The Changing Relationship between Gender and Corruption*

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Abstract

Greater representation of women in government is strongly associated with less corruption in that government among democracies. In this chapter, we show that the empirical association between women's representation and corruption has gotten smaller over the last forty years. We probe the etiology of this decline using instrumental variables analysis, allowing us to eliminate simultaneity and confounding as barriers to causal inference. Our results indicate that the negative effect of corruption on women's representation has grown weaker during this period, but the causal impact of increased women's representation on reducing corruption remained relatively stable. We theorize that corruption networks might be less effective now than they once were at protecting their operations via excluding women from public office because of increased women's representation worldwide.

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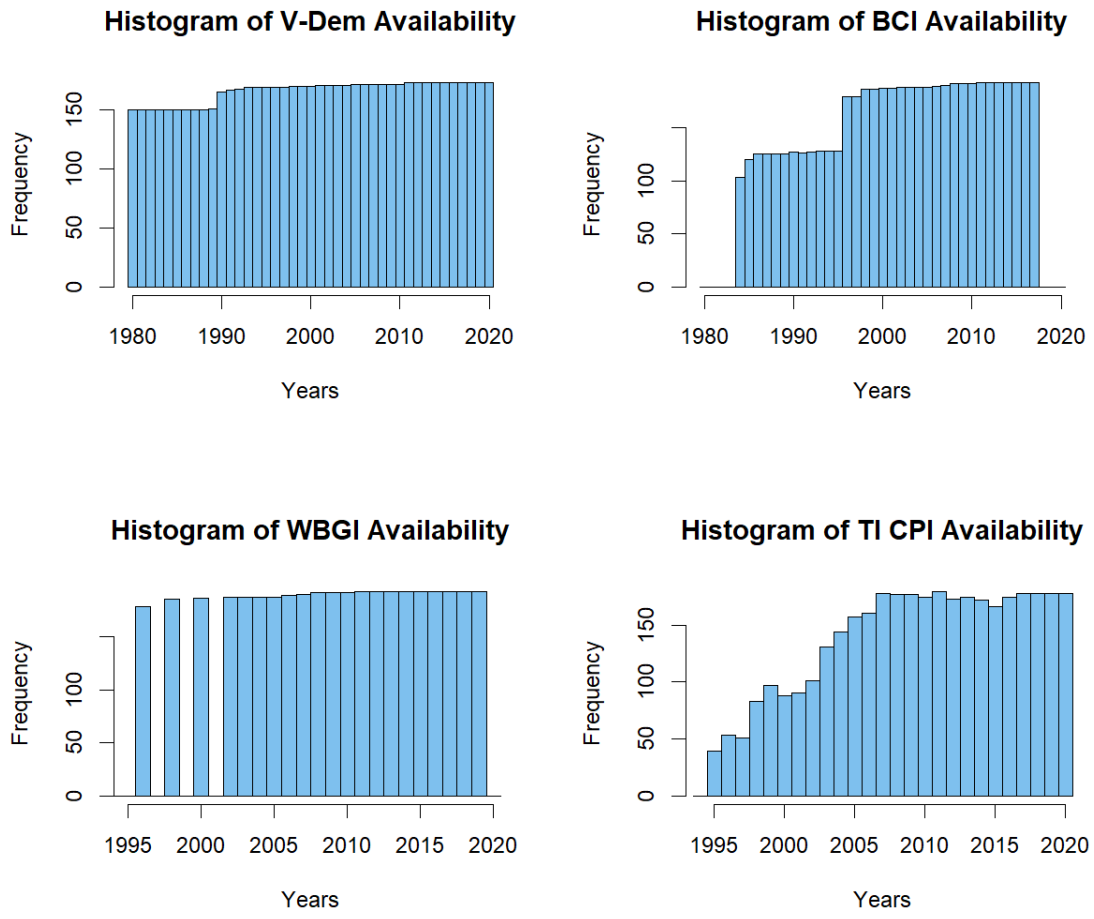
A Dependent Variables' Availability Over Time

Figure 4: **Availability of Corruption Measures by Year**



The availability of each of the four corruption measures during different time periods, ranging from 1980 to 2020.

B Descriptions of Frequently-Used Corruption Measures

The descriptions in this section are identical to descriptions in the online appendix of Dalton and Esarey (2021); that paper was written contemporaneously with this chapter and uses (some of) the same variables.

1. *Varieties of Democracies (V-Dem)*[9]

   The V-Dem project constructs 470 democracy measures created from subjective, expert-led assessments that score how well governments are performing relating to democratic ideals. One of their products is a measure of overall corruption in a country-year. This composite measure is created by averaging four other sub-indicators of corruption: (i) the public sector corruption index, (ii) the executive corruption index, (iii) a measure of legislative corruption, and (iv) a measure of judicial corruption. These four measures are in turn created from expert assessments of corruption in the corresponding government sector. The resulting composite measure of overall corruption ranges from 0 to 1, with 0 indicating low corruption, and is available from 1980 to 2020.

2. *Bayesian Corruption Index (BCI)*[10]

   The BCI is an index of perceived overall corruption (abuse of public power for private gain) within a country. It is constructed from 17 different surveys of countries' inhabitants, business executives, and governments. The BCI expands upon the number of sources used by the WBGI and CPI and is available over a larger time span than either of these two measures, but the measurement models used by the BCI and WBGI are broadly similar. Unlike the WBGI, the BCI's measurement model accounts for variation over time to avoid discrepancies in corruption measurements and prevent selection bias. The BCI ranges between 0 (least corrupt) to 100 (most corrupt) in countries and is available from 1984 onward.

3. *World Bank Group's Worldwide Governance Indicators (WBGI)*[11]

   The WBGI is created from 30 data sources from a variety of surveys, organizations, and governments. It utilizes an Unobserved Components Model (UCM) to construct six aggregated indicators of governance and estimate margins of error for each indicator. Of the six indicators, our interest is in their measure of *control of corruption*, defined by Kaufmann, Kraay and Mastruzzi (2010, p.4) as "the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as 'capture' of the state by elites and private interests". The WBGI ranges from -3 (least control over corruption - highly corrupt) to 3 (most control over corruption - least corrupt) and is available for 1996, 1998, 2000, and 2002-2020.

4. *Transparency International's Corruption Perceptions Index (CPI)*[12]

[9] Information about the V-Dem has been paraphrased from Coppedge et al. (2021).
[10] Information about the BCI has been paraphrased from Standaert (2015).
[11] Information about the WBGI has been paraphrased from Kaufmann, Kraay and Mastruzzi (2010).
[12] Information about the CPI has been paraphrased from Transparency International (2016) and Transparency International (2020)

The CPI is an extremely influential indicator of corruption widely used by scholars and policymakers.[13] It is constructed by averaging at least three (but as many as thirteen) different corruption scores taken from perception-based surveys and assessments of corruption in a given country. The CPI targets corruption in the public sector within a country and compiles relevant data from multiple, independent sources. The CPI standardizes the corruption scores from these sources to the same scale, then averages the scores. Finally, the standard error and confidence interval for each country's CPI value is calculated to account for any variation in the sources. The CPI ranges from 0 (most corrupt) to 100 (least corrupt), and is available from 1995-2020.

[13] According to Galtung (2006, p. 106), "The impact of the CPI has been considerable. It has been credited as a factor that gave the issue of corruption 'greater international prominence' (Florini, 1998).... The CPI has facilitated a qualitative shift in journalistic writing and public discourse on corruption.... This interest and awareness of the CPI extends well beyond the business and financial press."

C Time trends for Relationship between Corruption and Women in Parliament

Table 2: **Time Trends for Figure 1**. The table contains the estimated trend in the relationship between gender and corruption over time along with its associated 95% confidence interval. Confidence intervals are calculated by using a regression on corruption with interaction terms between a dummy variable for each year and the percentage of women in parliament to estimate slope coefficients between gender and corruption for each year, simulating values for these coefficients from their (asymptotically) normal distribution, calculating the linear trend of coefficients over time using each simulation, and reporting the 2.5^{th} and 97.5^{th} percentiles for the simulated trends.

	time trend	2.5% CI	95.5% CI
WBGI Corruption	0.0530953	0.0390130	0.0673703
V-Dem Corruption	0.0155335	0.0059824	0.0251958
Bayesian Corruption Index	0.0198892	0.0127227	0.0271108
TI Corruption Perception Index	0.0524026	0.0404257	0.0641867

D The Relationship between Gender and Corruption among Countries Classified as Democratic-leaning over the Full Time Period

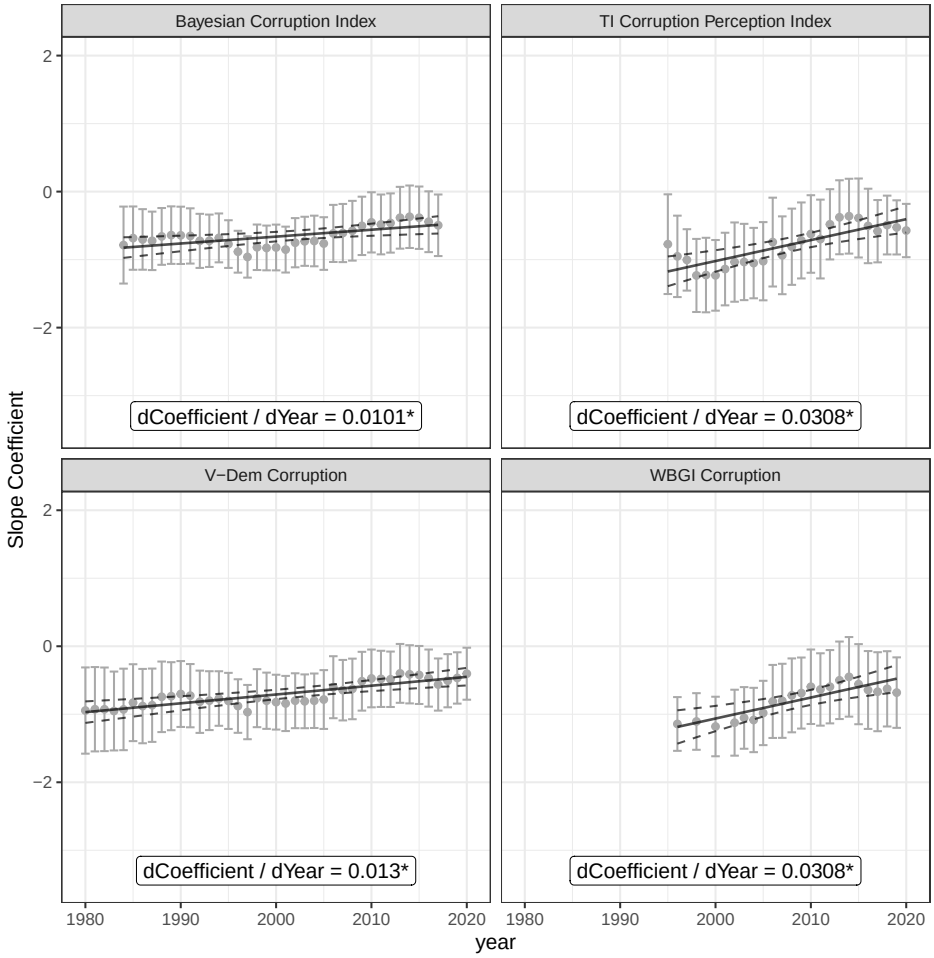


Figure 5: **The changing relationship between gender and corruption among countries classified as democratic-leaning over the entire 41-year time period of our sample.** Each panel shows the association between a measure of corruption (named at the top of each panel, the dependent variable in a linear regression) and the percentage of women in the lower house of the legislature (the independent variable in the regression) for a subset of countries classified as democratic for the full 41 years covered by our sample. Each gray dot reports a bivariate linear regression slope coefficient using data from the year on the x-axis. The coefficient is shown on the y-axis; 95% confidence intervals for each coefficient are represented by gray barred lines. The trend in coefficients over time and bootstrapped 95% confidence intervals for this trend are presented as solid and dashed black lines, respectively. The inset panel labeled dCoefficient/dYear shows the slope of this time trend; $* = p < 0.05$. The inset panel shows the slope of this time trend. Countries included in this analysis are: Australia, Austria, Barbados, Belgium, Botswana, Canada, Costa Rica, Cyprus, Denmark, Ecuador, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Japan, Luxembourg, Malta, Mauritius, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Trinidad and Tobago, the United Kingdom, the United States, and Vanuatu.

E Impact of Women in Parliament on Corruption: IV Analysis with Female Journalists Instrument

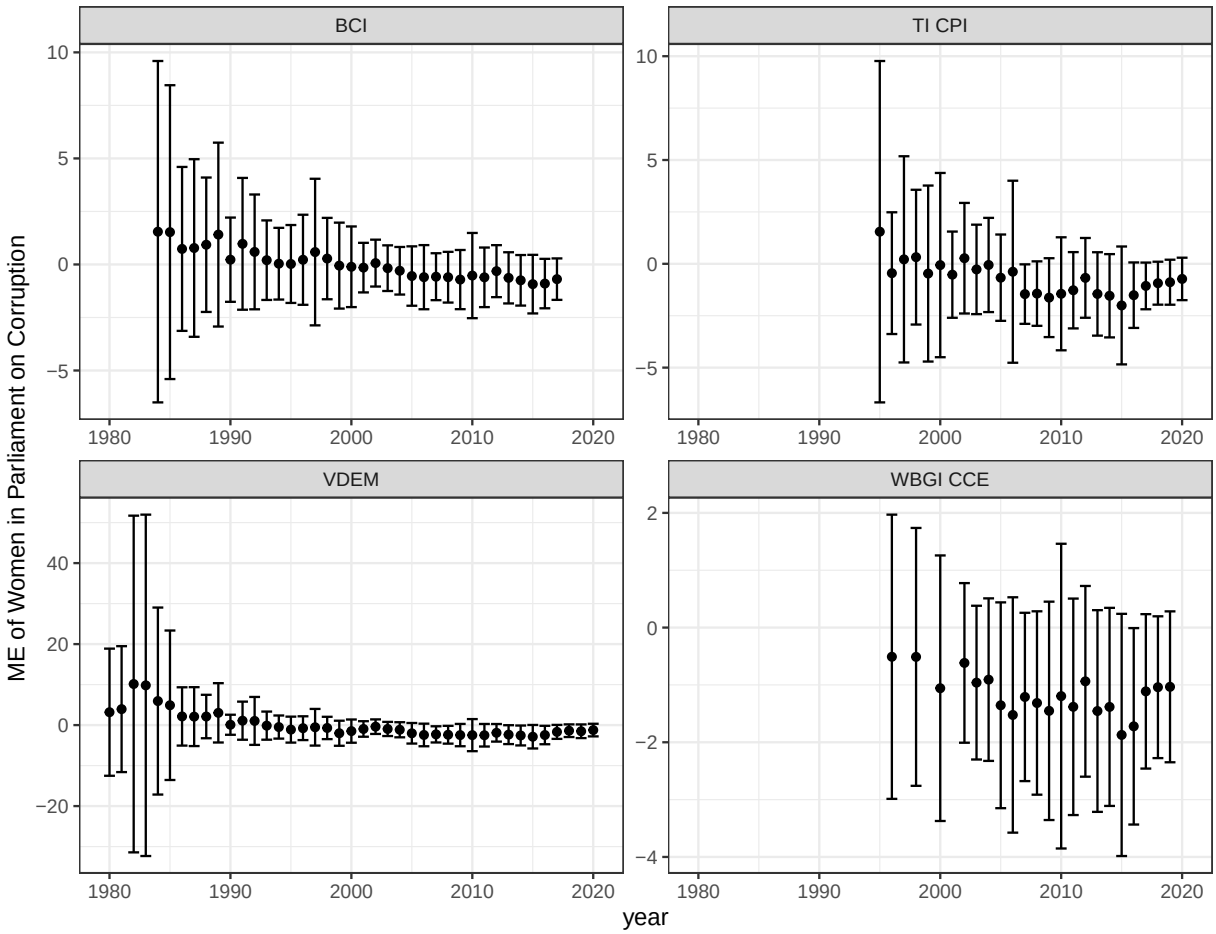


Figure 6: **The causal impact of women's representation on corruption in democratic-leaning countries over time, using the percentage of female journalists as an instrument.** Each panel studies the causal impact of the proportion of women in the lower house of the legislature on the V-Dem Political Corruption Index using a different dependent variable (indicated at the top of the panel). Dots report a slope coefficient from a bivariate two-stage least-squares regression using data from the year indicated on the x-axis.

F First Stage F-statistics Plot: Women in Parliament's Effect on Corruption

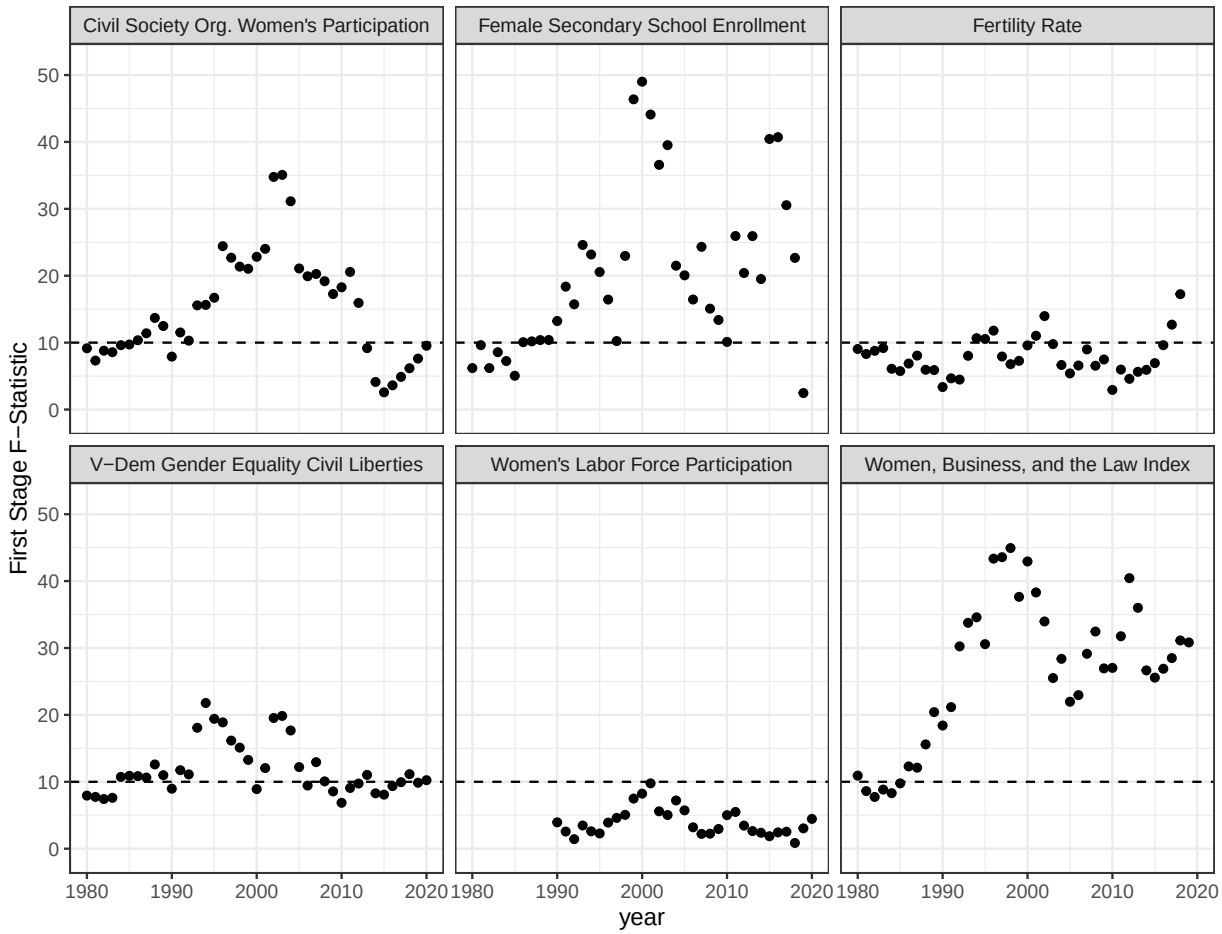


Figure 7: **First stage F-statistics for IV/2SLS models in Figure 2.** Each dot indicates the F-statistic corresponding to the year and instrumental variable indicated in Figure 2. The conventional minimum of 10 recommended by Staiger and Stock (1997) is indicated by a dashed line.

G Impact of Women in Parliament on Corruption (BCI)

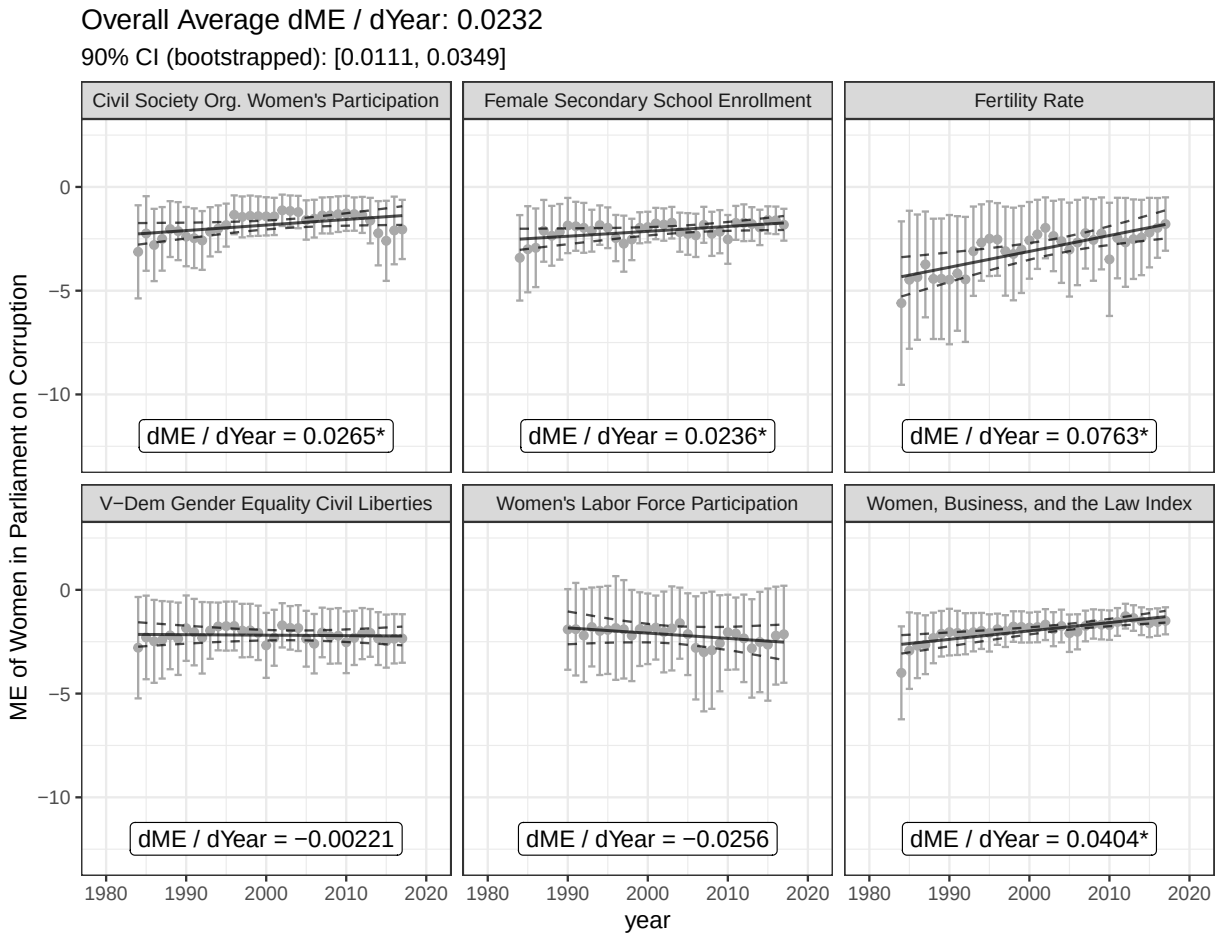


Figure 8: **The causal impact of women's representation on corruption in democratic-leaning countries over time, Bayesian Corruption Index DV.** Each panel studies the causal impact of the proportion of women in the lower house of the legislature on the Bayesian Corruption Index using a different instrumental variable (indicated at the top of the panel). Gray dots report a slope coefficient from a bivariate two-stage least-squares regression using data from the year indicated on the x-axis, with the magnitude of the slope on the y-axis and 95% confidence intervals represented by barred lines. The trend in coefficients over time and bootstrapped 95% confidence intervals for this trend are presented as solid and dashed black lines, respectively. The inset panel labeled dME/dYear shows the slope of this time trend; $* = p < 0.05$, two-tailed.

H Impact of Women in Parliament on Corruption (WBGI)

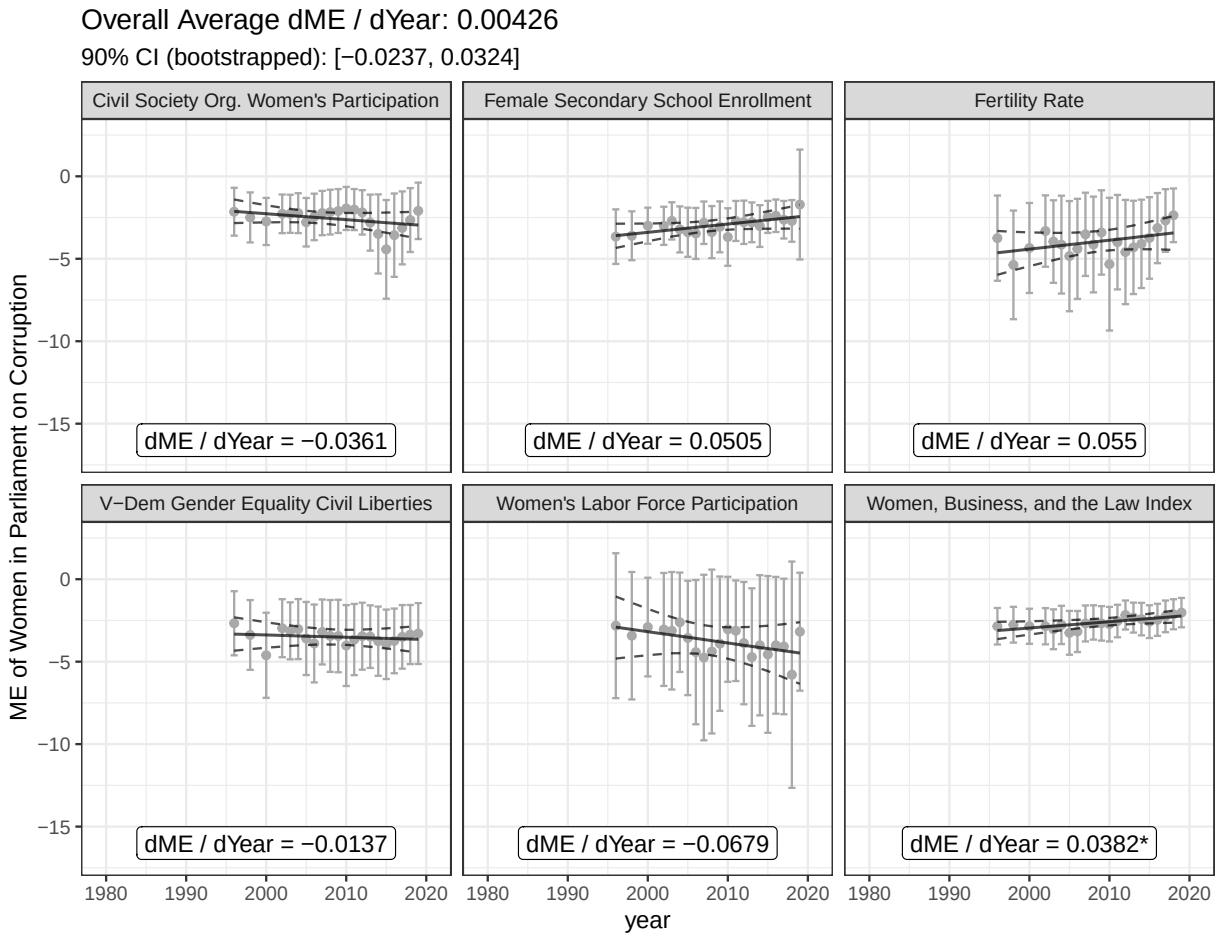


Figure 9: **The causal impact of women's representation on corruption in democratic-leaning countries over time, World Bank Governance Indicators Control of Corruption DV.** Each panel studies the causal impact of the proportion of women in the lower house of the legislature on the Bayesian Corruption Index using a different instrumental variable (indicated at the top of the panel). Gray dots report a slope coefficient from a bivariate two-stage least-squares regression using data from the year indicated on the x-axis, with the magnitude of the slope on the y-axis and 95% confidence intervals represented by barred lines. The trend in coefficients over time and bootstrapped 95% confidence intervals for this trend are presented as solid and dashed black lines, respectively. The inset panel labeled dME/dYear shows the slope of this time trend; $* = p < 0.05$, two-tailed.

I Impact of Women in Parliament on Corruption (TI CPI)

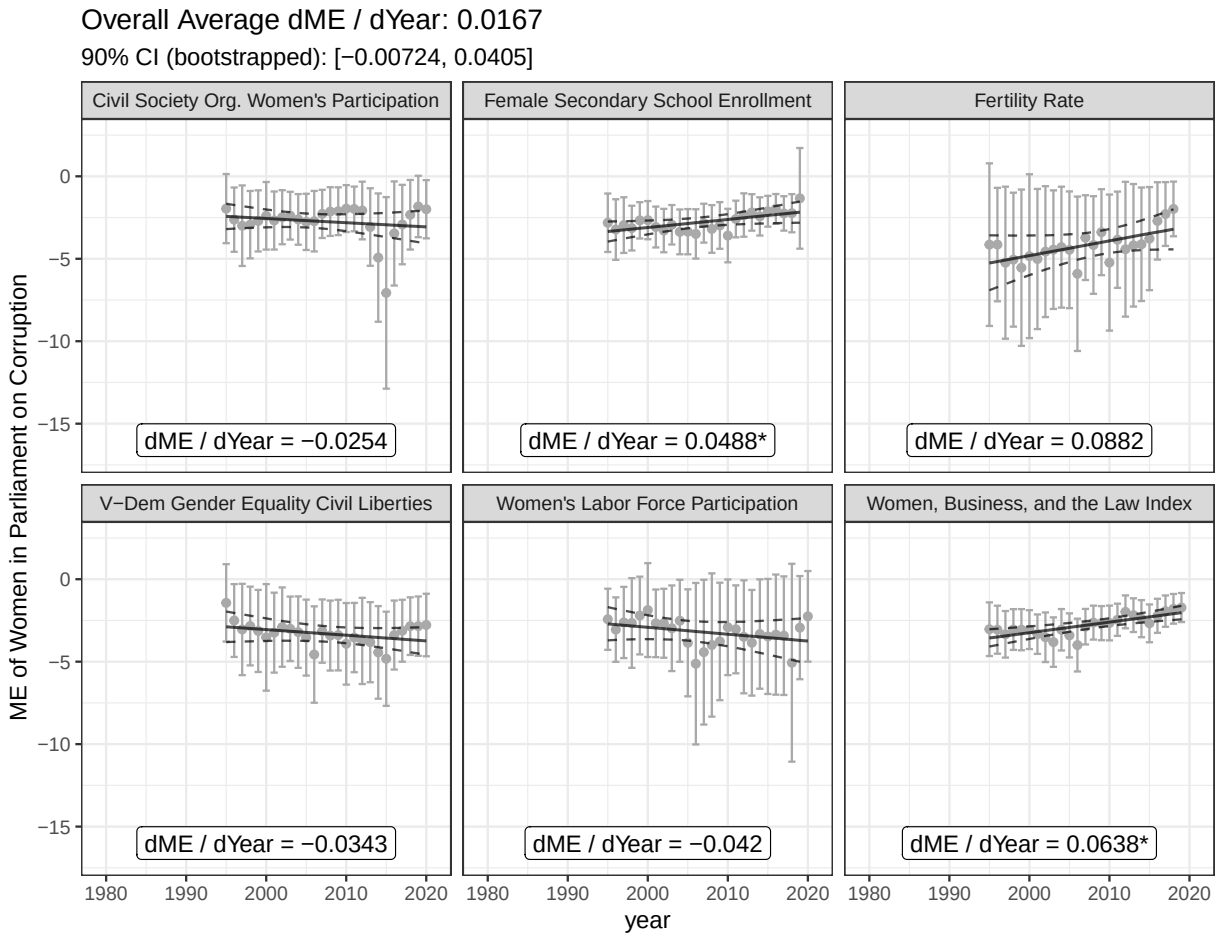


Figure 10: **The causal impact of women's representation on corruption in democratic-leaning countries over time, Transparency International Corruption Perceptions Index DV.** Each panel studies the causal impact of the proportion of women in the lower house of the legislature on the TI Corruption Perceptions Index using a different instrumental variable (indicated at the top of the panel). Gray dots report a slope coefficient from a bivariate two-stage least-squares regression using data from the year indicated on the x-axis, with the magnitude of the slope on the y-axis and 95% confidence intervals represented by barred lines. The trend in coefficients over time and bootstrapped 95% confidence intervals for this trend are presented as solid and dashed black lines, respectively. The inset panel labeled dME/dYear shows the slope of this time trend; $* = p < 0.05$, two-tailed.

J First Stage F-statistics: Corruption's Effect on Women in Parliament

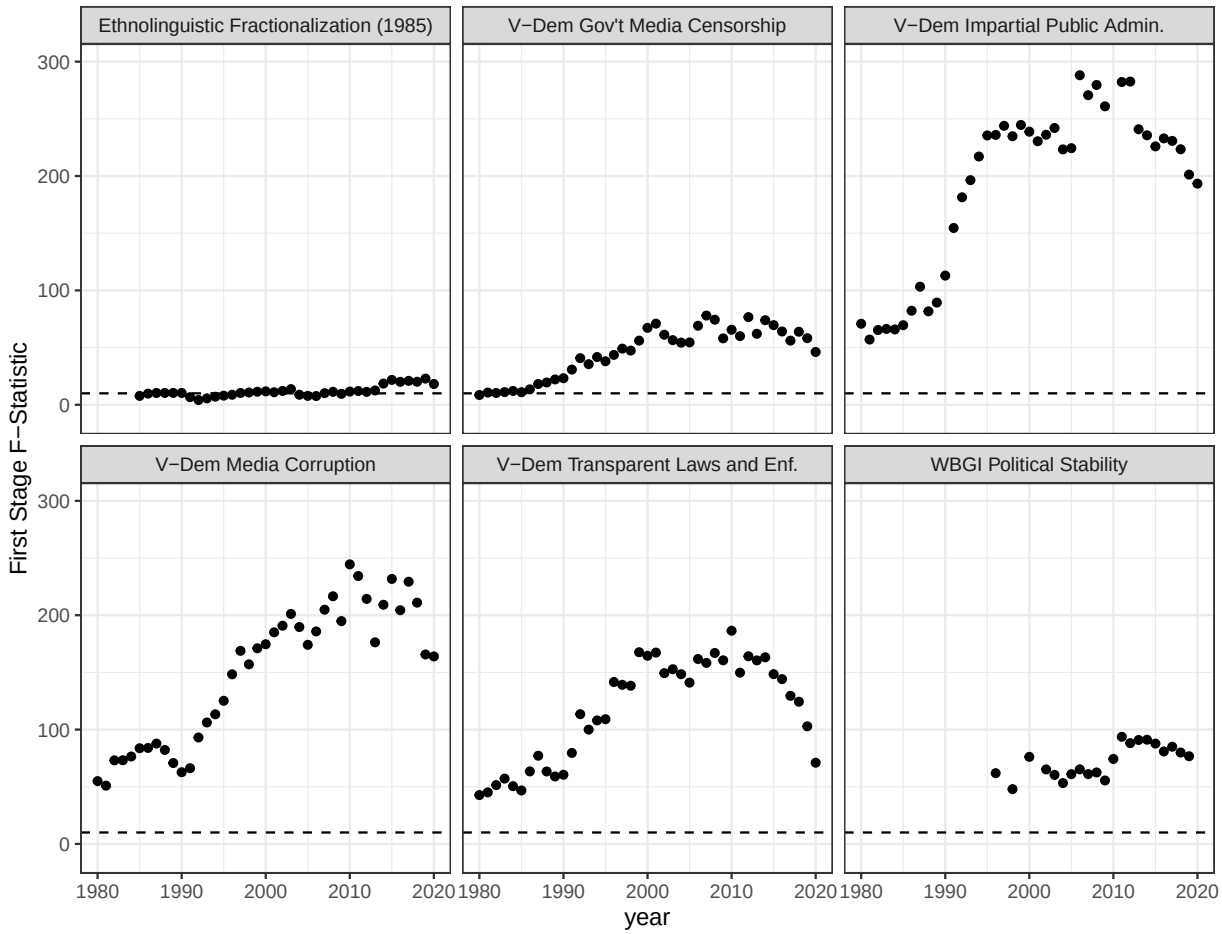


Figure 11: **First stage F-statistics for IV/2SLS models in Figure 3.** Each dot indicates the F-statistic corresponding to the year and instrumental variable indicated in Figure 3. The conventional minimum of 10 recommended by Staiger and Stock (1997) is indicated by a dashed line.

K Impact of Corruption on Women in Parliament (BCI)

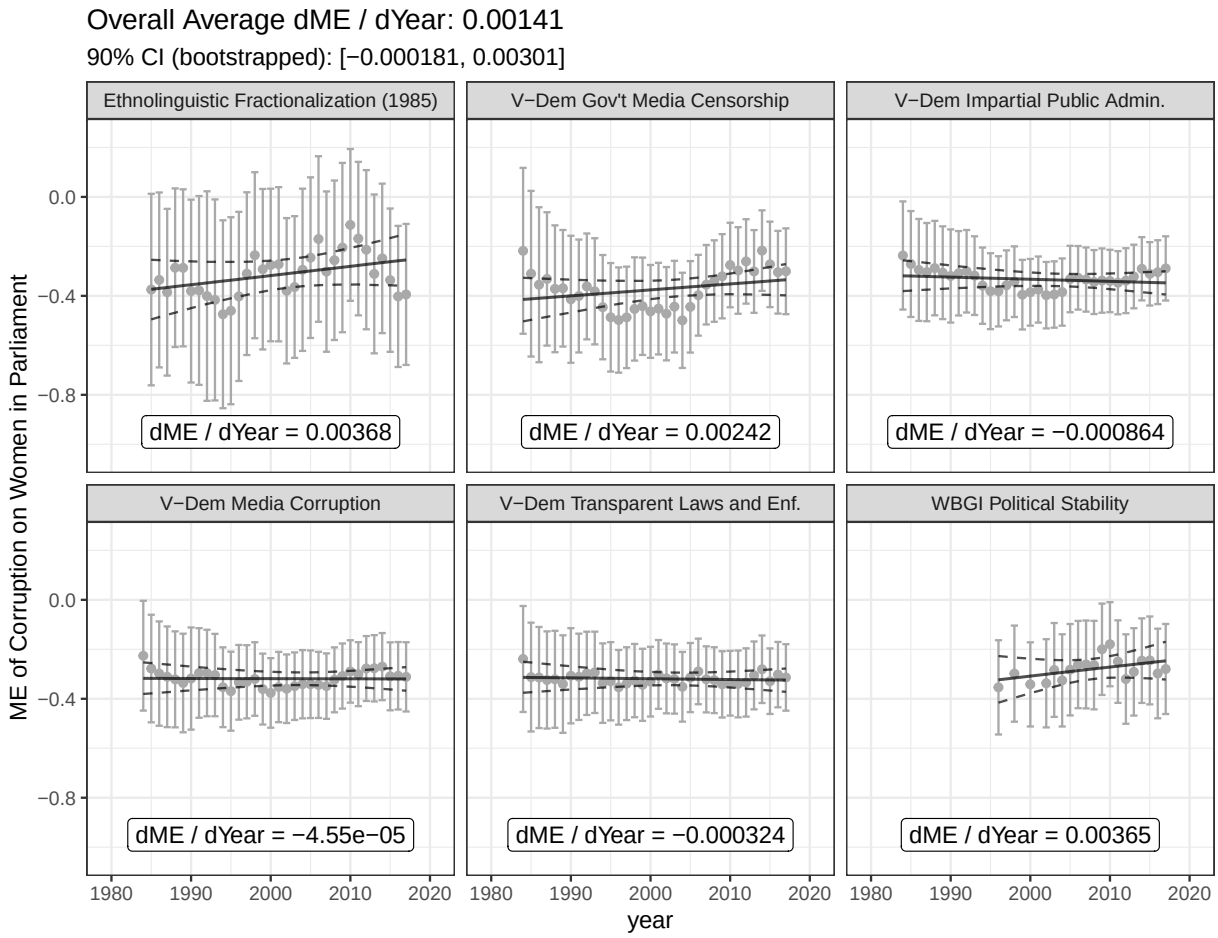


Figure 12: **The causal impact of corruption on women's representation in democratic-leaning countries over time, Bayesian Corruption Index DV.** Each panel studies the causal impact of the Bayesian Corruption Index on the proportion of women in the lower house of the legislature using a different instrumental variable (indicated at the top of the panel). Gray dots report a slope coefficient from a bivariate two-stage least-squares regression using data from the year indicated on the x-axis, with the magnitude of the slope on the y-axis and 95% confidence intervals represented by barred lines. The trend in coefficients over time and bootstrapped 95% confidence intervals for this trend are presented as solid and dashed black lines, respectively. The inset panel labeled dME/dYear shows the slope of this time trend; $* = p < 0.05$, two-tailed.

L Impact of Corruption on Women in Parliament (WBGI)

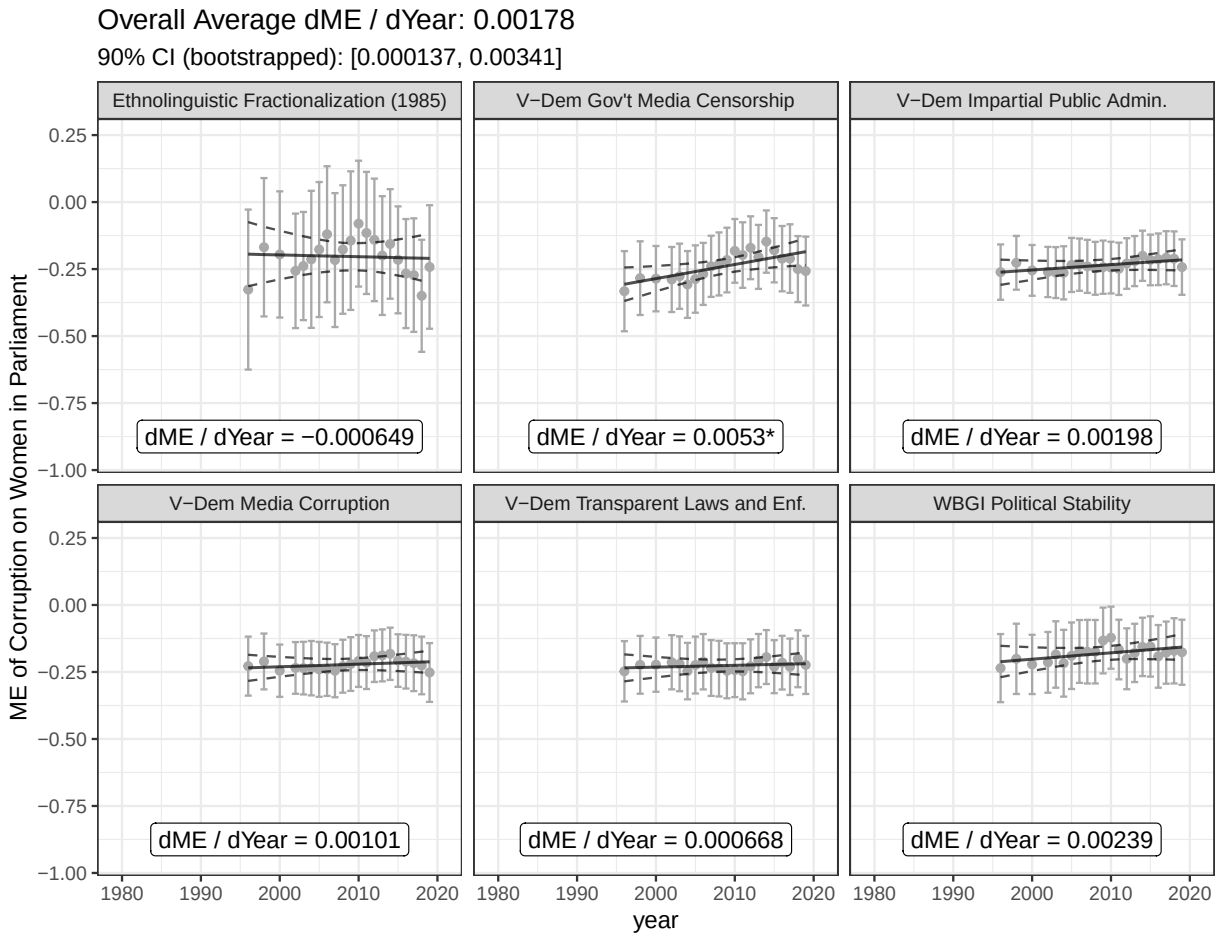


Figure 13: **The causal impact of corruption on women's representation in democratic-leaning countries over time, World Bank Governance Indicators Control of Corruption DV.** Each panel studies the causal impact of the WBGI Control of Corruption measure on the proportion of women in the lower house of the legislature using a different instrumental variable (indicated at the top of the panel). Gray dots report a slope coefficient from a bivariate two-stage least-squares regression using data from the year indicated on the x-axis, with the magnitude of the slope on the y-axis and 95% confidence intervals represented by barred lines. The trend in coefficients over time and bootstrapped 95% confidence intervals for this trend are presented as solid and dashed black lines, respectively. The inset panel labeled dME/dYear shows the slope of this time trend; $* = p < 0.05$, two-tailed.

M Impact of Corruption on Women in Parliament (TI CPI)

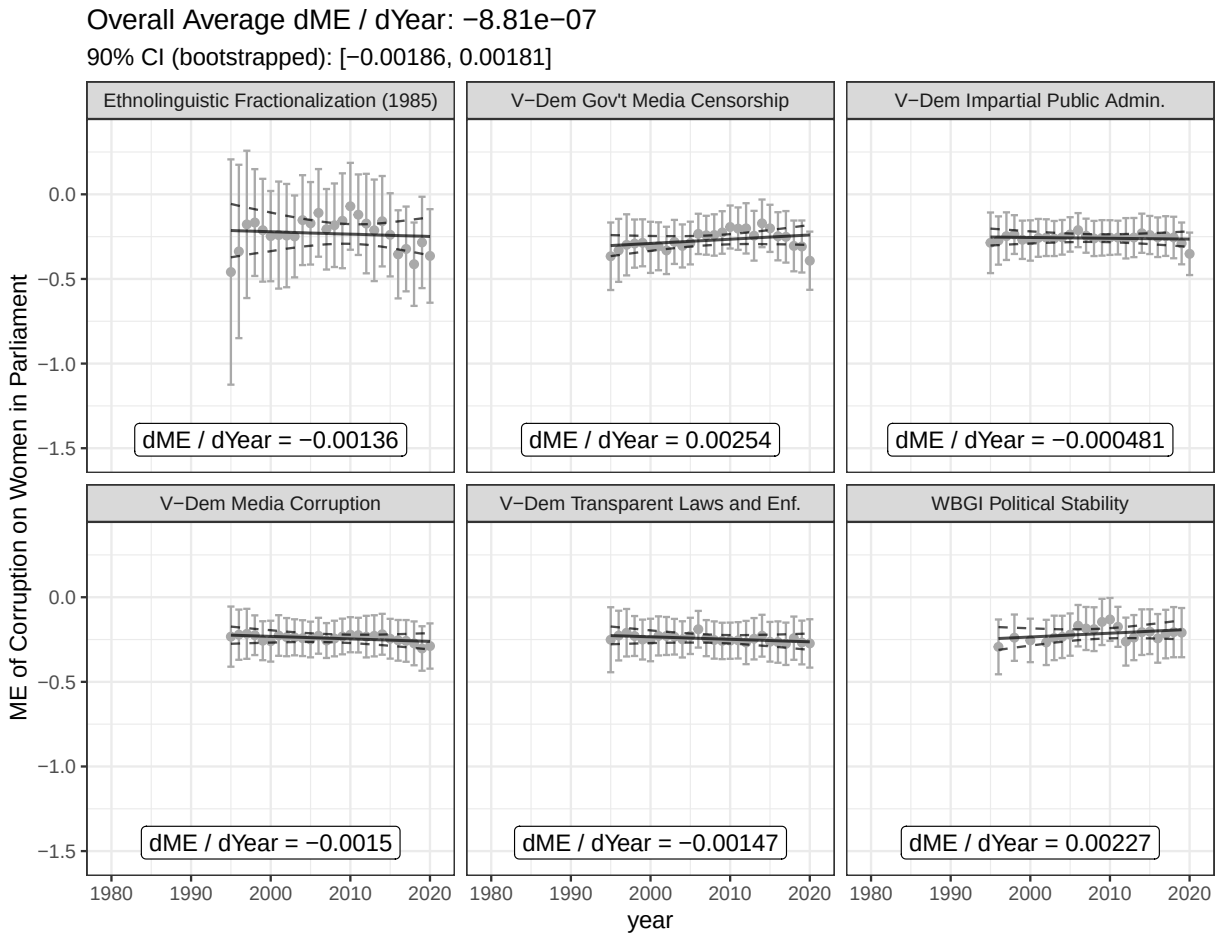


Figure 14: **The causal impact of corruption on women's representation in democratic-leaning countries over time, Transparency International Corruption Perceptions Index DV.** Each panel studies the causal impact of the TI Corruption Perceptions Index on the proportion of women in the lower house of the legislature using a different instrumental variable (indicated at the top of the panel). Gray dots report a slope coefficient from a bivariate two-stage least-squares regression using data from the year indicated on the x-axis, with the magnitude of the slope on the y-axis and 95% confidence intervals represented by barred lines. The trend in coefficients over time and bootstrapped 95% confidence intervals for this trend are presented as solid and dashed black lines, respectively. The inset panel labeled dME/dYear shows the slope of this time trend; $* = p < 0.05$, two-tailed.

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