The Effects of Gender Quotas on Corruption:

Are Women the Solution?

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Abstract

Studies find that women take part in corrupt transactions significantly less than men. With this intuition, influential studies such as Dollar et al. (2001) and Swamy et al. (2001) found that greater representation of women in government reduces corruption. Both studies advocate that governments should increase female participation in efforts to combat corruption. A means to do so would be to implement gender quotas into an election. No gender quota has been implemented solely for the reason of decreasing corruption as of yet. However, if its effects are found to be significant, a gender quota policy recommendation could be used in the ongoing efforts to combat corruption. This study investigates the relationship between gender quotas and the level of corruption in a panel data set of 125 countries during the period 1984-2015. The dependent variable used in this study is the ICRG corruption index, measured by the International Country Risk Guide from the PRS Group. The index is a measure from 0 (highly clean) to 6 (highly corrupt). The explanatory variable used in this study is the implementation of gender quotas into a country's election. The data are gathered from Quota Adoption and Reform over Time (QAROT), 1947-2015 and is coded as a dummy variable. This study applies the two-way fixed effect to control for unobserved heterogeneity across countries, and to alleviate endogeneity bias. This paper finds that the implementation of a gender quota is associated with a lower level of corruption and decreases corruption levels by 0.204.

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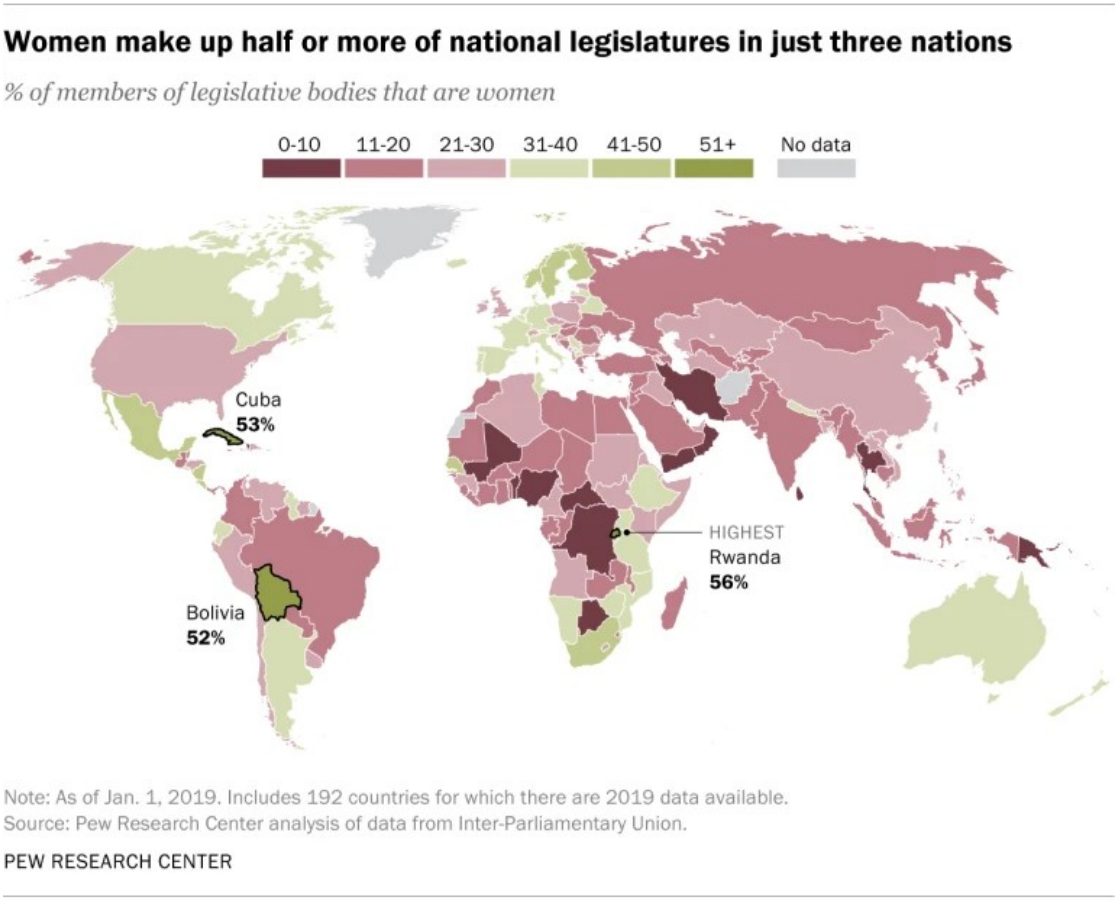
I. Introduction

Countries are always in pursuit of new ways to combat corruption in their economies. As such, studies have found that women take part in corrupt transactions significantly less than men. Dollar et al. (2001) initial study showed that more women in parliament leads to a decrease in the level of corruption. These findings have initiated the study of the question: does greater representation of women in government cause decreased corruption? A majority of studies on this topic conclude through their findings that gender quotas are the best policy to implement in order to increase female representation in government to in turn decrease corruption. While no quota has been implemented solely for the reason of decreasing corruption as of yet, this policy could be one way to alleviate the issue of corruption.

Initially quotas were implemented to increase women's representation in political positions. Bonomi et al. (2013) shows that more than half of the countries in the world have implemented gender quotas, and the number has only increased since 2013. These quotas require that women must make up a certain number or percentage of "...a body, whether it is a candidate list, a parliamentary assembly, a committee, or a government" (Dahlerup, 2006). Ranging from 20, 30, 40, or even a 50-50 percent divide for a true balance, the quota system seeks for women to constitute a percentage of representation in the specified group. It can be implemented for a certain period of time and removed once the barriers for women's entry into politics have been removed. Yet most countries have not removed their quotas since they have been adopted. In Figure 1 below, the Pew Research Center shows the percent of members of legislative bodies that are women since January 2019.

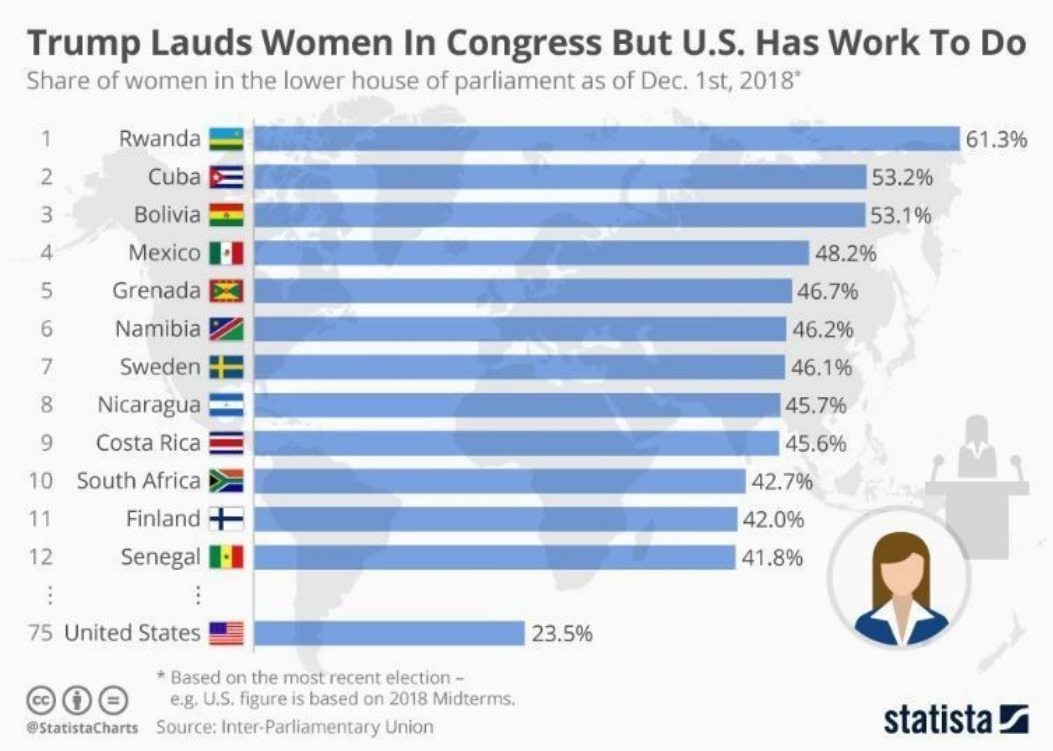
Figure 1



Upwards of 80 nations have gender quotas present for varying political positions, while some countries like the United States have yet to jump on the gender quota bandwagon. Some reasons argued against a quota are that a quota would raise concerns over the validity of a truly liberal democracy or that women are being elected solely for their gender, not their politics. These ideas could be used as points of discussion when studying whether increased women's representation in governments truly decreases corruption levels. Figure 2 below was seen in an article published in 2019 from the World Economic Forum that discussed the presence of quotas in some countries and the absence of quotas in others. Looking at the comparison of women's representation in Rwanda, which uses gender quotas, opposed to the United States, which does

not, the difference is notable, with each country holding female representation of 61.3 percent and 23.5 percent respectively.

Figure 2



The aim of this study is to determine if the adoption of gender quotas has inadvertently affected corruption levels in those governments, aside from their original intent to increase women's representation. As the studies discussed in this paper have encouraged countries to implement gender quotas to combat corruption, few studies have been done to follow up on the effects of gender quotas on corruption. With the use of a two-way fixed effect regression, I will test if the implementation of a gender quota in a country has decreased their level of corruption.

II. Literature Review

Dollar et al. (2001) draw from social sciences that women "have higher standards of ethical behavior". Using data from more than 100 countries, they regress how corruption, measured by the International Country Risk Guide's (ICRG) corruption index, is dependent on the number of women in parliament. They find that "higher rate of female participation in government is associated with lower levels of corruption." Since Dollar's initial research, several studies have been conducted on the effects of women's representation on corruption levels in government with results varying depending on the methodology used. Swamy et al. (2001) presents similar statistically significant findings as Dollar et al. (2001), but they show that female labor market participation, not just women's presence in the government, helps curb corruption. Swamy et al. (2001) conduct their regression analysis with the use of three different corruption indexes: "Graft index" (constructed by Kaufmann et al. (1999)), Transparency International's (TI) "Corruption Perception Index" and International Country Risk Guide (ICRG) corruption index. They also proxied females' representation in lower levels of government bureaucracy as well as in the private sector using three different measures: proportion of legislators in the national parliament who are female, proportion of ministers and high-level government bureaucrats who are female, and females' share in the labor force.

Sung (2003) criticizes both these studies. He argues that higher levels of women's representation in politics and lower levels of corruption are results of higher political liberalization. His three-factor relationship is supported by multivariate analysis, which indicates negative correlations between gender representation and corruption when in the presence of a functioning liberal democratic institution. This is a result of a liberal democracy promoting gender equality and government transparency simultaneously. Goetz (2007) similarly argues that corruption is not an issue of women representation, but rather it is more an issue about the type

of governance system. Goetz also suggests that women may interact with other forms of corruption than what is traditionally included in corruption indexes. One example is women may exploit sexual favors instead of money in return for services. This issue furthers the discussion about corruption by suggesting that traditional measures of corruption (like indexes) may not accurately reflect levels of corruption, as all forms of corruption are not accounted for in typical corruption measures.

Esarey and Chirillo (2013) discuss that measuring corruption is a perpetual challenge because "those with knowledge of a corrupt act usually share an interest in keeping it concealed" (Johnston 2005). They explain how "...many time-series cross-section corruption indicators are measures of corruption perception rather than reported incidences of corruption, prosecutions, or the total number of bribes" (Esarey and Chirillo, 2013). The World Bank Control of Corruption index from the World Bank's Governance Indicators dataset, measures corruption by creating an index, which uses multiple data sources such as "...expert assessments and surveys of businesspeople and or citizens" (Esarey and Chirillo, 2013). The index combines the sources using "...an extension of the standard unobserved components model which expresses the observed data in each cluster as a linear function of the unobserved common component of governance, plus a disturbance term capturing perception errors and/or sampling variation in each indicator" (Kaufmann, Kraay and Mastruzzi 2003, p. 258). Other corruption measures include the Transparency International's Corruption Perceptions Index and the International Country Risk Guide's Corruption Index. The Transparency International's Corruption Perceptions Index "combines 13 different polls and surveys from 10 independent sources, including both expert rankings and opinion surveys of those doing international business, to develop its Corruption Perceptions Index" (Esarey and Chirillo, 2013). They define corruption as

"the abuse of public office for private gain" (Transparency International 2011). The International Country Risk Guide's Corruption Index defines corruption as "...financial corruption in the form of demands for special payments and bribes connected with import and export licenses, exchange controls, tax assessments, police protection, or loans. Such corruption can make it difficult to conduct business effectively, and in some cases may force the withdrawal or withholding of an investment" as well as "excessive patronage, nepotism, job reservations, 'favor-for-favors,' secret party funding, and suspiciously close ties between politics and business" (Political Risk Services Group 2012). The corruption measure is part of the ICRG's Political Risk Rating, which is an index of "12 different components, weighted differently, on a 0-100 scale" (Esarey and Chirillo, 2013). The differences in these above corruption measures is that some measure experienced corruption (e.g. ICRG), while others measure perceived corruption (e.g. Transparency International).

To approach differences in government systems, Mishalova, J. and Melnykovska, I., (2009) look at 28 economies of the former USSR to analyze a group of countries with similar cultures and history. They find a significant negative relationship between the number and percentage of women in the upper and lower houses of parliament and corruption (Paweenawat, S. W., 2018). However, when using measures such as women who are legislators, managers, or female labor market participation, these measures were not found to lower corruption.

Cheung, A. and Hernandez, J. (2006) find that the use of cross-sectional data in previous studies results in the omission of unobserved factors. The use of panel data allows for tracking of the impact of women's representation on corruption, while minimizing bias from unobservable heterogeneity. Jha's (2015) and Lauw (2015:79) use standard fixed effects and IV fixed effects to account for the endogeneity of women in parliament, but both studies find no causality of

women's representation on corruption. This is potentially because the two methodologies are static in nature and ignore the dynamic nature of the problem and the persistence of corruption over time. To overcome these problems, Paweenawat, S. W. (2018) use panel data from 38 Asian countries applying both IV fixed effect and Generalized Method of Moments estimation (GMM) estimators. Both methods used in their paper support previous studies in showing a negative relationship between the share of women in parliament and the level of corruption.

Esarey and Schwindt-Bayer (2018) state that the statistical certainty and extent of the relationship depends on the choice of instruments and model specification. They use a variety of models, including IV/2SLS and IV/ GMM2S estimate of the Local Average Treatment Effect (LATE) for "1. women's representation on corruption, and 2. for corruption on women's representation in government." Most of their models result in "statistically significant causal relationships in both directions." Where, a one-unit increase in the ICRG corruption score causes roughly a six-percentage point drop in women's representation in government. They conclude that the two streams of argument are not in mutually exclusive competition with one another, but rather propose that future research must explicitly account for the possibility of reverse causality as a part of their modeling strategy.

While many studies find a relationship between women's representation and corruption levels in government, few look at the causal effects of women's representation on corruption. Papers that have used instrumental variables to try and establish this causal relationship have been discredited because their choice of instruments were deemed invalid. For example, Jha and Sarangi (2018) used women in parliament with the year that women attained suffrage in the country as their instrument. However, with the adoption of gender quotas in recent years, suffrage and women's representation of women in parliament has no further correlation. In a

comprehensive survey of literature, the adoption of gender quotas has been the policy recommendation of most of the studies referenced above to combat corruption. As Paweenawat, S. W. (2018) states "... any policy supporting the role of women's participation in politics, such as gender quotas, should be encouraged and widely implemented in the region's countries."

III. Theoretical Model and Testable Hypothesis

Initial studies of women's representation and corruption framed their work around the basis of the essentialist theory that men and women have different attributes. The hypothesis being that men are more selfish than women, stemming from both experimental and survey-based studies. As Dollar et al., (2001) summarized these findings: "women are more likely to exhibit 'helping' behavior (Eagly and Crowley, 1986); vote based on social issues (Goertzel, 1983); score more highly on 'integrity tests' (Ones and Viswesvaran, 1998); take stronger stances on ethical behavior (Glover et al., 1997, Reiss and Mitra, 1998); and behave more generously when faced with economic decisions (Eckel and Grossman, 1998)." There is substantial past research that shows women are more risk averse than men (Bernasek & Shwiff, 2001; Byrnes, Miller, & Schafer, 1999; Croson & Gneezy, 2009; Eckel & Grossman, 2008; Sundén & Surette, 1998; J. Watson & McNaughton, 2007). Further, women tend to be more honest and trustworthy than men, thus leading to the idea that women are less likely to be corrupt than men (Dollar et al., 2001).

Later studies have hypothesized different theories, with the link between corruption and representation as context-dependent (Esarey & Schwindt-Bayer, 2018; Goetz, 2007; Sung, 2003). Goetz (2007) argues that women have less opportunity to engage in corruption as a result of being excluded from political power. Stockemer (2011) and Sundström & Wängnerud (2014)

show that male-dominated governments with corrupt officials keep women out of representation to maintain their corrupt networks. With women not having access to corrupt networks, the implication is that more women in political power would be able to crowd out the corrupt officials resulting in reduced corruption. Torgler and Valev (2010) found that "women are significantly less likely to agree that corruption and cheating on taxes can be justified" but that political opportunity has no effect on the relationship between women's representation and corruption.

In terms of the context of government systems, Esarey and Chirillo (2013) argue that "greater women's representation in legislatures is only associated with less corruption in democracies but not in autocracies" (Esarey and Schwindt-Bayer, 2018). Esarey and Schwindt-Bayer (2018) later find that "the relationship between women's representation and corruption is conditional upon electoral accountability…" In fact, women are punished by voters at the poll more than men when they engage in corrupt activities. With the fear of greater punishment, they are less likely to engage in corrupt transactions while in office.

Other studies provide theoretical frameworks which support both directions of causality. The theory behind why corruption decreases women's representation emerges from the understanding that corrupt elites keep women out of government to maintain the networks and continue reaping the financial benefits of corruption. The theory of why women's participation in the political arena may decrease corruption stems from the ideas that women are more honest and risk averse than men. Since the publication of these studies, no research has been done to follow up on the effects of the implementation of gender quotas on corruption levels, per their concurrent policy recommendations. Gender quotas may yield different insights into the issue at hand as compared to other measures of women's participation in governmental affairs that has

been used in the literature to date, because their direct effort is to increase female representation in government. For this reason, this paper's concern is not on whether the amount of women in government alone has decreased corruption, but if the efforts to include women through gender quotas decreased corruption. The implementation of a gender quota provides a definitive time an increase in women's representation has occurred, and these effects can be studied from one year to the next. The initiative of this paper is to see if the theoretical framework of past research is supported by the implementation of gender policies. I hypothesize that an implementation of a gender quota in a government system will result in a decrease in corruption levels of that government.

IV. Data and Methodology

The empirical model used in this study is created to show the effects of adopting a gender quota into a country's constitution or secondary law on the level of corruption in that country. To effectively examine this research question, the panel data set used in this study was constructed from macroeconomic data for 125 countries for the time period 1984–2015. Note that this study covers all countries in the world for which data sets concerning whether a gender quota was implemented and the level of corruption are available. The dependent variable used in this study is the ICRG corruption index, measured by the International Country Risk Guide from the PRS Group. The index is a measure from 0 (highly clean) to 6 (highly corrupt). The explanatory variable used in this study is the implementation of gender quotas into a country's election. This variable is chosen as opposed to percent female representation because it not only reflects the willingness to include women, but also measures how these efforts have impacted their corruption levels. The data are gathered from Quota Adoption and Reform over Time (QAROT), 1947-2015 and is coded as a dummy variable “‘1’ beginning in the year a quota has been

implemented in an election -- whether or not the law was followed -- and in all subsequent years, unless the quota is overturned or withdrawn" (Hughes, et al, 2017). The level or degree of the quota implemented is not limited. If any level of quota is in place, it is accounted for in the *Quota* variable.

Corruption is a result of many factors. To account for some of these effects the model includes a few control variables used in previous studies which have been shown to be effective. Variables including women's representation (the percent of women in the national legislature, lower house (Sources: Paxton Green, and Hughes (2008), Inter-Parliamentary Union (2016)), Real GDP per Capita, total population, openness to trade (Trade (percent of GDP)), and education (school enrollment (primary, percent net)), are taken from the World Development indicators of the World Bank (2020). To control for differences in political systems between countries, a Political Rights variable has been included where countries are graded between 1 (most free) and 7 (least free). This variable is generated from the Freedom House (2016). The variable's *logpop* and *loggdp* are recorded in logarithmic form. Data description and sources can be seen in Table 1 and the summary statistics of all variables used are shown in Table 2.

V. Empirical Results

In this study, OLS and two-way fixed effect models were used to analyze whether the implementation of a gender quota decreases corruption levels in an economy. The models observe a time period of 1984-2015 in 125 countries. The results of the three models can be seen in Table 6 of the Appendix.

OLS Model

To develop an initial understanding of the relationship between gender quotas and corruption levels, a simple OLS regression is used. Running an OLS poses risk to many issues such as multicollinearity. To check for possible multicollinearity, the correlation between each variable was computed (see Table 7). From the results it can be seen that none of the variables suffer a high level of correlation. As such we proceed with our OLS regression. The econometric model used for this analysis is as follows:

$$Corruption_{i,t} = \beta_0 + \beta_1 Quota_{i,t} + \beta_2\ WomenRep_{i,t} + \beta_3 loggdp_{i,t} + \beta_4 logpop_{i,t} + \beta_5 Trade_{i,t} + \beta_6 Rights_{i,t} + \beta_7 Enrollment_{i,t} + \varepsilon$$

After running this model in SAS, the results in Table 3 are produced. This model accounted for 2,116 observations, produced an F-Value of 269.69, and returned an R-Squared of 0.4724. The R-Squared signifies that the variables used in the model account for 47.24 percent of variation in the corruption index. As seen in the table, all independent variables resulted to be significant at the 99 percent confidence level.

The OLS estimate observed an increase in the corruption index by 0.86 with the implementation of a gender quota. This result did not produce the expected sign as the theory states. The positive parameter estimate is also contradicted by the negative parameter estimate on the women's representation variable. As the percent of women in national legislation (lower house) increases by 1, corruption levels decrease by 0.018. The negative parameter estimate on women's representation would suggest that an implementation of a gender quota would also decrease corruption levels. However, the estimated results from the OLS regression are biased

and inefficient. This is a result of OLS not controlling for unobservable heterogeneity across countries.

Two-Way Fixed Effects Model (1)

To account for differences across countries and years, the same model was run using two-way fixed effects. The results can be seen in Table 4 below. The model contained 125 cross sections over a time series of 32 years. 2,116 observations were used, producing an F-Value of 33.43, and returning an R-Squared of 0.856. The R-Squared signifies that the variables used in the model account for 85.60 percent of variation in the corruption level. As seen in the table, the variables *Quota, WomensRep, logpop, Rights, and Enrollment* resulted to be significant at the 99 percent confidence level. *GDP* and *Trade Openness* resulted in no significance. The variable for quota, being significant at the 99 percent confidence level indicates a relationship between corruption and the adoption of a gender quota. The negative parameter estimate on *Quota* measures that if a country adopts a quota, their corruption levels will decrease by 0.265 points.

Looking at the control variables, all variables produced the expected signs, except for *logpop* which has a negative parameter estimate, and *WomensRep*. The coefficient of *logpop* suggests that a one percent increase in population decreases corruption levels by 0.69. It can be hypothesized that the results return a negative coefficient due to omitted variable bias.

Women's representation produces a positive sign, contrary to theory. Implying that a 1 percent increase in women's representation increases corruption by 0.0139. However, this could be due to multicollinearity between the gender quota variable and women's representation not observed when we ran our correlation test. In order to account for this, a second Fixed Effects Model is run excluding the variable *WomensRep.*

Two-Way Fixed Effects Model (2)

The second fixed effect model is as follows:

$$Corruption_{i,t} = \beta_0 + \beta_1 Quota_{i,t} + \beta_2 loggdp_{i,t} + \beta_3 logpop_{i,t} + \beta_4 Trade_{i,t} + \beta_5 Rights_{i,t} + \beta_6 Enrollment_{i,t} + \varepsilon$$

The results can be seen in Table 5 below. 2,222 observations were used, producing an F-Value of 35.41, and returning an R-Squared of 0.850. The quota variable, being statistically significant at the 95 percent confidence level, implies that the implementation of a gender quota decreases corruption levels by 0.204. This change is small when one considers that the standard deviation of our dependent variable is 1.33. We would not expect to see a change in corruption larger than two standard deviations away from our mean (a change of 2.66). However, its confidence level allows us to reject the null and confirm our testable hypothesis that the implementation of a gender quota decreases corruption levels in a government.

All control variables in the model are significant at the 95 percent or 99 percent confidence level, excluding *Trade*. The expected signs were produced as seen in prior literature. However, the variable *logpop* comes back negative as in the previous model. This unexpected sign could be due to omitted variable bias, where some aspects of corruption are not accounted for in the model.

VI. Conclusion

This study investigated the relationship between gender quotas and corruption level in government, using a panel data set of 125 countries over a period of 32 years. The results from the second fixed effects model shows that the presence of a gender quota leads to a 0.204

decrease in the corruption level. This study contributes to previous literature by supporting suggested policy implications of implementing gender quotas in response to the theory that women's representation decreases corruption levels. The coefficient suggests that *Quota* has a small effect on corruption levels, nonetheless it is still statistically significant. The recommendation to adopt gender quotas in hopes to combat corruption is seen to have some weight to it as the relationship can be seen to exist from our model.

Despite the success in our analysis, there are some limitations to this study. First, it is difficult to accurately measure corruption as most corrupt activities are not documented, and what can be labeled as a "corrupt activity" is debatable. Second, accounting for how strict a gender quota has been implemented in each country is a challenge, as gender quotas vary from country to country. Finally, studying all of the countries in one model does not provide the best analysis as the countries differ in characteristics and stages of socio-economic development. As seen in this study, *Rights* influenced corruption levels, showing that differences in political rights have a statistically significant effect on corruption levels. These different social and political attitudes can affect gender differences and the perception of the position of women in public services. With these differences, further research should account for such differences among countries. This could be done by analyzing a smaller pool of countries with similar socioeconomic characteristics. The definition of women in the public services to extend beyond politics should also broaden to include women in local governments and the judiciary. Finally, more robust testing should be done using the gender quota variable in tests such as Generalized Method of Moments estimation (GMM), and Two-Stage Least Squares (2SLS).

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VIII. Appendix

Table 1

Data Description		
Variable Name	**Definition**	**Source**
Corruption	ICRG index of corruption (range 0 to 6; higher value indicate less corrupt)	**The International Country Risk Guide (ICRG)**
Quota	dummy--country has implemented a gender quota in an election. Coded '1' beginning in the year a quota has been implemented in an election -- whether or not the law was followed -- and in all subsequent years, unless the quota is overturned or withdrawn. Coded for all years.	**Quota Adoption and Reform over Time (QAROT), Version 1, 1947-2015 (Hughes, Paxton, Clayton, and Zetterberg 2017)**
WomenRep	The percent women in the national legislature, lower house. Sources: Paxton, Green, and Hughes (2008); Inter-Parliamentary Union (2016). Coded for all years	**Quota Adoption and Reform over Time (QAROT), Version 1, 1947-2015 (Hughes, Paxton, Clayton, and Zetterberg 2017)**
Loggdp	This is the estimate of real GDP per Capita in constant US dollars at base year 2000	**World Development Indicators/The Quality of Government Standard Dataset, version Jan20**
Logpop	Total population is based on the de facto defnition of population, which counts all residents regardless of legal status or citizenship. The values shown are midyear estimates.	**World Development Indicators/The Quality of Government Standard Dataset, version Jan20**
Trade	Trade (% of GDP)	**World Development Indicators/The Quality of Government Standard Dataset, version Jan20**
Rights	Political Rights Rating - Political rights enable people to participate freely in the political process, including the right to vote freely for distinct alternatives in legitimate elections, compete for public once, join political parties and organizations, and elect representatives who have a decisive impact on public policies and are accountable to the electorate. The specifc list of rights considered varies over the years. Countries are graded between 1 (most free) and 7 (least free).	**The Quality of Government Standard Dataset, version Jan20**
Enrollment	School enrollment, primary (% net)	**World Bank national accounts data, and OECD**

Table 2

Descriptive Statistics					
Variable Name	Number of Observations	Mean	Standard Deviation	Minimum	Maximum
Corruption	3,744	3.03	1.33	0	6
Quota	3,744	0.16	0.37	0	1
WomensRep	3,479	14.57	10.46	0	53.10
Loggdp	3,663	8.05	1.63	4.55	11.69
Logpop	3,738	16.29	1.56	12.39	21.04
Trade	3,554	75.60	43.79	0.02	416.39
Enrollment	2,307	87.44	15.40	19.19	100
Rights	3,741	3.42	2.14	1.00	7

Table 3

OLS Regression Estimates: Dependent Variable- Corruption				
Variable Name	Parameter Estimate	Standard Error	T Value	P Value
Intercept	2.7308	0.34821	7.84	<.0001
Quota	0.8601	0.05727	15.02	<.0001
WomensRep	-0.0178	0.00223	-8.01	<.0001
Loggdp	-0.3532	0.02160	-16.35	<.0001
Logpop	0.0792	0.01815	4.37	<.0001
Trade	0.0045	0.00060	7.42	<.0001
Rights	0.2136	0.01365	15.65	<.0001
Enrollment	0.0110	0.00207	5.34	<.0001

Table 4

Fixed Two-Way Estimates (1): Dependent Variable- Corruption				
Variable Name	Parameter Estimate	Standard Error	T Value	P Value
Intercept	15.2765	2.9940	5.10	<.0001
Quota	-0.2653	0.0553	-4.80	<.0001
WomensRep	0.0139	0.0031	4.50	<.0001
Loggdp	-0.0868	0.0549	-1.58	0.1143
Logpop	-0.6929	0.1771	-3.91	<.0001
Trade	-0.0008	0.0008	-0.98	0.3293
Rights	0.0805	0.0187	4.31	<.0001
Enrollment	0.0101	0.0025	4.07	<.0001

Table 5

Fixed Two-Way Estimates (2): Dependent Variable- Corruption				
Variable Name	**Parameter Estimate**	**Standard Error**	**T Value**	**P Value**
Intercept	15.8727	2.3519	6.75	<.0001
Quota	-0.2041	0.0526	-3.88	0.0001
WomensRe				-
Loggdp				0.0028
Logpop				<.0001
Trade				0.1844
Rights				0.0006
Enrollment				<.0001

Table 6

Corruption & Gender Quotas Dependent Variable: Corruption			
	Model		
Variable	**OLS**	**Fixed Effect (1)**	**Fixed Effect (2)**
Intercept	2.731*** (7.84)	15.276*** (5.10)	15.873*** (6.75)
Quota	0.860*** (15.02)	-0.265*** (-4.80)	-0.204** (-3.88)
WomensRepresentation	-0.018*** (-8.01)	0.014*** (4.50)	
logGDP	-0.353*** (-16.35)	-0.09 (-1.58)	-0.155** (-2.99)
logpop	0.079*** (4.37)	-0.693*** (-3.91)	-0.677*** (-4.93)
Trade	0.004*** (7.42)	-0.001 (-0.98)	-.001 (0.18)
Education	0.011*** (5.34)	0.01*** (4.07)	0.011*** (4.81)
PoliticalRights	0.214*** (15.65)	0.08*** (4.31)	0.062** (3.42)
N	2116	2116	2222
Adjusted R-Squared	0.471	0.856	0.85
F-Value	269.68	33.43	35.41
T-Values in Paranthesis *,**, and *** represent significane at the 90 percent, 95 percent, and 99 percent level, respectively			

Table 7

Pearson Correlation Coefficients:
Prob > |r| under H0: Rho=0
Number of Observations

Variable	*Corruption*	*Quota*	*WomenRep*	*Loggdp*	*Logpop*	*Trade*	*Rights*	*Enrollment*
Corruption	1.00000	0.20794	-0.27396	-0.51262	0.12287	-0.08890	0.51883	-0.25134
		<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
	3744	3744	3479	3663	3738	3554	3741	2307
Quota	0.20794	1.00000	0.22830	-0.03396	0.16347	-0.05668	-0.03513	-0.00223
	<.0001		<.0001	0.0399	<.0001	<.0001	0.0317	0.9146
	3744	3744	3479	3663	3738	3554	3741	2307
WomenRep	-0.27396	0.22830	1.00000	0.38151	-0.00988	0.07962	-0.26273	0.26792
	<.0001	<.0001		<.0001	0.5605	<.0001	<.0001	<.0001
	3479	3479	3479	3432	3476	3338	3479	2181
Loggdp	-0.51262	-0.03396	0.38151	1.00000	-0.17159	0.29903	-0.52742	0.62984
	<.0001	0.0399	<.0001		<.0001	<.0001	<.0001	<.0001
	3663	3663	3432	3663	3663	3536	3663	2285
Logpop	0.12287	0.16347	-0.00988	-0.17159	1.00000	-0.52205	0.12111	0.01430
	<.0001	<.0001	0.5605	<.0001		<.0001	<.0001	0.4928
	3738	3738	3476	3663	3738	3551	3738	2303
Trade	-0.08890	-0.05668	0.07962	0.29903	-0.52205	1.00000	-0.16794	0.16245
	<.0001	<.0001	<.0001	<.0001	<.0001		<.0001	<.0001
	3554	3554	3338	3536	3551	3554	3554	2230
Rights	0.51883	-0.03513	-0.26273	-0.52742	0.12111	-0.16794	1.00000	-0.38176
	<.0001	0.0317	<.0001	<.0001	<.0001	<.0001		<.0001
	3741	3741	3479	3663	3738	3554	3741	2305
Enrollment	-0.25134	-0.00223	0.26792	0.62984	0.01430	0.16245	-0.38176	1.00000
	<.0001	0.9146	<.0001	<.0001	0.4928	<.0001	<.0001	
	2307	2307	2181	2285	2303	2230	2305	2307

IX. SAS Code

```
data SProject_merged;
merge SProject.corruption1 sproject.quota1 sproject.qognew sproject.rights

sproject.enrollment;

by code year;

*/reversing Index*/;

new_corr =  6 - (index);

*/create logged variables*/;

lnwdi_gdpcapcur= log(wdi_gdpcapcur);

lnwdi_pop= log(wdi_pop);

*/remove observations with missing variables*/;

if index="." then delete;

*/remove observations with missing variables for quota*/;

if implemented="." then delete;

if country='Belarus' then delete;

if country='Korea, North' then delete;

if code='PRK' then delete;

if code='ROM' then delete;

if code='TTO' then delete;

if code='YEM' then delete;

if code='ZAR' then delete;

if code='BRN' then delete;

if code='JPN' then delete;

if code='LBN' then delete;

if code='LBY' then delete;

if code='NAM' then delete;

if code='SGP' then delete;

if code='SOM' then delete;

Run;
```

```
ODS PDF file = 'D:\Spring 2020\Senior Project\My data 2.pdf';
proc univariate data=SProject_merged;
var new_corr;
run; proc means data=SProject_merged;
var new_corr implemented women_rep lnwdi_gdpcapcur lnwdi_pop wdi_trade fh_pr
Enrollment;
title1 'Selective Statistics';
Run;
ODS graphics on;
proc corr data=Sproject_merged;
var new_corr implemented women_rep lnwdi_gdpcapcur lnwdi_pop wdi_trade fh_pr
enrollment;
title 'Correlation';
Run;
proc reg data=SProject_merged;
model new_corr=implemented women_rep lnwdi_gdpcapcur lnwdi_pop wdi_trade fh_pr
enrollment;
title 'Reg w/womenrep';
Run;
proc reg data=SProject_merged;
model new_corr=implemented lnwdi_gdpcapcur lnwdi_pop wdi_trade fh_pr
enrollment;
title 'Reg w/o womenrep';
Run;
proc sort data=Sproject_merged;
by code year;
Run;
proc panel data=SProject_merged;
title 'Fixed Effect Model';
```

```
id code year;
Model new_corr=implemented women_rep lnwdi_gdpcapcur lnwdi_pop wdi_trade fh_pr
enrollment/FIXTWO;
Run;
proc panel data=SProject_merged;
title 'Fixed Effect Model2';
id code year;
Model new_corr=implemented lnwdi_gdpcapcur lnwdi_pop wdi_trade fh_pr
enrollment/FIXTWO;
Run;
ods pdf close;
```