UNIVERSITY OF CALIFORNIA
RIVERSIDE

Women's Political Representation and Corruption: Risk Aversion or Political Power?

A Thesis submitted in partial satisfaction
of the requirements for the degree of

Master of Arts

in

Sociology

by

Manjing Gao

June 2019

Thesis Committee:
Dr. Matthew C. Mahutga , Chairperson
Dr. Christopher Chase-Dunn
Dr. Augustine Kposowa

The Thesis of Manjing Gao is approved:

_____

_____

_____

Committee Chairperson

University of California, Riverside

ABSTRACT OF THE THESIS

Women's Political Representation and Corruption: Risk Aversion or Political Power?

by

Manjing Gao

Master of Arts , Graduate Program in Sociology
University of California, Riverside, June 2019
Dr. Matthew C. Mahutga, Chairperson

Empirical findings on the negative association between women's political representation and corruption are mixed and there is no consensus on why such association exists. Some argue that women's risk aversion characteristic leads female legislators to engage in corruption less to avoid the risks of being caught. Others suggest that female legislators actively mobile against corruption to protect women's interests. Using the panel data for up to 162 countries from 2002-2015, I first find that after controlling for the time-invariant country-specific heterogeneity, women's political representation is negatively associated with corruption. Then, using mediation analysis, I find that social spending mediates the suppressing effect of women's political representation and corruption, thus provide evidence for the women's interest mechanism.

Table of Contents

List of Tables

I. Introduction

Despite numerous government efforts, corruption remains an important issue in both developed and developing countries. Studies document its negative consequences for economic and social development. For example, corruption inhibits economic growth (Mo 2001), threatens democracy (TI 2018), leads to greater income inequality and poverty (Gupta et al.2002), and reduces generalized social trust (Richey 2009). To understand the causes of corruption, a gender perspective is introduced by Swamy et al. (2001) and Dollar et al. (2001). Both studies find a negative association between women's political representation (women's presence in parliament) and corruption.

Research findings on women's political representation and corruption have varied and there are still no consensus about the causal relationship. While many researchers find evidence that countries with more women involved in parliament are less prone to corruption (Jha and Sarangi 2018; Watson and Moreland 2014; Treisman 2007), some find the relationship to be spurious and argue that liberal democratic institutions are the underlying causes for both women's high political participation and lower corruption (Sung 2003; 2012). Also, some scholars find the association between women's political representation and corruption is conditional on democratic institutions (Esarey and Chirillo 2013) and electoral accountability (Esarey and Schwindt-Bayer 2017). Nevertheless, these studies often rely on cross-country data but do not take the presence of time-invariant unobservable country-specific heterogeneity into consideration, which may lead to the biased results.

Further, the causal mechanisms about how women's political representation reduces corruption are unclear. The most dominant explanation adopts a "gender difference approach", suggesting that women's essentialized characteristics such as risk-aversion, lead women to engage in corruption less often than men because female politicians are more risk averse than males (Swamy et al. 2001; Esarey and Chirillo 2013; Esarey and Schwindt-Bayer 2017; Barnes and Beaulieu 2018). However, this "gender difference approach" seems problematic in some ways. One, it may overemphasize risk aversion as the driver of differences in behavior. Other studies show that elite women may have similar risk-taking tendencies as men (Djerf-Pierre and Wängnerud 2015) and there can also be large risks involved in anti-corruption efforts. Further, this approach overlooks women's conscientious political agency and female legislators' broader effects in society, which may help reduce corruption. Another explanation about the relation between women's political representation and corruption is the "women's interest mechanism" (Alexander and Ravilik 2015). This argues that the effect of women's political representation on corruption is due to female legislators' different policy agenda compared to males. A female legislator's policy preferences that aims to protect women's interests may help reduce corruption (Bauhr, Charron and Wangnerud 2018; Jha and Sarangi 2018). This explanation is not empirically examined at the country level, and previous research has not disentangled the two causal mechanisms—gender difference approach and women's interest approach.

Based on a fixed-effects panel regression model and data for up to 162 countries from 2000 to 2015, I first examine whether there is an association between women's

political representation and corruption. The results show that women's political representation is significantly negatively associated with corruption, accounting for time-invariant unobserved heterogeneity at the country level. Secondly, using mediation analysis, I directly test the women's interest causal mechanism. I find that the association between women's political representation and corruption works via the expansion of social spending (government health spending). Moreover, the results are robust to models that address the potential for endogeneity in the relationship between health spending and corruption. These results suggest that female legislators' political power, i.e. their policy agenda, and not essentialized risk aversion characteristics, lead to the reduced corruption.

Empirically, my results suggest that women's political representation have an effect on corruption. However, incorporating more women in parliaments is just the first step. Instead of relying on women' naturalized or socialized essentialized characteristics, such as risk aversion to reduce corruption, more efforts should be paid to create a more women-friendly institutional and organizational environment which can help strengthen female legislators' political power to achieve their policy agendas.

II. Theoretical Framework

Does Women's Political Representation Reduce Corruption?

Two pioneering studies identify the relationship between women's political participation and corruption. Both link a negative effect of women's political participation on corruption to the purported greater degrees of honesty, lower degrees of opportunism or risk aversion among women. With cross-country comparative data, Dollar, Fishman and Gatti (2001) find that higher rates of female participation in

government are associated with lower levels of corruption. Meanwhile, Swamy et al. (2001) examine both micro data and cross-country data and find similar results: corruption is lower in countries where women have greater representation in national parliaments and more participation in national labor markets. At the individual level, they find that women are less likely to condone and participate in corruption.

Building on these two seminal studies, some find additional empirical support for the association between women's political representation and corruption (e.g. Jha and Sarangi 2018; Watson and Moreland 2014; Treisman 2007). However, others fail to observe this relationship. Sung (2003;2012) rejects the "fair gender" thesis that women are less likely to engage in corruption. Instead, he proposes the "fairer system" thesis that liberal democratic institutions simultaneously promote women's participation in politics and reduce corruption. He shows that the association between women's political representation and corruption loses significance once variables measuring liberal democracies, such as rule of law, political rights and freedom of press are controlled. Along with Sung, scholars find that the association between women's political representation and corruption is conditional on political regime. For example, Esarey and Chirillo (2013) show that women's political representation has an effect on corruption in democratic institutions but not in authoritarian regimes. Esarey and Schwindt-Bayer (2017) find that strong electoral accountability in democratic-leaning countries enhances the relationship between women's presence in parliament and lower levels of corruption.

Further, the results from cross-sectional studies may be biased in the presence of unobservable country-specific heterogeneity. Only one study employing fixed-effect

panel regression found that the association between the presence of females in national parliament and corruption is not significant when unobservable country-specific heterogeneity is controlled (Debski, Jetter, Mosle and Stadelmann 2018). This suggests a need for further investigation.

Thus, the above studies show that it is still unclear whether the causal relationship between women's political representation and corruption is spurious. In this study, I control for democratic institutions and the unobservable country-specific heterogeneities to better evaluate this relationship.

Women's political representation and corruption: gender essentialism or women's interest?

In addition to the mixed empirical support for the association between women's political representation and corruption, the causal mechanisms behind the relationship remain unclear. The primary explanation in the literature is the "gender difference" approach. This approach contends that gender-specific characteristics lead women to engage in corruption less than men. For example, women can be more prosocial and less selfish due to the social role as caregivers. This essential characteristic discourages women from corrupted political practices, which sacrifice the public interest for private gain (Dollar et al. 2001; Swamy et al.2001).

One more frequently deployed essential characteristic is risk-aversion (Esarey and Chirillo 2013; Esarey and Schwindt-Bayer 2017; Barnes and Beaulieu 2018). These researchers argue that women are more risk averse than men, causing women to not

engage in corruption in order to avoid the risk of being caught.[1] Esarey and Chirillo (2013) argue that the stronger effect of women's political participation in democracies is consistent with this view, insofar as democratic institutions increase the risks of corruption. Thus, they suggest that women's risk-aversion has a greater discouraging effect in democratic countries (also see Esarey and Schwindt-Bayer 2017; Barnes and Beaulieu 2018).

While the risk-averse mechanism may be plausible, it has several limitations. First, gender difference in risk taking may overemphasize purportedly essential gender characteristics as the driver of different behavior. This essentialist approach perpetuates the universalizing gender stereotypes attached to women thus overlooks the diversity of women's experiences and the contextuality of women's behaviors. For example, the results gained from laboratory studies may fail to extend to elite women, such as female legislators. Elite women may not be more risk averse than men. Indeed, some research suggests elite women have very similar perceptions regarding future risks and threats as men (Djerf-Pierre and Wängnerud 2015). The female participants in these experiments may not be comparable to female politicians who are a special group (Kauder and Potrafke 2016). Additionally, other studies show that mobilizing against corruption also involves large risks by creating political enemies (Bauhr et al. 2018).

[1] Experiments on the role of gender in risk-taking show a more consistent gender gap where women, on average, take fewer risks than men (Byrnes et al. 1999). However, the results of experiments focusing on gender and corruption are mixed. Chaudhuri (2012) gives an overview on the experimental findings on gender and corruption and shows that while some studies find that women are less corrupted than men, others show no gender differences.

Importantly, the risk aversion mechanism also views women as passive actors who are refrained from the risks related to corruption and confined by societal scripts. In other words, this approach overlooks the conscience political agency of women. Thus, a second approach views women as rational actors who behave in ways that benefit women's interest (Bauhr et al. 2018; Jha and Sarangi 2018). This second approach contends that female legislators actively oppose or inhibit corruption to achieve their political and personal goals (Bauher et al. 2018). In line with studies focusing on women's political empowerment and the greater representation of women's interests, Alexander and Ravilik (2015) develop "the women's interest mechanism." They argue that female politicians' support of policies which improve welfare for women citizens is especially dependent on a well-functioning state that is free of corruption so that government resources can be allocated to the public rather than used for private gain. Thus, female legislators' women-friendly policies provide incentives for women to pursue greater transparency of the state, which can help reduce the corruption (Alexander and Ravlik 2015; Jha and Sarangi 2018).

Analyzing 140 countries worldwide from 1998-2011, Watson and Moreland (2014) show that both women's political representation and women's substantive representation (the degree of protection of women's substantive interests) which is measured as government health expenditures and a policy on pregnancy protections reduce perceived corruption. Thus, they suggest that the perceived corruptions are lower in countries with more women-friendly policies. Bauher et al. (2018) conduct analyses on regional-level data in 20 European Union countries and find that women's presence in

elected office decrease citizens' corruption experience in public sector services such as education and health care which are issues prioritized more by women than men Also, the reduction in corruption is primarily experienced among women. Thus, they indicate that female legislators' policy agenda aim to protect women's interests by improving public service delivery helps reduce women's need to engage in corruption and then leads to less corruption experienced by women.

However, previous studies cannot disentangle the two types of mechanisms. It is unclear whether the reduction of corruption, even in certain areas like health care and education, identified as women-friendly areas, is due to women's risk aversion or female politicians' active effort to promote social policies which can be beneficial to women. In other words, the above studies do not examine the effects of the proposed causal mechanisms directly. Thus, the causal mechanism remains unclear and needs further exploration.

Social policy and the effect of women's political representation on corruption

In this section, I introduce women's policy preferences as a potentially mediating variable between women's political power and corruption. I begin by reviewing previous research that establishes a clear relationship between women's political representation and policy outputs. Gender influences legislators' attitudes and behaviors. Thus, female legislators prioritize issues and policies aiming to improve the welfare of women in society at large to a higher degree than males. In other words, they protect and represent women's interests (Celis 2006; Lovenduski and Norris 2003; Wangerud 2009). Studies have identified the gender dimension of social spending and have well illustrated that

women gain more benefits from welfare services than men, ensuring that most public welfare policies are "women friendly" (Hernes 1987; Borchorst and Siim 2002; Wilson 2002). They argue it is due to women's different life experiences and their structural position in the society (Allik 2016). Since women are major beneficiaries of social spending, female legislators who tend to represent women's interests can function as an institution to channel women's demands. A large literature finds that female legislators are more supportive of the expansion of social spending than men. (Bolzendahl and Brooks 2007; Caiazza 2004; Poggione 2004; Wangnerud 2000a). More specifically, they find that female legislators prioritize important welfare state issues such as education and health care which are two main area of "women's interests" and they are more invested in social spending tied to these issues (Wängnerud 2009; Bolzendahl and Brooks 2007).

While women's political representation can possibly lead to more government investments in social spending, how does the enlarged social spending lead to a lower level of corruption? There are two possible explanations. First, increased social spending can decrease the need for both women and men to engage in corrupt transactions in the first place. For example, Bauhr et al. (2018) find that stronger political representation of women in local councils decreases petty corruption in education and health care.[2] Also, Watson and Moreland (2014) suggest that passing laws about gender issues of protection

[2] More specifically, they find that in the health care sector where the prevalence of petty corruption is the greatest in their sample, there is a substantive decrease in the possibility of paying a bribe for both women and men, but the effect is slightly stronger for women. With respect to education, the effect of female legislators on reducing corruption is much stronger for women than men.

of minority groups may have positive effects on citizens' perceptions of the quality of government at large, leading to a lower perceived level of corruption.

Second, theories of "state feminism" suggest that, by advancing women-friendly social policies, women's political representation may increase favorable attitudes toward the state among women (Hernes 1987). Thus, women may promote greater government transparency, which in the long run may lower levels of corruption. When female legislators improve women's substantive interests through expanding social spending, women in the larger society have more incentives to protect the state from corruption. For example, Stensöta et al. (2015B) find that more encompassing welfare states increase the propensity for women to vote against parties involved in corruption. Alexander (2018) finds that in countries with more social spending, females attribute higher importance to honest elections which are free from corruption.

Given the strong empirical link from women's political representation to social policy, I argue the latter is a mediating mechanism linking the former to corruption. In addition to the above, for example, Watson and Moreland (2014) observe that the effect of women's political representation decreases after controlling for heath expenditures and pregnancy protection. Bauher et al. (2018) also suggest that women legislators' policy agenda to improve public services delivery may help reduce corruption.

III. Analytical Approach

While my claim is consistent with extant explanations for the link from women's representation to corruption and with evidence linking women's representation to social policy, more direct evidence is needed to establish a mediating role for the latter. Thus,

based on the previous studies, I argue that the effect of women's political representation on corruption works through increasing social spending, which is the result of female legislators' preferred policies. To subject this argument to empirical scrutiny, I propose a direct mediation analysis to test the null hypothesis that women's political representation has an indirect effect on corruption through its positive impact on social policy. This mediation analysis also helps to disentangle the two causal mechanisms--- risk aversion and women's interest—described above.

I measure social spending in two distinct ways. First, previous research identifies health care as an important women's issue (Wängnerud 2009). Existing studies find connections between female politicians and their spending preferences tied to health-promoting issues (Bratton and Ray 2002). Further, health care is the area which suffers from corruption severely. Based on the estimates from Transparency International (2011), at least 5 percent of the more than three trillion dollars spent yearly on health services worldwide may be lost to corruption.[3] Bauher et al. (2018) also shows that in their sample which contains 85,000 respondents coming from 196 regions in 24 European countries, the prevalence of petty corruption is the greatest in the health care sector, compared to education and law enforcement. Thus, the first hypothesis is:

Hypothesis 1: Women's stronger political representations reduce the levels of corruption through increased government health spending.

[3] Article available at http://news.bbc.co.uk/2/hi/business/4666328.stm, accessed November 16, 2011.

In addition to health care, education is widely identified by researchers as another area which fits with women's interests and is also a major dimension of government's social spending. Studies show that women prioritize education issues more than men (Clots-Figueras 2011; Schwindt-Bayer 2010). Thus, the second hypothesis is:

Hypothesis 2: Women's stronger political representations reduce the levels of corruption through expanding government education spending.

IV. Data and Methods

Dependent variable

The dependent variable is the level of corruption. It is measured by the corruption perception index (CPI), which is the most recognized measure of corruption (e.g. Swamy et al., 2001; Sung, 2003; Watson and Moreland, 2014). Transparency International produces an annual corruption ranking based on the perceived level of corruption in the public sector, including bribery, diversion of public funds, use of public office for private gain, nepotism in the civil service and state capture. This ranking is compiled by subjective assessments by expert and business executive (Diaz, Saisana, Montalto and Moura, 2018). It contains sources based on assessment of both foreigners and samples of nationals, which ensures the consistent perceptions of corruption across the world (Galtung 2006). The data is drawn from Varieties of Democracy dataset (V-Dem 2018) which imported the corruption variable from Transparency International (2016) without any change. The index is continuous and ranges from 0 to 100, and higher scores indicate lower corruption levels. For a more convenient interpretation, I reverse the index so that higher scores indicate higher levels of corruption. More specifically, I generate a new

variable which equals the maximum value plus the minimum value, then minus the original value of corruption perception index (CPI=maximum value + minimum value – original values). The correlation between the new generated value and the original value is -1, which means only the direction of the variable changed.

Compared to the objective, direct measures of corruption, the perception-based measurement of corruption has several advantages. First, objective criteria are hard to collect due to the secrecy of corrupted transactions and especially not available for cross-country studies. Second, available objective data is often biased. The current objective measurement is commonly based on data on official criminal statistics. However, the legal definitions of corruption and the regulations about corruption can be different in each national context (Lambsdorff 2006). Thus, the perception of corruption is an appropriate measurement of corruption in the cross-country setting.

Independent variable

The independent variable is women's political representation (denoted WIP). It is measured as the percentage of seats held by women in the national parliaments. The yearly data is drawn from the Variety of Democracy dataset (V-Dem 2018), which complied related data from different sources, including Chronicle of Parliamentary Elections (IPU), Edgel (2014) and so on More specifically, I use the proportion of seats held by female in single or lower chambers of national parliament as the measurement of women's political representation.

The mediating variables capture two dimensions of social spending. The first is the domestic general government expenditure on health as a percentage of GDP, as a

measurement of government's attention to the issue of health. The second is the government expenditure on education, as a percentage of GDP. These two measurements allow me to measure the social spending of developed countries as well as developing countries over time. Both data are drawn from World Bank (2018).

Control variables

Studies have shown other indicators of socioeconomic development are associated with corruption. For economic factors, studies have shown that economic development reduces corruption (e.g. Treisman 2000). Thus, I include GDP per capita in current international dollar as a control variable. In addition, corruption is found to be higher in countries where domestic firms are protected from foreign competition (Ades and Di Tella 1999). Thus, I control for foreign direct investment (net FDI inflows as a percentage of GDP) (e.g. Larraín 2004). Last, a control of inflation is included as higher inflation tend to result in more corruption (e.g. Braun, Miguel, and Rafael Di Tella 2000).

In addition to economic variables, I also control political factors. First, the effects of different political systems are controlled by the level of democracy in a country. It is measured by the imputed version of polity score from Freedom House (2018). Hadenius and Teorell (2005) show that this average index performs better both in terms of validity and reliability than its original constituents parts. I draw the data from the database of Variety of Democracy (V-Dem 2018). The scale ranges from 0 to 10 where 0 is least democratic and 10 is most democratic. Second, it is argued that a powerful legal system which punishes the corruption behavior could decrease the incentives of corruption (Iwasaki and Suzuki 2012). Thus, I include the rule of law index as a control. It measures

the extent to which agents have confidence in and abide by the rules of society (Kaufmann et al. 2011). Further, voice and accountability is included since a strong accountability system will increase the risk of corruption being detected and punished by the public (e.g. Esarey and Schwindt-bayer 2017). It measures the extent to which citizens of a country can participate in the selection of governments and the independence of media (Kaufmann et al. 2011). Lastly, the regulatory quality is included since more regulations may give more discretionary power to the states, thus leading to more corruption (Dong and Torgler 2013). It reflects the perceptions of the ability of the government to formulate and implement regulations that permit and promote private sector development. These three indexes are all taken directly from Varieties of Democracy dataset (V-Dem 2018) which collected these variables from World Bank Governance Indicators (Kaufmann et al. 2011). The variables range from approximately -2.5(weak) to 2.5(strong).

Further, culture also influences corruption. Scholars have argued that countries with more egalitarian or individualistic religions, such as Protestantism, have a lower corruption level than those with strong hierarchical religions (e.g. Machielsen 2016). Thus, the percentage of adherents of protestants over the whole population is controlled to capture the potential effect of religion on corruption. The data are taken from the Religious Characteristics of States Dataset Project (RCS-Dem 2.0 2017).

Methods

Fixed effects panel regression

I conduct a panel regression analysis of corruption among a large set of countries. The unit of observation is the country-year. In order to address the repeated observations of the countries over time, two common approaches are used: fixed effects models (FEM) and random effects models (REM). Compared to FEM, the REM is more efficient, but one limitation is it yields biased coefficients if there is a correlation between the unit-specific error term and the covariates (Halaby 2004; Wooldridge 2010). To test whether such correlation exists, I conduct Hausman tests and it suggests that such correlation is present in these data, thus I choose fixed effects models. Due to missing data on the dependent and independent variables, the panel dataset is unbalanced.

One strength of this model is that it allows me to control for omitted time-invariant unobservable covariates that vary across countries. Thus, the inclusion of fixed country effects in the models provide correct estimation accounting for this source of omitted-variable bias. Panel data often leads to heteroskedastic and serially corrected error terms, which will bias standard errors if left unaddressed (Wooldridge 2010). Using the available identification test in Stata 15.0, I tested and rejected the null hypotheses of homoscedasticity and zero serial correlation (Wooldridge 2010). To address serially correlated errors, I employ a first-order (AR1) auto-correlation with a Prais-Winsten transformation. To correct for heteroskedasticity and spatially correlated errors, I employ the panel-corrected standard errors (PSCE) of Beck and Katz (1995).

Mediation analysis

Because the hypotheses aim to investigate the mediation effect, I need a test of the null hypothesis that there is no indirect effect of women's political representation on corruption which works through increasing social spending. Thus, I employ the three-step multiple regression approach (Baron and Kenny 1986) combined with the Sobel test (Sobel 1982) to estimate mediation and indirect effects. This approach is widely adopted by former studies and shown to be effective (e.g. Mahutga 2016). Baron and Kenny (1986) noted that three conditions must be satisfied to establish mediation: first, the independent variables should be significantly related to the mediator variable; second, the independent variable should have an effect on the dependent variable and third, the mediator should influence the dependent variable. Thus, it is expected that if the mediating or indirect effect exists, the influence of the independent variable on the dependent variable should decrease once the mediator is introduced. I estimate different regressions following the steps illustrated by Baron and Kenny (1986). However, the attenuation of the coefficients of the independent variable cannot provide definite evidence for the mediating effect because the correlation between the independent variable and the mediator can bias the estimated results. Thus, I conduct the Sobel test to test the null hypothesis that the coefficient on the indirect path from women's political representation through social spending is equal to zero, which enables me to test whether the absolute size of the mediating effect is meaningful. The Sobel test is equal to $S = \frac{a*b}{\sqrt{b^2S_a^2+a^2S_b^2}}$, where a denotes the path from women's political representation to social spending, b denotes the effect of social spending on corruption, S_a and S_b denote the

standard error for a and b separately, and $a * b$ is denoted as the indirect effect (Sobel 1982). Employing Sobel test in this way, I assume the direction of causal effect is from social spending to corruption. However, the reverse causality is also possible. Thus, I use instrumental variables and two-stage least squares regression to address the potential endogeneity issue in the robustness test session.

V. Results

Models 1 through 4 in table 2 report results which address hypothesis one, that women's political representation has both a direct and indirect effect on corruption through increasing government's health spending. Model 1 regresses the perception of corruption (CPI) on women's political representation and other control variables. It shows that women's political representation has a negative and significant effect on corruption (CPI). This result is consistent with much previous work (e.g. Dollar, Fisman, and Gatti 2001; Swamy et al. 2001; Esarey and Leslie 2018) and is a necessary but insufficient condition for the mediation hypothesis. Model 2 excludes women's political representation and introduces government's expenditure on health. The significant effect of government's health spending is also a necessary but insufficient condition for the mediation hypothesis. Model 3 introduces both government's health spending and women's political representation into the same equation. The coefficient on women's political representation in model 3 is 10.4 percent smaller than in model 1, which is consistent with my hypothesis. The shrinking effect of women's political representation is also a necessary, but insufficient, condition for mediation. To evaluate the fourth condition, I regress government health spending on women's political representation and

the other controls in model 4. Then I conduct the Sobel test using the coefficients and standard errors in table 2. Th product *ab* is -0.0075 and the standard error of the product is 0.003 ($p<0.05$). Thus, consistent with hypothesis 1, there is a significant indirect effect of women's political representation that works through increases in the government's expenditure on health (-0.0075/0.003, $p<0.05$).

[Table 2 about here]

Models 1 through 4 in table 3 test whether there is an indirect effect of women's political representation on corruption through increasing government's expenditure on education. Conducting the same procedures, model 1 indicates that women's political representation has a significant negative effect on corruption. Model 2 excludes women's political representation and introduces government's education spending. The result shows that government's education spending has a significant negative effect on corruption only at the 0.1 level. Then, model 3 includes both women's political representation and government's education spending into the same equation. Contrary to hypothesis 2, education spending loses statistical significance. Thus, even though model 4 indicates that women's political representation has a positive effect on government's expenditure on education, there is insufficient evidence for mediation. Thus, hypothesis 2 does not gain empirical support. Although increases in women's political representation lead to more government spending on education, this does not result in a lower corruption level than expected.

[Table 3 about here]

VI. Robustness tests

Endogeneity of health spending

In testing the hypothesis that government's expenditure on health mediates the relationship between women's political representation and corruption via the Sobel test, I assume that government's health spending is an exogenous predictor of corruption and the causal arrows runs in one direction, from government's health spending to corruption. However, some literature suggests that the casual arrow runs from corruption to government's health spending (e.g. Ondřej and Drobiszová 2015; Delavallade 2006). Thus, to access the validity of this assumption, I test the null hypothesis that government's health spending is exogenous in the model of corruption.

To test this hypothesis, I employ a two-stage least squares regress (2sls). In the first stage, I regress government's health spending on two excluded instruments –the percentage of population ages 65 and above, and the percentage of the population ages 0 to 14--along with the rest of the covariates in model 4 of table 1. These data are obtained from World Bank (2018). In the second stage, the potentially endogenous variable is replaced with the predicted values from the first-stage regression. In order to acquire unbiased coefficients of the second stage regression, the instrument variables should correlate with government health spending but not with corruption. More specifically, two conditions should be held: (1) the instruments are not weak, i.e. instruments are strongly correlated with the potential exogeneous variable and (2) the instruments are valid, i.e. instruments are exogeneous in the second stage regression (Wooldridge 2010).

Thus, it is clear that the utility of the IV regression is determined by the strength and validity of the instruments. Previous literature finds that population demographics have an influence on countries' health expenditures (e.g. Tchoe and Nam 2010; Getzen 1992). Moreover, these instruments are likely valid since there is little reason to expect that population demographics impact corruption except through their impact on social spending.

In addition to theoretical reasons, I use diagnostic tests in Stata. The first is the weak identification test. The null hypothesis is the excluded instruments are only weakly correlated with the endogenous regressors. If instruments are weak, then 2SLS provides no protection against endogeneity bias. There are two statistics for this test. One is the Cragg-Donald Wald F statistic and the other is Kleibergen-Paap rk Wald F statistic. The former is no longer valid if the i.i.d. assumption is violated. Since the structure of the panel data requires to account for heteroskedasticity and serial correlation and the i.i.d assumption is not valid in the presence of the robust options, a correspondingly-robust Klibergen-Paap rk Wald F statistic is reported (Baum, Schaffer and Stillman 2007). The second is the Sargan-Hansen test which tests for overidentifying restrictions. The null hypothesis is that the instruments are valid, which means they can be excluded from the second-stage regression (Baum, Schaffer and Stillman 2007: 481-483). Thus, if the null hypothesis is not rejected, then it shows the instruments are valid. Finally, I conduct a test for endogeneity. The null hypothesis is that the variable is exogenous (Baum, Schaffer and Stillman 2007:482-483). Thus, if the null hypothesis is rejected, then the regressor is

endogenous in the second-stage regression and the coefficients in Table 2 and 3 are biased.

The results of this analysis are reported in the model 2 and model 3 of table 4. Since the panel-corrected standard errors (PSCE) of Beck and Katz (1995) is not available for IV regression, I employ the cluster robust option to control for the heteroskedasticity and arbitrary within-panel autocorrelation (Cameron, Gelbach and Miller 2006). The results of the first test shows that the remaining bias in my parameter estimates is no more than 15% of that in Tables 2 and 3. The second test shows that I fail to reject the null hypothesis of valid instruments (i.e. the excluded instruments are uncorrelated with the second stage error term. These results are reported in rows 16 and 17 in table 4. Thus, I conclude these instruments are both strong and valid.[4] Also, the null hypothesis that health spending is exogenous is rejected (i.e. health spending is correlated with the second-stage error term). Thus, health spending is endogenous and the coefficients in Tables 2 and 3 are biased (see rows 18 in table 4).

Because the above results of tests of instruments show that the previous mediation analysis is biased by endogeneity, I replicate all mediation analysis but replace the coefficient on health spending with the 2sls result. Model 1 of table 4 shows that women's political representation is negatively associated with corruption level at 0.05 level. Model 2 reports the 2SLS regression of corruption on instrumented health spending

[4] Since the instruments are valid but are less strong (the instruments are weak is not rejected at 10% level of bias), I also employ the limited information maximum likelihood (LIML) as the estimators since it can give less biased estimates compared to 2sls ((Baum, Schaffer and Stillman 2010: 456-506). The results are substantively similar.

and controls. Not only does health spending have a negative effect on corruption, but the ratio of this coefficient to its standard error increases relative to model 2 of Table 2 ($p<0.01$). Model 3 of table 4 introduces both women's political representation and health spending in the same 2SLS framework. Here, the coefficient on women's political representation declines in size by ~61% and is no longer significant. Health spending is significant at 0.01 level. Model 4 of table 4 tests the relationship between women's political representation and government health spending using the same VCE as in models 2 and 3. The results show that one percentage increase of women in lower or single chambers of the parliament lead to a 0.022 unit increase of government health spending.

[Table 4 about here]

Finally, I conduct Sobel test using the results from table 4. The results show that the product *ab* is -0.066 and the standard error of the product is 0.031 ($p<0.05$). Thus, after adjusting coefficients for the presence of endogeneity, hypothesis 1 still receives empirical support. That is, there remains a significant indirect effect of women's political representation that works through increases in the government's expenditure on health (-0.066/0.031, $p<0.05$).

Alternative explanation

Some studies find that women's labor participation has a suppressing effect on a country's level of corruption (e.g. Swamy et al. 2001). In the present analysis, it is possible that the observed effect of female legislators is driven by political demands of women in the labor force (Neudorfer 2016). In other words, the gender of legislators is

not relevant because when the political demands from working women are large, both female legislators and male legislators should respond to these demands to gain more political support. To test this alternative hypothesis, I control for female labor participation in model 3 of table 4 and replicate other models in table 4 with the introduction of female labor participation. If the alternative explanation is true, then the direct and indirect effect of women's political representation on corruption should not exist after controlling women's labor participation. The data on the latter is measured as the percentage of female workers in the total labor force and is drawn from World Bank (2018).

The results are presented in table 5. Because of the missing values on female labor participation and two singletons, in total 12 observations are dropped. Model 1 of table 5 shows that women's labor participation is not significantly related to the country's corruption level. Thus, the first condition of mediation effect of labor participation is not satisfied. Model 2 shows that health spending is negatively related to corruption level at 0.01 level after controlling for female labor participation but excludes women's political representation. Model 3 shows that both women's political representation and labor participation are not significant associated with corruption level while health spending is still negatively associated with country's level of corruption. Model 4 shows that women's political representation is positively related to government health spending while the number of female workers has no effect. Lastly, I conduct the Sobel test using results from table 5. The indirect effect *ab* is -0.072 and the standard error of the product is 0.035 ($p<0.05$). Thus, after controlling for female labor participation, hypothesis 1 still

get empirical support, indicating that women's political representation rather than women's labor participation has an indirect effect on corruption which works through increases in government's expenditure on health (-0.072/0.035, $p<0.05$).

[Table 5 about here]

In addition to women's labor participation, Esarey and Schwindt-Bayer (2017) find that women's representation has the strongest effect when officials can be held electorally accountable in democratic and semi-democratic countries. That is, the electoral accountability moderates the link between women's representation and corruption. They suggest that women's risk aversion characteristic explains this conditional effect since the risks of engaging in corruption are higher when electoral accountability is strong. To examine this moderating effect, I first introduce an interaction term between women's representation in parliament and accountability, without controlling for health spending. The data on the on accountability is gained from World Bank (2018). It is an index which captures the extent to which citizens of a country can participate in the selection of governments, as well as the independence of media (Kaufmann et al. 2011). The results are consistent with Esarey and Schwindt-Bayer (2017). The interaction between women's political representation and political accountability is significantly negatively associated with corruption ($p<0.05$), indicating that women's political representation has a stronger suppressing effect on corruption when political accountability is strong. Then, I add health spending into this model. However, after controlling for health spending, the interaction between women's representation and political accountability is no longer significant. Last, I use the above

2sls regression which addresses the endogeneity of health spending. The interaction between women's political representation and political accountability remains non-significant. Thus, the findings suggest that women's political power, instead of risk aversion, explains the association between women's presence in parliaments and corruption.

Substantive Significance

Consistent with previous studies, my results show that women's political representation has a significant negative effect on corruption. Controlling for other variables and the unobserved time-invariant heterogeneity at the country level in the model, with the lowest OLS coefficient, a one standard-deviation (10.86%) increase in women's political representation is associated with a reduction in the expected corruption perception by 0.61points ($p<0.05$; Model 1,Table 3). With the highest (IV) coefficient, a one standard-deviation (10.86%) increase in women's share in parliament is associated with an improvement in the expected corruption perception by 1.20 ($p<0.05$; Model 1, Table 4).

Further, the results show that the negative effect of women's political representation on corruption works through the expansion of government health spending. How substantively important is the indirect effect for reducing corruption? To answer this question, I calculate the size of the indirect effect. Before correcting for the endogeneity between health spending and corruption, nearly 10.39% of the (ceteris paribus) suppressing effect of women's political representation on corruption is mediated by the government health spending. After the endogeneity is addressed, the indirect effect

of women's political representation on corruption which works through government health spending increase to 60.66%, suggesting that nearly 60 % of the effect of women's political representation on corruption is mediated by government health spending. Thus, the indirect effect of women's political representation which works through government health spending is not only statistically significant but also sizable.

VII. Discussion and conclusion

In investigating the association between women's political representation and corruption, I first examine whether the relationship between women's presence in parliaments and corruption is spurious. By employing fixed effects panel regression on data for up to 162 countries from 2000 to 2015, I find that after accounting for time-invariant country-specific characteristics, higher share of females in politics is significantly associated with a reduction of corruption in that country. This conclusion is consistent with the previous studies which find female legislators lead to a lower level of corruption (Jha and Sarangi 2018; Watson and Moreland 2014; Treisman 2007).

Next, I ask why the relationship between women's political representation and corruption exists. Current studies develop two causal mechanisms to explain the relationship. The first is the gender difference approach which regards the essentialized gendered characteristics such as risk aversion as the driver of different corruption-engaged behavior. The inherent logic is that women, who are more risk averse than men, engage in corruption less to avoid the risk of being caught (Swamy et al. 2001; Esarey and Chirillo 2013; Esarey and Schwindt-Bayer 2017). The second is the women's interest approach which argues that female politicians' policy preferences to protect women's

interests lead to less corruption. More specifically, since female's politicians' support for policies which improve women's interests is especially dependent on a well-functioning state which is free of corruption, women have more incentives to actively inhibit corruption (Alexander and Ravlik 2015; Bauher et al. 2018; Jha and Sarangi 2018). I argue that compared to the risk aversion explanation, women's interest mechanism is more convincing since female politicians as elite women may not be more risk averse than male politicians (Djerf-Pierre and Wängnerud 2015), anti-corruption efforts also involve risks (Bauher et al. 2018). Also, the essentialized risk aversion overlooks women's conscience political agency and female legislators' broader effects in society which may help reduce corruption. Along with the women's interest mechanism, I argue that female legislators' policy preference on increase social spending leads to less corruption because the expansion of social spending decreases the need for corrupted transactions, offers incentives for women in large society to combat corruption and monitor government, and reduces the percentage of government private spending which is more prone to corruption.

To test the causal mechanism, I conduct mediation analysis using government health spending and education spending as mediators. My results from mediation analysis provide evidence for the women's interest mechanism and suggests that risk aversion, at most, can only partially explain female politicians' suppressing effect on corruption. First, I use the Sobel test to examine the indirect effect of women's political representation on corruption which works through government health spending and find the indirect effect is both statistically and substantively significant. That is, government

health spending mediates the association between women's political representation and corruption. Second, the indirect effect is robust after I address the endogeneity between the government health spending and corruption. Women's political representation loses statistical significance after government health spending is introduced. Further, the indirect effect increases from 10.39% to 60.66%. Thus, nearly 60% of the (ceteris paribus) suppressing effect of women's political representation on corruption is explained by the government health spending. However, contrary to expectation, I do not find sufficient evidence for the mediating effect of government education spending. One possible explanation is that corruptions are more pervasive in the health sector than in the education sector (e.g. Bauher et al. 2018) which makes the effect of women's policy on expansion of heath spending more prominent. Another potential explanation is that the endogeneity between government education spending and corruption biases the result. Since addressing endogeneity requires the available instruments and such instruments are hard to find, whether government education spending mediates the effect of women's political representation on corruption is needed to be examined by future studies. Nevertheless, my results show that female legislators' policy preference to more social spending help reduce corruption, which supports the women's interests mechanism.

Moreover, I examine whether the reduced level of corruption is brought by women's labor participation rather than women's political participation. First, I test if women's labor participation has a direct negative effect on corruption. Based on risk aversion mechanism, women's labor participation should help inhibit corruption since working women are more risk averse than working men thus engage in corruption less.

However, I do not find evidence for this prediction. Controlling for time-invariant country-specific heterogeneities, women's labor participation is not significantly associated with corruption. This result is consistent with some previous findings (e.g. Jha and Sarangi 2018). Second, I test the alternative explanation that working women's demand leads to more social spending thus reduce corruption. If this explanation was true, then the indirect effect of women's political representation would have lost significance after controlling for women's labor participation. I do not find evidence for this alternative explanation either. The rationale is that even though working women demand more public goods, the fulfillment of their demand is largely dependent on whether their demand can be channeled through institutions, i.e. legislators' response to these demands. Since female legislators are more responsive to women's interests, they can shape policies leading to increased social spending more directly than working women. Last, I find that the interaction between women's political representation and political accountability is no longer significant after controlling for health spending, which suggests that female legislators' political power instead of their risk aversion characteristic help explain the gender-corruption relationship.

One limitation of this study is that corruption is measured as perception of corruption instead of the actual corruption. Therefore, the direct interpretation of my results is that a greater presence of women in parliaments reduces the perception of corruption through expanding social spending, although corruption perception has been found to be highly correlated with actual corruption. Despite this fact, my results provide useful insights. It helps disentangle the two casual mechanisms, that is the risk aversion

mechanism and the women's interest mechanism. My results show that it is female legislators' political power rather than the gendered essentialized risk aversion characteristic contributes to anti-corruption. This suggests that promoting women's political representation can help combat corruption. Increasing the share of women in politics has become an important goal for government policies and international organizations such as the UN (United Nations 2015). My research shows the beneficial effects of women's political representation on better governance quality, thus provides evidence for increasing females' participation in politics.

Despite the efforts made to improve women's political representation, women's pollical participation remains low. Based on my results, the total effect of women's political representation on corruption is not so sizable even if larger presence of women in parliaments do contribute to reducing corruption. One possible explanation is that the results suggest that women's political power is still weak. First, the numeric representation of women is still low in the national parliaments. Based on my sample, the average percentage of females in single or lower chamber of parliaments is only 17.19%. In the classical thesis of Kanter (1993), she illustrates the significance of proportions and how the numerical distributions matter for behavior in organizations. She argues that in skewed groups where men far outnumbered women, women are "tokens" who have low opportunity and low power, facing performance pressures, confrontation of the dominant groups and the role encapsulation of the gendered stereotype (Kanter 1993). In current national parliaments where women only occupy a small percentage of the total legislators, these female legislators are in the "token" situation, facing with the

disadvantages of the numeric underrepresentation. Thus, more policies aim to increase women's presence in politics such as affirmative actions are needed. Moreover, incorporating more women in parliaments is just the first step. Despite women's numeric underrepresentation in the politics, female politicians also are excluded from the "old boys' network" and face with discrimination and sexism (Galligan and Clavero 2008). Within such political environment, it is difficult for female politicians to achieve their political goals. Thus, instead of relying on women' naturalized or socialized essentialized characteristics such as risk aversion to reduce corruption, more efforts should be paid to create a more women-friendly institutional or organizational environment in order to strengthen female legislators' political power to achieve their policy agendas.

My analyses also raise two questions for future research. First, what are the specific mechanisms linking women's political power to reduced corruption? I suggest that there are two possible specific mechanisms. First, the expansion of social spending will decrease the need for engaging in corruption. Second, since women rely more on social spending to provide everyday services than men, more social spending offers women in large society more incentives to protect the governments from corruption. Future studies can examine which mechanism (s) contributes to anti-corruption. Second, what are other potential explanations for the suppressing effect of women's political representation on corruption? My results suggest that female politicians' political power, i.e. the expansion of social spending, explains nearly 60% of the total effect. However, 40% percent of the total effect remains unexplained. In addition to risk aversion, Alexander (2018) argues that the gender equality socializes norms of impartiality which

support a culture of anti-corruption. She finds that people with stronger gender egalitarian values attribute higher importance to honest elections without corruption and this relationship is stronger in more gender egalitarian countries (Alexander 2018). Thus, future research can examine whether females' presence in national parliaments contribute to a more gender egalitarian value, which helps reduce corruption.

To conclude, my results show that women's participation in politics should be encouraged not only in order to achieve gender equality but also because it has positive externalities, that is a negative impact on corruption. Moreover, instead of relying on the essentialized risk aversion and only increase female politicians' number to combat corruption, more policies should be introduced to create a more gender equal environment for female politicians to achieve their policy agenda.

VIII.Reference

Ades, Alberto and Rafael Di Tella. 1999. "Rents, Competition, and Corruption." *American Economic Review*89(4):982–93.

Alexander, Amy C. 2017. "Micro-Perspectives on the Gender–Corruption Link." Corruption and Norms53–68.

Alexander, A. C., and M. Ravlik. 2015. "Responsiveness to Women's Interests as a Quality of Government Mechanism: A Global Analysis of Women's Presence in National Legislatures and Anti-trafficking Enforcement. "*American Political Science Association's Annual Meeting, San Francisco*.

Allik, Mirjam. 2016. "Welfare State and Representation: Do Women Make the Welfare State or Does the Welfare State Make Women Representatives?" *Representation*52(4):253–69.

Alvarez Diaz, M., Saisana, M., Montalto, V. and Tacao Moura, C. 2018. *Corruption Perceptions Index 2017 Statistical Assessment*, EUR 29405 EN, Publications Office of the European Union, Luxembourg, ISBN 978-92-79-96745-0 (online), doi:10.2760/974516 (online), JRC113251.

Baron, Reuben M. and David A. Kenny. 1986. "The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations." *Journal of Personality and Social Psychology*51(6):1173–82.

Bauhr, Monika, Nicholas Charron, and Lena Wängnerud. 2018. "Exclusion or Interests? Why Females in Elected Office Reduce Petty and Grand Corruption." *European Journal of Political Research*.

Baum, Christopher F., Mark E. Schaffer, and Steven Stillman. 2007. "Enhanced Routines for Instrumental Variables/Generalized Method of Moments Estimation and Testing." *The Stata Journal: Promoting Communications on Statistics and Stata*7(4):465–506.

Beck, Nathaniel and Jonathan N. Katz. 1995. "What To Do (and Not to Do) with Time-Series Cross-Section Data." *American Political Science Review*89(3):634–47.

Bolzendahl, Catherine and Clem Brooks. 2007. "Women's Political Representation and Welfare State Spending in 12 Capitalist Democracies." *Social Forces*85(4):1509–34.
Borchorst, Anette and Birte Siim. 2002. "The Women-Friendly Welfare States Revisited." *NORA - Nordic Journal of Feminist and Gender Research*10(2):90–98.

Bratton, Kathleen A. and Leonard P. Ray. 2002. “Descriptive Representation, Policy Outcomes, and Municipal Day-Care Coverage in Norway.” *American Journal of Political Science*46(2):428.

Braun, Miguel and Rafael Di Tella. 2000. *Inflation and Corruption*. Boston: Division of Research, Harvard Business School.

Byrnes, James P., David C. Miller, and William D. Schafer. 1999. “Gender Differences in Risk Taking: A Meta-Analysis.” *Psychological Bulletin*125(3):367–83.

Caiazza, Amy. 2004. “Does Womens Representation in Elected Office Lead to Women-Friendly Policy? Analysis of State-Level Data.” *Journal of Women, Politics & Policy*26(1):35–70.

Cameron, A. Colin, Jonah Gelbach, and Douglas Miller. 2007. “Bootstrap-Based Improvements for Inference with Clustered Errors.”

Celis, Karen. 2006. “Substantive Representation of Women: The Representation of Womens Interests and the Impact of Descriptive Representation in the Belgian Parliament (1900–1979).” *Journal of Women, Politics & Policy*28(2):85–114.

Chaudhuri, Ananish. 2012. “Chapter 2 Gender and Corruption: A Survey of the Experimental Evidence.” *Research in Experimental Economics New Advances in Experimental Research on Corruption*13–49.

Clots-Figueras, Irma. 2011. “Clots-Figueras, I. (2011). Women in Politics: Evidence from the Indian States.” *Journal of Public Economics*95(7-8):664–90.

Coppedge, Michael, John Gerring, Carl Henrik Knutsen, Staffan I. Lindberg, Svend-Erik Skaaning, Jan Teorell, David Altman, Michael Bernhard, Agnes Cornell, M. Steven Fish, Haakon Gjerløw, Adam Glynn, Allen Hicken, Joshua Krusell, Anna L¨uhrmann, Kyle L. Marquardt, Kelly McMann, Valeriya Mechkova, Moa Olin, Pamela Paxton, Daniel Pemstein, Brigitte Seim, Rachel Sigman, Jeffrey Staton, Aksel Sundtr¨om, Eitan Tzelgov, Luca Uberti, Yi-ting Wang, Tore Wig, and Daniel Ziblatt. 2018. ”V-Dem Codebook v8” Varieties of Democracy (V-Dem) Project

Coppedge, Michael, John Gerring, Carl Henrik Knutsen, Staffan I. Lindberg, Svend-Erik Skaaning, Jan Teorell, David Altman, Michael Bernhard, M. Steven Fish, Agnes Cornell, Sirianne Dahlum, Haakon Gjerløw, Adam Glynn, Allen Hicken, Joshua Krusell, Anna L¨uhrmann, Kyle L. Marquardt, Kelly McMann, Valeriya Mechkova, Juraj Medzihorsky, Moa Olin, Pamela Paxton, Daniel Pemstein, Josefine Pernes, Johannes von R¨omer, Brigitte Seim, Rachel Sigman, Jeffrey Staton, Natalia Stepanova, Aksel Sundstr¨om, Eitan Tzelgov, Yi-ting Wang, Tore Wig, Steven Wilson, and Daniel Ziblatt. 2018. ”V-

Dem [Country-Year/Country-Date] Dataset v8" Varieties of Democracy (V-Dem) Project.

Davis Brown and Patrick James. 2017. Religious Characteristics of State Dataset: Demographics, version 2.0. http://www.thearda.com/Archive/Files/Descriptions/BROWN.asp.

Debski, Julia, Michael Jetter, Saskia Mösle, and David Stadelmann. 2018. "Gender and Corruption: The Neglected Role of Culture." *European Journal of Political Economy*55:526–37.

Djerf-Pierre, Monika and Lena Wängnerud. 2015. "Gender and Sociotropic Anxiety: Explaining Gender Differences in Anxiety to Social Risks and Threats." *International Journal of Public Opinion Research*28(2):217–40.

Dollar, David, Raymond Fisman, and Roberta Gatti. 2001. "Are Women Really the 'Fairer' Sex? Corruption and Women in Government." *Journal of Economic Behavior & Organization*46(4):423–29.

Dong, Bin and Benno Torgler. 2013. "Causes of Corruption: Evidence from China." *China Economic Review*26:152–69.

Esarey, Justin and Gina Chirillo. 2013. "'Fairer Sex' or Purity Myth? Corruption, Gender, and Institutional Context." *Politics & Gender*9(04):361–89.

Esarey, Justin and Leslie A. Schwindt-Bayer. 2017. "Women's Representation, Accountability and Corruption in Democracies." *British Journal of Political Science*48(3):659–90.

Galtung, Fredrik. 2006. "Measuring the immeasurable: boundaries and functions of (macro) corruption indices." *Measuring corruption*101.

Getzen, T. E. 1992. "Population Aging and the Growth of Health Expenditures." *Journal of Gerontology*47(3).

Gupta, Sanjeev, Hamid Davoodi, and Rosa Alonso-Terme. 2002. "Does corruption affect income inequality and poverty?." *Economics of governance*3(4): 23-45.

Hadenius, Axel and Jan Teorell. 2005. "Cultural and Economic Prerequisites of Democracy: Reassessing Recent Evidence." *Studies in Comparative International Development*39(4):87–106.

Halaby, Charles N. 2004. "Panel Models in Sociological Research: Theory into Practice." *Annual Review of Sociology*30(1):507–44.

Hernes, Helga Maria. 1987. *Welfare State and Woman Power: Essays in State Feminism*. Oslo: Norwegian University Press.

Iwasaki, Ichiro and Taku Suzuki. 2012. "The Determinants of Corruption in Transition Economies." *Economics Letters*114(1):54–60.

Jha, Chandan Kumar and Sudipta Sarangi. 2018. "Women and Corruption: What Positions Must They Hold to Make a Difference?" *Journal of Economic Behavior & Organization*151:219–33.

Kanter, Rosabeth Moss. 1993. *Men and Women of the Corporation*. New York: Basic Books.

Kaufmann, Daniel, Aart Kraay, and Massimo Mastruzzi. 2011. "The Worldwide Governance Indicators: Methodology and Analytical Issues." *Hague Journal on the Rule of Law*3(02):220–46.

Lambsdorff, Johann Graf. 2006. "Measuring corruption–the validity and precision of subjective indicators (CPI)." *Measuring corruption* (81):81.

Larraín, Felipe B. and José Tavares. 2004. "Does Foreign Direct Investment Decrease Corruption?" *Cuadernos De Economía*41(123):199-215.

Lovenduski, Joni and Pippa Norris. 2003. "Westminster Women: The Politics of Presence." *Political Studies*51(1):84–102.

Mahutga, M. C. 2016. "Theoretical Holism in the Sociology of Development: Foreign Investment, Private Markets and Earnings Inequality during Postsocialism." *Sociology of Development*2(1):1–24.

Mo, Pak Hung. 2001. "Corruption and Economic Growth." *Journal of Comparative Economics*29(1):66–79.

Neudorfer, Natascha S. 2016. "Gender and Graft: A Political Economy Argument about the Influence of Working Women on Political Corruption." *Journal of Women, Politics & Policy*37(2):190–216.

Poggione, Sarah. 2004. "Exploring Gender Differences in State Legislators Policy Preferences." *Political Research Quarterly*57(2):305.

Richey, Sean. 2009. "The Impact of Corruption on Social Trust." *American Politics Research*38(4):676–90.

Schwindt-Bayer, Leslie A. 2010. “Political Power and Women’s Representation in Latin America.”

Stensöta, Helena Olofsdotter, Lena Wängnerud, and Mattias Agerberg. 2015. “Why Women in Encompassing Welfare States Punish Corrupt Political Parties.” Pp. 245-262 in Elites, Institutions and the Quality of Government, edited by Dahlström, Carl, and Lena Wängnerud. Palgrave Macmillan, London: Springer.

Sung, H.-E. 2003. “Fairer Sex or Fairer System? Gender and Corruption Revisited.” *Social Forces*82(2):703–23.

Sung, Hung-En. 2012. “Women in Government, Public Corruption, and Liberal Democracy: a Panel Analysis.” *Crime, Law and Social Change*58(3):195–219.

Swamy, Anand, Stephen Knack, Young Lee, and Omar Azfar. 2001. “Gender and Corruption.” *Journal of Development Economics*64(1):25–55.

Tchoe, Byongho and Sang-Ho Nam. 2010. “Aging Risk and Health Care Expenditure in Korea.” *International Journal of Environmental Research and Public Health*7(8):3235–54.
The World Bank. 2018. World development indicators. Washington, D.C. :The World Bank

Treisman, Daniel. 2000. “The Causes of Corruption: a Cross-National Study.” *Journal of Public Economics*76(3):399–457.

Treisman, Daniel. 2007. “What Have We Learned About the Causes of Corruption from Ten Years of Cross-National Empirical Research?” *Annual Review of Political Science*10(1):211–44.
Wangnerud, Lena. 2000. “Testing the Politics of Presence: Womens Representation in the Swedish Riksdag.” *Scandinavian Political Studies*23(1):67–91.

Watson, David and Amy Moreland. 2014. “Perceptions of Corruption and the Dynamics of Womens Representation.” *Politics & Gender*10(03):392–412.

Wilson, Elizabeth. 2002. *WOMEN AND THE WELFARE STATE*. S.l.: ROUTLEDGE.
Wooldridge, Jeffrey M. 2010. *Econometric Analysis of Cross Section and Panel Data*. Cambridge, MA: MIT Press.

Wängnerud, Lena. 2009. “Women in Parliaments: Descriptive and Substantive Representation.” *Annual Review of Political Science*12(1):51–69.

TABLE 1.. Unstandardized Coefficients of Government's Health Spending and Corruption (CPI)

VARIABLES	(1) CPI	(2) CPI	(3) CPI	(4) Health Spending
WIP	-0.077***		-0.069***	0.022***
	(0.022)		(0.022)	(0.003)
Health spending		-0.409***	-0.340***	
		(0.128)	(0.130)	
GDP per capita[5]	-0.060**	-0.077***	-0.048	0.036***
	(0.003)[6]	(0.029)	(0.030)	(0.005)
Inflation	-0.008	-0.006	-0.009	-0.003***
	(0.010)	(0.009)	(0.009)	(0.001)
FDI	-0.004	-0.004	-0.004	-0.000
	(0.007)	(0.007)	(0.007)	(0.001)
Democracy	0.137	0.117	0.133	-0.009
	(0.202)	(0.201)	(0.201)	(0.028)
Protestants (%)	-0.570***	-0.648***	-0.589***	-0.055***
	(0.079)	(0.077)	(0.080)	(0.012)
Rule of Law	-3.622***	-3.605***	-3.688***	-0.214*
	(0.806)	(0.807)	(0.805)	(0.111)
Regulations	-3.671***	-3.573***	-3.642***	0.061
	(0.660)	(0.661)	(0.658)	(0.090)
Accountability	-1.368*	-1.266	-1.248	0.336***
	(0.830)	(0.830)	(0.827)	(0.126)
Constant	77.488***	75.916***	77.521***	0.023
	(3.056)	(3.009)	(3.048)	(0.260)
Observations	1,968	1,968	1,968	1,968
R-squared	0.961	0.961	0.961	0.888
Number of numeric	162	162	162	162
Country FE	YES	YES	YES	YES

Notes:
Coefficients are unstandardized and net of fixed country effects; heteroskedasticity- and serial correlation-consistent standard errors are in parentheses;
*p<0.1, ** p<0.05, *** p<0.01

[6] For GDP per capita in table 1 to table 4, I multiply both the coefficient and the standard deviation by 1000 to better present the results.

TABLE 2:Unstandardized Coefficients of Government's Education Spending and Corruption (CPI)

VARIABLES	(1) CPI	(2) CPI	(3) CPI	(4) Education Spending
WIP	-0.056**		-0.050*	0.024***
	(0.028)		(0.029)	(0.006)
Education spending		-0.314*	-0.273	
		(0.177)	(0.178)	
GDP per capita	-0.098***	-0.120***	-0.097***	0.003
	(0.036)	(0.033)	(0.036)	(0.005)
Inflation	-0.006	-0.005	-0.007	-0.004**
	(0.010)	(0.009)	(0.010)	(0.002)
FDI	-0.005	-0.005	-0.005	-0.002
	(0.013)	(0.013)	(0.013)	(0.002)
Democracy	0.274	0.256	0.275	0.003
	(0.265)	(0.264)	(0.265)	(0.046)
Protestants (%)	-0.558***	-0.584***	-0.553***	0.018
	(0.098)	(0.096)	(0.098)	(0.015)
Rule of Law	-3.440***	-3.371***	-3.477***	-0.164
	(1.027)	(1.024)	(1.025)	(0.179)
Regulations	-4.449***	-4.364***	-4.405***	0.149
	(0.844)	(0.843)	(0.843)	(0.129)
Accountability	-1.802*	-1.723*	-1.726*	0.286
	(1.043)	(1.041)	(1.039)	(0.189)
Constant	80.003***	79.893***	80.819***	2.933***
	(3.206)	(3.163)	(3.212)	(0.465)
Observations	1,307	1,307	1,307	1,307
R-squared	0.973	0.973	0.973	0.843
Number of numeric	147	147	147	147
Country FE	YES	YES	YES	YES

Notes:
Coefficients are unstandardized and net of fixed country effects; heteroskedasticity- and serial correlation-consistent standard errors are in parentheses;
*p<0.1, ** p<0.05, *** p<0.01

TABLE 3: Two-Stage Least Squares Instrumental Variable Regression of Health Spending on Corruption and Mediation Analysis using the Predicted Value of Health Spending in the first stage

VARIABLES	(1) CPI	(2) CPI	(3) CPI	(4) Health Spending
WIP	-0.110**		-0.043	0.022***
	(0.049)		(0.055)	(0.007)
Health Spending		-3.293***	-2.983***	
		(1.016)	(1.063)	
GDP per capita	-0.048	0.071	0.075	0.041***
	(0.076)	(0.080)	(0.077)	(0.012)
Inflation	-0.013	-0.020	-0.021	-0.003
	(0.017)	(0.015)	(0.015)	(0.002)
FDI	-0.008	-0.010	-0.011	-0.001
	(0.013)	(0.012)	(0.012)	(0.001)
Democracy	0.487	0.423	0.434	-0.018
	(0.370)	(0.398)	(0.396)	(0.047)
Protestants (%)	-0.589***	-0.787***	-0.742***	-0.051*
	(0.167)	(0.192)	(0.196)	(0.028)
Rule of Law	-4.836***	-5.405***	-5.413***	-0.194
	(1.578)	(1.563)	(1.539)	(0.185)
Regulations	-4.957***	-4.770***	-4.813***	0.048
	(1.479)	(1.443)	(1.437)	(0.165)
Accountability	-2.926**	-1.637	-1.723	0.403**
	(1.441)	(1.557)	(1.518)	(0.204)
Observations	1,966	1,966	1,966	1,966
R-squared	0.166	0.008	0.041	0.137
Number of numeric	160	160	160	160
Instruments are weak[a]		16.468###	13.571###	
instruments are valid[b]		0.758	0.576	
Health spending is exogenous[c]		6.784***	5.580**	

Notes: Arbitrary heteroskedasticity- and arbitrary within-panel autocorrelation-consistent standard errors are in parentheses; *p<0.1, ** p<0.05, *** p<0.01. Population ages 65 and above as a percentage of the total population and population between the ages 0 to 14 as a percentage of the total population are used as instruments for government's health spending.

a. Kleibergen-Paap F statistic (### < 15% OLS bias).

b. Hanson J statistic, distributed $\chi 2$.

c. Pseudo C statistic, distributed $\chi 2$.

TABLE 4: Two-Stage Least Squares Instrumental Variable Regression of Health Spending on Corruption and Mediation Analysis using the Predicted Value of Health Spending in the first stage, controlling for female labor participation

VARIABLES	(1) CPI	(2) CPI	(3) CPI	(4) Health Spending
WIP	-0.110**		-0.039	0.022***
	(0.051)		(0.058)	(0.007)
Female labor participation	0.127	0.208	0.218	0.028
	(0.210)	(0.269)	(0.252)	(0.030)
Health Spending		-3.490***	-3.219***	
		(1.114)	(1.174)	
GDP per capita	-0.055	0.067	0.070	0.039***
	(0.079)	(0.080)	(0.077)	(0.013)
Inflation	-0.011	-0.019	-0.020	-0.003
	(0.017)	(0.015)	(0.015)	(0.002)
FDI	-0.007	-0.011	-0.011	-0.001
	(0.013)	(0.012)	(0.012)	(0.001)
Democracy	0.495	0.435	0.443	-0.016
	(0.376)	(0.413)	(0.411)	(0.047)
Protestants (%)	-0.599***	-0.812***	-0.774***	-0.054**
	(0.169)	(0.196)	(0.204)	(0.028)
Rule of Law	-4.695***	-5.269***	-5.262***	-0.176
	(1.583)	(1.586)	(1.563)	(0.189)
Regulations	-4.964***	-4.728***	-4.782***	0.057
	(1.519)	(1.483)	(1.483)	(0.168)
Accountability	-3.031**	-1.724	-1.791	0.385*
	(1.446)	(1.581)	(1.546)	(0.203)
Observations	1,954	1,954	1,954	1,954
R-squared	0.164	-0.012	0.019	0.139
Number of numeric	159	159	159	159
Instruments are weak[a]		15.073###	12.438###	
instruments are valid[b]		0.591	0.446	
Health spending is exogenous[c]		6.880***	5.820**	

Notes: Arbitrary heteroskedasticity- and arbitrary within-panel autocorrelation-consistent standard errors are in parentheses -consistent standard errors are in parentheses; *p<0.1, ** p<0.05, *** p<0.01. Population ages 65 and above as a percentage of the total population and population between the ages 0 to 14 as a percentage of the total population are used as instruments for government's health spending.

a. Kleibergen-Paap F statistic (### < 15% OLS bias).
b. Hanson J statistic, distributed $\chi 2$.
c. Pseudo C statistic, distributed $\chi 2$.