



# Policy Brief on The institutional evolution of knowledge creation in Europe and entrepreneurship

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... importance of gender differences in education for entrepreneurship. Triggering women to engage in more ambitious entrepreneurship can be an important governmental instrument to foster the entrepreneurial climate across countries and regions, which could benefit these areas' competitiveness. We present three recommendations, and argue that policy changes should consider that gender differences already emerge at the early stages of the life course, particularly at the family level. An aspect that is often neglected in policy making, leading to possible failure of recent policies.

## Introduction

For more than three decades, researchers have been interested in the relationship between knowledge institutions— including education, experience, and skills – and entrepreneurship. In contrast to the more traditional input of labour and capital, the economic value of knowledge is uncertain, it is non-rival in use and its potential value is

asymmetric across economic agents. While many factors related to knowledge institutions contribute to entrepreneurial outcomes, one easily influenced determinant of entrepreneur outcomes is education.

Knowledge obtained through education is a crucial explanation for cross-national differences in entrepreneurial activity. More specifically, recent attention has been paid to





the importance of the choice of subjects such as Science, Technology, Engineering and Math (STEM) for the promotion of entrepreneurial activity. Given that differences in STEM education are particularly large between men and women, in D2.4 we focus on the gender role.

Women constitute 52% of the total European population but only one-third of self-employed workers and all business starters in the EU (Eurostat 2007; OECD 2016). Triggering women to engage in more ambitious entrepreneurship can be an important governmental instrument to foster the entrepreneurial climate across countries and regions, which could benefit these areas' competitiveness. Female entrepreneurs not only contribute to employment creation and economic growth through their increasing participation but also add to the diversity and quality of entrepreneurship in the economic process

## Methodology

Recent data is used to show the relevance of addressing the gender gap in education and then a historical analysis is applied to see if these gaps can indeed effectively be addressed and what policies would work.

The role of the gender differences in STEM education is analysed at the country level in promoting women's and men's perceived opportunities at three stages: (i) start a business, (ii) the knowledge intensiveness of the sector in which they start their business and (iii) their growth aspirations.

## Results and conclusions

Our results in D2.4 show that women are generally less likely to engage in all three stages of entrepreneurial activity mentioned above. This seems to be a general phenomenon for all the European countries

and the United States because the size of the gender gap does not vary much across countries.

When we look back and take a more historical perspective, an increase in science education in all 4 Variety of Capitalism (VoC) types since the 1990s becomes clear, with liberal market economy (LMEs) countries having the highest level followed by Managed Market Economies (MMEs), Continental Market Economies (CMEs) and Eastern Market Economies (EMEs), respectively (see Figure 1). However, despite the increase in the share of the population receiving science education, it did not translate into higher gender equality in science education. Instead, all VoC categories show a rather steep decrease in the share of women in science education compared to men since the mid-1990s.

Individual and social factors shape gendered motivation and young girls' and boys' career plans. For example, parents' beliefs differ according to the sex of their child, and these beliefs predict children's beliefs and behaviours. Thus, a gendered bias might emerge toward STEM fields, even though girls and boys do equally well in math and science throughout their schooling (Eccles 2014). The gender gap in STEM achievement widens with every step in one's educational and professional life, from high school to college to graduate school, and into the ranks of academia or industry. These more informal institutions related to gender roles and attitudes, which emerge at the family level, are highly embedded and have deep historical roots and are therefore difficult to change.

## Implications

Based on the results in D2.4 we argue that in fostering entrepreneurship it is important to close the gender gap in education. As stated in the Introduction, getting women into more ambitious entrepreneurship can be an





important policy to raise the entrepreneurial climate across countries and regions in general, which could benefit competitiveness.

We give three recommendations for policies.

First, in general, closing the gender gap – especially in science education – is beneficial to increase engagement in more ambitious entrepreneurship, that is in knowledge-intensive sectors and high-growth entrepreneurial activity.

Second, the size of the gender gap in science seems to increase over time rather than decrease (see Figure 1). When defining policies to close this gender gap, it is very important to acknowledge that gender roles are deeply embedded cultural institutions. In 2016, the European Commission (COM 2016) recalled that education offers a unique opportunity to counter socio-economic disparities and gender stereotypes and make sure that nobody is left behind. However, most policies do not consider this high embeddedness of gender differences. So, we recommend that policies that aim to close the gender gap in science at the tertiary level should target gender differences that emerge at the early stages of the life course, particularly at the family level.

Third, closing the gender gap in science education is beneficial to stimulate entrepreneurial engagement in highly knowledge-intensive sectors particularly in institutional contexts that have a high-quality institutional environment with moderate levels of employment protection and high investment in education, such as Nordic/continental Europe

Also for policy making it would be helpful to consider that closing the gender gap in science education is less urgent for countries which receive highly skilled migrants (brain drain vs

brain gain). More research is needed though to verify this claim.

**Figure 1: Gender gap and overall study choice in science education over time**



### Further reading:

COM (2016) 941 final, 'Improving and modernising education', <https://ec.europa.eu/transparency/regdoc/rep/1/2016/EN/COM-2016-941-F1-EN-MAIN.PDF>

Dilli, Selin and Gerarda Westerhuis (2017), 'Institutions, Gender Differences in Human Capital, and Entrepreneurship'. Deliverable 2.4 in Financial and Institutional Reforms for the Entrepreneurial Society (FIRES).

Eccles, Jacquelynne S. (2014) 'Gendered Socialization of STEM Interests in the Family', *International Journal of Gender, Science and Technology*.

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