

*Title:* Glowing coals of the stake: Can witch-hunts help explain regional gender inequalities?

*Authors:* Alina Sorgner (JCU Rome, IfW Kiel, IZA Bonn) and Fabrizio Conti (JCU Rome)

*Extended Abstract:*

While understanding regional differences in gender equality and their determinants is crucial for designing appropriate policy measures, studies of gender equality at the subnational level are rare (European Commission, 2019). Previous research has shown that substantial differences in the level of gender equality (e.g., labor force participation rates, educational attainment, power positions, or health outcomes) exist across regions within countries (Di Bella et al., 2021; Norlén et al., 2021). This suggests that differences in gender equality cannot be exclusively explained by macroeconomic factors at the level of countries or by other factors, such as nation-wide policies aimed at empowering women, and highlights the need for more understanding of regional determinants of gender equality.

This paper contributes to a growing body of literature on historical drivers of regional differences in gender equality outcomes by investigating the relationship between the spread of witch-hunts in Europe in the early-modern period and contemporary regional gender inequalities in European regions. Witch-hunts occurring in the early-modern period (ca. 1400-1750) in Europe yielded, over more or less two centuries, about 50,000 of female and male victims executed for witchcraft in regions that today are part of some of the most developed European countries. Especially during later waves of the witch-hunts, they were associated in certain regions with a strong gender bias, thus, introducing a shock to the sex ratio in the regional population. Previous studies generally show that in the presence of historical shocks that primarily affect men (e.g., slave trade, wars) gender roles tend to become more egalitarian, that is, gender inequality decreases. Teso (2019), for instance, shows that women whose ancestors were more exposed to transatlantic slave trade in sub-Saharan Africa are more likely to be part of the labour force, have lower levels of fertility, and are more likely to participate in household decisions. Similar effects have been found in studies of violent conflicts, in which the share of the female population increased because of high mortality among the male population. For instance, the WWII had a persistent “shocking” effect on U.S. women’s labor supply measured in terms of weeks worked and labor force participation (Goldin and Olivetti, 2013; Acemoglu, Autor and Lyle, 2004). Buvinic et al. (2013) in their review of literature on impacts of violent conflicts on gender inequality conclude that women might have more opportunities in work and politics in the aftermath of war conflicts. Historical shocks altering sex ratio in the population can therefore contribute to transforming traditional gender roles. The historical case of the witch craze of early-modern Europe is a particularly interesting one, because at least in certain regions (e.g. in Germany) it was strongly female-biased. Our paper, therefore, contributes to the strand in the literature that investigated how historical shocks may have challenged traditional gender roles by altering the sex ratio in the population. Male-biased sex ratios were found to be associated, for instance, with a lower marriage probability for men of lower socioeconomic status (Hesketh, 2011; Pollet and Nettle, 2008), increased violence and crime rates (Diamond-Smith and Rudolph, 2018), lower women’s labor force participation rates (Amuedo-Dorantes and Grossbard, 2007) and lower birth rates (Chipman and Morrison, 2013). Thus, our case of witch-hunts makes for an interesting comparison with other studies, for instance, on war conflicts, as it can be expected that a sex ratio that is biased toward

male population may promote anti-egalitarian social norms that may result in persisting gender inequalities.

Moreover, our research contributes to the literature strand that uses historical data to explain current economic outcomes (see, e.g., Giuliano and Matranga, 2021). For instance, Alesina et al. (2013) link existing cross-cultural differences in values regarding the appropriate role of women in society with a heritage of traditional agricultural practices, such as prevalence of plough use, that have influenced the historical gender division of labor. Carranza (2014) shows for the case of India that soil texture, which determines the depth of land tillage and the technology used in agriculture, explains a significant portion of within-state variation in female agricultural labor force participation and it is significantly related with the ratio of female to male children. Giuliano (2021) provides a review of empirical literature on various historical determinants of contemporary differences in gender equality, such as preindustrial societal characteristics and religion, and concludes that cultural norms regarding gender roles tend to persist even after the historical conditions have changed. Our novel results contribute to this literature by showing that local historical events of witch-hunts (and their characteristics, such as intensity, timing, and location) may play a role in explaining regional variation in contemporary levels of gender outcomes.

The empirical analysis employs a comprehensive historical database on witch trials that we merge with contemporary data on gender-disaggregated statistics from official sources that are available at NUTS 3 regional level, such as female-to-male ratio and various fertility indicators (e.g., total fertility rate, mean and median age at first birth, age cohort-specific birth rates). In addition, we use data on gender-related local social norms from the World Values Survey and European Values Survey that are available at NUTS 2 regional level. We show that regions that witnessed witch-hunts have a significantly lower level of egalitarian attitudes toward the role of women in society. People residing in these regions are more likely to report more traditional values and attitudes, when asked about women's role in the household and at workplace. In addition, individual-level analysis using the German SOEP data shows that the gender gap in employment and earnings is stronger, to the disadvantage of women, in regions with the legacy of witch-hunts. In addition, we show that European regions that experienced witch-hunts in the past are significantly more likely to have a male-biased sex ratio, higher mean and median age of mothers at childbirth, and lower birthrate in younger age cohorts. These effects are stronger for regions that experienced more intensive and longer witch-hunts, as well as for regions that had been affected by later waves of witch-hunts. We also provide some indirect evidence that motivations for witch-hunts might be related with sex ratio differently in different regions. We demonstrate this by using two cases of Germany and France. In Germany, witch-hunts were severely biased toward female population, while some regions in France, for instance, Normandy, have seen a higher share of males among all persecuted for witchcraft. We show that these gender differences in motivations for witch-hunts seem to be associated with a stronger male bias in sex ratios in German regions that witnessed witch-hunts, and a stronger female bias in sex ratios in France.

In conclusion, the study provides evidence of a long-term impact of a historical legacy of local witch-hunts on contemporary regional gender inequalities. In a metaphorical sense, the "coals of the stake" are still glowing. These findings highlight the importance of considering local historical factors when addressing current gender disparities and designing policy measures to promote gender equality.