¹⁸ In particular, the Council calls on Member States to strengthen efforts toward mainstream gender equality in all relevant areas by applying tools and methods, such as gender budgeting, gender equality plans, and gender impact assessments, and promoting their use in practice. This paragraph describes in detail the practical tools and methods necessary to reduce gender inequality.

¹⁴ Chamber of Deputies, gender legislation and policies, n. 62 XVIII Legislature, 2 March 2022.

¹⁵ According to this study, 'improvements to gender equality would generate up to 10.5 million additional jobs by 2050 and the EU employment rate would reach almost 80%. EU Gross Domestic Product (GDP) per capita would also be positively affected and could increase up to nearly 10% by 2050'.

¹⁶ EIGE (2017), Gender Equality Boosts Economic Growth, EIGE, Vilnius. Available at: <https://eige.europa.eu/news-and-events/news/gender-equality-boosts-economic-growth>

¹⁷ See Council Conclusions on Review of the implementation by the Member States and the EU institutions of the Beijing Platform for Action - Indicators in respect of Institutional Mechanisms for more details.

¹⁸ EIGE (2016), Gender Impact Assessment: Gender Mainstreaming Toolkit, EIGE, Vilnius. Available at: <https://eige.europa.eu/gender-mainstreaming/toolkits/gender-impact-assessment>

2.1 *Gender Budgeting: Definition, Objectives, and Developing Steps*

‘Gender budgeting’ is a tool for implementing a gender mainstreaming strategy in the budgetary process. As defined by the Gender Equality Glossary drawn up by the Council of Europe,¹⁹ ‘Gender mainstreaming is the (re)organization, improvement, development, and evaluation of policy processes so that a gender equality perspective is incorporated in all policies at all levels and all stages, by the actors normally involved in policymaking’. Hence, gender budgeting is an integration of gender perspective into the budgetary process. Gender budgeting was developed in the mid-1980s; the first country to adopt it was Australia in 1984, followed by South Africa in 1994. Subsequently, other countries, both at the central and local government levels, have promoted and used gender budgeting, including Canada, the UK, France, Israel, Italy, Switzerland, Norway, Sweden, and Denmark. The dissemination of gender budgeting was promoted in 1995 with the Beijing Platform for Action during the Fourth World Conference on Women.²⁰ On this occasion, gender budgeting was presented as a necessary tool to support public and private institutions. In 2001, the European Union accepted this indication, which was ratified by the resolution²¹ of the European Parliament in 2002/2198 (INI). Another European initiative to include the gender perspective in the policy process is the resolution of the European Parliament on 25 February 2010²² which establishes the need for systematic monitoring of the integration of the gender perspective in legislative and budgetary decision-making processes. Another resolution of 2019²³ focused on the integration of the gender dimension in EU fiscal policies, calling on commissions and member states to fully implement the gender budget. A gender perspective was also integrated into the context of the European project using the Horizon 2020 programme. With horizontal Europe, there is a strong emphasis on tools to mitigate gender inequalities and promote gender equality. Finally, in 2020, the EIGE published an operational toolkit to produce the gender budget for EU funds, an instrument capable of strongly orienting the management of economic resources both in the programming phase (*ex ante*) and in the monitoring phase (mid-term and *ex post*) of projects financed with European funds. Gender budgeting

¹⁹See www.coe.int for more details.

²⁰For further details, see the Official United Nations World-Wide Web page of the Fourth World Conference on Women at <https://www.un.org/womenwatch/daw/beijing/fwcwn.html>.

²¹In 2003, a report and a motion for a resolution on gender budgeting were presented to the European Parliament by the Commission for Women’s Rights and Equal Opportunities. For further details, see the European Parliament resolution on gender budgeting—building public budgets from a gender perspective (2002/2198(INI)).

²²For further details, see the European Parliament resolution of 25 February 2010 on the 13th session of the United Nations Human Rights Council (P7_TA(2010)0036).

²³For further details, see the European Parliament resolution of 15 January 2019 on gender mainstreaming in the European Parliament (2018/2162(INI)).

now takes place in more than 40 countries worldwide, and it has been developed and implemented in a wide variety of ways.²⁴ Gender budgeting aims to recognise and evaluate the potentially discriminatory effects of public policies on women, which could increase the gender gap in the economic, political, social, and cultural spheres. The purpose of gender budgeting is not to produce separate budgets for women and men or to promote programmes specifically aimed at women but rather to influence public budgets. Based on the gender budget, there is the consideration that there are differences between men and women as regards the needs, conditions, situations, opportunities for life, work, and participation in decision-making processes and therefore, policies are not gender-neutral but, on the contrary, have a differentiated impact on men and women. According to the abovementioned European Parliament resolution on gender budgeting (2002):

gender budgeting implies that in all budget programmes, measures, and policies, revenue or expenditure in all programmes and actions should be assessed and restructured in order to ensure that women's priorities and needs are taken into account on an equal basis to those of men, the final aim being to achieve equality between men and women.

The objectives of gender budgeting also include greater efficiency and effectiveness in the design of public policies and greater equity, which means fair and balanced budgetary policies aimed at reducing gender inequalities and promoting equal opportunities for men and women. Gender budgeting also provides greater transparency regarding the redistribution of public resources. Furthermore, gender budgeting does not represent an additional budget system compared to the existing ones; rather, it consists of a series of additional analytical tools, also aimed at verifying whether gender equity has been reduced, increased, or remained unchanged. As suggested by a report on gender budgeting (2002/2198(INI)), the European Commission set up a working group composed of experts on gender budgeting to produce an information document that represents an overview of the gender budgetary process. The document presents methodological guidelines, provides indicators or benchmarks, and collects the most relevant experiences of the gender budgetary process. The document can be consulted by all those regularly involved in public planning and budgeting processes. There is no single methodology for preparing gender budgeting; countries and institutions at the international and national levels have followed and developed different methods of analysis. However, it is possible to define common guidelines in the preparation of budget analysis from a gender perspective. Gender budgeting can be realised in both the preliminary balance (*ex ante* evaluation) and final balance (*ex post* evaluation). Gender budgeting is aimed at policymakers, institutional personnel, and communities. Through gender budgeting, policymakers can make resource allocation policies more efficient; the personnel of the public bodies through the budget are involved and stimulated to manage services from a gender perspective. Finally, for the community, gender budgeting represents a form of social accountability. Generally,

²⁴Council of Europe, Final Report of Group of Specialists on Gender Budgeting. Directorate of Human Rights, Council of Europe, Strasbourg, 2005. Available at: <https://rm.coe.int/1680596143>

the gender-budgeting process is divided into several stages. The first phase corresponds to context analysis. In this phase, the area of concern and its population were analysed. All demographic characteristics of the population are described, paying particular attention to sex. Depending on the organisation and the activities carried out by the public institution that draws up gender budgeting, other characteristics of the population and the reference environment may be examined. Usually, this phase includes, in addition to the analysis of sociodemographic characteristics, the analysis of economic development, labour market participation, unpaid work, care provision, practices to improve work-life balance, environmental protection, and quality of life. The purpose of this first phase is to describe the context and identify potential demand, that is, the needs of the population in terms of services and sectors in which gender inequality is most evident. Once existing gender inequalities are identified, it is important to understand why they exist. This phase uses indicators that measure gender inequalities, which allows a better understanding of the socio-economic conditions of individuals. During this phase, internal information relating to the organisation is also collected, such as the gender composition of the government bodies and the participation of women in decision-making processes. The implementation of contextual analysis requires the availability of data disaggregated by gender. Useful data broken down by sex include the Gender Equality Index,²⁵ which provides data from all EU Member States in the eight areas of work, money, knowledge, time, power, health, violence against women, and intersecting inequalities; the EIGE's Gender Statistics Database,²⁶ which contains gender statistics from all over the EU and beyond, at the EU, Member State and European level; and Eurostat gender statistics.²⁷ The second phase of the gender budgetary process is programming analysis. This phase involved planning interventions and related expenditures, focusing on the gender perspective. These interventions are intended to change the reference context and subsequently translate it into budgetary choices and, therefore, into the formulation of accounting documents. In this phase, it is fundamental to choose documents from which to obtain the information necessary for intervention planning. Generally, especially for the first editions, the analysis begins with relevant legislation. Initially, the information is collected from the institutional structure and the main European and national regulatory documents; then, the documents at a regional or local level are consulted, depending on the administration responsible for the budget.²⁸ Other sources that need to be examined

²⁵EIGE (2019a), Gender Inequality Index, EIGE, Vilnius. Available at: <https://eige.europa.eu/gender-equality-index>.

²⁶EIGE (2019b), Gender Statistics Database, EIGE, Vilnius. Available at: <https://eige.europa.eu/gender-statistics/dgs>.

²⁷Eurostat (2019), Gender Statistics, Eurostat, Brussels. Available at: https://ec.europa.eu/eurostat/statistics-explained/index.php/Gender_statistics.

²⁸ISFOL, Research Group for Equal Opportunities and Against Discrimination, Rosiello A., Salvucci M., A., Guidelines for the preparation of the Gender Report, 2013. For further details, see https://oa.inapp.org/xmlui/bitstream/handle/20.500.12916/1619/ISFOL_Linee%20guida%20per%20la%20redazione%20del%20Bilancio%20di%20Genere.pdf?sequence=1&isAllowed=y.

include documents of a strategic and programmatic nature (such as training and work plans or plans for equal opportunities) and economic-financial forecast documents (such as financial law). The main purpose of this phase was to identify measures dedicated to women and those that could indirectly have a gender impact. The third phase of the gender budget is the reclassification of expenditure. Specifically, this phase consists of evaluating the balance sheet documents (preliminary and final balance sheets and management balance sheets) from a gender perspective. To this end, it is necessary to carry out a reclassification of expenditure according to criteria that make it possible to re-aggregate the budget items in topics of relevance to gender. Additionally, in this case, the choice of classification is not unique and is linked to the type of institution. Often, the gender budget provides for four macro-categories of expenditure: expenditures on measures directed at women (e.g. measures for female entrepreneurship or anti-violence centres); spending on measures that have an indirect impact on gender (e.g. micro-credit interventions in support of businesses aimed at disadvantaged people, which also impact women as they are included in this type of person); significant expenditures for the economic and social context (interventions aimed at promoting gender equality and equity through an improvement of the environment—enabling environment, e.g. specific support interventions for reconciliation of work and family life or for the construction of nurseries, which improve the system in general but also the lives of women, more frequently involved in family care jobs); and neutral expenditures, which do not affect the gender gap (e.g. depreciation, interest and debt repayments, royalties, and utilities). The last step of the gender budgetary process was the evaluation phase. In this phase, the activities carried out by the institution and the management of related resources are qualitatively described. The purpose was to assess the gender impact of the interventions carried out by the institution, highlighting their strengths and weaknesses. The evaluation phase is necessary as it allows improvements to be made to the gender budgetary process, for example, by providing a fairer allocation of public economic resources. In conclusion, gender budgeting implies a gender-based assessment of budgets, a gender perspective at all levels of the budgetary process, and reclassification of revenues and expenditures to promote gender equality. Therefore, this policy instrument allows for the reallocation and mobilisation of resources for the empowerment of women. Gender budgeting results in a much broader and more appropriate strategy with the long-term aim of achieving gender equality.

2.2 *Gender Equality Plan (GEP): Definition, Objectives, and Developing Steps*

As stated in the Communication for a reinforced European research area,²⁹ the European Commission called on Member States to create policies that encourage gender equality and invited them to develop gender-mainstreaming strategies and/or Gender Equality Plans (GEPs). Gender equality does not mean that men and women must be equal, but that women must have access to the same opportunities while retaining their diversity. According to the EIGE definition, the GEP represents ‘a set of commitments and actions that aim to promote gender equality in an organization through a process of structural change’. This scope can be achieved by acting on human resource development strategies, institutional governance, allocation of research funding, institutional leadership and decision-making, and research programmes.³⁰ In the specific context of research organisations and higher education institutions, the EU Commission defines three different objectives for the GEP: the first is to conduct impact assessment/audits of procedures and practices to identify gender bias; the second is to implement innovative strategies to correct any gender bias; and the last is to set targets and monitor progress via qualitative and quantitative indicators. Hence, the EU Commission promotes gender equality actions and the integration of gender dimensions in universities and research institutions as well as in Horizon 2020 programmes and projects. Currently, the Gender Equality Plan represents a basic requirement for participation in the Horizon Europe programme.³¹ This new requirement is consistent with the aforementioned European Strategy for Gender Equality 2020–2025 of the European Commission; indeed, the strategy announced the ambition for a GEP requirement for participating organisations. In September 2021, the European Commission published a guide on GEPs for the Horizon Europe programme³² to support organisations in meeting the GEP eligibility criterion, which establishes the basic requirements for a GEP. The guide refers to existing materials and resources that support gender equality in the research and innovation (R&I) field. Specifically, it refers to gender equality in academia and

²⁹For further details, see the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, ‘A Reinforced European Research Area Partnership for Excellence and Growth’ (COM(2012)392).

³⁰Brodolini (2017). Gender equality plans in the private and public sectors in the European Union. Retrieved from: [https://www.europarl.europa.eu/RegData/etudes/STUD/2017/583139/IPOL_STU\(2017\)583139_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2017/583139/IPOL_STU(2017)583139_EN.pdf).

³¹According to the provisions of the European Commission, organisations that apply for Horizon Europe funds are required to have a Gender Equality Plan in place; however, if the organisations already have other plans, these can be considered equivalent to a GEP. These strategic documents must comply with the recommendations and advice suggested by the European Commission and must be updated accordingly to ensure full alignment and effectiveness.

³²The Horizon Europe Guidance on Gender Equality Plans (GEPs) is available on the webpage of the Italian Agency for the Promotion of European Research (APRE) at the following link: <https://apre.it/wpcontent/uploads/2021/10/KI0221806ENN.pdf>.

research (GEAR), a tool developed by the EIGE and the Commission's directorate-general for research and innovation, which includes additional advice, case studies, and resources for developing a GEP. Regarding gender budgeting, the building process of GEP can be divided into different phases or steps. In general, there were six phases. The first step consists of a preliminary phase that concerns the familiarisation of the GEP concept; during this phase, the team responsible for the GEP must contextualise the institution, starting with the type of institution, since the implementation of gender equality policies may differ from public institutions, research organisations, or universities. The second step consists of an assessment of the status quo of gender equality within the organisation. In this analysis phase, data broken down by sex about staff and students were collected,³³ and procedures, processes, and practices were critically assessed to identify gender inequalities, gender bias, and their causes. The data used can be secondary data, so the information has already been collected (e.g. by the Human Resources department or another function within the organisation), or it can be primary data, that is, data originated for the first time (e.g. by conducting surveys among staff members or interviews/group discussions with representatives of all levels of staff).³⁴ The analysis phase, also called the audit phase in the Horizon Europe Guidance for GEPs, should consider the relevant legislation and policies concerning gender equality and non-discrimination at the EU, national, and regional levels. The third step is represented by the planning phase. This step involves setting the objectives and targets and defining the actions and measures for the GEP. The team responsible for drafting the GEP should involve people in senior management and leadership positions to decide on the area of intervention that the plan must address, in addition to those defined by the European Commission. During this phase, the allocation of financial and human resources and assignment of responsibilities for the delivery of the GEP are also defined, and the timelines necessary for its implementation are estimated. In the planning phase, quantitative and qualitative indicators are identified, which are represented by numbers such as units, prices, proportions, or ratios, and are disaggregated by gender, whereas qualitative indicators are based on descriptive information and represent people's judgements or perceptions. In the fourth step, denoted as the implementation phase, previously planned activities are implemented. This phase also includes the implementation of awareness and support activities aimed at expanding the network of stakeholders that support GEP implementation, both inside and outside the organisation. The second to last step involves the monitoring and evaluation phase, in which the progress achieved against the aims and objectives is assessed. As mentioned before, the planning phase provides a list of quantitative and qualitative indicators, and the same statistical measures should be

³³The collection of gender disaggregated data is pivotal to developing effective gender-sensitive and evidence-based policies.

³⁴The Gender Equality Audit and Monitoring (GEAM) offers a collection of measurement instruments that can be adapted for any organisation. The GEAM database is available at the following link: <https://geam.act-on-gender.eu/database-ls-questionnaire-modules>.

considered to continuously monitor the progress of the organisation. Examples of quantitative indicators are the number of women and men in top leadership positions, the share of women and men among employed researchers, the number of women and men attending GEP activities, the average number of years needed for women and men to make career advancements, and gender pay gap reduction. These indicators allow us to compare any progress achieved in the field of gender equality with the initial conditions of the organisation. Instead, qualitative indicators evaluate the strategic institutional changes resulting from GEP. Examples of qualitative indicators include the adoption of permanent gender equality initiatives, the institutionalisation of work–life balance actions, and the establishment of gender equality committees. Monitoring and evaluation activities allow for improvements in interventions defined in the planning phase. The interventions’ adjustments could be useful for the last phase, in which the organisation should develop and implement a new GEP based on the experiences, learning, and findings achieved in the monitoring and evaluation phases. The European Commission defines four minimum process-related requirements regarding the eligibility criterion of the GEP.³⁵ The first is represented by the publication of a formal document on the institution’s website that must be signed by the top management. The second requires a commitment to financial and human resources and expertise in gender equality to implement the strategic plan. Third, a GEP must be built by collecting and analysing sex-disaggregated data on staff; moreover, organisations should report their progress annually using specific indicators. The last criterion requires the organisation to provide awareness training on gender equality and unconscious gender biases to its personnel and decision-makers. These criteria are mandatory and must be applied to public institutions, research organisations, and higher education establishments. The European Commission has defined a set of recommended content-related elements. Specifically, a GEP should address the following fields: work-life balance and organisational culture, gender balance in leadership and decision-making, gender equality in recruitment and career progression, integration of the gender dimension into research and teaching content, and measures against gender-based violence.³⁶ The objectives and measures of the GEP must be SMART³⁷ (specific, measurable, achievable, realistic, and time-bound). ‘Specific’ means that objectives and measures should answer basic questions such as who, what, how, when, where, and why; ‘measurable’ consists of identifying quantitative and/or qualitative indicators and the related objectives; ‘achievable’ indicates that the GEP must ensure that the

³⁵ See the [Horizon Europe—Work Programme 2021–2022](#), published by the European Commission for more details.

³⁶ For further details on the content-related requirements, see the gender equality in academia and research (GEAR) action toolbox, available at the following link: <https://eige.europa.eu/gender-mainstreaming/toolkits/gear/step-step-guide>.

³⁷ SMART criteria were originally proposed as a management tool for project and programme managers to set goals and objectives (Doran 1981 and others), but these days the SMART criteria have been well accepted in the field of monitoring and evaluation and have become an engrained, common best practice approach in developing indicators.

objectives and measures are not out of reach and can be achieved; ‘realistic’ means the GEP must ensure that objectives and measures are relevant to the organisation and that they are achievable with the resources available; and ‘time-related’ suggests that the GEP must indicate the period within which the objectives and measures can be achieved. In conclusion, regarding gender budgeting, the GEP promotes gender equality through a process of structural change; indeed, this policy instrument strives to sustainably transform organisational processes, cultures, and structures R&I that is highly segregated by gender and marked by significant gender gaps.³⁸

2.3 *Gender Impact Assessment (Ex Ante Evaluation)*

Before proceeding with the description of the gender impact assessment process, it is necessary to establish a premise on the concept of the indicator. An indicator represents a statistic that has been standardised or has a reference point to enable comparisons across the population.³⁹ An example of a gender indicator is the number of female parliament members (MPs), expressed as a percentage of all MPs. As we have seen in the previous paragraphs, indicators can be quantitative or qualitative; the first ones are measures of quantities or amounts and can be expressed as units, prices, proportions, and ratios. Qualitative indicators represent people’s judgements, perceptions, or beliefs about a subject and can be expressed as statements, paragraphs, case studies, and reports. These types of indicators complement and cross-validate one another. Indicators, especially quantitative ones, should be disaggregated according to a variable of interest to show differences among target subgroups. One of the most common criteria for disaggregation is the gender variable. Indicators can be classified in different ways, and it is possible to differentiate between quantitative and qualitative indicators as well as between input, output, and outcome indicators. The planning of policies, strategies, projects, programmes, or other types of initiatives may require input, output, and outcome indicators. Input indicators concern the resources devoted to an intervention, including financial and human resources, and the means necessary to implement the intervention. For example, data on how much money is spent on a new mathematics programme represent an input indicator. Output indicators relate to the immediate results concerning tangible products and services delivered when a policy, programme, or project is completed. For example, how many people participate or how many textbooks are delivered represent output indicators. Outcome indicators, also called impact indicators, measure the results and changes that the intervention could have on the beneficiary population in the long term. An example of an

³⁸For further details, see [She Figures](#), a document published by the European Commission that presents data on gender equality objectives in the field of Research and Innovation policy.

³⁹UN ESCAP, Regional core set of gender statistics and indicators for Asia and the Pacific, United Nations Economic and Social Commission for Asia and the Pacific, Bangkok (2013)

outcome indicator is defining whether the introduction of a new curriculum raises students' test scores. All these indicators can be used in progress to monitor the implementation of the programme, and after the programme is completed, to evaluate its results. Impact evaluations can be performed to compare different subgroups of beneficiaries, such as female and male recipients. In the context of gender equality, constructing a system of indicators requires the collection and separation of data and statistical information by gender. For example, we will have data on how much money is spent by gender, on participation by gender, or on whether the introduction of a new curriculum raises test scores among female and male students. In recent years, policymakers and project managers have focused on controlling and measuring the inputs and outputs of a programme or project rather than assessing their impacts (Gertler et al., 2016). Currently, focus has shifted from input and output indicators to outcomes and long-term results. Government agencies and ministries increasingly request impact indicators to show that a programme or project works to obtain funding. Outcome indicators improve the allocation of government resources and identify the most effective policies or programmes to reach one or more specific goals. Furthermore, the outcomes and results allow policymakers to inform policy decisions and facilitate public awareness. Evaluating the impact of a programme or project should also involve the use of input and output indicators, and not simply outcome indicators. Without these indicators, the impact evaluation will produce only a 'black box' that identifies whether the predicted results are achieved; it would not be possible to explain why this was the case (Gertler et al., 2016). Impact evaluation can be applied to planned, ongoing, or completed projects, programmes, or policies; hence, assessment can be performed before or after a programme is implemented. In the first case, called *ex ante* evaluation, the assessment predicts the impacts of a programme using data before programme implementation; in the second case, called *ex post* evaluation, the programme outcomes are examined once the programme has been implemented. Having said that, we can introduce Gender Impact Assessment. The assessment of gender impact measures the tangible results that the intervention could have on the effective equality of women and men. The Gender Impact Assessment requires a set of gender-sensitive indicators that should be prepared before the implementation of the intervention. These indicators assess the different impacts and changes that the intervention could impose on the daily lives of women and men. More precisely, the Gender Impact Assessment (GIA) is a useful tool for implementing gender mainstreaming strategies. According to the definition of the Gender Equality Glossary drawn up by the Council of Europe,⁴⁰ the GIA represents a policy tool for the screening of a given policy proposal⁴¹ 'to detect and assess its differential impact or effects on women and men, so that these imbalances can be redressed before the proposal is endorsed'. Therefore, the GIA

⁴⁰See www.coe.int for more details.

⁴¹In 2006 the Council of the European Union in its conclusions called on the Member States to regularly use the Gender Impact Assessment not only for the drafting of policy plans, but also for laws, policy programmes, projects, budgets, concrete actions, bills, and reports or calls for research.

must be applied in the early stages of policymaking, and for this reason, it is defined as an *ex ante* evaluation method.

The GIA involves two different analyses: the first concerns the current gender-related position in relation to the valuation policy, and the second concerns the projected impacts on women and men once the policy has been implemented. The main purpose of this method is to achieve relevant impacts, both in policy design and planning, and to ensure adequate equality outcomes. As for the budget, even government policies and legislation are not gender-neutral; indeed, they often have different impacts on men and women, leading to a strengthening of gender inequalities in the economic, social, and cultural fields. These different effects on gender must be identified during the design phase. According to the guidelines of the European Commission,⁴² the GIA process should involve civil servants working for governmental, regional, or local offices, departments, or ministries, initiating a new norm or policy. It is worth noting that the application of gender impact assessment is a learning process, and there is no common regulation or model within public administration at the European level. However, even if there is no common approach, it is possible to identify six phases or steps of the GIA process that are always identical. The first step investigates the purpose and scope of the policy proposal, and the second step identifies its gender relevance to beneficiaries and stakeholders. During this second phase, it is necessary to identify the target group and predict whether the policy proposal can influence the social situation or the position of women and men representing the target group. The gender impact could be direct or indirect, depending on whether the proposed policy is directly targeted at women and men in the target group. The stakeholders involved in the GIA process are functional and competent. Functional stakeholders are individuals or legal entities relevant to the success of a project, having governance or project management functions, or even just the ability to influence the project. Competent stakeholders are individuals or legal entities (such as central bodies for gender equality, feminist and women's organisations, and gender experts) able to provide useful information on beneficiaries and the socio-cultural context. Competent stakeholders can provide disaggregated data by gender, statistics, and information that complement the data of the body carrying out the Gender Impact Assessment process. The third phase is gender-sensitive analysis. The purpose of this phase is twofold: first, gender-sensitive analysis seeks to understand the current situation for the target groups and how this situation could evolve without public intervention, and finally, the analysis attempts to measure how the planned intervention should change the existing situation. Similar to what has been seen for gender budgeting, this phase requires the collection of information and data disaggregated by sex to analyse the current status, roles, and relations of the target group in the intervention areas considered by the planned policy. To gain a deeper understanding of the current

⁴²EIGE, European Institute for Gender Equality. 2017. Gender Impact Assessment—Gender Mainstreaming Toolkit. Available at: <https://eige.europa.eu/gender-mainstreaming/toolkits/gender-impact-assessment>

situation of women and men, it is recommended to integrate statistics with qualitative insights. At this stage, it is necessary to identify the inequalities between women and men in the access to essential resources (such as education, work, careers, health, time, money, power, information, new technologies, etc.) to eliminate existing gender gaps, or at least significantly reduce them. Furthermore, it is necessary to consider inequalities in the exercise of fundamental rights (civil, social, and political) based on their sex or gender roles. For this purpose, it is essential to consider the structures where gender inequalities occur: division of labour, organisation of private life, and citizenship. The fourth step involves measuring the effects of the planned policy and identifying whether the gender impact is positive, neutral, or negative. For example, a planned policy has a positive gender impact if it increases the participation of women in the public sphere, contributes to reducing existing gender gaps, or eliminates gender stereotypes. In this phase, it is possible to assign a weight to the effects of the proposed policy. The fourth step also identified a list of indicators for measuring the progress of gender equality. In the last step of the GIA process, the evidence that emerged was collected, and specific proposals were made to improve the policy to be implemented.

In conclusion, an effective GIA process involves an assessment of gender inequalities, recognition of the effects of those inequalities, and, subsequently, a tailored response in policies and practices. Subsequently, the process was evaluated based on the results. However, the GIA goes beyond an analysis of the existing situation as it also includes a perspective dimension; this means that an assessment of gender equality is necessary even after the adoption of legislative or policy measures. A GIA process should be applied by public services, institutions, and civil society, as it helps decision-makers choose between other policies or projects and methodologies. Specifically, the assessment of gender impact allows us to avoid an unconscious increase in gender inequalities, rebalance gender equality, strengthen evidence-based policymaking, and lead to better governance.

3 Ex Post Evaluation of the Gender Impact

In addition, there are other methodologies that can be applied to evaluate programme outcomes once a programme has been implemented. Ex post evaluation measures the actual outcomes of a programme or project; hence, it reflects reality and does not represent predictions. Ex post evaluation might have higher costs than ex ante evaluation because it requires the collection of data on the actual impacts of the intervention, and there could be an additional cost in the ex post evaluation which consists of the failure of the programme. For these reasons, it is recommended to perform both analyses, and compare ex ante predictions with ex post estimations. Before describing ex post evaluation methodologies, it is necessary to introduce the counterfactual problem. The impact of a programme is not given by the difference between the situation observed after programme implementation and the situation observed before implementation. Programme impacts could have occurred anyway

for reasons other than intervention. Consider a socioeconomic development programme with the objective of increasing the income of employers in a specific geographic area. To this end, the programme provides for the organisation of professional training courses by which participants will acquire new skills necessary for their jobs. The mere observation of the increase in income after the participants completed the programme was not sufficient to establish causality. Employees' income might have increased even if the participants had not followed the training course—for example, because of changing labour market conditions, or because of one of the other factors that can affect income. Thus, the impact of a programme can be defined as the difference between what is observed in the presence and absence of the intervention. Mathematically, the causal impact of a programme is given by the following formula (Gertler et al., 2016):

$$\beta = (Y|P = 1) - (Y|P = 0)$$

where β represents the impact or causal effect of programme P on outcome Y and which is given by the difference between the outcome with programme ($Y|P = 1$) and the same outcome without the programme ($Y|P = 0$). Therefore, we would like to measure an outcome (e.g. income) simultaneously for the same observation (in this case, an individual), both with and without participation in a programme. It is worth noting that while the first term of this comparison is observable, the second term is hypothetical. If the intervention had been implemented, it would not have been possible to define what would have happened to programme participants if the programme had not existed. A recipient's outcome in the absence of intervention is called a counterfactual situation or result. Mathematically, the term ($Y|P = 0$) in the impact evaluation formula represents a counterfactual. The observability of only one of the two results constitutes 'a fundamental problem in causal inference' (Holland, 1986). This problem can be solved by estimating the counterfactual value. To this end, it is necessary to use comparison groups, more often referred to as 'control groups'. The identification of comparison groups is a key challenge in impact evaluation. The objective was to identify a group of programme participants (treatment group) and a group of non-participants (comparison or control group) who were statistically identical if the programme did not exist. Thus, if the two groups had the same characteristics,⁴³ it was possible to affirm that the programme alone contributed to the differences in the outcome (Y) between the two groups. However, to achieve this goal, the following three conditions must be satisfied. First, not every observation in the treatment group needs to be equal to every observation in the control group. It is necessary that, on average, the characteristics of the two

⁴³The only difference between the treatment and the control group is that the members of the treatment group participate in the programme, while the members of the control group do not participate.

groups are the same.⁴⁴ Second, the two groups should react to the intervention in the same way, and finally, they cannot be exposed to other programmes during the evaluation period. There are two possible methods to estimate the counterfactual. The first one consists of a pre-post comparison in which the outcomes of programme participants are compared before and after the implementation of a programme ('before-and-after comparison'). Instead, the second consists of a comparison between observations that choose to enrol or not to enrol in a programme; this method is called a 'with-and-without comparison', characterised by selection bias. For many public policies, there is no coincidence between the set of eligible observations and that exposed to an intervention. Generally, only some eligible subjects decide to enrol in a programme. This results in a self-selection process that determines the selection bias. The choice to enrol in a programme is often determined by the differences in the starting conditions of eligible observations. The analyst must attempt to make the selection bias null. In doing so, we consider the average causal effects in the population or specific subgroups. The existence of a plurality of subjects, some exposed and others not exposed to the intervention, allows the identification of the average causal effects. Moreover, these effects are typically the objects of interest for policymakers. Based on this premise, we can describe the different approaches to ex post impact evaluation. Specifically, we will examine the randomised evaluations, regression discontinuity signs (RDD), difference in differences (DiD), and matching methods.

3.1 Randomised Selection Methods

Randomised evaluation is an exception to other impact evaluation methods whereby the selection process is conducted by randomly assigning units to the treatment and control groups. This means that every eligible observation of treatment has the same probability of treatment selection. Hence, in randomised evaluations, the selection bias was zero by construction. Furthermore, with many observations, the random selection process produces two statistically equivalent groups. In other words, the treatment and comparison groups have the same averages for all observed and unobserved characteristics. The estimation of counterfactual in randomised selection methods is strong; thus, randomised methods are internally valid.⁴⁵ Furthermore, this evaluation tool has external validity because the results can be generalised to the population of all eligible units (Khandker et al., 2009). In a randomised evaluation, the average effect of the intervention was estimated through the difference between

⁴⁴ For example, the average income in the treatment group should be equal to the average income in the control group.

⁴⁵ An evaluation is internally valid if it uses a valid comparison group. This condition ensures that the differences in outcomes across the treatment and control group are a function of the programme only and do not depend on other confounding elements.

the average outcomes obtained by the observations, which were exposed and not exposed to the intervention. Mathematically, the impact of a programme is given by the following formula:

$$\text{Impact} = \Delta Y = \bar{Y}_{\text{treated}} - \bar{Y}_{\text{control}}$$

This method is often used when there is excess demand to enrol in the programme and resources are scarce; hence, there are a limited number of programme places available, in which randomised assignment represents a fair allocation rule that can be easily explained by project managers or policymakers. In other cases, the use of randomised methods is limited to interventions that represent pilot projects or programmes. The intervention was implemented on a small scale, with the specific purpose of evaluating its effectiveness, before it was rolled out to the entire eligible population. For example, this is a clinical drug-testing scenario.

Dahl et al. (2021)⁴⁶ conducted an experiment in which observations were randomly assigned to treatment and control groups. Specifically, the authors try to verify whether the integration of women into teams that were traditionally all male can change men's stereotypical attitudes about gender (e.g. gender productivity, gender roles, and gender identity). To this end, the authors randomly assigned female soldiers to some squads (but not others) during boot camps in the military in Norway and compared the gender attitudes of men among the treatment and control groups at the end of the boot camp. The findings of this experiment reveal that men's attitudes toward gender-related questions become more egalitarian thanks to their interaction with women. This type of experiment, based on a randomised selection method, avoids some limitations related to reverse causality, self-selection, and unobserved heterogeneity.⁴⁷ Another study conducted by Hoogendoorn et al. (2013)⁴⁸ estimated the impact of gender diversity on team performance. Specifically, the authors conducted a field experiment with random assignment of observations to teams, conditional on their gender, and measured their performance in terms of sales and profits. The results of this study show that business teams with an equal gender mix perform better than all-male teams do.

⁴⁶Gordon B. Dahl, Andreas Kotsadam, and Dan-Olof Rooth, Does Integration Change Gender Attitudes? The Effect of Randomly Assigning Women to Traditionally Male Teams, *The Quarterly Journal of Economics*, Volume 136, Issue 2, May 2021, pp. 987–1030. Available at: <https://doi.org/10.1093/qje/qjaa047>

⁴⁷A very similar field experiment based on a random selection process of observations was conducted by Finseraas et al. (2016). For further details, see Finseraas, H., Johnsen, Å. A., Kotsadam, A., and Torsvik, G. (2016). Exposure to female colleagues breaks the glass ceiling—Evidence from a combined vignette and field experiment. *European Economic Review*, 90, 363–374.

⁴⁸Hoogendoorn, S., Oosterbeek, H., & Van Praag, M. (2013). The impact of gender diversity on the performance of business teams: Evidence from a field experiment. *Management Science*, 59(7), 1514–1528

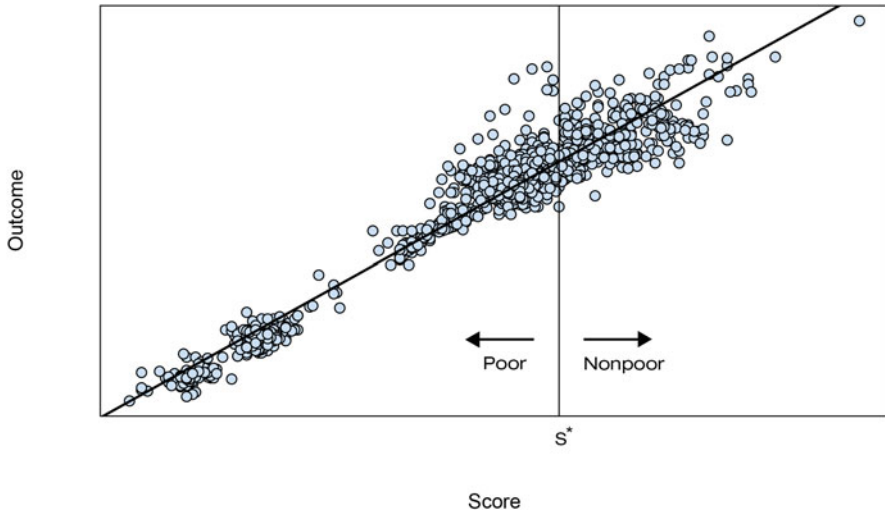


Fig. 1 Regression discontinuity designs—RDD. Source: Authors

3.2 Regression Discontinuity Designs

The evaluation method of regression discontinuity signs (RDD) is applied to a particular class of programmes such as social programmes. These programmes provide for rationing based on a threshold or cutoff score which can be represented by a given value of an index/variable or by a given position in a ranking. Observations below (above) the threshold participate in the programme. In contrast, observations above (below) the threshold are excluded. Let us consider a poverty program. This programme has as its target group poor households identified by a poverty score or index. The programme authorities determine a threshold (S^*) below which households are considered to be poor and hence can enrol in the programme. On the contrary, households above the threshold are identified as non-poor and are therefore excluded, as shown in Fig. 1. The estimated equation was $Y_i = \beta S_i + \varepsilon_i$.

The eligibility cutoff represents a discontinuity point, and a situation such as randomisation occurs around it. That is, the observations exposed to the intervention immediately below the threshold are equivalent to those not exposed immediately above it for both observable and unobservable characteristics. In that case, the comparison between the treatment and control groups was conducted around the threshold; more precisely, the difference in the average outcome for the treaties immediately below the threshold and that of the non-treated ones immediately above the threshold identifies the effect of the policy. Mathematically, the effect of the policy (β) is given by the ratio of the difference in the outcomes of the treated (observations just below the threshold) and non-treated (observations just above the threshold) groups, weighted by the difference in the values of the variable that determines programme eligibility (S_i).

$$\beta = \frac{Y^- - Y^+}{S^- - S^+}$$

If we move further away from the threshold, the differences across eligible and non-eligible observations increase; however, we know how different they are due to the eligibility criteria, and hence, we can control for these differences. Compared to other approaches, the RDD requires a large evaluation sample because it estimates the policy effect only around the cutoff score. The statistical power of the analysis increased as the bandwidth around the cutoff increased because more units were included in the analysis. Another limitation of the RDD method is that the analyst, to estimate the programme impact correctly, must consider the functional form (linear, quadratic, cubic, etc.) of the relation between the eligibility criteria and the outcome of interest because the impacts could be sensitive to the functional form. In conclusion, the RDD method guarantees internal validity; indeed, the control group is valid because the observations are similar around the cutoff. However, the RDD method has limited external validity because the results obtained cannot be generalised to the entire population but only locally in the neighbourhood around the eligibility threshold.

This ex post impact assessment method has been used by several authors. For instance, Vaccaro (2018)⁴⁹ adopted a combination of regression discontinuity design and difference-in-differences approaches to test the impact of Swiss policy on gender wage discrimination. Specifically, the author tried to evaluate whether the unexplained gender wage gap decreased after the introduction of the government policy. Since the anti-discriminatory policy was free of charge and voluntary, but was strongly recommended for firms with more than 50 employees, the author exploits the discontinuity of this rule to analyse whether these firms tend to reduce gender wage discrimination. The results confirm that the unexplained wage gap of firms subject to regulation (with at least 50 workers) decreased after the introduction of the Swiss policy. Another study by Bagues and Campa (2021)⁵⁰ attempted to identify the causal impact of gender quotas in Spain. The Equality Act, introduced in March 2007, modified Spanish electoral law to improve the gender balance in elected political offices. More precisely, this new regulation requires political parties to field female candidates in at least 40% of the seats they contest. To measure the effectiveness of this law, the authors implemented an RDD model by comparing municipalities slightly below and above the relevant population cutoff. Since the regulation was first implemented in municipalities with more than 5,000 inhabitants and then in those with more than 3,000 inhabitants, the authors used these values for the population thresholds. In both studies, the results were determined by the new

⁴⁹Vaccaro, G. (2018). Using econometrics to reduce gender discrimination: Evidence from a difference-in-discontinuity design. In *2nd IZA workshop: Gender and family economics*, New York

⁵⁰Bagues, M., & Campa, P. (2021). Can gender quotas in candidate lists empower women? Evidence from a regression discontinuity design. *Journal of Public Economics*, 194, 104,315

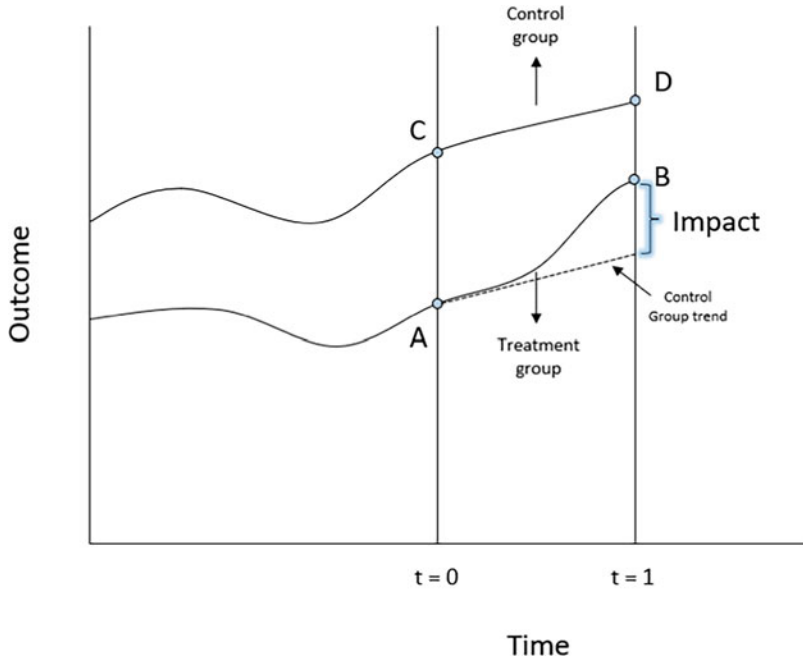


Fig. 2 Difference-in-differences—DiD. Source: Authors

policy or regulation because no other interventions were implemented based on these thresholds in the relevant period of analysis.

3.3 *Difference-in-Differences*

The DiD method can be applied if the analyst has longitudinal data or data relating to observations repeated over time on treated and non-treated groups for periods before and after the intervention. This is necessary because the DiD method measures the effect of the policy by comparing the difference in outcomes before and after the implementation of the policy (first comparison, over time) between the treated and non-treated groups (second comparison, between the treatment and control groups). Because the impact of the programme is computed as the difference between two differences, the method is also called double difference (DD). This method combines the two approaches that can be used to estimate the counterfactual: before and after comparisons, and with and without comparisons, as previously described, which allows for a better estimation of the counterfactual. Figure 2 clarifies the difference-in-differences methodology.

For example, consider an initial baseline survey administered to both nonparticipants and participants. After the intervention, a follow-up survey was conducted for

both groups. Therefore, as usual, we have a treatment group made up of observations of those who enrol in the programme, and a comparison group that is not enrolled. On the time axis, in correspondence with $t = 0$, we observe the outcomes of the treatment group (A) and the control group (C) before the implementation of the programme, whereas in correspondence with $t = 1$, we observe their outcomes (B and D) after the programme has been implemented. The estimation of policy effects is given by the difference in the mean outcomes for the treatment group ($B-A$) minus the difference in the mean outcomes for the control group ($D-C$), as expressed by the following equation:

$$\text{DiD impact} = (B - A) - (D - C)$$

Mathematically, the policy effect is given by:

$$\beta = (\bar{Y}_{\text{treat,after}} - \bar{Y}_{\text{treat,before}}) - (\bar{Y}_{\text{control,after}} - \bar{Y}_{\text{control,before}})$$

As we have seen before, a selection bias occurs when comparing participants and non-participants because the choice to enrol in a programme is often determined by differences in the starting conditions of the eligible observations. Therefore, the differences in outcomes across the treatment and control groups may be determined by their different characteristics rather than by the programme. However, the DiD method assumes that many unit characteristics remain constant over time. Therefore, the DiD analysis controls for both the observed and non-observed time-invariant conditions. Another limitation of this approach is the strong assumption that no other factors can affect the treatment group during the intervention. If other factors were present, the impact estimation would be invalid or biased.

Caliendo and Wittbrodt (2022)⁵¹ implemented a DiD model to analyse the impact of the German minimum wage on the gender gap. Specifically, the authors adopted a regional DiD approach, considering the variation in the degree to which female employees are affected by the minimum wage. This model measures the effect of the intervention by comparing the difference in gender-specific wages before and after the implementation of the reform, and between treated (high-bite regions) and non-treated (low-bite regions). This study reveals the effectiveness of the minimum wage in reducing gender wage disparities, especially in regions where women are strongly affected by the minimum wage. Another study by Baltrunaite et al. (2014)⁵² analysed the impact of the Italian reform of gender quotas (law introduced in 1993) in candidate lists on the average quality of elected politicians through a DiD model. Specifically, the authors considered municipalities that were exposed to gender quotas as the treatment group and those which never voted with gender quotas as

⁵¹ Caliendo, M., & Wittbrodt, L. (2022). Did the minimum wage reduce the gender wage gap in Germany? *Labour Economics*, 78, 102,228.

⁵² Baltrunaite, A., Bello, P., Casarico, A., & Profeta, P. (2014). Gender quotas and the quality of politicians. *Journal of Public Economics*, 118, 62–74.

the control group. This approach allows us to measure the effectiveness of the new law by comparing the change in the average education level of municipal councillors across the treatment and control groups immediately before and after the introduction of the reform. The key finding of this study is that the reform of gender quotas is associated with an increase in the quality of elected politicians.

3.4 *Matching*

Matching methods require that all variables X responsible for the selection bias are observed by the analyst. Under this assumption, matching is a robust method for estimating the mean effect on treaties. This method consists of matching each observation enrolled in a programme to observations that are not enrolled and have the same characteristics X . Usually, matching methods use an indicator called the Propensity Score (Rosenbaum & Donald, 1983) which computes the probability that an observation will be treated according to its observable characteristics. The propensity score assumes values between 0 and 1, and for each treated and non-treated unit, it summarises the information on the set of variables X , because these variables affect the likelihood of participating in the programme. The first step in the application of the propensity score is to conduct representative and highly comparable surveys to identify the individuals who participated in the programme and those who did not; matching requires a large dataset with extensive information on background characteristics for all units. Second, the analyst estimates the probability that each individual participates in the programme and assigns a propensity score value to all observations; thereafter, observations in the treatment group are matched with observations not enrolled in the programme that have the most similar propensity score. Finally, the effect of the programme will be measured by the mean of the differences between the outcomes observed for the treated observations and their matched comparison observations which represent the control group. Figure 3 illustrates how the matching methods work. Let us consider a programme whose purpose is to provide financial support to the unemployed. Figure 3 shows the distributions of the propensity score, that is, the probability of the units to enrol in the programme, for all the treated units (light blue distribution), and all the non-treated units (white distribution).

As we can see from Fig. 3, the propensity score distributions do not overlap perfectly; indeed, there is a lack of common support between the treated and non-treated groups. In other words, not all treatment units are matched to non-enrolled units, which implies that the external validity of the matching method is limited. Considering the extreme values of the distributions or tails, a subset of observations cannot be matched. Therefore, the matching procedure allows for a robust estimation of the average effect of the treatment, limited to the subset of treated and non-treated units that lie in the common space of the propensity score index which summarises their observed characteristics (X). Matching methods present several limitations. First, they require a large sample of units and, despite

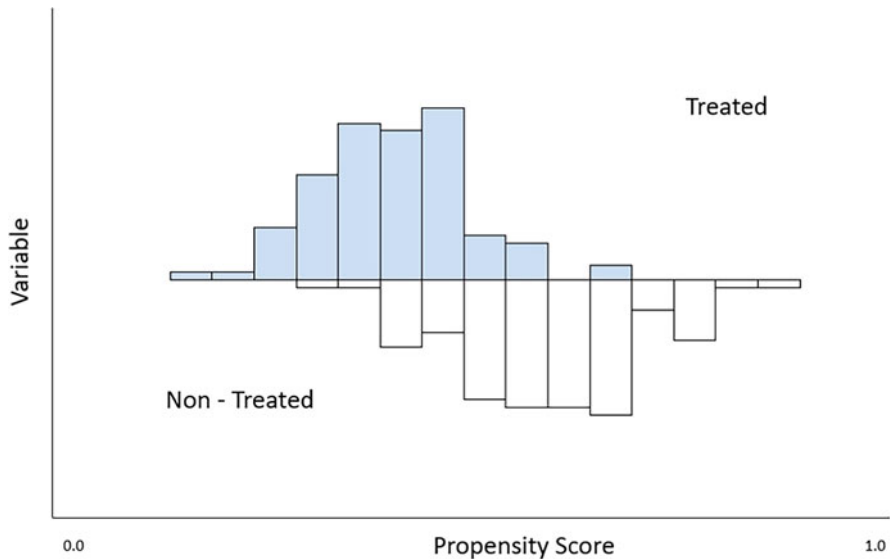


Fig. 3 Matching. Source: Authors

this, it is not certain that all enrolled units matched non-enrolled ones. Furthermore, this method is based on the strong assumption that there are no unobservable characteristics in the treatment and control groups. For this reason, it is suggested to use matching methods in combination with one of the other approaches previously discussed.

Several authors have used this econometric approach. For instance, Frölich (2007)⁵³ used propensity score matching to examine the gender wage gap among college graduates in the UK. A similar study conducted by Meara et al. (2020)⁵⁴ applied a matching method to estimate the gender pay gap in the USA.

4 Conclusions

The first part of the chapter summarises the legal framework for gender equality by illustrating the main interventions from the European Economic Community to the European Union. Gender equality has always been a fundamental value for the

⁵³Frölich, M. (2007). Propensity score matching without conditional independence assumption—with an application to the gender wage gap in the United Kingdom. *The Econometrics Journal*, 10(2), 359–407

⁵⁴Meara, K., Pastore, F. & Webster, A. (2020). The gender pay gap in the USA: A matching study. *Journal of Population Economics* 33, 271–305. Available at: <https://doi.org/10.1007/s00148-019-00743-8>

European Union, and interest in this topic has grown over time. Initially, the priorities of the European Commission were related to ensuring equal conditions and opportunities for women and men in the working environment. Later, the subsequent policies extended their area of intervention to create a gender-equal society. One of the most innovative interventions is the fourth action programme (1996–2000) which focuses on the principle of gender mainstreaming and suggests that policymakers, not only those in the field of gender equality, should bring a gender perspective across all policy fields. This principle is relevant for policymakers at all levels. In the second part of this chapter, practical tools and methods necessary to reduce gender inequalities are described in detail. Specifically, we illustrated the gender budgeting and gender equality plan which represent operational tools for implementing the gender mainstreaming strategy. The last section focuses on the impact evaluation of policies that promote gender equality. We analysed the GIA in detail, which consists of an ex ante evaluation of the policy impacts. Finally, we illustrated ex post evaluation methodologies such as randomised methods, regression discontinuity design, and differences in differences and matching methods. The main purposes of this contribution are summarising the main interventions on gender equality, illustrating the operational tools that effectively contribute to reducing gender inequalities, and introducing the main methods of policy evaluation that promote gender equality. The complexity of the impact evaluation processes and the relevance of their design should be clear to readers, even before the implementation of the policy itself.

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www.coe.int
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