

**The Impact of IMF Program on Corruption
and Bureaucratic Quality in Developing Nations**

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Abstract

Nowadays, corruption plays an important role in both national and international stages by influencing the economy, politics, and international relations. From the global perspective, international organizations usually step in to assist developing nations with foreign aid to develop their infrastructure and basic facilities. International Monetary Fund (IMF) has an impactful power to foster global financial cooperation and secure the economic stability of developing nations. Therefore, currently, there is debate on whether the participation of the IMF can reduce corruption or cause more corrupt behaviors. In this research, I propose bureaucratic quality as a key political indicator in the relationship between corruption and attending IMF programs aligning with functionalism in political psychology. I choose bureaucratic quality because, in general, high bureaucratic quality reflects strong government effectiveness with less corruption. Furthermore, this research aims to see if IMF programs can advance or weaken the bureaucratic quality of developing nations. In order to test it, I raise two hypotheses. H1: participation in IMF programs will increase corruption in developing nations. H2: Attending IMF programs will decrease the bureaucratic qualities of developing nations. To examine them, I conduct quantitative research in data analysis using a dataset covering 178 developing nations from 1971 to 2014. I find that both H1 and H2 are confirmed that attending IMF programs will actually increase corruption by weakening the bureaucratic quality. Moreover, there is an interaction between bureaucratic quality and IMF programs in the level of impact on corruption for developing nations. In the academic field,

the findings point out that the effectiveness of IMF programs depends on the level of bureaucratic quality, and it does not always reduce corruption in developing nations. A high bureaucratic quality can have more corruption by attending IMF programs since corruption does not mean the project will be destroyed. In fact, the mission can be done effectively and timely to cover the corruption according to functionalism. It points out the importance of political psychology in studying such complicated problem. In practice, these findings emphasize that governments from developing nations should realize that bureaucratic quality and corruption do not always cancel each other when governments seek to increase bureaucratic quality and reduce corruption simultaneously. This research is unique in a combination of theory: functionalism, and a quantitative method: Inverse Probability Treatment Weighting, which has not been applied in previous works.

Introduction

Corruption is defined as the misuse of public office and power for private benefits (World Bank 1997, 8). It can negatively impact political stability, economy, and government effectiveness in a domestic environment. Nowadays, with the trend of economic globalization, corruption's influence is extended to international involvement during a large amount of international cooperation and foreign aid. Thus, it is considerable to discover the role of non-state actors in solving the corruption. International Monetary Fund (IMF), as a representation of international financial institutions, remains an important position in assisting sustainable development through foreign aid and other monetary support for developing nations. IMF aims to help developing nations overcome economic recessions and struggles in general. Therefore, scholars argue that attending IMF programs can effectively

reduce corruption. On one side, scholars believe that IMF policy reforms, also called conditionalities, in privatization and deregulation can solve the issue of corruption (Gerring and Thacker 2005; Drugov 2010). However, on the other side, scholars argued these conditionalities will limit the capacity of bureaucratic quality which will increase corrupt behaviors (Blanton, Early, and Peksen 2018; Reinsberg, Stubbs, Kentielenis, and King 2019). While existed works have focused on IMF policy reforms, bureaucratic quality, and corruption, there was a gap of alignment to functionalism in studying IMF programs, bureaucratic qualities, and corruption for developing nations. Moreover, previous research did not pay attention to the interaction between bureaucratic quality and attending IMF programs on corruption for developing nations. Therefore, I will focus on the role of the IMF itself for developing nations in dealing with corruption through a pathway of bureaucratic quality to better understand the mechanisms linking the IMF to corruption outcomes by moderating the interaction of bureaucratic quality and IMF programs.

This research can contribute to the ongoing discussion by filling the gap in conducting quantitative research. I motivate the data analysis by observing significant empirical results of the hypothesis that participation in IMF programs will lead to an increase in corruption and a decrease in bureaucratic quality for developing nations. I utilize random and fixed effects and the Inverse Probability of Treatment Weighting method (IPTW) to analyze the data. IPTW is a statistical method to capture all treated and untreated individuals in the entire group when addressing a large number of confounding factors. In the following sections, I will first discuss the current discussion on whether participating in IMF programs can help reduce corruption. Then, I will add my own opinions relating to functionalism theory which has not been

addressed before. After that, I will explain the research design and empirical results with data analysis.

Literature Review

IMF is seeking to reform policies to decrease corruption by privatization, deregulation, and liberalization in the market. Existing literatures studying IMF programs and corruption provide mixed evidence of a connection. In the positive perspectives, these policy reforms can benefit the participations to reduce corruption since state-owned companies have overwhelmed government and political interference. Thus, deregulation and liberalization can promote the economy by increasing the competitiveness with less opportunities to corrupt. From the critical view,

On the one hand, a group of the literature suggests that IMF policy reforms positively affect corruption through privatization and deregulation. For example, Gerring and Thacker discuss the advantages of neoliberalism with increasing market-oriented policies and deregulation, following Drugov's analysis on why less bureaucratic performance will decrease corruption (Gerring and Thacker 2005; Drugov 2010). Gerring and Thacker suggested that neoliberalism policies for minimal regulatory policies to maximize markets' competitiveness can support political corruption in market-oriented developing countries to reduce corruption. The full market-based economic system will have a low level of corruption when other variables remain the same. Increasing the free-market level and enhancing its competitiveness will decrease the opportunity for corruption. Regulations can offer bureaucrats policy-making power. There will be incentives for businesspeople to cultivate special relations with government officials because the business's success could

depend on political support. By applying a measurement of regulatory quality, they found that countries with market-friendly policies were significantly less likely to experience corruption (Gerring and Tacker 2005). This evidence shows the positive effect of IMF programs on developing nations in reducing corruption by imposing a market-oriented system.

Aligning with Gerring and Thacker's discussion on how neoliberalism policy reforms will decrease corruption, other studies explicitly tested the hypothesis on bureaucracy and competition to argue that some bureaucrats are corrupt when they issue a license to any firm in exchange for a bribe. Drugov stated that competition in the market would create more incentives for investors and companies to corrupt in order to receive the business licenses (Drugov 2010). In this case, less bureaucratic performance under IMF policy reforms in liberalization and less regulation from the government can decrease corrupt opportunities during the process. Therefore, IMF neoliberal policy reforms such as privatization and deregulation will increase the market-oriented policies and market competitiveness from the previous part and decrease the bureaucratic performance.

On the other hand, intellectuals argued conversely that IMF neoliberal policy reforms would indeed increase corruption by reducing national capacity, effectiveness, and efficiency in bureaucratic performance and increase the potential risk of economic recession (Blanton, Early, and Peksen 2018; Reinsberg, Stubbs, Kentikelenis, and King 2019). Blanton, Early, and Peksen argued that IMF neoliberal adjustments could cause corruption because the structural conditions will increase economic hardship and decrease countries' regulatory capacity. They claimed that the sociopolitical impact of IMF programs would lead to the

shadow economy based on three reasons. First of all, the IMF policy reform requires a reorganization which could hurt the bureaucratic quality, and state capacity will be diminished with difficulties in hiring new skilled employees. In this case, the bureaucratic quality will decline with inefficiency. Secondly, the cost of time will increase when there is a lack of bureaucratic agencies to finish daily assignments. Thirdly, reducing state capacity will increase the attractiveness of doing business with corruption because of an inefficient process without enough skilled labor (Blanton, Early, and Peksen 2018).

In order to test them, Blanton, Early, and Peksen applied the first-differenced variable to create Δ Shadow Economy (%GDP) variable as the outcome variable. For explanatory variables, they used IMF program participation as a binary variable as 1 when a country is under an IMF program and 0 otherwise. They also applied structural conditions as loan conditions and captured the total number of conditions in IMF programs with privatization and government reorganization. They used GDP per capita, annual GDP growth, and inflation for economic sectors, which I also applied as control variables in my research. For social factors, they used regime type as a democracy variable. In their findings, IMF program participation is significantly related to great growth in illegal economic exchanges during the IMF program years (Blanton, Early, and Peksen 2018). Therefore, these results suggested that the economic downturn, reduced credit markets, and reduced state capacity brought about by the IMF programs can push actors into the shadow economy due to economic hardships and decreased benefits for remaining in the formal economy.

Moreover, another negative factor that scholars propose is that privatization will create more opportunities and incentives to corrupt. Reinsberg, Stubbs, Kentikelenis, and King

claimed that IMF neoliberal policies on privatization of state-owned factories and companies create rent-extraction opportunities and limit the capacity of state institutions to regulate corruption (Reinsberg, Stubbs, and Kenitkelenis 2019). They analyzed three phrases. First, they claimed that privatization processes would generate rent opportunities that can be exploited under asymmetric information situations. Corruption opportunities exist throughout the privatization process, from inception to tender and sale of public assets. They likely are larger when the administrators of the former system manage the privatization schemes. In addition, they argued that the illegal pursuit of such rents would create incentives and chances for weak institutions among rent-seeking elites. In general, outsiders know less information than insiders, such as managers and public officials, since they can exploit such information advantage during the entire process. Thirdly, they derived the dynamic implication that institutions deteriorate further as a result of the collective-action dilemma in post-privatization societies. Corrupt individuals will seek to protect their illegal assets by corruption and forego punishment by the country (Reinsberg, Stubbs, and Kenitkelenis 2019). They used panel data to analyze 141 countries in the 1982-2014 period. They conclude that privatization conditions will heavily increase corruption in the long term with indicators of the International Country Risk Guide (ICRG) corruption control index and the varieties of Democracy corruption index. I will contribute to this debate by adding a new indicator, bureaucratic quality, to test if the IMF program itself can shift it to developing nations.

In comparing these different works, their debate on the impact of IMF policy reform on corruption misses a clear mechanism based on the underdeveloped and ambiguous nature of theory in this area to study the role of the international approach in solving corruption under

globalization. Much of the current literature on IMF policy reform pays particular attention to its impact. At the same time, they were not aware of the complicated interaction between the effectiveness of policy reform in bureaucratic performance with different bureaucratic quality levels.

Theory

Gerring and Thacker assumed the ideal but not practical situation in market-oriented policies. When there is increasing competition among firms, there will be less demand for corruption since more attention will be focused on the market. However, firms may rely on political support to win the game, especially in the long run when firms have relatively the same competitiveness. In addition, measuring political corruption using polls conducted every two years will be inaccurate. There will be participation bias that the respondents who participate in such corruption surveys often tend to have complaints. It will be hard to ensure the validity of such measures. Drugov also ignored the similar sector of the necessity of corruption in the long run during the competition. In addition, it will be considered if a monopoly regime is better for society and will it create new risks of corruption. Blanton's work has a distinguished understanding of bureaucratic quality and performance. They argued that bureaucratic quality would decrease by the IMF policy reform to increase corruption, while others argued the participation. In contrast, Reinsberg focused on corruption during the process of privatization since public agencies will take advantage of asymmetric informational conditions. However, Reinsberg's logic seems conditioned on other factors, one of which would be bureaucratic quality. All previous works did not pay attention to the interaction of bureaucratic quality and the IMF program to moderate the

impact of corruption on developing nations. Besides, existing pieces of literature did not use IPTW to calculate the weight of the inverse probability of attending IMF programs to capture confounding variables.

Alternately, other works took a middle point that lack of competition policies and government regulations will increase corruption. For example, Pieroni and d'Agostino stated that corruption would occur in sectors with large economic freedom. Not all aspects of economic freedom deter corruption since some regulations may increase the transaction costs of corruption deals (Pieroni and d'Agostino 2010). In these cases, whether policy-makers are unresponsive to the demand for regulation-free competition and the lack of government regulations should be considered a policy formulation fallacy. When this behavior is associated with a weak legal apparatus of recognition and enforcement of the state, as recognized in less developed countries, corruption may strongly emerge because spontaneous mechanisms of economic freedom are conditioned by local rules that allow private bribes. Therefore, it is important to test whether the condition of the IMF program will affect bureaucratic quality with an interaction since bureaucratic quality reflects the level of government recognition and enforcement.

Functionalism theory in psychology and behavioral study explains human behavior's pattern in response to external stimuli and adapt to surrounding conditions (Dupuy and Neset 2018). In political science, functionalism theory describes corruption as an approach to "grease the wheels" to complete missions (Marquette and Pfeiffer 2015). Thus, corruption eliminates unnecessary steps and requirements to increase economic growth. It could quickly get things done instead of ruining the project because although it is a corruption, the project

itself can be finished efficiently. For rational choice, corrupt people do not want to be discovered, making the process effective. The consequence of such foreign investment and IMF program can still be finished on time or even early than the deadline. In order to not be discovered, there will be more supervision on the progress of the project, which can increase the bureaucratic quality. The world is not just black or white, right or wrong. There is a grey shade. . Especially for political science, we should take a more comprehensive and mature perspective to study a complicated issue such as corruption. We are dealing with people in this world. Because at the end of the day, it is about people's experiences. The human being is a key actor. Therefore, functionalism can be explained if a country with high bureaucratic quality can still increase corruption by attending IMF programs. A government with high bureaucratic quality may not have loopholes initially, but the officials become familiar with the institution as time goes by. And when there is a project and investment, there will be incentives for agents to corrupt.

Hypothesis

H1: IMF programs will increase corruption.

H2: IMF programs will decrease the bureaucratic quality.

Research Design

This research examines the empirical relationship between corruption and bureaucratic quality in developing nations — with and without anticipating IMF programs. The dataset builds on KOF Globalisation Index, International Country Risk Guide (ICRG) database, and V-Dem codebook for the 1971–2014 period for 178 countries. The merged dataset covers corruption rating, IMF programs, bureaucratic quality, and nine control variables for

participating developing countries in IMF programs. I focus my analysis on the correlation between corruption and participating in IMF programs with an indicator of bureaucratic quality because there is a current gap in the mechanism to test the interaction of bureaucratic quality by participating in IMF programs on the increase or decrease the corruption. These frequent interactions are central to the operation of corruption in developing nations with considerable bureaucratic quality. I demonstrate that the results are robust in the dataset with clustered standard error.

Dependent Variable

The dependent variable is a *Corruption* index from the ICRG dataset, including six types of corruption ranging in different fields and levels of polity aspects. It distinguishes between executive, legislative and judicial corruption. They differentiate between corruption in the highest echelons of the executive at the level of the rulers and cabinet and the public sector at large. Thus, the measurements are clarified into different categories: petty and grand, bribery and theft, both corruptions aimed at and influencing lawmaking and that affecting implementation which relates to what I want to test about bureaucratic quality. The category of petty and grand corruption relates to a previous analysis on corruption will depend on the level of agents and powers in practice. Aligning with the IMF program, these insidious sorts of corruption are potential of much greater risk to international cooperation and foreign aid. They can lead to popular discontent, unrealistic and inefficient controls on the state economy, and encourage the development of the black market.

Independent Variables

My main independent variables are the number of *IMF programs* a nation participates in and the *Bureaucratic Quality* of that state. The *IMF programs* data is from an established dataset by Kern, Reinsberg, and Rau-Göhring (Kern, Reinsberg, and Rau-Göhring 2019). The variable is defined by if there is a participated IMF program. The *Bureaucratic Quality* is a 4-point scale score from the ICRG dataset, which offers the institutional strength and quality of bureaucracy as a shock absorber that tends to minimize policy revisions when governments change. A high point reflects that a country has strength in bureaucracy and expertise to govern without the distraction of drastic changes in policy and interruptions in government services. The bureaucracy in these countries tends to be autonomous from political pressure with an established mechanism for recruitment and training. Countries with a low bureaucracy index will be traumatic due to the terms of policy formulation and administrative functions.

Control Variables

I control for potentially confounding influences in the economy and politics for corruption. The *Economic Risk* rating is from the ICRG dataset. It measures the assessment of a country's current economic strengths and weaknesses. Low economic risk means strengths are more than weaknesses. A high economic risk represents more weakness than strengths. Components are according to accepted ratios among measured data within the national economic and financial structure to ensure comparability between countries. If the economic risk is 0-24.5, the components are concerned with high risk. If the economic risk is between 25-and 29.9, it is moderate. If the economic risk is between 35-and 39.9, it is low risk. If the economic risk is 40 or more, then the risk is shallow.

Gross domestic product (GDP) per capita and *Consumer Price Index (CPI)* are controlled by the World Development Indicators in the World Bank database. Another control variable is *Democracy* from the Varieties of Democracy database. It contains different components in electoral democracy, liberal democracy, participatory democracy, deliberative democracy, and egalitarian democracy. Since regime type will moderate the corruption and bureaucratic quality as a condition, it must be controlled to examine the relationship between IMF programs and corruption accurately. To test an international organization and corruption, the international control variables are required and include *Global Policy*, *Global Flows*, *Openness*, and *Growth*. All data are from the World Development Indicator database.

Model Specification

$$\hat{y} = b_0 + b_1X_1 + b_2X_2 + \beta$$

$$\hat{y} = b_0 + b_1X_1 * b_2X_2 + \beta \text{ (only for \#3 interaction effect)}$$

#1: Corruption = IMF Program + LogGDP per capita + LogCPI + Economic Risk + Democracy + Global Policy + Global Flow + Region + Openness + Growth

#2: Corruption = IMF Program + Bureaucratic Quality + LogGDP per capita + LogCPI + Economic Risk + Democracy + Global Policy + Global Flow + Region + Openness + Growth

#3: Corruption = IMF Program * Bureaucratic Quality + LogGDP per capita + LogCPI + Economic Risk + Democracy + Global Policy + Global Flow + Region + Openness + Growth

#4: Bureaucratic Quality = IMF Program + LogGDP per capita + LogCPI + Economic Risk + Democracy + Global Policy + Global Flow + Region + Openness + Growth

\hat{y} is the independent variable. b_0 is the intercept. X_1 is the first independent variable. X_2 is the second independent variable. b_1 is the coefficient of the first independent variable. b_2 is the coefficient of the second independent variable. β are control variables, as $\beta_1, \beta_2, \beta_3$, etc. To test H1 and H2, I conduct four models. The first model is to examine if IMF itself causes corruption. It aligns with H1. The second model adds Bureaucratic quality as an indicator to see whether it is a factor for IMF to cause corruption. Ideally, the coefficient for IMF from the second model should be smaller than from the first model. The third one is an interactive model to examine if IMF increases corruption in a pathway of decreasing bureaucratic quality. The last model is to test if IMF on its own can shift bureaucratic quality. It aligns with H2. All IMF Programs and Bureaucratic Quality indexes are lagged to predict current and future statistic by shifting the time base back by initial observations.

Methodologies

The data are normalized using panel data in cross-sectional units over time. Because the time dimension is a key feature of panel data sets, issues of serial correlation and dynamic effects need to be considered. Furthermore, unlike the analysis of cross-sectional data, panel data sets allow the presence of systematic, unobserved differences across units that can be correlated with observed factors. In doing so, it estimates parameters that compute partial effects of interest for a non-linear model of corruption, quantify dynamic linkages of corruption, and generate valid inference when statistics repeat cross-sections. This research uses panel data to estimate IMF programs and bureaucratic quality as parameters to compute the partial effects of corruption in developing nations.

I estimate panel models, including random and fixed effects and fixed effects with IPTW, making my research unique. Previous research only applied fixed effects without IPTW. Thus, a comparison can be reflected with and without IPTW. In addition, early works mainly used fixed effects instead of random effects. The random effect can assume that different studies will estimate differently but related intervention effects. The random effect model assumes explanatory variables have fixed relationships with the response variable in all observations. It can catch these various fixed effects from one observation to another. Alternately, fixed effect models assume that explanatory variables have a fixed relationship with dependent variables in all samples. A key factor used in the fixed effect model in the country. However, it is inappropriate to consider the country predictor variable as a fixed effect. In this study, I apply a function to convert the country column from numeric to factor in random effects and not include it for fixed effects.

The purpose of applying random and fixed effects is to indicate the importance of IPTW in studying political science. The IPTW is usually applied in economic research to observe unbiased estimates of average treatment effects. As behavior often involves monetary elements, corruption should be considered in application with IPTW since corruption itself is complicated with untreated individuals. It will generate similar groups when testing the effect of treatment and exposure. In contrast to matching treated and untreated individuals on a select group of confounders, the IPTW method can use the entire group and address many confounding variables. Each individual in the group is assigned a weight based on the likelihood of being exposed to the treatment effect under investigation. Applying this weight when conducting statistical tests or regression models reduces or removes the impact of

confounders. In this work, I first predict the probability of participating in IMF programs for each developing nation using the logit model and controlling corruption and economic factors. Then, I calculate the inverse probability by 1-probability. Next, I apply the fixed effect again with IPTW with weighting the inverse probability to examine mechanisms among corruption, bureaucratic quality, and IMF programs.

Empirical Results and Analysis

Table 1 Random Effects

	Dependent Variable: Corruption		
	(1) The effect of IMF programs on Corruption	(2) The effect of IMF and Bureaucratic Quality on Corruption	(3) Interaction of IMF and Bureaucratic Quality on Corruption
IMF	0.003 (0.032)	0.003 (0.031)	-0.025 (0.077)
Bureaucratic Quality		-0.004 (0.042)	-0.012 (0.054)
IMF : Bureaucratic Quality			0.015 (0.041)
GDP Per Capita	-0.012 (0.095)	-0.012 (0.094)	-0.011 (0.093)
CPI	0.005 (0.013)	0.004 (0.013)	0.005 (0.013)
Democracy	-0.038 (0.078)	-0.038 (0.079)	-0.036 (0.077)

Table 2 Fixed Effects

	Dependent Variable: Corruption		
	(1) The effect of IMF programs on Corruption	(2) The effect of IMF and Bureaucratic Quality on Corruption	(3) Interaction of IMF and Bureaucratic Quality on Corruption
IMF	0.008 (0.009)	0.016 (0.012)	0.020 (0.027)
Bureaucratic Quality		0.003 (0.007)	-0.007 (0.009)
IMF : Bureaucratic Quality			-0.001 (0.014)
GDP Per Capita	0.007* (0.004)	0.004 (0.005)	0.007 (0.007)
CPI	-0.002 (0.003)	-0.005 (0.004)	-0.003 (0.005)
Democracy	-0.004 (0.007)	-0.004 (0.008)	-0.002 (0.012)

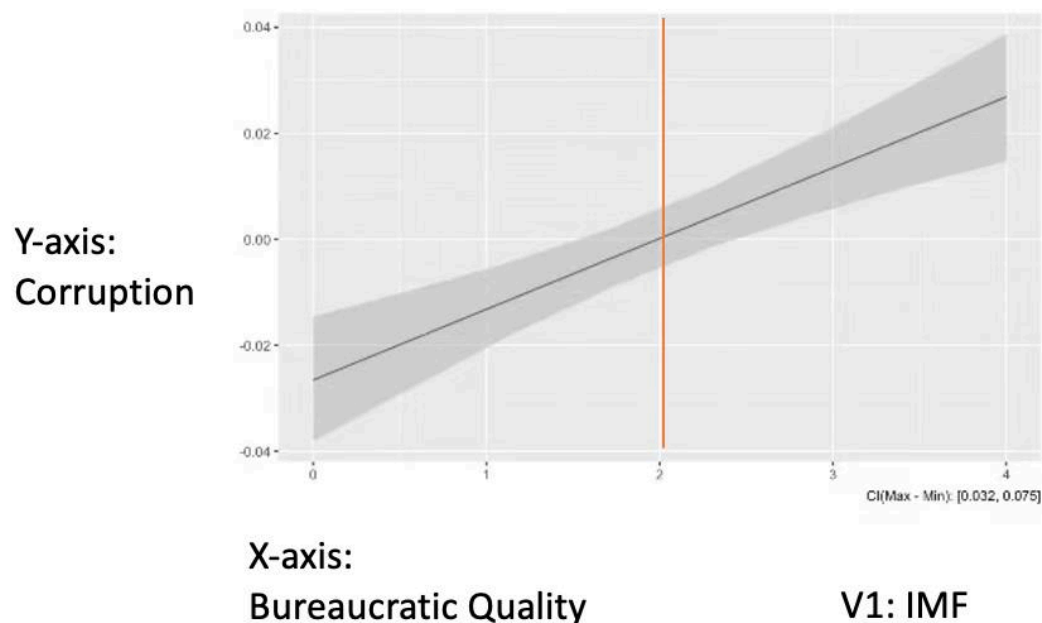
Table 1 is conducted by random effects. Table 2 is based on fixed effects. In Table 1, there is no change between IMF Program's coefficient in Model 1 and Model 2 when adding bureaucratic quality. But statistical results are not significant since the p-value is bigger than 0.005. IMF itself is not significant if it only applies the random effect. Based on Model 3 from Table 1, there is a negative relationship between IMF programs and corruption when low bureaucratic quality. However, the random effect only shows between-country variation. Alternately, Table 2 with fixed effect shows in-country variation. The coefficient of IMF Programs doubled when adding bureaucratic quality as a new indicator. Similar to Table 1 with random effects, the statistical results from Model 1 and Model 2 in Table 3 with fixed effects are not statistically significant with a large p-value. Unlike Model 3 from Table 1 based on random effects, the Model 3 in Table 2 with fixed effects indicates a positive correlation between attending IMF programs and corruption when a developing nation has a low bureaucratic quality score. However, since the p-value is bigger than 0.005, the result is not statistically significant. Thus, without IPTW, neither random nor fixed effects account for bias.

Table 3 Fixed Effect with IPTW

	Dependent Variable: Corruption		
	(1) The effect of IMF programs on Corruption	(2) The effect of IMF and Bureaucratic Quality on Corruption	(3) Interaction of IMF and Bureaucratic Quality on Corruption
IMF	0.058*** (0.009)	0.046*** (0.008)	-0.044*** (0.019)
Bureaucratic Quality		-0.056*** (0.005)	-0.095*** (0.005)
IMF:Bureaucratic Quality			0.046*** (0.009)
GDP Per Capita	-0.085*** (0.004)	-0.071*** (0.004)	-0.079*** (0.005)
CPI	0.009*** (0.004)	0.005 (0.004)	0.0001 (0.004)
Democracy	-0.143*** (0.008)	-0.124*** (0.008)	-0.133*** (0.008)

Table 3 is generated by fixed effect with the application of IPTW. First of all, the statistical results from this table are significant with a small p-value. The coefficient of IMF programs decreases by 0.012 units from Model 1, like 0.058, to Model 2, like 0.046, by adding bureaucratic quality as a new indicator. Therefore, it shows that bureaucratic quality is a factor for IMF programs to cause corruption in participating developing nations. According to Model 2, an increase in bureaucratic quality will decrease corruption by 0.056 units while others remain the same. Attending IMF programs will increase the corruption by 0.046 units while others remain the same based on Model 2. To be more specific, Model 3 shows the interaction effect when an independent variable has different impacts on the outcome that depends on the values of another independent variable. Based on Model 3, the slope, as the coefficient of IMF programs, is -0.044. With low bureaucratic quality, increased participation in IMF programs can decrease corruption by 0.044 units. The slope of bureaucratic quality is -0.095. More importantly, the interaction of IMF programs and Bureaucratic quality shows a change of 0.046 in the slope of IMF programs for every unit increase in Bureaucratic Quality.

But it is hard to pin down the conditions based on the table. It is hard to know the specific level defined as a low level of bureaucratic quality. So I draw an interplot graph.



On the graph, the y-axis is corruption as the object of the regression result, and the x-axis is bureaucratic quality as the variable on which the coefficient is conditional. Variable 1 is lagged IMF programs as the variable whose coefficient is to be plotted. The marginal effect tells us that level 2 is the baseline. When bureaucratic quality is higher than 2, IMF will increase corruption. Recalling the result from Model 3 in Table 3, when bureaucratic quality is less than level 2, an increase in participation in IMF programs can decrease corruption by 0.044 units for developing nations. Alternately, when a developing country has a bureaucratic quality that is higher than 2, then an increase in attending IMF programs will increase corruption by 0.046 units. It implies that the role of IMF programs is not always useful in reducing corruption in developing nations. On the contrary, if a government with high

bureaucratic quality from a developing nation is seeking to solve corruption by joining more IMF programs, the consequence of corruption will be accelerated and worse.

To explain that, one logic should be realized that good bureaucratic quality is not equal to less corruption. Corruption can occur through the process of establishing and strengthening bureaucratic quality. For example, a political leader can implement policies that benefit him and his followers. The bureaucratic quality will not be negatively influenced. In fact, such corruption from the top political chain can somehow increase bureaucratic quality in the short run since the process is efficient and easy to pass license. Moreover, there is no perfect bureaucratic system in the world. Every bureaucracy has its own strength and weaknesses. The corruption can happen inside the bureaucratic system without hurting it. In the beginning, the bureaucracy with better quality is hard to attack. However, as time goes by, the loophole will be uncovered as an opportunity for corruption. When there is a foreign investment or a new IMF program, there will be incentives to corrupt. In addition, it is impossible to have no corruption in the reality. A government agent with big power is possible to grand corruption. A government agent with less power is possible to petty corruption. The level of corruption also depends on the level and power of the government agent and official.

Table 4 Fixed Effect with IPTW: Bureaucratic Quality~IMF

	Dependent Variable: Bureaucratic Quality
IMF	-0.203*** (0.033)
GDP Per Capita	0.246*** (0.017)
CPI	-0.084*** (0.014)
Democracy	0.333*** (0.031)

In order to test H2 on whether the IMF program itself can increase or decrease the bureaucratic quality and dig into the causal effect of the IMF program and bureaucratic quality from the previous analysis. Table 4 is conducted based on the fixed effect with the application of IPTW by weighting the inverse probability of attending IMF programs. It is noticeable that all results are statistically significant from Table 4. Again, this emphasizes the necessity of IPTW in securing the validity and reliability of statistical consequences. The table shows that increased participation in the IMF program will decrease bureaucratic quality by 0.203 units for developing nations. It can be inferred that, in general, developing nations tend to have a low level of independent judicial systems. Additionally, when IMF steps in, likely, there is already a financial crisis in that developing nation. Dealing with its domestic issues and communicating with IMF for contracts at the same time will diminish the quality of bureaucracy since the government does not have the capacity to handle multiple complicated projects at once.

This empirical result can also demonstrate that the neoliberal policy reforms from IMF are not efficient since developing nations need to reconstruct to organize a new professional team with inevitable time and money costs aligning to Blanton, Early, and Peksen's

argument. Participation in IMF programs implies that participating country is seeking for assistance without strong domestic capacity. Thus, to adapt to the requirement of neoliberalism reforms, the government has to hire new employees and adjust old regulatory policies. Without enough experience and time, the new regulation possibly does not work efficiently as expected by IMF. More importantly, there could be more opportunities for corruption during this political transition.

Conclusion

In order to understand corruption at the international level, it is essential to pay attention to the role of international organizations in dealing with corruption. Corruption is at the center stage of international policy debates. As a well-known international financial institution that promotes anti-corruption reforms, the IMF has an impactful position. The neoliberal reforms require governments to increase the privatization of state-owned companies, liberalize the market, and decrease the regulatory policies. On one side, intellectuals argue that neoliberalism can reduce corruption by decreasing monopoly and increasing market competitiveness with less political and government intervention (Gerring and Thacker 2005; Drugov 2010). However, a group of professionals disagreed with this statement because they believed IMF's neoliberal reforms could cause more corruption than before. IMF policy reforms will reduce the government's capacity and efficiency to limit corruption by increasing the economic costs of reorganizing the government structure (Blanton, Early, and Peksen 2018; Reinsberg, Stubbs, Kentikelenis, and King, 2019). These varieties of literature focused on policy reforms themselves and were lack of attention on the

link between corruption and IMF programs through a pathway of bureaucratic quality.

Moreover, existing works did not combine data analysis with functionalism theory from the perspective of political psychology and behaviorism. Functionalism explains corruption as lubricating oil to quickly get things done (Dupuy and Neset 2018).

The findings I present in this article indicate a strong and consistent statistical correlation between corruption, participation in IMF programs, and bureaucratic quality for developing nations across a dataset covering 178 countries from 1971 to 2014. The application of random and fixed effects highlights the importance of IPTW, which was not applied by early research. Without IPTW, neither random nor fixed effects are significant and account for the bias of confounding variables. The empirical results confirm H1 and H2 that participation in IMF programs will increase corruption and decrease bureaucratic quality. An interaction between bureaucratic quality and IMF programs on corruption specifies that above level 2 of bureaucratic quality, an increase in participation in IMF programs will increase corruption in developing nations. A country with a high score on bureaucratic quality can also have a high level of corruption. Recalling the functional theory, corruption could increase bureaucratic quality by strengthening government effectiveness. With rational choice, corrupt people do not want to be discovered. Thus, they will pay more attention to the project's progress or investment to complete on time with high quality to pass the final check-in seeking long-term benefits. Besides, a good bureaucracy will be found an imperfection after a long-run opportunity for corruption. Future research in studying corruption can use my work in political psychology and behaviors in the academic field. In practice, when governments from developing countries want to weaken corruption and strengthen the bureaucratic quality, they

can use my research to understand these two factors do not always cancel each other.

Corruption is complicated, relating to many elements. Further research should focus on the independence of the legislative system and regime type in studying if the impact of IMF programs on corruption will depend on other factors.

Appendix

Table 5 (entire table for Table 1: random effects)

Dependent variable:				
Corruption_Pol_F5m				
	(1)	(2)	(3)	
IMF	0.003 (0.032)	0.003 (0.031)	-0.025 (0.077)	
BQual		-0.004 (0.042)	-0.012 (0.054)	
loggdppc	-0.012 (0.095)	-0.012 (0.094)	-0.011 (0.093)	
econrisk	-0.0004 (0.002)	-0.0005 (0.002)	-0.001 (0.002)	
logcpi	0.005 (0.013)	0.004 (0.013)	0.005 (0.013)	
democracy	-0.038 (0.078)	-0.038 (0.079)	-0.036 (0.077)	
Global_policy	-0.0002 (0.004)	-0.0002 (0.004)	-0.0001 (0.004)	
Global_flows	-0.0002 (0.003)	-0.0002 (0.003)	-0.0003 (0.003)	
as.factor(region)2	-0.105 (11.541)	-0.104 (11.213)	-0.106 (11.319)	
as.factor(region)3	-0.100 (7.643)	-0.099 (7.423)	-0.099 (7.466)	
as.factor(region)4	-0.353 (8.198)	-0.351 (7.955)	-0.349 (8.012)	
as.factor(region)5	-0.380 (14.459)	-0.376 (14.114)	-0.369 (14.089)	
openness	-0.00003 (0.002)	-0.00002 (0.002)	-0.00004 (0.002)	
growth	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)	
corruption	0.015 (0.050)	0.014 (0.048)	0.014 (0.048)	
IMF:BQual			0.015 (0.041)	
IMF:democracy				
Constant	0.750 (5.428)	0.756 (5.279)	0.769 (5.319)	
Observations	2,712	2,712	2,712	2,712
R2	0.154	0.157	0.164	0.158
Adjusted R2	0.149	0.152	0.159	0.154
F Statistic	386.528***	394.691***	424.377***	402.922***
Note: *p<0.1; **p<0.05; ***p<0.01				

Table 6 (entire table for Table 2: fixed effects)

Dependent variable:			
Corruption_Pol_F5m			
	(1)	(2)	(3)
IMF	0.008 (0.009)	0.016 (0.012)	0.020 (0.027)
BQual		0.003 (0.006)	-0.007 (0.009)
loggdppc	0.007* (0.004)	0.004 (0.005)	0.007 (0.007)
logcpi	-0.002 (0.003)	-0.005 (0.004)	-0.003 (0.005)
democracy	-0.004 (0.007)	-0.004 (0.008)	-0.002 (0.012)
econrisk	0.012*** (0.001)	0.012*** (0.001)	0.017*** (0.001)
Global_policy	-0.0004 (0.0003)	-0.0004 (0.0004)	0.0001 (0.001)
Global_flows	0.0004 (0.0004)	0.0004 (0.0004)	0.001 (0.001)
openness	-0.0002 (0.0001)	-0.0002 (0.0001)	-0.0002 (0.0002)
growth	0.0004 (0.001)	0.001 (0.001)	0.0002 (0.001)
corruption	0.110*** (0.003)	0.114*** (0.003)	
IMF:BQual			-0.001 (0.012)
Observations	2,024	1,524	1,524
R2	0.442	0.471	0.209
Adjusted R2	0.430	0.457	0.188
F Statistic	157.098*** (df = 10; 1981)	120.179*** (df = 11; 1484)	35.592*** (df = 11; 1484)
Note: *p<0.1; **p<0.05; ***p<0.01			

Table 7 (entire table for Table 3: fixed effects with IPTW)

Dependent variable:			
	corruption		
	(1)	(2)	(3)
IMF	0.076 (0.126)	0.046 (0.033)	-0.044 (0.072)
BQual		-0.056** (0.026)	-0.095*** (0.025)
loggdppc	-0.348*** (0.088)	-0.071*** (0.022)	-0.079*** (0.023)
logcpi	0.001 (0.064)	0.005 (0.013)	0.0001 (0.013)
democracy	-0.555*** (0.171)	-0.124*** (0.045)	-0.133*** (0.046)
econrisk	0.019* (0.011)	-0.002 (0.003)	-0.001 (0.003)
Global_policy	-0.013** (0.006)	-0.001 (0.001)	-0.001 (0.002)
Global_flows	-0.002 (0.006)	-0.001 (0.001)	-0.001 (0.001)
openness	-0.0001 (0.002)	-0.0002 (0.0004)	-0.0002 (0.0004)
growth	0.013 (0.009)	-0.0003 (0.002)	0.0002 (0.002)
corruption		0.051*** (0.014)	
IMF:BQual			0.046 (0.030)
Observations	2,712	2,712	2,712
R2	0.485	0.706	0.684
Adjusted R2	0.478	0.702	0.680
F Statistic	448.837*** (df = 9; 2676)	904.407*** (df = 11; 2674)	838.856*** (df = 11; 2674)
Note:			
*p<0.1; **p<0.05; ***p<0.01			

Table 8 (entire table for Table 4: fixed effect with IPTW: Bureaucratic Quality ~ IMF)

## =====	
##	Dependent variable:
##	-----
##	BQual
##	-----
## lagimf	-0.203*
##	(0.119)
##	
## loggdppc	0.246***
##	(0.074)
##	
## logcpi	-0.084*
##	(0.051)
##	
## democracy	0.333**
##	(0.160)
##	
## econrisk	0.004
##	(0.011)
##	
## Global_policy	0.004
##	(0.004)
##	
## Global_flows	0.001
##	(0.005)
##	
## openness	0.0003
##	(0.001)
##	
## growth	0.002
##	(0.007)
##	
## corruption	-0.311***
##	(0.050)
##	
##	-----
## Observations	2,712
## R2	0.643
## Adjusted R2	0.639
## F Statistic	791.236*** (df = 10; 2675)
##	=====
## Note:	*p<0.1; **p<0.05; ***p<0.01

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