

# The Effectiveness of National Fiscal Rules in the Asia-Pacific Countries

Chiung-Ju Huang, Yuan-Hong Ho

**Abstract**—This study utilizes the International Monetary Fund (IMF) Fiscal Rules Dataset focusing on four specific fiscal rules such as expenditure rule, revenue rule, budget balance rule, and debt rule and five main characteristics of each fiscal rule those are monitoring, enforcement, coverage, legal basis, and escape clause to construct the Fiscal Rule Index for nine countries in the Asia-Pacific region from 1996 to 2015. After constructing the fiscal rule index for each country, we utilize the Panel Generalized Method of Moments (Panel GMM) by using the constructed fiscal rule index to examine the effectiveness of fiscal rules in reducing procyclicality. Empirical results show that national fiscal rules have a significantly negative impact on procyclicality of government expenditure. Additionally, stricter fiscal rules combined with high government effectiveness are effective in reducing procyclicality of government expenditure. Results of this study indicate that for nine Asia-Pacific countries, policymakers' use of fiscal rules and government effectiveness to reducing procyclicality of fiscal policy are effective.

**Keywords**—Counter-cyclical policy, fiscal rules, government effectiveness, procyclical policy.

## I. INTRODUCTION

FISCAL rules usually set a numerical indicator, generally a certain percentage of GDP, that can be sustained over a long period of time and focuses on budget deficits, net borrowings, and total national debt rules. Fiscal rules are institutional approaches aimed at maintaining fiscal credibility and fiscal discipline [1]. The widespread implementation of fiscal rules began in the early 1990s. According to the IMF data from the beginning of 2009 [2], 80 of the IMF members have one or more central government fiscal rules or supranational fiscal rules. The most common types of fiscal rules are balanced budget rule and debt rule. The fiscal rules introduced from 1990 to 2009 are called the first generation of fiscal rules. For example, the Maastricht Treaty and the Stability and Growth Pact (SGP) are fiscal frameworks based on fiscal rules and require member states in the European Union (EU) to comply with certain fiscal rules.

Although the fiscal rules have been promoted in many countries, insufficient binding of existing rules caused the fiscal rules of some countries had not been implemented thoroughly. Under the economic recession, the debt crisis has intensified, so the fiscal rules have to be adjusted. After the financial crisis in 2009, countries began to implement fiscal rule reforms to form the next-generation fiscal rules.

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In the early days of the European debt crisis, the EU concentrated almost exclusively on the management of the crisis itself, without exploring the prevention of the crisis. Until 2010, policymakers in various countries finally realized that individual crisis management cannot guarantee the long-term sustainability of fiscal policy in the Eurozone. In order to improve the efficiency of public governance, it is necessary to implement fiscal policies based on fiscal rules. It is very important for countries to pursue fiscal policies of stabilizing the economy during the recession while maintaining a long-term sustainable development policy. Schaechter et al. [2] pointed out that since the mid-1990s, the use of fiscal rules as a basis for national fiscal policy has been growing rapidly, initially implemented to advanced countries, and then rapidly expanding to developing countries. Kopits and Symansky [3], IMF [4], and Bova et al. [5] agree that fiscal rules are established to maintain fiscal credibility and fiscal discipline.

The numerical fiscal rules refer to the setting of targets for annual revenue, annual expenditure, budget balance (deficit), government debt, etc., and these limits need to be sustained for a fixed period of time. The numerical fiscal rules are a core part of the country's construction of a budget policy and also used as a national financial performance indicator. For example, the permanent limit of the budget deficit or debt is intended to reduce the budget deficit caused by policy mistakes [3]. Whether fiscal rules can effectively achieve a specific fiscal performance indicator depends on whether the nation can establish a mechanism to enforce compliance with fiscal rules [6], [7] and the types of fiscal rules. Among them, the budget balance rules and the debt rules seem to be better than the expenditure rules [8]. Examining the role of fiscal rules in the budget process, [9] and [8] find that fiscal rules can be used as a credible commitment that the government will not try to pursue short-sighted and procyclical budgetary policies or as a warning tool to eliminate information asymmetry between government and voters.

There are some studies related to numerical fiscal rules and most of them focus on budget balance rule/deficit rule, fiscal discipline/fiscal consolidations, and stabilizing an economy. Regarding the impact of fiscal rules on deficits or budget balances, [10]-[12] argue that the national fiscal rules in the United States are helpful to reduce deficits. Alesina and Bayoumi [13] believe that the stricter the national fiscal rules are, the larger the budget surplus is. Debrun and Kumar [14] argue that fiscal rules have a significant effect on the balanced budget in the EU countries. Krogstrup and Walti [15] show that the fiscal rules of the Swiss local government significantly affect the budget balance. Marneffe et al. [16] used the fiscal

rule index to analyze 18 EU countries from 1995 to 2008 and found that fiscal rules have a negative impact on government expenditures. As to the impact of fiscal rules on fiscal discipline or fiscal reform, [13] thinks that national balanced budget rules can effectively promote fiscal discipline in the United States. Debrun [17] argues that well-designed fiscal rules and independent fiscal institutions can strengthen the fiscal discipline. Larch and Turrini [18] believe that fiscal rules are an important tool for fiscal consolidation. The European Commission [19] argues that the wider and stronger the fiscal rules are, the more likely they are to successfully achieve the goal of fiscal reform.

The IMF [20] advocates a positive correlation between fiscal rules and fiscal reform. As for the impact of fiscal rules on stabilizing the economy, the existing empirical studies have examined whether fiscal rules can effectively reduce procyclicality and have a stabilizing effect on an economy. References [21]-[25] argue that fiscal rules can reduce procyclical fiscal policy. However, [26] argues that fiscal rules tend to limit the ability of fiscal authorities to react to cyclical fluctuations in the economy, which may exacerbate the economic fluctuations. Debrun et al. [8] find that fiscal rules tend to encourage EU countries to adopt a higher cyclically adjusted primary fiscal balance, which may reduce procyclicality. References [27] and [28] believe that the use of fiscal rules in developing countries does not effectively reduce procyclicality compared with developed economies.

Currently, there are two sources of the fiscal rules. One is the IMF dataset and the other is European Commission (EC) numerical fiscal rules index. The recently published IMF database covers 96 countries, from 1985 to 2015, the central government or general government level implemented detailed information on the four types of fiscal rules, including budget balance rules, debt rules, expenditure rules, and income rules. The EC constructed a comprehensive index of the overall fiscal framework for all EU countries, called the Fiscal Rule Index. The recently published EC database covers the fiscal rule index for 28 member countries for the period from 1990 to 2016. The main differences between the EC and the IMF fiscal rules database are: (1) EC data are broader in scope than IMF data because it includes information on rules used by general government, central government, and local governments; but the IMF database focuses in general government and central government rules. (2) EC builds and publishes the fiscal rule index for 28 EU member countries. However, there is no fiscal rule index from the IMF database. The IMF database provides country-specific details on various characteristics of rules. Meanwhile, the IMF database also includes detailed descriptions of the supranational rules, so that it is possible to distinguish between the design and implementation of rules that are national or supranational.

The EC fiscal rule index has been widely used in empirical research [8], [29], but there is few empirical studies regarding the impact of national fiscal rules on public finance using the IMF fiscal rule database except for [2], [30], and [31]. The main reason is that the EC has built the fiscal rule strength index for each EU member state but the IMF database only reports the

information on each type of rule. Due to the lack of fiscal rule index for countries in the Asia Pacific region, the construction of national fiscal rule index for the Asia-Pacific countries is one main purpose of this study.

To stabilize economic operations and mitigate economic fluctuations, the government authorities should adopt a countercyclical fiscal policy, that is, the government should reduce government expenditure or increase tax revenue during the economic boom but increase government expenditure or reduce tax revenue during the recession. It is meaningful to examine whether fiscal rules can effectively reduce the procyclicality of government expenditure policies in exploring fiscal sustainability and government reliability. The other purpose of this study is to explore the impact of fiscal rules and government effectiveness on stabilizing the economy in the Asia Pacific region.

To sum up, the primary purpose of this study is to construct national fiscal rule index for nine Asia-Pacific countries, and then to explore the impacts of fiscal rules and government effectiveness on stabilizing the economy in the Asia Pacific region. First, we use the information from the IMF Fiscal Rules Dataset on the four specific types of fiscal rules of the nine Asia-Pacific countries, including budget balance rules, debt rules, expenditure rules, and income rules, to construct the national fiscal index for each country over the period of 1996 to 2015. Then, we use the constructed national fiscal rule index to examine whether the effectiveness of fiscal rules in reducing procyclicality as well as to examine whether stricter fiscal rules combined with higher levels of government effectiveness lead to a better fiscal performance by reducing the procyclicality of government expenditure. The remainder of the paper is organized as follows: Section II describes the data and methodology; Section III presents empirical results; Section IV concludes the paper.

## II. DATA AND METHODOLOGY

### A. Data

In this study, we use the IMF Fiscal Rules Dataset. The IMF database covers 11 countries in Asia-Pacific region; Australia, Hong Kong Special Administrative Region (SAR), India, Indonesia, Japan, Malaysia, Maldives, Mongolia, New Zealand, Singapore, Sri Lanka. Because the real government expenditure data obtained from World Development Indicators are not available for Maldives over the period of 1996 to 2015 and is not available for Mongolia over the period of 1996 to 2009, Maldives and Mongolia are excluded in this study. Therefore, there are nine countries selected as the main countries of interest for this empirical study.

The IMF Fiscal Rules Dataset includes descriptions of the rules and information about the type of rules. We use the IMF dataset to construct an overall fiscal rule index measuring the strength of fiscal rules for nine countries in the Asia-Pacific region from 1996 to 2015. The description of how to construct the national fiscal rule index is in Section III. At the same time, the dataset used in this study consists of annual observations of GDP (constant 2010 US\$) and gross national expenditure

(constant 2010 US\$) from World Development Indicators. The government effectiveness index is obtained from the World Bank's Worldwide Governance Indicators. We employ the government effectiveness indicator. According to the definition of Worldwide Governance Indicators from the World Bank, we know that government effectiveness indicator can reflect 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.

Table I provides the summary statistics for nine Asia-Pacific countries. As shown in Table I, Japan has the greatest mean real GDP, at 5,580 billion US dollars but Sri Lanka has the least mean real GDP, at 47 billion US dollars among the nine Asia-Pacific countries. Additionally, Japan and Sri Lanka have the greatest and least mean real national gross expenditure at 5,610 billion US dollars and 50 billion US dollars, respectively. Singapore has the highest mean government effectiveness index score of 2.14 but Indonesia has the lowest mean government effectiveness index score of -0.36. This implies that Singapore has the best government effectiveness, while Indonesia has the worst government effectiveness among the nine Asia-Pacific countries. As to the national fiscal rule index score, New Zealand has the highest mean national fiscal rule index score of 0.954 but India has the lowest mean national fiscal rule index score of 0.119. This indicates that New Zealand has the strongest fiscal rules but India has the weakest fiscal rules among the nine Asia-Pacific countries

TABLE I  
 DESCRIPTIVE STATISTICS

Country	GDP		Government expenditure		Government effectiveness		National fiscal rule index	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Australia	1,010	184.0	994	217.0	1.74	0.10	0.793	0.28
Hong Kong	195	43.8	190	37.7	1.58	0.29	0.526	0.12
India	1,280	523.0	1,310	543.0	-0.08	0.09	0.119	0.21
Indonesia	637	181.0	630	178.0	-0.36	0.17	0.345	0.11
Japan	5,580	257.0	5,610	208.0	1.35	0.26	0.402	0.10
Malaysia	217	60.2	182	60.4	1.00	0.18	0.723	0.00
New Zealand	135	20.3	131	23.1	1.77	0.10	0.954	0.00
Singapore	187	61.0	143	39.3	2.14	0.15	0.946	0.06
Sri Lanka	47	15.6	50	17.8	-0.19	0.12	0.320	0.24

**B. Methodology**

This study utilizes the IMF Fiscal Rules Dataset and follows Schaechter et al. [2] to construct the national fiscal rule index for nine Asia-Pacific countries. We focus on four specific fiscal rules which are expenditure rule, revenue rule, budget balance rule, and debt rule. There are five main characteristics of each rule those are (i) monitoring, (ii) enforcement, (iii) coverage, (iv) legal basis, (v) well-specified escape clause. Additionally, we consider six characteristics regarding institutional supporting

features and stabilization features those are (i) multi-year expenditure ceilings, (ii) independent body providing budget assumptions, (iii) independent body monitoring implementation, (iv) fiscal responsibility laws, (v) budget balance target in cyclically-adjusted/structural terms or over the cycle, (vi) rules exclude public investment or other priority items from ceiling. In total, we have 26 different characteristics describing national fiscal rules in each country. The framework of national fiscal rule index is as shown in Fig. 1. All 26 characteristics represent indicators which are 0-1 dummies in the dataset except for coverage and legal basis. To construct overall index we normalize coverage and legal basis indices to lie between 0 and 1 like the other 24 indices. We then add all 26 indices and renormalize the index to be the range between 0 and 4. The resulting index is denoted NFRI. The larger numbers of NFRI indicate stronger fiscal rules.

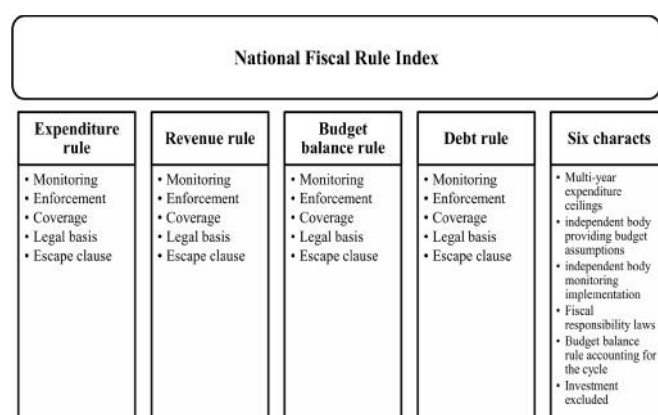


Fig. 1 Framework of national fiscal rule index

Discretionary fiscal policy series are not readily available in existing datasets. In fact, one could use both government expenditures and tax rates to measure the cyclicity of policy. However, it is difficult to observe tax rates indicators for a broad group of countries over time. Therefore, the existing estimates are mostly based on expenditure-side series such as total real government expenditures. The primary purpose of this study is to examine whether the effectiveness of fiscal rules in reducing procyclicality exists. We follow the standard practice in the literature by estimating the effect of fiscal rules on the cyclically adjusted government expenditure.

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

$$A_{it} = \beta_0 A_{it-1} + \beta_1 A_{it} + \beta_2 (A_{it} * N_{it}) + \alpha_1 + \epsilon_{it} \quad (1)$$

where  $A_{it}$  is cyclically adjusted real government expenditure,  $A_{it}$  is cyclically adjusted real GDP,  $N_{it}$  is the national

fiscal rule index,  $\alpha_i$  measures country fixed effects, and  $\varepsilon_{it}$  is the error term.  $\beta_1$  measures the procyclicality of government expenditure and  $\beta_2$  measures the effect of fiscal rules on expenditure cyclicality. The term of  $(\beta_1 + \beta_2 * N_{it})$  is the net procyclicality for any given level of rules,  $N_{it}$ . Equation (1) is a dynamic panel model and estimated by using 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 a better fiscal performance by reducing the procyclicality of government expenditure.

$$A_{it} = \beta_0 A_{it-1} + \beta_1 A_{it} + \beta_2 (A_{it} * N_{it} * G_{it}) + \alpha_i + \varepsilon_{it} \quad (2)$$

where  $G$  is the government effectiveness and the term of  $(\beta_2 * N_{it} * G_{it})$  allows us to measure the interaction of both national rules and government effectiveness together in reducing procyclicality.

### III. EMPIRICAL RESULTS

This study adopts the GMM methods to conduct the empirical analysis. The empirical results are reported in Table II. On the basis of column (1) in Table II, we find that the national fiscal rule index has a significantly negative impact on expenditure cyclicality. This result indicates that one unit increase in the national fiscal rule index reduces expenditure cyclicality by 0.0086. Meanwhile, we find higher government effectiveness with stronger fiscal rule significantly reduces procyclicality of fiscal policy (coefficient value of -0.0052), shown in column (2). In addition, Hansen J test is a test for over-identification and the null hypothesis is that the over-identification restrictions are valid. According to the Hansen J statistics shown in columns (1) and (2) of Table II, we cannot reject the null hypothesis. Accepting the null hypothesis of Hansen J test indicates that instruments are jointly uncorrelated with error term.

TABLE II  
CYCLICALITY OF FISCAL POLICY, FISCAL RULES, AND GOVERNMENT EFFECTIVENESS

	(1)	(2)
$A_{it-1}$	0.9835*** (0.0238)	0.9657*** (0.0260)
$A_{it}$	0.0628*** (0.0222)	0.0812*** (0.0256)
$A_{it} * N_{it}$	-0.0083** (0.0036)	
$A_{it} * N_{it} * G_{it}$		-0.0052** (0.0022)
Hansen J Statistic	0.0000	2.6302

Note: The standard errors are shown in parentheses. \*\*\* and \*\* indicate significance at the 1% and 5% levels, respectively.

### IV. CONCLUSION

Fiscal rules restrict the behavior of policymakers and eliminate deficits and debt deviations. It is a way to maintain fiscal discipline. According to the definition of the IMF [33], the fiscal rule imposes a long-term limit on fiscal policy through numerical restrictions on the total budget. The purpose of the fiscal rule is to overcome the government misconstrued by

political and economic factors and to ensure fiscal responsibility and debt sustainability.

There are few studies [31], [32] investigating the effect of national fiscal rules on the cyclicality of fiscal policy, especially for countries in the Asia Pacific region due to lack of the national fiscal rule index in the Asia-Pacific countries. Therefore, this study attempts to contribute to this line of research by focusing on nine Asia-Pacific countries to construct the national fiscal rule index and understand the effectiveness of fiscal rules in reducing procyclicality of fiscal policy.

This study utilizes the IMF dataset on the four specific types of fiscal rules including expenditure rules, revenue rules, budget balance rules, and debt rules to construct the national fiscal index for the nine Asia-Pacific countries over the period of 1996 to 2015. Then, we adopt the constructed national fiscal rule index to examine whether the effectiveness of fiscal rules in reducing procyclicality of government expenditure and whether the interaction of fiscal rules and government effectiveness has an impact on reducing procyclicality of government expenditure.

Empirical results show that national fiscal rules are effective in reducing procyclicality of fiscal policy. Meanwhile, strong fiscal rules combined with high government effectiveness are facilitating countercyclical policy response to GDP movements. The findings of this study indicate that national fiscal rules are effective in reducing procyclicality of fiscal policy within nine Asia-Pacific countries. Furthermore, strong fiscal rules with high levels of government administrative effectiveness help create an institutional environment where governments are able to follow countercyclical fiscal policy.

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