The Effect of Women's Participation in Government on Income Inequality through Corruption

(*Pengaruh Partisipasi Wanita dalam Pemerintahan terhadap Ketimpangan Pendapatan melalui Korupsi*)

Agatha Herdiani Bria
Universitas Indonesia
e-mail: agatha.herdiani@ui.ac.id

Abstract

In addition to other economic concerns, inequality is a problem that affects all countries. The results of the numerous research that have been done to investigate the causes of income inequality are reasonably varied. The role played by women in politics is one of the exciting factors to be examined. Additionally, this paper should discuss the role of corruption as one of the primary keys, considering how involvement influences wealth disparity through what channels. According to this study, which examined panel data from 130 nations between 1998 and 2020, there is a strong correlation between the increased participation of women in politics and a global decline in income disparity. Additionally, increasing the number of women in politics lowers corruption, reducing economic inequality. Nevertheless, within nations, corruption becomes less significant. According to the Regions' analysis, inequality in Asia and Latin America is influenced by the proportion of women in parliament, but not in Europe or Sub-Saharan Africa. Last but not least, the impact of corruption on economic disparity is more significant than the impact of women's representation in government.

Keywords: Income inequality, Women's participation in government, Corruption, Mediation analysis.

Abstrak

Tesis ini menganalisis data panel dari 130 negara sejak tahun 1998 sampai 2020 dan menemukan hasil bahwa secara keseluruhan, ketimpangan pendapatan menurun seiring dengan semakin banyaknya wanita yang dilibatkan dalam pemerintahan, di mana hasil ini robust. lebih lanjut, semakin banyak wanita yang berpartisipasi dalam pemerintahan mengurangi tingkat korupsi, dan rendahnya korupsi mempersempit ketimpangan pendapatan yang ada. Namun, analisa per masing-masing negara menunjukkan hasil yang tidak signifikan untuk pengaruh dari korupsi terhadap ketimpangan. Selanjutnya, Analisa per wilayah menunjukkan bahwa keterlibatan wanita di dalam parlemen mempengaruhi ketimpangan di Asia dan Amerika latin, tetapi tidak signifikan di Eropa dan Afrika Sub-Sahara. Pada akhirnya, pengaruh tidak langsung dari korupsi terhadap ketimpangan pendapatan lebih besar daripada pengaruh langsung dari keterlibatan wanita di pemerintahan.

Kata kunci: *Ketimpangan pendapatan, Partisipasi wanita dalam pemerintahan, Korupsi, Analisis Mediasi*

1. Introduction

One of the economic issues in the past two decades is inevitably the rising inequality, whether it is between or within countries. Yap (2013) and Piketty (2014) highlight the debate on how the top percentiles' income share keeps increasing over time, and it widens the gap between the group and the poor. This discussion raises the core question: what could drive the persistent incline in inequality? Many studies examine the driving factors of income inequality, but this study focuses on corruption as the central aspect. Government corruption distributes the income mainly from the poor to the rich because it limits the expenditure on supposed welfare programs such as education and health. Therefore, a country's social development, politics, and economic state are negatively affected by corruption behavior (World bank, 2003).

In the interest of reducing corruption in its relationship to lessening the income inequality gap, countries are likely to apply several possible means. An interestingly fresh way proposed by analysts

is to include more women in politics. Eagly and Crowley (1986), Reiss and Mitra (1998), and Eckel and Grossman (1998) argue that it comes with the nature of women's character, where women tend to work with helping hands; they care about those who are in need more than men. Above all that, women are less tolerant of injustice compared to men. Consequently, women are believed to be able to influence their men coworkers to work more righteously, in this case, less corrupt. Despite the popular arguments regarding income inequality, corruption, and women's participation in government, there are limited studies regarding the direct and indirect effects of the involvement of women in politics on income inequality. However, the impact of women's share in government on corruption has been widely examined academically. Two of the prevailing literature on it is the one provided by Swamy et al. (2001) and Dollar et al. (2001). Their analysis shows that the corruption level is lower when there is more women's government participation. More women in politics lessen corruption level and, in turn, encourages income equality. By reducing corruption, women make sure to allocate the social funds to their original purpose, improving education, health, and women-related care.

When there are quite large discrepancies between countries in the index, the Gini Index suggests that some countries face increasing inequality from 1998 to 2020. Corruption and women's participation in government follow a similar pattern. As a result, it is necessary to investigate the link between these three factors.

Briefly, the results found evidence linking increased female representation in parliament to lower levels of inequality, and corruption plays a significant mediating role in explaining this relationship across national boundaries. When looking at individual nations, inequality decreases as the proportion of women in parliament rises. Still, corruption has little impact and no proof that it has a mediating influence. A higher percentage of women in parliament is associated with lower levels of inequality when looking at regions, and corruption is a critical mediator in understanding the relationship between female political engagement and inequality globally. When examining specific areas, more women in politics reduces inequality in Asia and Latin America. Still, this effect is barely noticeable in Europe and Sub-Saharan Africa. Furthermore, women's participation in politics has a greater indirect than direct impact on inequality, which is mediated through corruption.

2. Data and Method

Panel data from 130 countries between 1998 and 2020 are withdrawn from the World Bank and Institute for Democracy and Electoral Assistance (IDEA) to be analyzed in this paper.

2.1. Variables Description

Income inequality

Income inequality is measured by the Gini index from World Development Indicators (WDI) World Bank. The data shows that the Gini index has been declining globally over time, even though there might be variations in the index's movement within and between nations. Specifically, lower indexes at the beginning of the term, like those of France, the Netherlands, and Austria, tend to be steadier. Except for Indonesia, which has a growing index, and Turkey, which nearly remains the same at the end of the period as it did at the beginning, other countries starting with higher indexes have a declining trajectory.

Women's share in the government

Following Swamy et al. (2001) and Dollar et al. (2001), this study examines the percentage of seats held by women in parliament as a gauge of women's representation in governance (2001). The Inter-Parliamentary Union (IPU) gathers and obtains information on the representation of women in parliament and pulls it from the World Bank. The percentage of women serving in parliament between 1998 and 2020 depicts that, globally, there has been a significant rise in the proportion of women serving in parliament. These changes can be accounted for within and between nations, where the amounts of each country's share vary, and throughout time, there are noticeable changes within each government.

Corruption

The Control of Corruption Index (CCI) is used in this study to quantify corruption as a proxy. This index is more comprehensive, covers more nations than other corruption indices, and has been extensively utilized in the literature. This indicator was developed by Kaufmann, Kraay, and Mastruzzi (2011) using information from the World Governance Indicator of the World Bank. A nation's level of "public power being exercised for private gain, encompassing both small and large types of corruption, as well as "capture" of the state by elites and private interests" is measured by the CCI (World Bank, 2019). Data from multiple sources, including surveys of public sector organizations, households, businesses, non-governmental information providers, and commercial business information suppliers, are averaged to create the CCI index. Initially scored from -2.5 to 2.5, the index includes 214 nations, with a higher score signifying lower levels of corruption. The index was reversed such that a higher corruption coefficient denotes a higher level of corruption to make the CCI coefficients easier to understand.

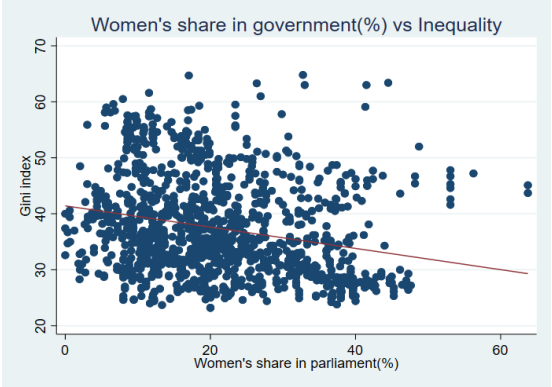
The dynamic of the corruption index between 1998 and 2020 demonstrates a distinct variation pattern on the global average. However, it is clear from the data regarding the national movement that differences between countries account for most of the shifting average, and the index is more stable inside a single nation than across countries.

Control variables

The study's control variables are the nation's election system and how it affects the proportion of women in parliament, unemployment, secondary school enrollment, public spending, GDP growth, foreign direct investment (FDI), and natural resource rent.

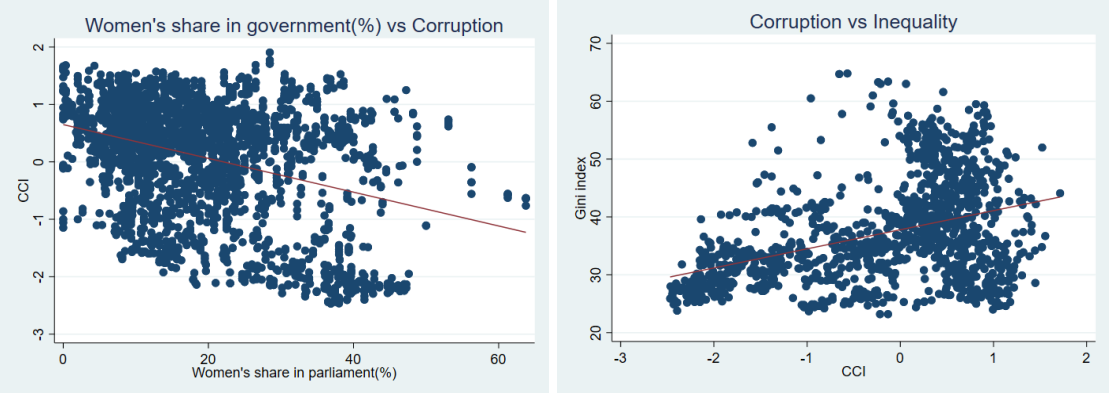
2.2. Variables correlation

The graph between the Gini coefficient and the percentage of women in parliament is shown in Figure 1 below. It indicates a link between inequality and the proportion of women in government, contrary to expectations that having more women in government would lessen inequality.



***Source**: Author's construction*

Figure 1. The relationship between women's share in parliament and the Gini index



***Source**: Author's construction*

Figure 2. The relationship between women's share in parliament, CCI, and the Gini index

Figure 2 above shows the relationship between CCI and women's share in parliament (left) and CCI and the Gini index (right). The picture on the right demonstrates the positive association between corruption and inequality, whereas the figure on the left illustrates the negative relationship between women's representation in government and corruption. Therefore, it is projected that greater inequality will be accompanied by more significant corruption, whereas the more excellent representation of women in government parliament will result in less corruption.

Table 1. Data distribution of women's share in parliament and CCI

Variable		Mean	Std. dev.	Min	Max
Women's share in parliament	Overall	18.9602	11.3508	0.0000	63.7500
	Between		9.5294	0.3471	49.4066
	Within		6.1912	-13.3035	53.5254
CCI	Overall	0.0999	0.9819	-2.4700	1.9052
	Between		0.9690	-2.3372	1.5423
	Within		0.1882	-0.7398	1.3810

***Source**: Author's construction*

The data distribution for the two significant independent variables in the analysis, the percentage of women in parliament and corruption statistics, are diverse within and within nations, as shown in Table 1 above. The proportion of women in parliament fluctuates significantly within and between countries, with standard deviations of 9.53 and 6.19, respectively. However, data on corruption indicate that there have been little changes in it overall, and there have been even fewer changes within individual countries (standard deviation: 0.97 and 0.19, respectively). These data features are crucial when choosing the model to use in the study.

In addition, this study tests for normality, homoscedasticity, no multicollinearity, and no serial correlation assumptions. The model is chosen by running the Breusch-Pagan Lagrangian Multiplier (BPLM) and Hausman tests, Fixed effects to estimate the within changes, and the pooled OLS to capture the between and within estimates (Wooldridge, 2012).

It is also vital to take into account other explanatory factors that may have an impact on income inequality in a nation. It offers a glimpse of the potential for changes in the impact women's representation in government may have on inequality if other factors are included in the model. The following describes the study's general empiric model:

$$inequality_{it} = \beta_0 + \beta_1 women_{it} + \beta_2 corrupt_{it} + \beta_3 X_{it} + \varepsilon_{it} \quad (1)$$

Gini index measures inequality, β_0 is the intercept; β_1 is the slope parameter for women, representing the women's share in parliament; β_2 is the slope parameter for corruption, representing the CCI. X is the vector of control variables with its slope parameter β_3, ε is the error term, and *i* and t represent country and year, respectively.

Assumption tests demonstrate that the data set has heteroskedasticity and serial correlation concerns. To overcome heteroskedasticity, the robust standard error is used in the regressions, as it improves the precision of the estimates under heteroskedasticity. In terms of serial correlation, it is unimportant when there are strictly exogenous independent variables and independent samples throughout time.

Moreover, endogeneity test is also performed, as endogeneity may pose a significant problem for this study because inequality may also influence the proportion of women in government. According to statistics from Stockemer (2017), the percentage of women serving in government declines as wealth disparity rises. Following the Wooldridge method, a two-stage least square (2SLS) is used to overcome this potential problem (2012). As the inequality at this time cannot affect the women's presentation in the government in the last and the two prior periods, the instrument variables in this study are the two lags of the women's share in parliament. Tests are done to determine the relevance and exogeneity of the instruments following the 2SLS. The test for exogeneity of the women's share in parliament is undertaken if the instruments are exogenous and relevant, which means they are valid instruments. If the women's representation in parliament is exogenous, the null hypotheses are unlikely to be rejected in either test (Adkins & Hill, 2011).

2.3. Mediation analysis

Following Mackinnon (2008) and Baron and Kenny, this study uses the mediation technique to examine the direct impact of women's representation in parliament on income inequality and the indirect effect through corruption (1986). The relevance of women's representation in parliament should be lessened or even eliminated if corruption mediates the impact, and vice versa. Iacobucci et al. (2007) modified Baron and Kenny's (1986) approach, and Zhao et al. (2010) used a different approach to examine the mediation effect and its relevance (Mehmetoglu, 2018). In the following section, this study will further elucidate the specifics of this methodology.

3. Results and Discussion

3.1. Inequality changes across and within countries

Across countries changes

The regression findings for the pooled OLS regression in Table 2 show the mediation effect of corruption and the impact of factors on income inequality. Column (1) displays the regression of the CCI on the proportion of women in parliament, column (2) the regression of the Gini index on the proportion of women in parliament and the CCI, column (3) the regression of the Gini index on the proportion of women in parliament and the CCI, and column (4) the regression of the Gini index on the proportion of women in parliament, corruption, and all of the control variables.

According to column (1), a 1% increase in women's representation in parliament considerably lowers corruption by 0.03 points at the 1% significance level. According to data in column (2), income inequality grows by 3.30 points at a 1% significance level when corruption levels climb by one point. In column (3), corruption and the proportion of women in parliament significantly affect inequality in the anticipated ways. The inequality will increase by 3.16 points for every 1-point increase in the corruption index, which is still significant at the 1% level. The significance level of women's participation in government lessens to 5%, with 1% more women in parliament reducing inequality by 0.05 points. These results initially indicate a mediation effect of corruption in how women's participation in government affects inequality. In other words, higher women's participation in parliament reduces corruption and, in turn, lowers inequality.

Table 2. Pooled OLS robust standard error estimated regression

Independent variables	Dependent variables			
	(1) CCI	(2) Gini index	(3) Gini index	(4) Gini index
Women's share in parliament	-0.0294***		-0.0473**	0.1110***
	(0.0018)		(0.0229)	(0.0337)
CCI		3.3010***	3.1630***	1.4680***
		(0.1800)	(0.2170)	(0.3230)
Electoral system				6.2660***
				(1.1680)
Women's share*electoral system				-0.1840***
				(0.0446)
Unemployment				0.1800***
				(0.0672)
Secondary school enrolment				-0.0714***
				(0.0136)
Government spending				-0.3650***
				(0.0774)
GDP growth				0.0349
				(0.0686)
FDI				-0.0240***
				(0.0045)
Natural resources rents				0.0924*
				(0.0561)
Constant	0.6490***	37.7900***	38.8500***	44.7100***
	(0.0330)	(0.2460)	(0.5430)	(1.8820)
Observations	2,606	1,234	1,205	981
R-squared	0.1150	0.1590	0.1710	0.3090

*Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

***Source**: Author's calculation*

The regression's control variables are also listed in column (4). The effect of women's share of government on inequality becomes -0.07, which is more significant in magnitude than the model in the column because of the considerable interaction between the electoral system (1 for proportional, 0 for others) and women's share of government (3). This result demonstrates that electing women via a proportional election system has a higher impact on eliminating inequality. Compared to the prior model, corruption's impact on inequality has decreased to 1.47, indicating that other factors may also contribute to inequality.

Except for GDP growth, all the other control factors significantly affect inequality. Interestingly, when the election system is proportional, the inequality is more considerable at the significance level of 1%. Because a party gains legislative seats in direct proportion to the votes it receives, it may nominate candidates of poor quality and make little effort to alleviate inequality. The gap between the rich and the poor widens by 0.18 points for every 1% increase in unemployment because unemployed people struggle harder to meet their basic needs, become poorer, and have a smaller income. Inequality is negatively impacted by secondary school enrollment by 0.07 points because more persons who complete higher education have a better chance of improving their standard of living. A 1% increase in government spending reduces inequality by 0.36 points. The argument is that more lavish government spending typically translates into more significant social-related expenditures to improve the lives of the less fortunate and bring them closer to parity with the wealthy. Since FDI reduces inequality by 0.02 points for every 1% increase, it harms inequality. This finding demonstrates that the government generally uses the inflow's investment for social, educational, and health-related purposes. Rents from natural resources come last. At a significance level of 10%, a 1% rise in natural resource rents results in a 0.09-point increase in inequality because rents increase the income of the wealthy. At the same time, the poor receive no benefit from them. As a result, the two groups have a broader income difference.

Within countries changes

Table 3. Fixed effects robust standard error estimated regressions

Independent variables	Dependent variable: Gini index		
	(1)	(2)	(3)
Women's share in parliament	-0.1830***	-0.1740***	-0.1450**
	(0.0365)	(0.0344)	(0.0619)
CCI		0.0876	0.1970
		(0.7250)	(0.7810)
Electoral system			-
Women's share*electoral system			-0.0046
			(0.0798)
Unemployment			0.2250***
			(0.0599)
Secondary school enrolment			-0.0226
			(0.0229)
Government spending			-0.1230
			(0.1200)
GDP growth			0.0504*
			(0.0266)
FDI			0.0003
			(0.0028)
Natural resources rents			-0.0260
			(0.0461)
Constant	41.2700***	40.8900***	42.3900***
	(0.7770)	(0.7780)	(3.3470)
Observations	1,251	1,205	981
R-squared	0.1550	0.1430	0.2230
Number of countries	129	129	111

*Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

***Source**: Author's calculation*

Applying the fixed effect model, as shown in Table 3, allows for investigating the impact of women's participation in parliament on inequality. As seen in Table 5, column (1) displays the impact of women's representation in government on inequality, column (2) displays the impact of

corruption, and column (3) displays the impact of the regression that took into account all of the other control variables. At a significance level of 1%, column (1) regression demonstrates the strong negative impact of women's representation in government on inequality. Consistent with the earlier findings, the inequality will decrease by 0.18 points with 1% more women participating in parliament. Results in column (2) show that when corruption is taken into account, the impact of women in parliament on inequality is reduced to 0.17 in magnitude. However, in this model, inequality is not considerably impacted by corruption.

Similar findings are shown in column (3), where a 1% increase in women serving in parliament lowers inequality by 0.14 points at a significance level of 5%. When the other variables are considered, the size does not vary significantly, but the significance level does, and the corruption remains small. Only unemployment rates and GDP growth are statistically significant among the other control variables, the others being statistically insignificant. At a significance level of 1%, unemployment rates positively impact inequality, adding 0.22 points to it for every 1% increase. GDP growth has a 10% level of relevance impact on inequality. The inequality increases by 0.05 points for every increase in GDP growth since the wealthiest benefit greatly more from rapid economic expansion than the poor.

Regional analysis is undertaken to further the investigation because different regions have different characteristics. Asia, Europe, Latin America (LA), and Sub-Saharan Africa are the four regions that make up the analysis (SSA). The regression findings for each region in the two models are shown in Table 4. Model 1 is a regression with two significant independent variables, while Model 2 is the regression's findings when all control factors are considered.

Table 4. Fixed effect robust standard error estimated regressions – regions analysis

Independent variables	Dependent variable: Gini index							
	(1) Model 1 Asia	(2) Model 2 Asia	(3) Model 1 Europe	(4) Model 2 Europe	(5) Model 1 LA	(6) Model 2 LA	(7) Model 1 SSA	(8) Model 2 SSA
Women's share in parliament	-0.1300*	-0.1650***	-0.0603*	0.0074	-0.3390***	-0.2160**	-0.0385	-0.0782
	(0.0651)	(0.0328)	(0.0318)	(0.0267)	(0.0384)	(0.0739)	(0.0610)	(0.1270)
CCI	-0.0582	-0.7210	0.8990	0.2940	0.5270	0.6690	-0.1110	0.0227
	(1.0950)	(1.094)	(0.8590)	(0.8330)	(2.7170)	(2.228)	(2.1970)	(2.1450)
Women's share*Electoral system		0.3270**		-0.0574		-0.0840		-0.0831
		(0.1550)		(0.0452)		(0.0964)		(0.1850)
Unemployment		0.2690***		0.1750***		0.3870**		-0.4100
		(0.0763)		(0.0512)		(0.1510)		(0.3430)
Secondary school enrolment		-0.0227		0.0020		-0.1020*		0.0896
		(0.0555)		(0.0134)		(0.0518)		(0.0728)
Government spending		-0.0021		-0.0549		-0.1620		0.4550*
		(0.1230)		(0.1010)		(0.3480)		(0.2460)
GDP growth		0.1070*		0.0498		0.0638		0.3660
		(0.0538)		(0.0307)		(0.0573)		(0.2220)
FDI		0.0113**		-0.0016		0.0938		-0.2350
		(0.0044)		(0.0012)		(0.102)		(0.1790)
Natural resources rents		0.0308		-0.2060*		-0.0998		0.00971
		(0.0588)		(0.1220)		(0.0840)		(0.0851)
Constant	37.8500***	35.6500***	33.7100***	31.9200***	56.6100***	63.3600***	43.4700***	36.4800***
	(0.8100)	(5.0940)	(1.1900)	(2.8260)	(1.4270)	(5.0480)	(1.7530)	(5.1310)
Observations	269	194	566	514	227	197	143	76
R-squared	0.0690	0.1990	0.0330	0.1170	0.4860	0.6380	0.0050	0.2720
Number of countries	31	24	37	37	16	16	45	34

*Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0. Country- and year-fixed effects are included in all regressions. US and Australia are grouped into Europe. The LA group consists of Latin America and the Caribbean. The SSA group includes SSA countries and Northern African countries.

***Source**: Author's calculation*

In Asia and Latin America, women consistently make up a large portion of the legislature. When the voting system is proportional representation, the initial effect in Asia is -0.13, and after adjusting for the other components, the effect becomes -0.162. The interplay with the Asian electoral system has a favorable result, possibly due to the proportional election system, which allocates seats in parliament to parties in proportion to their vote totals. Therefore, there is no assurance that those seated in the parliament in the party's name are those who care about reducing inequality. Similar to Latin America, the first and second models always negatively and significantly impact women's

representation in parliament, with effects of -0.34 and -0.22, respectively. When the other factors are considered, it becomes negligible, while Europe at the 10% significance level with a magnitude of 0.06 is negatively significant in model 1.

The corruption factor is the next one, which is still tiny. Unemployment is significant in Latin America (at a 5% significance level) with an effect of 0.39 and 0.27, and 0.18 in Asia and Europe, respectively (at a 1% significance level). All of these effects are in the predicted direction. Inequality increases as unemployment rates rise in these areas. Enrollment in secondary schools only affects inequality negatively, with a magnitude of 0.10 in Latin America at a significance level of 10%.

Contrary to expectations, government spending is at a 10% level of relevance in SSA in a positive direction. In this area, a 1% increase in government spending results in a 0.46-point rise in inequality. This result demonstrates that the governments in these nations only sometimes devote their spending to welfare-related activities. At a significance level of 5%, FDI considerably impacts inequality in Asia. The inequality will expand by as much as 0.01 points if FDI increases by 1%, which is expected given its path. Finally, at a 10% level of relevance, natural resource rents are considerable in Europe and go against expectations. Rents for natural resources can be raised by 1% while reducing inequality by 0.21%.

3.2. Endogeneity test with 2SLS IV regression

Endogeneity may result in inequality and impact the proportion of women in parliament. This work addresses this problem using a two-stage least squares (2SLS) instrumental variable (IV) regression. Since it is untrue that this time of inequality is impacted by the previous period in which women held a majority in parliament, this study utilizes the lagged variable of women's share in parliament. The instruments used are two lags in the percentage of women in parliament.

Results for pooled OLS regression in column (1) and 2SLS IV regression in column (2) are shown in Table 5. (2). According to the findings in column (2), the proportion of women in parliament is still statistically significant in the same direction but with a smaller magnitude (-0.07 for pooled OLS and -0.08). This finding suggests that the pooled OLS estimator is consistent, although statistical evidence is still required.

Table 5. Pooled OLS and 2SLS IV estimated regressions

	Dependent variable: Gini index	
Independent variable:	(1) Pooled OLS	(2) 2SLS IV
Women's share in parliament	0.1110***	0.1410***
	(0.0401)	(0.0443)
CCI	1.4680***	1.3620***
	(0.3400)	(0.326)
Electoral system	6.2660***	6.8760***
	(1.1090)	(1.2880)
Women's share*Electoral system	-0.1840***	-0.2210***
	(0.0485)	(0.0530)
Unemployment	0.1800***	0.1720**
	(0.0506)	(0.0680)
Secondary school enrolment	-0.0714***	-0.07190***
	(0.0127)	(0.0138)
Government spending	-0.3650***	-0.3380***
	(0.0718)	(0.0773)
GDP growth	0.0349	0.0850
	(0.0681)	(0.0679)
FDI	-0.0240***	-0.0236***
	(0.0089)	(0.0045)
Natural resources rents	0.0924*	0.113*
	(0.0483)	(0.0585)
Constant	44.7100***	43.5100***
	(1.7340)	(1.9160)
Observations	981	948
R-squared	0.3090	0.3070

*Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0

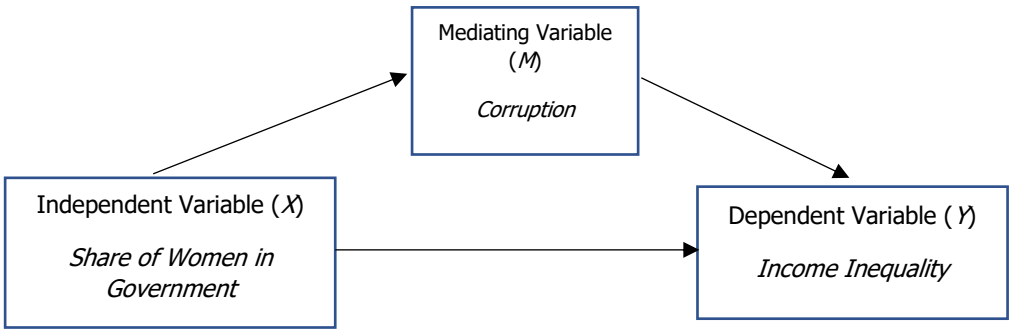
***Source**: Author's calculation*

The combined significance test for the instruments reveals that at least one of the instruments significantly influences women's representation in parliament at the significance level of 1%, according to the results of the first stage of the 2SLS IV regression. Second, the overidentification test is run to ensure the instruments' exogeneity. The outcome demonstrates that for both the Sargan and Basman scores, the null hypothesis is not rejected at any level of significance, indicating that the instruments are exogenous or legitimate. The last test examines the exogeneity of female representation in parliament because the instruments are valid. The null hypothesis is not rejected at any level of significance, according to the Durbin and Wu-Hausman tests for endogeneity, demonstrating that the proportion of women in parliament is an exogenous variable. These test results indicate that the pooled OLS estimator is superior to the 2SLS IV because it does not have endogeneity problems. The results of this investigation are hence solid.

3.3. Mediation analysis

The model in Picture 6 highlights X's direct impact on Y and X's indirect impacts through M, where X influences M and then influences Y. (Mackinnon, 2008). Three essential requirements are listed by Baron and Kenny (1986) as proof that a mediation relationship exists. The first criterion is that X should have an enormous impact on Y, and the second is that X should have an impact on M. The third criterion is that M should have a considerable effect on Y when Y is regressed jointly on X and M. These conditions are not in any particular sequence. The final regression ought to demonstrate that X's coefficient is lower than X's in the initial regression and that there is no effect for a perfect mediation.

The mediation analysis applied in this study is illustrated as follows:



***Source**: Author's reconstruction*

Figure 3. Illustration for the mediation model

Empirically, the following models are used to examine the direct and indirect effects:

$$inequality_{it} = \beta_0 + \beta_1 women_{it} + \varepsilon_{it} \quad (2)$$

$$corrupt_{it} = \alpha_0 + \alpha_1 women_{it} + u_{it} \quad (3)$$

$$inequality_{it} = \delta_0 + \delta_1 women_{it} + \delta_2 corrupt_{it} + v_{it} \quad (4)$$

When the proportion of women in government significantly impacts inequality (2), one can only assume corruption is a mediation factor if it also strongly influences inequality (3). After that, the impact of corruption should continue to substantially impact inequality while the effect of women's representation in government is lessened (4). The models will be subjected to a mediation analysis using structural equation modeling (SEM).

Following the control of corruption, the mediation analysis results show the direct impact of women's share on inequality and its indirect consequences due to corruption. $\widehat{\delta_1}$ measures the direct effect, and $\widehat{\alpha_1} * \widehat{\delta_2}$ measures the indirect effect. Then, $\widehat{\delta_1} + (\widehat{\alpha_1} * \widehat{\delta_2})$ measures the total effect of women's share on inequality. Furthermore, examining the importance of indirect influence $\widehat{\alpha_1} * \widehat{\delta_2}$ is

crucial. Baron and Kenny (1986) and Zhao, Lynch, and Chen's (2010) approach to testing mediation are utilized to determine the importance of the indirect effect.

Previously, Table 4 showed that the representation of women in parliament considerably influences inequality. Therefore, this study can move forward to examine the mediation effect. The regression findings for the mediation models are shown in Table 6 bellow. The Gini index on CCI and women's representation in parliament is in column (1), and the CCI on women's representation is in column (2). According to the data, there is a partial rather than a full mediation effect because the direct effect of women's representation in government is -0.0473. It is still significant but at a lesser level of significance (5%). The indirect impact of women's representation in politics on inequality due to corruption is (-0.0404)*(3.163), or -0.128. As a result, the total impact of women's representation in government on inequality is equal to the sum of its direct and indirect effects, or (-0.0473)+(-0.0128), or -0.175. Without considering corruption, every 1% increase in female representation in the legislature reduces inequality by 0.047 points. A rise of 1% in the number of seats held by women in parliament decreases 0.175 points in inequality through the decline of corruption. Inequality is significantly and greatly impacted by corruption alone; for every one-point increase, inequality rises by 3.16 points. Research on the impact of female representation in parliament shows that corruption decreases by 0.04 percentage points for every one percent increase in female participation in politics. This result supports earlier research suggesting that increased representation of women in parliament leads to improved equality and reduced corruption.

Table 6. Mediation analysis estimated regression

Independent variables	Dependent variables	
	(1) Gini index	(2) CCI
CCI	3.1630*** (0.2390)	
Women's share in parliament	-0.0473** (0.0224)	-0.0404*** (0.0024)
Constant	38.8500*** (0.5170)	0.6500*** (0.0593)
Observations	1,205	1,205

*Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Regressed with SEM for mediation analysis

Source: *Author's calculation*

The significance test findings for the indirect effect of corruption are attested in Table 7, which supports the indirect or mediation effect. The indirect effect is statistically significant and merits accounting for because all three tests in the table are significant at 1%. According to column (4), corruption mediates around 73% of women's government representation's impact on inequality. Column (5) demonstrates that the indirect impact of women's representation in government on inequality is approximately 2.7 times greater than the direct impact.

Table 7. Significance test of indirect effect results

Estimates	(1) Delta	(2) Sobel	(3) Monte Carlo	(4) /Total Effect	(5) /Direct Effect
Indirect effect	-0.1280*** (0.0120)	-0.1280*** (0.0120)	-0.1280*** (0.0120)	0.7300	2.6990
Confidence interval	-0.1520, -0.1030	-0.1520, -0.1030	-0.1530, -0.1040		

*Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Regressed with *medsem* for mediation analysis

Source: *Author's calculation*

4. Conclusions and Recommendations

Despite the enormous interest in studying the factors that contribute to inequality, there still needs to be more research on the impact of women's participation in government on inequality and investigating the direct and indirect consequences. This analysis adds to the sparse body of literature by evaluating those effects using data from 130 nations from 1998 to 2020, using corruption as the mediating variable.

Overall and country-specific analyses of two different models are conducted. The research of all nations suggests that corruption may mediate the relationship between women's political participation and income disparity. The corruption index decreases when more women hold elected office, and countries with lower levels of corruption have more evenly distributed income. However, an examination of different countries reveals instances where corruption has no appreciable impact on the representation of women in government or economic disparity. There is less income inequality within nations when more women are in leadership positions. Another significant conclusion is that nations with proportional representation in their electoral systems have higher levels of the impact of women participating in politics on wealth inequality. When broken down by regions, women's contributions to inequality appear minimal in nations with relatively high-quality institutions (European countries) and minimal in those with weak institutions at the bottom (Sub-Saharan African countries). Women's representation in government plays a significant influence in reducing income inequality in Asian and Latin American nations with average levels of institutions. Later in this study, the mediation analysis is used to assess the direct impact of women's political participation on income inequality and the indirect impact of corruption on this. The analysis confirms that corruption mediates the relationship between the percentage of women in parliament and income disparity and that the indirect effect is greater than the direct effect. The test conducted by Zhao, Lynch, and Chen (2010) and Baron and Kenny (1986) demonstrates the mediation effect's statistical significance.

Given the solid evidence about the direct and indirect effects, it is possible to recommend including more women in politics to lower the level of corruption, which ultimately widens the gap in wealth inequality. Furthermore, if the female candidates are credible, a radical shift, like changing a nation's voting system to proportional representation, could reduce inequality. Although the results of this study are strong, they have certain limitations, primarily in the availability of the data. Some significant factors have short periods, making it impossible to evaluate them far in the past. Additionally, many observations must be left out due to the limited data availability. Furthermore, this study only examines the linear relationships among key variables, but the dynamic relationships among crucial variables can hold different results. Therefore, future studies can analyze more about the dynamic relationship to contribute more to the literature.

References

Adkins, L. C. & Hill, R. C. (2011). Using Stata for Principles of Econometrics, Fourth Edition. John Wiley & Sons, Inc.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of personality and social psychology*, 51(6), 1173.

Dollar, D., Fisman, R., & Gatti, R. (2001). Are Women Really the "Fairer" Sex? Corruption and Women in Government. *Journal of Economic Behavior & Organization*, 46(4), 423- 429.

Eagly, A. H. & Crowly, M. (1986). Gender and Helping Behavior: A Meta-Analytic Review of the Social Psychological Literature. *Psychological Bulletin*, Vol. 100, No. 3, 283-308.

Eckel, C. C. & Grossman, P. J. (1998). Are Women Less Selfish than Men?: Evidence from Dictator Experiments*. *The Economic Journal*, 108 (May), 726-735.

Kaufmann, D., Kraay, A., & Mastruzzi, M. (2011). The worldwide governance indicators: methodology and analytical issues. *Hague Journal on the Rule of Law*, 3(2), 220-246.

Mehmetoglu, M. (2018). medsem: a Stata package for statistical mediation analysis. *International Journal Computational Economics and Econometrics*, Vol. 8, No. 1.

Piketty, T. (2014). Capital in the Twenty-First Century: A Multidimensional Approach to the History of Capital and Social Classes. *The British Journal of Sociology*, 65(4), 736–747.

Reiss, M. C. & Mitra, K. (1998). The Effects of Individual Difference Factors on the Acceptability of Ethical and Unethical Workplace Behaviors. *Journal of Business Ethics*, 17: 1581–1593.

Stockemer, D. (2017). Income inequality and women's descriptive representation. *International Journal of Comparative Sociology 2017*, Vol. 58(1) 33–54.

Swamy, A., Knack, S., Lee, Y., & Azfar, O. (2001). Gender and Corruption. *Journal of Development Economics*, 64(1), 25-55.

Wooldridge, J. M. (2016). Introductory Econometrics: A Modern Approach, Fifth Edition. Nelson Education.

Yap, J. T. (2013). Addressing Inequality in East Asia through Regional Economic Integration. *Eria Research Institute Network*, Statement No. 3.

World Bank (2003). A Guide to the World Bank. Washington, DC: The World Bank.

Zhao, X., Lynch Jr, J. G., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and Truths about Mediation Analysis. *The Journal of Consumer Research*, Vol. 37, No. 2 (August 2010), pp. 197–206.