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Historic sex-ratio imbalances predict female participation in the political market

*Iris GRANT, Iris KESTERNICH, Carina
STECKENLEITER and Joachim WINTER*

Department of Economics

Faculty of Economics
and Business



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Iris Grant
KU Leuven

Iris Kesternich
KU Leuven

Carina Steckenleiter
University of St. Gallen

Joachim Winter*
University of Munich

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Abstract

We analyze the long-term effects of gender imbalances on female labor force participation, in particular in the politician market, exploiting variation in sex ratios across Germany induced by WWII. In the 1990 elections, women were more likely to run for office in constituencies that had relatively fewer men in 1946.

Keywords: female labor market participation; gender stereotypes; occupational choice

JEL codes: J16; J24; N44

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*Corresponding author. E-mail: winter@lmu.de; Address: Department of Economics, University of Munich, Ludwigstr. 33, D-80539 Munich.

1 Introduction

Worldwide, only 22 percent of the members of parliament and 17 percent of government ministers are women.¹ For instance, in West Germany the share of female members of parliament at the federal level has been well below 20 percent in the post-war decades. In the first federal election after unification in 1990 it reached 20.5 percent, and it is still below 37 percent [Bieber, 2013]. The reasons why women are less likely to be active as members of parliament, and poorly represented in leadership positions more generally, are not well understood. A recent literature, reviewed below, stresses the role of past experiences and cultural norms as potential determinants of female labor force participation, especially in high-profile professions.

This paper highlights the fact that historical shocks to the gender balance can affect female participation in a leadership profession even after many decades. We show that the drastic sex-ratio imbalances induced in Germany by the Second World War (WWII) predict participation of female candidates in the first federal election after unification, more than four decades after the war ended. These post-war sex ratios exhibit plausibly exogenous variation across voting districts. Among cohorts drafted into the German army up to 38 percent of men died [Kroener et al., 1988]. Regional variation is mainly a consequence of front lines at the end of war and differential post-war allocation of expellees, evacuees, and former prisoners of war [Steinberg, 1991].

We test the hypothesis that constituencies which experienced more severe shortages of men relative to women after the war – in short, which had lower sex ratios² – have a larger share of female nominees in the 1990 federal elections. Our premise is that the shortage of men made it necessary for women to step in.³ Hence, people were exposed to women in occupations and positions that had previously been dominated by men. The salience of female “role models” may have led adolescent girls to change their beliefs about their ability to succeed in such jobs and aim for better jobs.

We collected data on sex ratios at the county level for the period immediately after the end of WWII and combined them with election data for the German federal parliament (*Bundestag*). The analysis focuses on the first election after re-unification in 1990 so that all current German states can be included. We estimate regressions of the share of female candidates from all parties in the constituencies on the 1946 sex ratio, using several specifications. Our main result is that a one standard deviation decrease in the 1946 sex ratio was associated with an increase in the share of female candidates in the 1990 election of 3.9

¹Numbers as of August 2016, see [United Nations Women].

²The sex ratio is defined as the number of men divided by women in a region, in our case voting districts.

³For a comprehensive overview of the immediate post-war period in Germany, see Niehuss [2001].

percentage points.

In the remainder of this paper, we review the related literature in Section 2, describe the data in Section 3, and present the results in Section 4. Section 5 concludes.

2 Related literature

An under-representation of women in politics is considered to be undesirable for several reasons (see, e.g., Casas-Arce and Saiz [2015]). First, women make up half of the population. A better representation of women in parliaments can improve the protection of their rights and interests. Second, decision on public goods provision may be different between male and female politicians. Women tend to concentrate on social policies such as education, health, and childcare which tend to be more beneficial towards their own sex [Chattopadhyay and Duflo, 2004, Bratton and Ray, 2002]. Another positive effect of a higher share of female politicians in parliament is a lower level of corruption [Dollar et al., 2001].

The literature identifies various reasons why fewer women occupy political office. Baltrunaite et al. [2016] distinguish two channels, voter preferences and parties' selection of candidates. Casas-Arce and Saiz [2015] find evidence that party leaders are less inclined to nominate female candidates even at the expense of receiving fewer votes. Additionally, women themselves might be reluctant to enter the politician market. Social norms typically attribute male characteristics leadership positions [Akerlof and Kranton, 2000, Eagly and Karau, 2002]. This discourages adolescent girls from aspiring for such positions and making corresponding educational choices.

Besides these demand and supply factors, historically grown institutional settings can help or hinder the success of women. Matland and Studlar [1996] stress the importance of how the electoral system is organized (proportional representation or winner-takes-all). Cultural and psychological aspects such as gender stereotypes can also influence female participation on the politician market. Beaman et al. [2012] conducted a randomized controlled trial that shows that prior exposure to female leaders leads to electoral gains for women.

Exogenous variation in sex ratios has been widely used to study the consequences of imbalances in labor and marriage markets [Guttentag and Secord, 1983]. Prior literature has established that lower sex ratios are associated with higher female labor market participation rates (see, e.g., Angrist, Acemoglu et al. [2004]). Imbalances in sex ratios are also of interest *per se*: As the technology to control the sex of children has become widely available, sex ratios are increasingly imbalanced in several countries, including India and China [Attané, 2010].

3 Data

The main outcome we study is the share of female candidates in the 1990 *Bundestag* election. We also consider whether a female candidate was elected as a second outcome. The unit of observation is the voting district. In Germany, voting districts are designed to roughly represent the same number of voters, and often correspond to political counties. In the 1990 elections, there were 328 districts.

Germany has a mixed election system. Voters cast two votes, one for a district candidate (this is often referred to as the “first vote” or the “direct mandate”) and the other for a political party (the “second vote”), which determines the overall share of the parties in the parliament. We focus on the first vote for which each party can nominate one candidate per voting district. Independent candidates are allowed but typically command only negligible shares of the vote.

Our dataset covers all 2,338 candidates nominated for the first vote in the 1990 elections. It includes the sex and party affiliation of all candidates and the vote shares of all parties by voting district. We also collected data on the 1987 West German election and on the composition of the East German *Volkskammer* before unification.⁴ This allows us to determine whether the pre-1990 incumbent runs for office again.

We compiled data on the sex ratios immediately after WWII from the census which was conducted by the occupation forces (USA, UK, France and the Soviet Union) in 1946.⁵ These data were digitalized from printed publications [Ausschuss der deutschen Statistiker für die Volks- und Berufszählung 1946, 1949a]. In addition, we collected data on the number of Catholics and Protestants from the census [Ausschuss der deutschen Statistiker für die Volks- und Berufszählung 1946, 1949b]. As these data are available at the level of the county, we constructed a mapping of the 1946 counties into the 1990 voting districts. Using their geographic composition, we mapped each 1990 voting district into one or more of the 1990 counties. Those were in turn matched to the 1946 counties.

Summary statistics are reported in Table 1. Further details of the data construction are available, together with the data, from the authors.

⁴All data on the federal election of 1990 in reunified Germany and the 1987 federal election in West Germany was obtained from the Federal Returning Officer, [Bundeswahlleiter, 2016]. Data on the members of the 10th East-German *Volkskammer* was obtained from [Datenbank VOLKPARL].

⁵The state of Saarland is not included in our dataset since it was not part of the four occupation zones in 1946 and no comparable census data are available.

4 Results

Table 2 reports the results of OLS regressions of the share of female candidates in the 1990 voting districts on the 1946 sex ratio. In addition, we control for the share of Catholics in 1946 and the share of votes for left wing parties in 1990 as political science literature suggests that gender stereotypes present in Catholic regions and in conservative parties are associated with lower shares of female politicians; see Bieber [2013]. Further, parties might nominate female candidates strategically in constituencies where they have low probabilities of winning, for instance constituencies where former Bundestag members decide to seek re-election. We thus add a dummy variable for whether the incumbent runs again. State dummies are included to account for between-state differences.

The first column shows the result of the baseline specification (all constituencies and all control variables). The effect of the sex ratio on the share of female nominees is significant at the 5% level. A decrease of the sex ratio by one standard deviation (i.e., by 0.047) is associated with an increase in the share of women nominated by approximately 3.9 percentage points. To illustrate, a decrease in the sex ratio from 0.82 to 0.72, which are the values of North-Rhine Westphalia and Brandenburg, respectively, is associated with an increase in the share of female nominees by 8.3 percentage points. As female representation in the Bundestag after the 1990 elections was around 20 percent and the share of female nominees for the first vote was around 18 percent, the effect of historic sex ratio imbalances is of relevant size.

The remaining columns report results for specifications that leave out the share of Catholics as a regressor, and drop the districts located in the State of Bavaria, respectively. Leaving out the share of Catholics does not change the effect of the historic sex ratio by much. Dropping Bavaria strengthens the effects. Bavaria has a special role in the German political system. First, it has a very high share of Catholics, and second, the conservative party (CSU) has had a commanding share of the vote over much of the post-war period.

The theories discussed above suggest a second outcome – whether female candidates were more likely to win in districts that had a lower sex ratio. Figure 1 shows 1946 sex ratio densities, separately for voting districts with female and male winners in 1990. The sex ratios are substantially smaller than 1 for each constituency, illustrating the devastating effects of WWII on the German male population. In constituencies where a woman received the majority of votes, sex ratios are lower, i.e., there were relatively more women than men in 1946. Again, this difference is stronger excluding Bavaria. The null hypothesis of identical distributions, however, cannot be rejected using nonparametric Kolmogorov-Smirnov tests at conventional levels of significance.⁶ This result suggests that voter demand effects were not as strong as candidate supply effects.

⁶We did not obtain a significant effect of the sex ratio on this outcome in Probit regressions that control for the same variables as in Table 2 either.

5 Conclusions

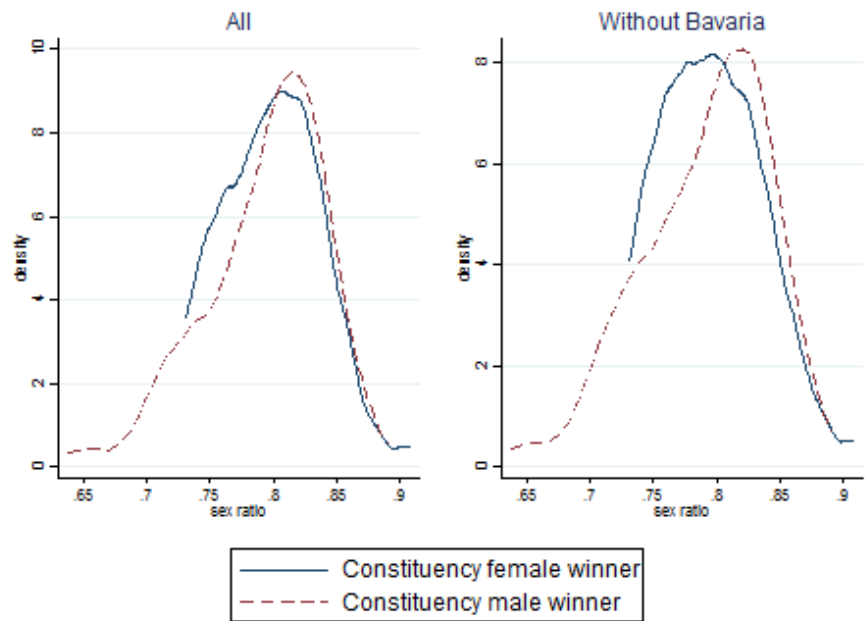
We use a drastic change in post-WWII sex ratios in Germany to analyze the long-term effects of gender imbalances on female participation in labor markets for professional occupations. We find significant effects of the 1946 sex ratio on the share of female nominees in the 1990 federal election. Voter demand effects are unlikely to account for this effect. While we find the evidence of a link between past gender imbalances and labor market choices of women compelling, lack of data on intermediate outcomes prevents us from identifying the specific causal channels that created this association. This is an important topic for future research on gender imbalances. A plausible mechanism is based on the observation that due to a shortage of male workers after the war, women had to take up jobs that were previously ascribed to men, which in turn might have changed perceptions about the careers that are open to, and should be pursued by, women.

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Figure 1: Sex ratio densities for constituencies with female/male winners



Variable	Obs	Mean	Std. Dev.	Min	Max	P50
Sex ratio <i>(Men/Women)</i>	2304	.795	.047	.638	.909	.805
Catholic share <i>(Catholics/Population)</i>	2304	.39	.294	.045	.98	.329
Vote left share <i>(% SPD/PDS/Grüne/B90 votes)</i>	2304	.429	.092	.235	.659	.421
Incumbency	2304	.742	.438	0	1	1

Table 1: Descriptive statistics

VARIABLES	(1) % fem. nominees	(2) % fem. nominees	(3) % fem. nominees	(4) % fem. nominees
Sex ratio	-0.831** (0.360)	-0.741** (0.356)	-1.006*** (0.373)	-0.942** (0.368)
Catholic share	0.0513 (0.0538)		0.0520 (0.0573)	
Vote left share	0.238* (0.133)	0.174 (0.124)	0.159 (0.133)	0.101 (0.119)
Incumbency	0.000545 (0.0186)	-0.000102 (0.0187)	-0.00455 (0.0202)	-0.00529 (0.0202)
Constant	0.729*** (0.266)	0.705*** (0.266)	0.899*** (0.277)	0.894*** (0.276)
Observations	323	323	278	278
R-squared	0.046	0.043	0.051	0.047
state dummies	YES	YES	YES	YES
incl. Bavaria	YES	YES	NO	NO

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 2: OLS regression of the share of female nominees in a Wahlkreis on 1946 sex ratios

