Economic benefits of gender equality in the EU

How gender equality in STEM education leads to economic growth

Getting more women into STEM (science, technology, engineering and mathematics) education will have a positive impact on economic growth in the European Union. However, despite good employment opportunities and highly productive jobs in this area, there is currently a low proportion of women studying and graduating in STEM subjects ([1]).

A study from the European Institute for Gender Equality (EIGE) on the 'economic benefits of gender equality' puts forth robust new evidence showing the positive impacts of reducing gender inequalities in education in developed countries.

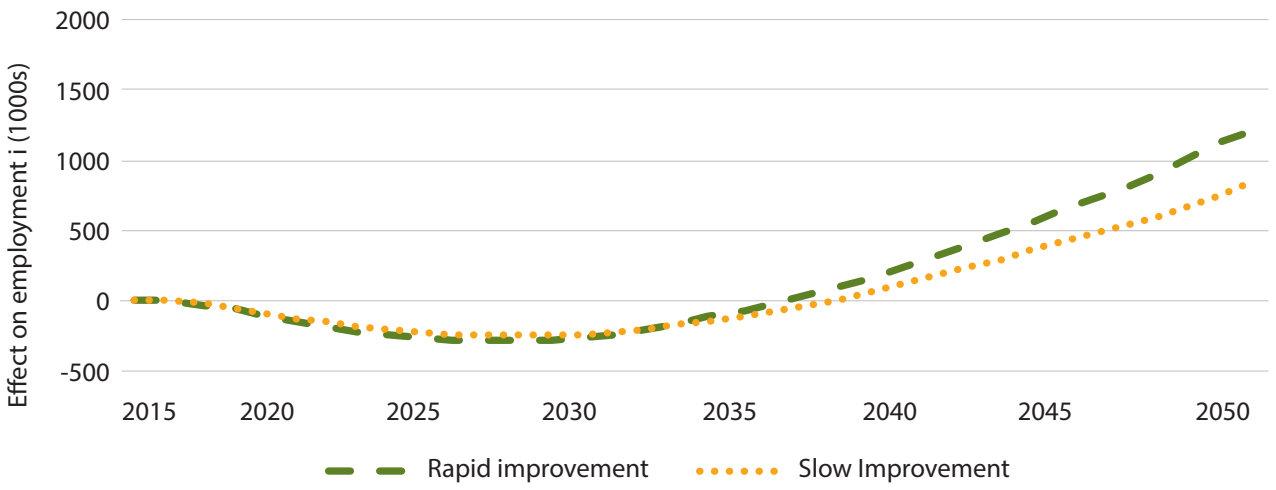
Closing the gender gap in STEM education can foster economic growth

Gender equality measures such as the removal of gender stereotypes in education; awareness raising and the promotion of STEM subjects to girls and women; and career guidance to encourage girls to consider studying in fields dominated by men and boys in ones dominated by women are likely to result in higher number of women graduating from STEM subjects. In turn, these measures could encourage more women to take up jobs due to good employment prospects in the area of STEM at present and in the future. At the same time, an increase in STEM employment would help to reduce labour market shortages and existing bottlenecks in the labour market.

Closing the gender gap in STEM could lead to an additional 1.2 million jobs.

Closing gender gaps in STEM education would have a positive impact on employment. Total EU employment would rise by 850 000 to 1 200 000 by 2050. These jobs are forecasted

Figure 1. The effect of closing the gender gap in STEM on employment



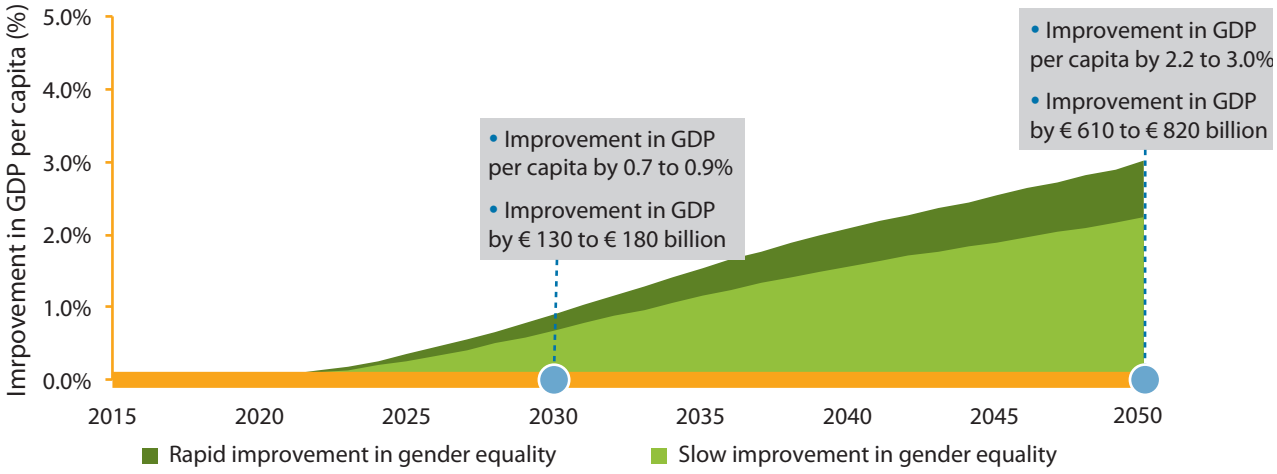
([1]) The study focused on the gender gap in the fields of computing and engineering, because the number of women in these fields is particularly low compared to men. In mathematics the evidence of a gender gap in participation is less conclusive across the EU Member States.

mostly in the long term, as employment rates will rise only after more women studying STEM finish their education.

The new jobs are likely to be highly productive because women graduating from STEM often progress into high-added-value positions in sectors such as information and communication or financial and business services.

Increasing the participation of women in STEM subjects will have a strong positive GDP impact at EU level. Closing the gender gap in STEM would contribute to an increase in EU GDP per capita by 0.7-0.9 % in 2030. By 2050, the increase is between 2.2 % and 3.0 %. In monetary terms, closing the STEM gap leads to an improvement in GDP by EUR 610-820 billion in 2050.

Figure 2. The effect of closing the gender gap in STEM on GDP per capita



A larger STEM workforce pool is expected to be more productive, to boost the potential productive capacity of the economy and to generate an increase in GDP per capita.

Higher productivity of STEM jobs is likely to result into higher wages (European Parliament, 2015). Remarkably, the study shows a closure of the gender wage gap by 2050. There is an increase in the number of women graduating in STEM subjects and, because of their higher educational attainment and choice of career in higher-wage sectors, women experience a gradual increase in average earnings, reaching parity with wages for men by 2050.

Improving gender equality in STEM education can improve the long-term competitiveness of the EU economy.

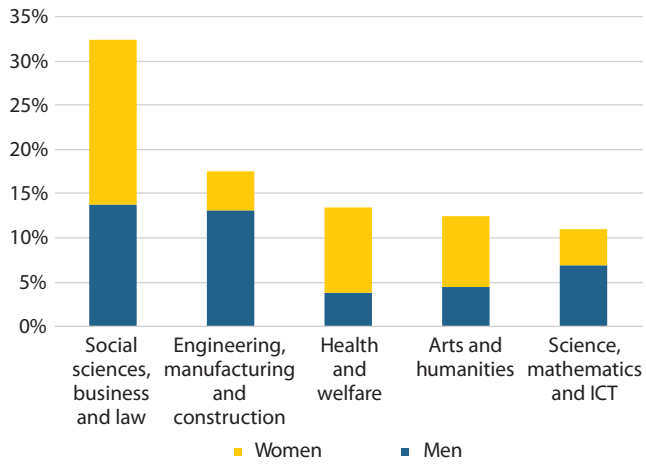
The study forecasts that women will become more productive due to higher rates of STEM qualifications, contributing to the smart growth envisaged in the Europe 2020 strategy. The competitiveness of the EU economy is also expected to gain from the increased employment of women in STEM fields. By 2050 exports are estimated to increase by about 0.7 %, whereas imports are forecast to decline by up to 1.2 %, leading to an improved balance of trade.

Why does the gender gap in STEM matter?

Despite the large proportion of women gaining higher-education qualifications, inequalities and gender gaps persist in terms of subjects and study fields chosen. According to data from Eurostat, in 2014 women mainly graduated in health and welfare, humanities and arts, along with social sciences, business and law. In contrast, men often graduated in engineering, manufacturing and construction-related fields, followed by technology, science and maths. Although the total number of students in STEM rose between 2003 and 2013, the gap between women and men remained constant throughout this period.

The largest gender gaps in education are found in STEM studies.

Figure 3. Distribution of tertiary education students by field and sex, EU-28, 2014 (%) ([2])



Source: Eurostat (educ_uoe_enrt03).

Stopping the persisting trend of under-representation of women among STEM university students and graduates matters for the following reasons:

1. Increasing the labour supply in STEM sectors

A large majority of Member States have experienced severe recruitment difficulties in relation to STEM skilled labour, especially in engineering and IT. Twenty-one Member States report difficulties in finding science and engineering professionals, and 20 report the same problems finding ICT professionals (Attstroem et al., 2014). For instance, in the United Kingdom more than 40 % of job vacancies (double the country's average) in STEM have been hard to fill due to a shortage of applicants.

Estimates show that 7 million new jobs in STEM sectors will be available in the EU by 2025 (European Parliament, 2015).

This trend is likely to continue: the employment opportunities for engineers and IT specialists are expected to rise and exceed many other occupations. For example, while zero employment growth in the pharmaceutical sectors is expected between 2013 and 2025, employment in computing over the same period is expected to rise by 8 % (European Parliament, 2015). STEM professionals across the EU are largely unaffected by unemployment and enjoy significantly higher wages (European Parliament, 2015).

2. Increasing women's access to well-paid jobs

At present, social, cultural, economic, educational and institutional factors sustain the persisting gender segregation across study fields. Stereotyping in education, gender differences in educational and training choices and a lack of female role models are major problems contributing to the low percentage of women graduating in STEM subjects.

At the individual level, fewer women in STEM studies may translate into lower employment prospects and lower earnings in the labour market, which ultimately end in lower economic independence for women. This is because STEM-related sectors have been growing much faster than others and have significantly higher wages (European Parliament, 2015).

The study shows that reducing the gender gap in STEM education areas could help reduce bottlenecks in the labour market, increase the employment and productivity of women and reduce occupational segregation. Ultimately this would foster economic growth via both higher productivity and increased labour market activity.

References

Attstroem, K. et al (2014), *Mapping and analysing bottleneck vacancies in EU labour markets*, report for the European Commission, Ramboll/Erasmus School of Economics.

European Parliament (2015), *Encouraging STEM studies for the labour market*.

([2]) NB: The cited data are the most recent data from Eurostat at the moment of preparing the content of this publication. For further information and updates please see: http://ec.europa.eu/eurostat/statistics-explained/index.php/Tertiary_education_statistics

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About the study

The study on the economic benefits of gender equality is unique in the EU context. It is the first of its kind to use a robust econometric model to estimate a broad range of macroeconomic benefits of gender equality in several broad areas such as education, labour market activity and wages.

The overall results of the study show that more gender equality would lead to:

- between 6.3 million and 10.5 million additional jobs in 2050, with about 70 % of these jobs taken by women;
- positive GDP impacts that grow over time;
- an increase in GDP per capita of up to nearly 10 % in 2050.

The study used the E3ME macroeconomic model to estimate the economic impacts of improvements in gender equality. E3ME is an empirical macroeconomic model tailored specifically to model outcomes at EU and Member State levels.

The outputs of the study on economic benefits of gender equality in the EU include nine publications:

1. Literature review: existing evidence on the social and economic benefits of gender equality and methodological approaches.
2. EU and EU Member State overviews.
3. Report on the empirical application of the model.
4. How the evidence was produced: briefing paper on the theoretical framework and model.
5. How the evidence was produced: factsheet on the theoretical framework and model.
6. Economic impacts of gender equality in the EU policy context: briefing paper.
7. Economic impacts of gender equality: briefing paper.
8. **How gender equality in STEM education leads to economic growth: briefing paper.**
9. How closing the gender labour market activity and pay gaps leads to economic growth: briefing paper.

All publications, detailed study results and methodology can be found on EIGE's website.

The European Institute for Gender Equality (EIGE) is the EU knowledge centre on gender equality. EIGE supports policymakers and all relevant institutions in their efforts to make equality between women and men a reality for all Europeans by providing them with specific expertise and comparable and reliable data on gender equality in Europe.

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