



# Press Release

## Gender equality is good for economic growth

**Economic historians from Tübingen and Wageningen Universities investigate 27 European countries over 500 years, finding numerical skills boosted by later marriage**

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Over 500 years, the economy developed better in parts of Europe where women married in their 20s instead of their teens, according to a study by economic historians Alexandra de Pleijt from Wageningen University in the Netherlands and Jörg Baten from the University of Tübingen. Their study has been published in the journal *World Development*.

"Early marriage shortened the time in which young women could pursue a job on the farm or in the labor market. After marriage, women were then confined to life in the household," says Jörg Baten, professor of economic history at the School of Business and Economics in Tübingen. Women's age at marriage is therefore considered by economists to be a measure of gender equality.

The research team has now demonstrated that women developed better numerical skills as a result of being more independent for longer. Such skills include the handling of numbers, proportions and probabilities, and may be acquired without formal schooling. Economic historians see numerical skills as a keystone in the economic development of a society.

Baten and de Pleijt evaluated censuses and records of witch trials from 27 countries and 153 regions in Europe, from the 16th century to the end of the 19th century. If women rounded their ages up or down to increments of ten or five years during questioning and interrogation, they often

lacked a precise numerical sense. In regions where marriage took place early, women rounded their age particularly frequently.

Then Baten and de Pleijt cross-checked the average age at marriage with numerical ability. In the Alpine countries and in Central and Northern Europe between 1500 and 1900, women did not marry until their mid-twenties on average and were significantly more likely to state their age accurately. In Eastern and Southeastern Europe, women on average married in their teens during the same period, and they more frequently rounded their age up or down - indicating that they had not learned the same numerical skills.

"Economic development was better in regions where women married late and were better able to develop numerical skills. That's exactly where the Industrial Revolution took place in the 19th century," says Alexandra de Pleijt, a researcher at Wageningen University's Department of Economic and Environmental History. These correlations showed up in the statistical analysis both between regions and countries, and across the centuries.

The influence of women becomes more understandable when their role in raising and educating their children is taken into account. "If mothers themselves had numerical skills, they could encourage their sons and daughters to learn these skills and thus influence overall economic development," de Pleijt says.

The research team sees one reason for the cultural differences, as far as marriage age is concerned, in the livestock and dairy farming of the Alpine region and in Central and Northern Europe; milking and feeding cows did not require as much human muscle strength as plowing fields and harvesting grain. "Women therefore had a more important role in the work processes in farming societies that were more based on livestock and dairy farming, and they didn't have to marry until later," Baten explains.

The team of authors draws parallels from the historical study with some parts of the world today. In regions with low gender equality, such as South and Central Asia, numerical skills developed more slowly - and the economy grew correspondingly more slowly.

**Publication:**

Joerg Baten, Alexandra M. de Pleijt, "Female autonomy generated successful long-term human capital development: Evidence from 16<sup>th</sup> to 19<sup>th</sup> century Europa, *World Development*, October 2022

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