

# THE IMPACT OF NATIONAL FISCAL RULES AND GOVERNMENT EFFECTIVENESS ON THE PROCYCLICALITY OF FISCAL POLICY IN THE ASIA-PACIFIC COUNTRIES

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## Abstract

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Fiscal rules are institutional approaches aimed at maintaining fiscal credibility and fiscal discipline and usually set a numerical indicator. Currently, there are two sources of fiscal rules. One is the International Monetary Fund (IMF) dataset that provides country-specific details on various characteristics of rules for 96 countries and the other is European Commission - numerical fiscal rules index that provides the fiscal rule index for 28 member countries. Because of the lack of fiscal rule index for the Asia-Pacific countries, the purpose of this study is to construct the fiscal rule index for 8 Asia-Pacific countries from 1996 to 2015 by using the IMF dataset. Then, this study utilizes the Panel Generalized Method of Moments and the constructed fiscal rule index to investigate the impact of fiscal rules and government effectiveness on the procyclicality of fiscal policy in 8 Asia-Pacific countries, classified as “advanced economies” and “emerging economies”. The empirical results show that fiscal rules and government effectiveness are effective in reducing the procyclicality of government expenditure only in advanced economies. Additionally, the interaction of fiscal rules and government effectiveness has a negative impact on the procyclicality of government expenditure for both advanced economies and emerging economies but the effect is not significant in emerging economies.

**Keywords:** Fiscal Rules, Government Effectiveness, Procyclicality, Panel Generalized Method of Moments

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## 1. INTRODUCTION

Fiscal rules have become more common in recent years. What are the fiscal rules? According to the International Monetary Fund (IMF) definition, fiscal rules are defined as long-lasting restrictions on

fiscal policy through numerical limits on the total amount of the budget. Fiscal rules usually set a numerical indicator that can be sustained over a long period (usually a certain percentage of gross domestic product (GDP) and focus on fiscal indicators such as government budget deficits, net

borrowings, and total government debt. Fiscal rules are a way to restrict the behavior of policymakers, to constrain fiscal deficits and government debt, and to maintain fiscal discipline.

According to data from the IMF in early 2009, 80 IMF members have one or more central government-level fiscal rules or supranational fiscal rules. The most common types of fiscal rules are the balanced budget rule and debt rule. The fiscal rules implemented from 1990 to 2009 are called the first generation of fiscal rules. For example, the Maastricht Treaty and the Stability and Growth Pact are fiscal frameworks based on fiscal rules, requiring member countries to be under certain fiscal rules and develop their budget policies. Although the fiscal rules have been promoted in many countries, the insufficient binding force of existing rules, the implementation of fiscal rules in some countries is not thorough. In the economic recession, the debt crisis has intensified, so the fiscal rules should be adjusted. After the financial crisis in 2009, countries began to implement fiscal rules reforms to form the "second-generation fiscal rules".

Currently, there are two datasets provided information on national fiscal rules. One is IMF datasets and the other is the European Commission (EC) Numerical Fiscal Rules Index. The recently published IMF database provides systematic information on the use and design of fiscal rules covering national and supranational fiscal rules in 96 countries from 1985 to 2015. The dataset includes four types of rules such as budget balance rules (BBR), debt rules (DR), expenditure rules (ER), and revenue rules (RR), applying to the central or general government or the public sector.

The EC has built a comprehensive index of the overall fiscal framework of all European Union (EU) countries, called the Fiscal Rule Index. The recently published EC database covers 28 member countries, the fiscal rules index for the period 1990-2017. There are two main differences between the EC and IMF fiscal rules database. First, EC data is broader in scope than IMF data. EC data includes information on rules adopted by the general government, central government, and local governments; but the IMF database focuses on general government and central government rules. Second, the EC dataset constructs and provides the fiscal rule strength index for each EU member state, but the IMF database only reports information for each type of rule.

Fiscal rules are a good starting point for studying the sustainability of government finances. The existing empirical studies investigated whether fiscal rules are effective for stabilizing the economy's focus on EU countries. There are few empirical studies focus on the Asia-Pacific countries. The main reason perhaps there is no fiscal rule index from the IMF database. The IMF database provides country-specific details on various characteristics of each type of rule without providing the fiscal rule index. However, the EC database provides the fiscal rules index for each country in the 28 member states of the European Union. Due to the lack of fiscal rules index in the Asia-Pacific countries, the construction of the fiscal rules index for the Asia-Pacific countries is one of the purposes of this study.

Since the European sovereign debt crisis in 2009, nations have focused on the sustainability of public finance. In the early days of the European debt crisis, the EU concentrated on the management

of the crisis itself but did not explore the prevention of the crisis. Then, policymakers in various countries finally realized that only crisis management could not guarantee long-term fiscal sustainability in the euro area. To improve the efficiency of public governance, it is necessary to implement fiscal policies based on fiscal rules. Countries need to pursue a stable fiscal policy during the economic downturn while maintaining a sustainable long-term track. From the perspective of stabilizing the economy and mitigating economic volatility, fiscal policy should adopt a countercyclical fiscal policy, that is, the government increases tax revenues or reduces expenditures during the economic boom period, and reduces tax revenues or increases expenditure during the recession period. On the contrary, if the government tends to reduce tax revenues or increase spending during the economic boom, and reduce expenditures or increase taxes during the recession, it is called a procyclical fiscal policy. Fiscal rules are a good starting point for the study of fiscal sustainability. The other main purpose of this study is to explore whether the fiscal rules can effectively reduce the procyclicality of government spending policies based on the fiscal rules index of the countries in the Asia-Pacific region.

The remainder of the paper is organized as follows. First, we give an overview of studies relative to fiscal rules. Then, we describe the methodology used in this study and present empirical results. Finally, conclude the paper.

## **2. LITERATURE REVIEW**

Numerical fiscal rules are setting permanent constraints on fiscal policy, typically defined in terms of a summary indicator of fiscal performance as a numerical ceiling or target in a proportion of GDP. The numerical fiscal rules are a core part of the country's budgetary policy and are used as indicators of national fiscal performance, such as budget deficits or permanent debt restrictions aimed at reducing budget deficits due to policy mistakes (Kopits & Symansky, 1998). The fiscal rules can effectively achieve a specific fiscal performance indicator depends on whether the country can establish a mechanism to enforce fiscal rules (Inman, 1996; Ayuso-i-Casals, Gonzalez-Hernandez, Moulin, & Turrini, 2007). Debrun, Moulin, Turrini, Ayuso-i-Casals, and Kumar (2008) suggest that the budget balance rules and debt rules seem to be superior to the expenditure rules. Fiscal rules play an important role in the budget process. Fiscal rules can serve as a credible commitment that governments will not attempt to pursue short-sighted and procyclical budget policies (Debrun & Kumar, 2007a; Debrun et al., 2008) or serve as a warning tool to eliminate information asymmetry between governments and voters (Debrun & Kumar, 2007a; Debrun, 2007).

There are many studies examined the impact of fiscal rules on budget deficits or budget balances, fiscal disciplines or fiscal consolidations, and stability of the economy. Regarding the impact of fiscal rules on budget deficits or budget balances, Alt and Lowry (1994), Poterba (1994), Bayoumi and Eichengreen (1995) argue that fiscal rules are helpful to reduce budget deficits. Alesina and Bayoumi (1996) argue that the stricter the fiscal rules of the state government, the greater the budget surplus.

Debrun and Kumar (2007b) find that fiscal rules have a significant impact on the budget balance of EU countries. Krogstrup and Wälti (2008) suggest that the fiscal rules of Swiss local governments significantly affect the budget balance. Marneffe, van Aarle, van der Wielen, and Vereeck (2011) use the fiscal rules index to analyze 16 EU countries from 1995 to 2008 and found that fiscal rules have a negative impact on government expenditures. Azzimonti, Battaglini, and Coate (2016) examine the impact of a balanced budget rule and find that the rule leads to a gradual reduction in the level of public debt. Badinger and Reuter (2017) investigate the effects of fiscal institutions on fiscal policy outcome using two-stage least squares estimates for 74 countries over the period 1985-2012 and find that countries with more stringent fiscal rules have higher fiscal balances (lower deficits). Asatryan, Castellon, and Stratmann (2018) find that constitutional balanced budget rules lead to a reduced probability of experiencing a sovereign debt crisis. Heinemann, Moessinger, and Yeter (2018) implement a meta-regression-analysis for the budgetary impact of numerical fiscal rules and find that a significantly constraining impact of fiscal rules on fiscal aggregates at the national level. Caselli and Reynaud (2019) examine the causal effect of fiscal rules on fiscal balances in a panel of 142 countries over the period 1985-2015 and find that fiscal rules correlate with lower deficits. They suggest that well-designed rules have a statistically significant impact on fiscal balances.

Fiscal discipline or fiscal consolidation or debt sustainability and/or stabilization are the main motivations behind the adoption of fiscal rules. The impact of fiscal rules on fiscal discipline or fiscal consolidation, Alesina and Bayoumi (1996) argue that the US state government's balanced budget rules can effectively promote fiscal discipline. Debrun (2007) believes that well-designed numerical fiscal rules and independent financial institutions can strengthen fiscal discipline. Larch and Turrini (2008) argue that fiscal rules are an important tool for fiscal consolidation. The European Commission (2007) suggests that the broader and stronger the fiscal rules, the more likely it is to successfully achieve the goal of fiscal restructuring. The IMF (2010) argues that there is a positive relationship between fiscal rules and fiscal consolidation.

As to the impact of fiscal rules on stabilizing the economy, the empirical studies examine whether fiscal rules can effectively reduce the procyclicality or increase counter-cyclicality. That is whether fiscal rules can reduce economic fluctuations and have an effect on stabilizing the economy. For example, Gavin and Perotti (1997), Gali and Perotti (2003), Melitz (2000), Kaminsky, Reinhart, and Vegh (2004), Talvi and Vegh (2005) find that fiscal rules can reduce procyclical fiscal policies. Manasse (2005) argues that fiscal rules tend to weaken the ability of fiscal authorities to respond to fluctuations in the boom cycle, which may exacerbate the volatility of the economy. Debrun et al. (2008) find that fiscal rules tend to encourage EU countries to adopt a higher primary fiscal balance and lead to reduce procyclicality. Ilzetzki and Vegh (2008) and Bova, Carcenac, and Guerguil (2014) argue that developing countries adopt fiscal rules that do not effectively reduce procyclicality compared to developed economies. Ardanaz and Izquierdo (2017) use a dummy variable indicating whether debt,

expenditure, balanced budget, or revenue rule such a fiscal rule is in place and find that fiscal rules have limited explanatory power on reducing procyclical biases in developing countries. Guerguil, Mandon, and Tapsoba (2017) explore the impact of different types of flexible fiscal rules on the procyclicality of fiscal policy with propensity score matching methods on a broad panel of 167 advanced and developing economies over the period 1990-2012. Guerguil et al. (2017) find that not all fiscal rules have the same impact. Investment-friendly rules reduce the procyclicality of both overall and investment spending. However, escape clauses in fiscal rules do not seem to affect the cyclical stance of public spending. Ardanaz, Cavallo, Izquierdo, and Puig (2020) show that flexible fiscal rules can reduce procyclical biases in public investment. Fiscal policy is a factor that affects the cyclical changes in the overall economic variables and can make a valuable contribution to national stability.

Currently, only the IMF fiscal rules dataset and the EC fiscal rules database provide information on national fiscal rules. The EC fiscal rules index has been widely used in empirical researches (Debrun et al., 2008; European Commission, 2010), but few empirical studies are using the IMF fiscal rules database to investigate the impact of fiscal rules on a country's public finance except for Schaechter, Kinda, Budina, and Weber (2012), Nerlich and Reuter (2013), Bergman and Hutchison (2015), and Guerguil et al. (2017). The main reason is that the EC fiscal rules database has constructed the fiscal rules index for each member state of the EU, but the IMF dataset only provides systematic information on the use and design of fiscal rules covering national and supranational fiscal rules in 96 countries such that the researcher has to construct the fiscal rules index according to the individual research needs. Since countries in the Asia-Pacific region are in the IMF fiscal rules database that doesn't provide fiscal rules index, researchers have to construct the fiscal rules index by themselves. Therefore, the purpose of this study is to construct the fiscal rules index of countries in the Asia-Pacific region firstly, and then use the constructed fiscal rules index to test the effectiveness of fiscal rules in reducing the procyclicality of government expenditures.

### 3. RESEARCH METHODOLOGY

In this study, first, we use the IMF Fiscal Rules Dataset covers four types of rules including expenditure rules, revenue rules, budget balance rules, debt rules to construct fiscal rules index for countries in the Asia-Pacific region. Then, we use the constructed fiscal rules index to explore the effect of fiscal rules and government effectiveness on stabilizing the economy.

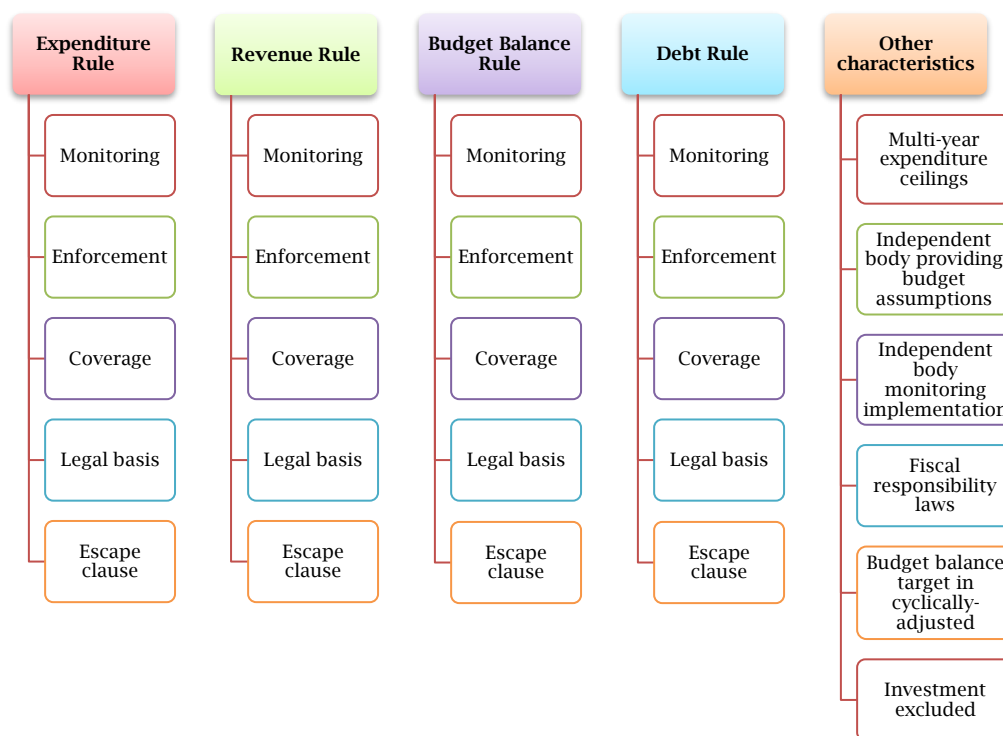
#### 3.1. Constructing the fiscal rules index

This study follows Schaechter et al. (2012) and utilizes the IMF Fiscal Rules Dataset to construct the fiscal rules index for Asia-Pacific countries. The IMF Fiscal Rules Dataset includes descriptions of the rules and codified information about rules' characteristics. In this study, we focus on four types of fiscal rules which are expenditure rule, revenue rule, budget balance rule, and debt rule. The five main characteristics of each rule are (1) monitoring procedures, (2) enforcement procedures, (3) coverage

level of government, (4) legal basis, (5) well-specified escape clause. Besides, characteristics regarding institutional supporting features and stabilization features are adopted. Institutional supporting features include multi-year expenditure ceilings, independent body setting budget assumptions, independent body monitoring implementation, and fiscal responsibility laws (transparency and

accountability). Stabilization features consist of budget balance target in cyclically-adjusted/structural terms or over the cycle, and rules exclude public investment or other priority items from the ceiling. The framework of the fiscal rule index in Figure 1 shows that a total of 26 different characteristics described the fiscal rules in each country.

Figure 1. The framework of constructing fiscal rule index



Source: Author's own illustration

Each character represents an indicator which is 0-1 dummy in the dataset except for coverage and the legal basis. Coverage refers to the level of government that enforces fiscal rules. If the general government or wider, the value is 2; if the central government, the value is 1; 0 is uncovered. As to the legal basis, if the legal basis of the fiscal rules is the constitution, its value is 5; if the legal basis is an international treaty, its value is 4; if the legal basis is a decree, its value is 3; if the legal basis is a coalition agreement, the value is 2; If the legal basis is a political commitment, the value is 1. Then, the two characteristic indices of coverage and legal basis are normalized to values between 0 and 1 like the other 24 indices. Then, all 26 characteristics represent indicators that are 0-1 dummies. We add all the 26 indices and renormalize the index to be the range between 0 and 4. The resulting index is denoted FRI. The larger numbers of FRI indicate stronger fiscal rules.

### 3.2. Effectiveness of fiscal rules in stabilizing the economy

In principle, real government expenditures or tax rates could be used to measure the procyclicality of policy. Kaminsky et al. (2004) argue that as indicators for the cyclicity of policy, real government expenditures and tax rates are

preferable to other indicators such as tax revenues, primary balance, expenditures to GDP ratio, and the revenue to GDP ratio. They point out that there is no systematic data on tax rates, leaving government expenditures as the best indicator in practice. They show that government spending can discriminate between procyclical and countercyclical policies. As time passes, it is difficult to observe that each of a group of countries has an all-around representative tax rate indicator. Therefore, the existing empirical research analysis mainly uses government expenditures to measure the procyclicality of policy. Follow the norm in the literature (Kaminsky et al., 2004; Frankel, Vegh, & Vuletin, 2013; Céspedes & Velasco, 2014; Bergman & Hutchison, 2015; Calderón, Duncan, & Schmidt-Hebbel, 2016; Ardanaz & Izquierdo, 2017; Guerguil et al., 2017; Ardanaz et al., 2020), we focus on government expenditures. The main purpose of this study is to test whether fiscal rules are effective in reducing the procyclicality, so we follow the standard practice in the empirical studies to examine the impact of fiscal rules on periodically adjusted government expenditures. If fiscal rules can effectively reduce the procyclicality of government spending, in other words, fiscal rules can effectively increase the counter-cyclicality of government expenditure; it means that fiscal rules are effective in stabilizing the economy.

Hodrick-Prescott (HP) filter is a widely used tool for removing cyclical components from time-series data. In this study, we use the HP filter (with the penalty parameter  $\lambda = 100$ ) to transform the real GDP and real government expenditure to cyclically adjusted real GDP (denoted  $Y$ ) and cyclically adjusted real government expenditure (denoted  $G$ ). The basic dynamic panel model is as follows:

$$G_{it} = \alpha_i + \beta_1 G_{it-1} + \beta_2 Y_{it} + \beta_3 (Y_{it} * FRI_{it}) + \varepsilon_{it} \quad (1)$$

where  $G$  is cyclically adjusted real government expenditure,  $Y$  is cyclically adjusted real GDP,  $FRI$  is the fiscal rule index, and  $\varepsilon_{it}$  is the error term.  $\alpha_i$  measures country fixed effects.  $\beta_2$  measures the procyclicality of government expenditure and  $\beta_3$  measures the effect of fiscal rules on expenditure cyclicality. The term of  $\beta_2 + \beta_3 * FRI_{it}$  is the net procyclicality for any given level of rules,  $FRI_{it}$ .

$$G_{it} = \alpha_i + \beta_1 G_{it-1} + \beta_2 Y_{it} + \beta_3 (Y_{it} * FRI_{it}) + \beta_4 (Y_{it} * GE_{it}) + \beta_5 (Y_{it} * FRI_{it} * GE_{it}) + \varepsilon_{it} \quad (2)$$

where  $GE_{it}$  is the government effectiveness,  $\beta_4$  measures the effect of government effectiveness on expenditure cyclicality, and the term of  $(\beta_4 + \beta_5 * FRI_{it} * GE_{it})$  allows us to measure the interaction of both fiscal rules and government effectiveness together in reducing the procyclicality.

#### 4. EMPIRICAL RESULTS

In this study, we use the IMF Fiscal Rules Dataset to construct the numerical fiscal rules index for Asia-Pacific countries. The description of how to construct the fiscal rule index is above. The current IMF database covers descriptions and codified information on four types of fiscal rules, including expenditure rules, revenues rules, budget balance rules, and debt rules in 96 countries from 1985 to 2015. A total of 11 out of 96 countries are in the Asia-Pacific region, namely Australia, Hong Kong, India, Indonesia, Japan, Malaysia, Maldives, Mongolia, New Zealand, Singapore, and Sri Lanka. Due to some parts of the real government expenditures data for Maldives and Mongolia are not available from World Development Indicators. Besides, Hong Kong is a special administrator of the People's Republic of China. Therefore, Hong Kong, Maldives, and Mongolia are excluded from this study. There are 8 countries selected as the main countries of interest for this empirical study and are classified as an advanced country including Australia, Japan, New Zealand, and Singapore, and emerging countries covering India, Indonesia,

Malaysia, and Sri Lanka. In a dynamic panel model, the choice between a fix-effects formulation and a random-effects formulation has implications for estimation that are different than those associated with the static model. Dynamic panel models are more complex compared with the standard fixed-effects and random-effects models. A key benefit of dynamic panel models is the ability to determine short-run and long-run values of coefficients. Additionally, dynamic panel models make it possible for researchers to choose which explanatory variables are potentially endogenous or exogenous. Equation (1) is a dynamic panel model and estimated by using a one-step GMM estimation with country fixed effects. Furthermore, we would like to examine whether stricter fiscal rules combined with higher levels of government effectiveness lead to better fiscal performance by reducing the procyclicality of government expenditure.

Malaysia, and Sri Lanka.

Although fiscal rules have been promoted in many countries, if the existing fiscal rules in some countries are not sufficiently binding or incomplete, the effectiveness of fiscal rules in stabilizing the economy will be limited. Calderón et al. (2016) argue that the quality of government administration will have an impact on fiscal outcomes. Therefore, this study considers the interaction between fiscal rules and government effectiveness, using the government effectiveness index of Worldwide Governance Indicators (WGI) from the World Bank. The government effectiveness index in WGI measures the quality of government policy formulation, its implementation, and the credibility of the government's commitment to this policy. The score of government effectiveness index approximately ranges from -2.5 to 2.5. The larger government effectiveness index score, the stronger the government effectiveness performance is. On the contrary, the smaller the government effectiveness index score, the weaker the government effectiveness performance is. Since the WGI data are available from 1996, the empirical period of this study begins in 1996.

The real GDP and real government expenditure data used in this study are from the World Development Indicators. The real GDP and real government expenditure are based on 2010, the US dollar. Government effectiveness data obtained from the World Bank's government effectiveness index. The descriptive statistics are shown in Table 1.

Table 1. Descriptive statistics

Country	Real GDP (Billion US\$)	Real Government Expenditure (Billion US\$)	Government Effectiveness (Score)	Fiscal Rule Index (Score)
	Mean	Mean	Mean	Mean
Australia	1,010	994	1.74	0.793
India	1,280	1,310	-0.08	0.119
Indonesia	637	630	-0.36	0.345
Japan	5,580	5,610	1.35	0.402
Malaysia	217	182	1.00	0.723
New Zealand	135	131	1.77	0.954
Singapore	187	143	2.14	0.946
Sri Lanka	47	50	-0.19	0.320

Source: Author's own calculation

Table 1 shows that among the 8 countries in the Asia-Pacific region from 1996 to 2015, the mean real GDP in Japan is the highest, at 5,580 billion US dollars but the mean real GDP in Sri Lanka is the lowest, at 47 billion US dollars. Japan has the greatest mean real government expenditure at 5,610 billion US dollars. Sri Lanka has the lowest mean government expenditure at 50 billion US dollars. The mean score of government effectiveness index in Singapore is the greatest at 2.14, but the mean score of government effectiveness index in Indonesia is the lowest at -0.36. This indicates that Singapore has the best government effectiveness, while Indonesia has the worst government effectiveness among the eight Asia-Pacific countries. As to the fiscal rule index score, New Zealand has the highest fiscal rule

index score of 0.954 but India has the lowest fiscal rule index score of 0.119. This implies that fiscal rules in New Zealand are the strongest, while fiscal rules in India are the weakest.

We use a one-stage generalized momentum method (GMM) to conduct the empirical analysis. The empirical results are reported in Tables 2 and 3. In Table 2, we find that fiscal rules have a significantly positive impact on government expenditure cyclicity for advanced countries. This result indicates that one unit increase in the fiscal rule index raises government expenditure cyclicity by 0.015. For emerging countries, the effect of fiscal rules on government expenditure cyclicity is positive but is not significant.

**Table 2.** Cyclicity of fiscal policy and fiscal rules

<i>Dependent Variable</i>	<i>Advanced Countries</i>	<i>Emerging Countries</i>
$G_{it-1}$	0.957*** (0.035)	1.001*** (0.069)
$Y_{it}$	0.041 (0.037)	0.065 (0.068)
$Y_{it} * FRI_{it}$	0.015*** (0.004)	0.005 (0.008)

Notes: The standard errors are shown in parentheses. \*\*\* indicates significance at the 1% level.  
Source: Author's own analyses and calculation.

Table 3 reports not only the impacts of fiscal rules and government effectiveness on government expenditure cyclicity but also the impact of the interaction of fiscal rules and government effectiveness on government expenditure cyclicity. For advanced countries, fiscal rules and government effectiveness do reduce the procyclicality and the coefficient values are -0.128 and -0.041, respectively. Meanwhile, when fiscal rules combined government effectiveness, we find that the interaction of fiscal rules and government effectiveness has a significantly negative impact on government expenditure cyclicity. This indicates that stronger fiscal rules with higher government effectiveness significantly reduce the procyclicality of fiscal policy

(coefficient value -0.097). For emerging countries, fiscal rules have a positive impact on government expenditure cyclicity (coefficient value 0.006) but the effect is not significant. Government effectiveness has a significantly positive impact on government expenditure cyclicity. Government effectiveness does increase the procyclicality and the coefficient value is 0.040. As to the interaction of fiscal rules and government effectiveness, it has a negative impact on government cyclicity. This implies that stronger fiscal rules with higher government effectiveness decrease the procyclicality of fiscal policy (coefficient value -0.040) but the effect is not significant.

**Table 3.** Cyclicity of fiscal policy, fiscal rules, and government effectiveness

<i>Dependent Variable</i>	<i>Advanced Countries</i>	<i>Emerging Countries</i>
$G_{it-1}$	0.925*** (0.035)	1.091*** (0.092)
$Y_{it}$	0.134*** (0.037)	-0.021 (0.090)
$Y_{it} * FRI_{it}$	-0.128*** (0.025)	0.006 (0.008)
$Y_{it} * GE_{it}$	-0.041*** (0.007)	0.040*** (0.013)
$Y_{it} * FRI_{it} * GE_{it}$	-0.097*** (0.017)	-0.041 (0.028)

Notes: The standard errors are shown in parentheses. \*\*\* and \*\* indicate significance at the 1% and 5% levels, respectively.  
Source: Author's own analyses and calculation.

## 5. DISCUSSION

Not only fiscal rules might affect the procyclicality of fiscal policy but also the government effectiveness does. When fiscal rules are combined with government effectiveness, we find that both fiscal rules and government effectiveness are effective in reducing the procyclicality of fiscal policy for advanced countries in Asia. Meanwhile, strong fiscal rules combined with high government effectiveness are facilitating countercyclical policy

response to GDP movements in advanced countries. However, for emerging countries in the Asia-Pacific region, neither government effectiveness nor fiscal rules are effective in reducing the procyclicality of fiscal policy. Stabilizing public expenditure throughout the business cycle by utilizing fiscal rules or government effectiveness may be challenging for emerging countries in the Asia-Pacific region. Many developing countries have poor debt and cash management systems, and, thus, face difficulties with generating a steady flow of funding.

Policymakers in emerging countries usually spend more on current expenditure in good times and cut back expenditures during bad times. Therefore, using fiscal rules to reduce the procyclicality of fiscal policy is not effective for emerging countries in the Asia-Pacific region.

## 6. CONCLUSION

Fiscal rules are getting more and more attention. The reason is that fiscal rules are a way of restricting the behavior of policymakers, eliminating deficits and debt deviations, and maintaining fiscal discipline. Fiscal rules are to overcome the government misconstrued by political and economic factors and to ensure fiscal responsibility and debt sustainability. Meanwhile, it is necessary to implement fiscal policies based on fiscal rules to improve the efficiency of government governance. Countries need to pursue a stable fiscal policy during the economic downturn while maintaining a sustainable long-term track. However, there are currently few studies (Bergman & Hutchison, 2015; Sacchi & Salotti, 2015) to investigate the impact of fiscal rules on fiscal policy cyclicality, especially for countries in the Asia-Pacific region, due to the lack of fiscal rule index in the Asia-Pacific countries. Therefore, this study constructed the fiscal rule index for the Asia-Pacific countries and investigated the effectiveness of fiscal rules in reducing procyclicality of fiscal policy.

This study utilizes the IMF fiscal rule dataset on the four specific types of fiscal rules including expenditure rules, revenue rules, budget balance rules, and debt rules to construct the fiscal index for the 8 Asia-Pacific countries classified as advanced countries and emerging countries for 1996 to 2015. Then, we use the constructed fiscal rule index to examine whether the effectiveness of fiscal rules in reducing the procyclicality of government expenditure and whether the interaction of fiscal rules and government effectiveness helps reduce the procyclicality of government expenditure.

Empirical results show that fiscal rules alone do decrease the procyclicality of fiscal policy for advanced countries but fiscal rules have no significant impact on government expenditure cyclicality for emerging countries. Meanwhile, we incorporate the government effectiveness and the interaction of fiscal rules and government effectiveness into the empirical model, we find that for advanced countries, not only government effectiveness is effective in reducing the

procyclicality of fiscal policy but also the interaction of fiscal rules and government effectiveness decreases the procyclicality of fiscal policy. For emerging countries, government effectiveness has a significantly positive effect on government cyclicality; the interaction of fiscal rules and government effectiveness reduces the procyclicality of fiscal policy but the effect is not significant.

The findings of this study indicate that fiscal rules might be effective in reducing the procyclicality of fiscal policy for advanced countries in the Asia-Pacific region. However, fiscal rules are not effective in reducing the procyclicality of fiscal policy for emerging countries in the Asia-Pacific region. Furthermore, stronger fiscal rules with higher levels of government administrative effectiveness help create an institutional environment where governments can follow countercyclical fiscal policy and the effect on reducing the procyclicality of fiscal policy is significant only in advanced countries.

The imitations regarding sample size exist in this study. The size of the sample was limited to 20 years from 1996 to 2015. IMF database currently provides information on fiscal rules from 1985 to 2015. Even though we use the IMF Fiscal Rules Dataset to construct the numerical fiscal rules index for Asia-Pacific countries, we also employ government effectiveness from the World Bank's WGIs at the same time. Since the WGI data are available from 1996, the empirical period of this study begins in 1996. Moreover, the IMF database doesn't provide information on fiscal rules in some Asian countries such as China, Philippine, South Korea, and Vietnam. Therefore, these countries are not selected in this study.

Except for government effectiveness, the bureaucratic quality such as the extent of corruption and the degree of law and order might influence the procyclicality levels. These determinants of bureaucratic quality could be taken into account in further research. As to empirical models, dynamic stochastic general equilibrium (DSGE) models are more comprehensive and capture more aspects of the economy. DSGE models can be employed to investigate the effectiveness of fiscal rules on economic stabilization in the future. In addition, utilizing the fiscal rule index we constructed, researchers could investigate the impacts of fiscal rules on budget deficits, budget balances, or public debt in Asian-Pacific countries.

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## APPENDIX

**Table A1.** Fiscal rule index in Asian-Pacific countries

Year	Australia	India	Indonesia	Japan	Malaysia	New Zealand	Singapore	Sri Lanka
1996	0.000	0.000	0.215	0.323	0.723	0.954	0.923	0.000
1997	0.000	0.000	0.215	0.323	0.723	0.954	0.923	0.000
1998	0.815	0.000	0.215	0.323	0.723	0.954	0.923	0.000
1999	0.815	0.000	0.215	0.323	0.723	0.954	0.923	0.000
2000	0.815	0.000	0.215	0.323	0.723	0.954	0.923	0.000
2001	0.815	0.000	0.215	0.323	0.723	0.954	0.923	0.000
2002	0.815	0.000	0.215	0.323	0.723	0.954	0.923	0.000
2003	0.815	0.000	0.215	0.323	0.723	0.954	0.923	0.492
2004	0.815	0.477	0.431	0.323	0.723	0.954	0.923	0.492
2005	0.815	0.477	0.431	0.323	0.723	0.954	0.923	0.492
2006	0.815	0.477	0.431	0.431	0.723	0.954	0.923	0.492
2007	0.815	0.477	0.431	0.431	0.723	0.954	0.923	0.492
2008	0.815	0.477	0.431	0.431	0.723	0.954	0.923	0.492
2009	0.985	0.000	0.431	0.323	0.723	0.954	0.923	0.492
2010	0.985	0.000	0.431	0.585	0.723	0.954	0.923	0.492
2011	0.985	0.000	0.431	0.585	0.723	0.954	0.923	0.492
2012	0.985	0.000	0.431	0.585	0.723	0.954	0.923	0.492
2013	0.985	0.000	0.431	0.477	0.723	0.954	1.077	0.492
2014	0.985	0.000	0.431	0.477	0.723	0.954	1.077	0.492
2015	0.985	0.000	0.431	0.477	0.723	0.954	1.077	0.492

Source: Author's own calculation