

Evaluating Fiscal Policy Responses after the Great Recession: A Comparison of Different Fiscal Stance Measures

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I

Introduction

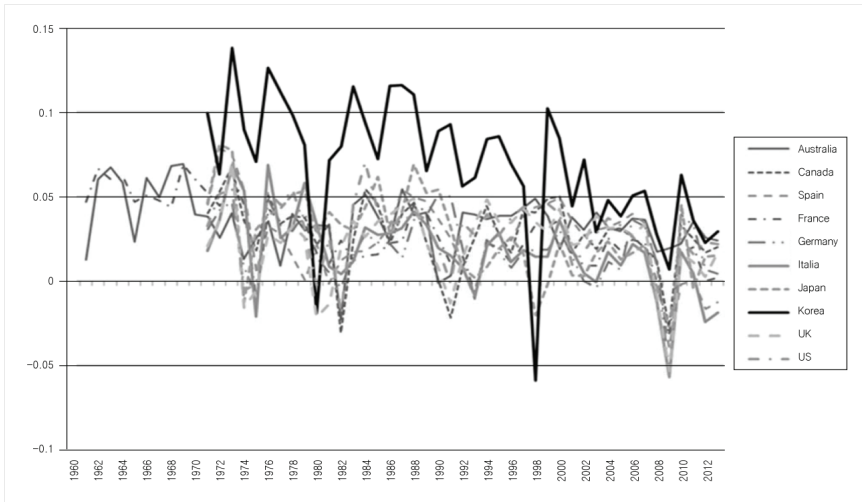
Government fiscal measures and programs play a central role in shaping and affecting national economic behavior. In turn, the conditions and cycles of the national economy also decide and shape a government's fiscal activities. In this interactive relationship, the state implements various policy measures to satisfy its fiscal goals, and assesses the effects of those measures after implementation. Such assessments not only consider the effects of individual policies or programs from microeconomic perspective, but also from macroeconomic perspective whether the overall fiscal policy stance has been appropriate in countering the business cycle.

Over the last four decades, the economic growth rates of major world economies have gradually declined amid short-term fluctuations. As global economic growth slowed down again after a short rebound following the global financial crisis in 2008, fear of possibly protracted recession has been mounting.¹⁾ As shown in [Figure I-1], growth rate slowdown is not a new phenomenon, but how to react is a challenging question to policy makers in a day-do-day decision making, especially with recently changing perspective on fiscal policy.

Most countries responded to the latest global financial crisis by releasing massive amounts of fiscal stimulus packages, but the debate continued as to what kind of fiscal policy had been appropriate during the so-called "Great Recession". Also, there is increasing suspicion that the pre-crisis consensus,

1) Summers (2013) has described the continuing and near-zero growth rates prevalent worldwide today as "secular stagnation"

[Figure I-1] Real GDP Growth Rates of Major Economies



established and dominant the “Great Moderation” period which refers to the two decades before the onset of the financial crisis, in relation to the respective roles and functions of fiscal and monetary policies²⁾ may have failed to provide the right understanding of fiscal policy and its role, given the long-term trend of declining economic growth rates

The consensus has been that the monetary policy was the right tool for short-term business cycle management, and that the fiscal policy was more geared toward long-term economic growth (Feldstein 2009).

The subject of this study is nothing new, and has already been discussed in-depth in countless other studies. There is a well-established body of literature assessing, *a posteriori*, whether the selected policy measures were appropriate to the economic situations of the day. Nevertheless, the significance of this study derives from the fact that the economic conditions we face today are

²⁾ The consensus has been that the monetary policy was the right tool for short-term business cycle management, and that the fiscal policy was more geared toward long-term economic growth (Feldstein 2009)

fundamentally and structurally unlike any we have seen in history, and that such conditions demand new and clearly defined policy measures that reflect the needs of the times. This study also presents a new fiscal stance indicator—namely, the discretionary fiscal effort—which, in addition to the indicators making up the fiscal shock index, helps us assess the appropriateness of the intent of policymakers *before* they implement selected policy measures. We review and compare this indicator to other methodologies attempted in similar studies.

This study is further divided into the following parts. In Part II we summarize the debates on the correlation between short-term economic fluctuations and fiscal policy, as the topic forms the theoretical premise of the empirical analysis pursued in this study. In Part III, we introduce diverse indicators that are used to identify the fiscal stance of a government, discussing their respective strengths and weaknesses. Here we also introduce the concept of the discretionary fiscal effort, which we have developed, and discuss how it differs from other indicators. In Part IV, we use the indicators discussed in the foregoing part to analyze and estimate empirical data, and apply our findings towards determining the appropriateness of the fiscal policy measures implemented. In Part V, we summarize our findings and state conclusions.

II

Fiscal Policy and Economic Fluctuations

The two decades or so leading up to the collapse of Lehman Brothers in 2008 served to establish the current consensus on the respective roles of fiscal and monetary policies, the two most important policy tools at the disposal of governments. Dubbed a period of “Great Moderation” by Ben Bernanke and others,³⁾ these two decades are marked by minimal economic fluctuations, the stability of various macroeconomic indicators, and the disappearance of much macroeconomic uncertainty, all of which reduced the need for government intervention in the market.

Until the very onset of the latest global financial crisis, international organizations and certain members of domestic policy circles firmly believed in this divide between the roles of fiscal and monetary policies. The Ricardian equivalence theorem and the constructive effect based on the assumed rationality of economic actors appeared to provide an unquestionable theoretical basis for preferring the monetary policy over the fiscal one for restoring and strengthening short-term economic stability. The outbreak of the global financial crisis, however, forced a paradigm shift upon this great divide. The near-zero interest rate under the prevalent monetary policy at the time of the onset of the crisis failed to help nations cope with the massive recession. The fact that the crisis

3) Ben Bernanke, then the chairman of the Federal Reserves, used this expression in a speech he gave in February 2004. The first use of this expression is found in a study by James Stock and Mark Watson, published in 2002. Since Stock and Watson, the expression has been used to refer to the noticeable decline in the unpredictability of economic fluctuations since the mid-1980s

originated from the financial sector also meant that channels of monetary policy implementation collapsed with the crisis. Amid rising skepticism of the effectiveness of the existing monetary policy, the majority of states worldwide moved to inject massive amounts of fiscal resources into the market to contain the spread of the crisis. This led to a resurfacing of the consensus that massive crises call for powerful short-term fiscal interventions. Nevertheless, there remains raging controversy over the effectiveness of fiscal interventions. Current debates on the issue focus more on policy environments and other aspects rather than on the effectiveness of early intervention, the importance of the overall fiscal system in making fiscal readjustments, or on the issues of fiscal risks and sustainability.

1 Macroeconomic effects of the fiscal policy

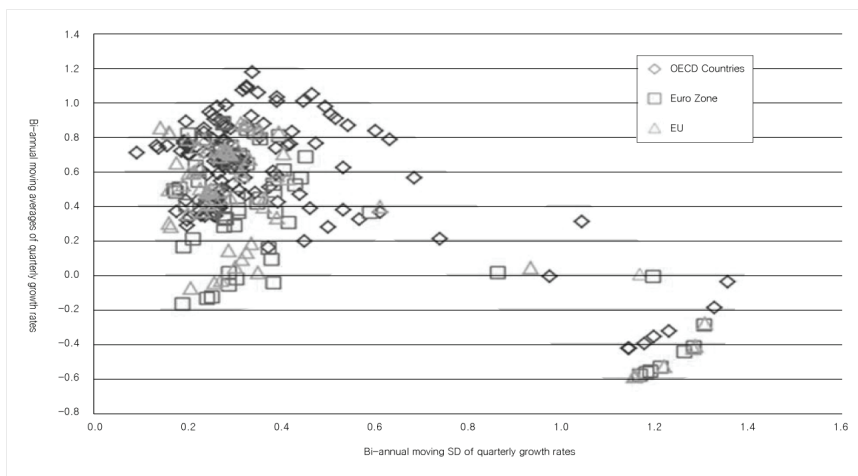
Numerous states worldwide have introduced growth-friendly or growth-promoting policies in an attempt to escape the current economic rut and securely land their respective economies back on the track toward long-term growth. Policymakers, however, need to keep in mind that their policy choices can significantly affect short-term macroeconomic stability. When it is impossible to secure a complete insurance, at the level of individual economic actors, against exogenous mid- to long-term risks, macroeconomic instability essentially reduces the utility for risk-averse economic actors.⁴⁾ Macroeconomic instability deserves in-depth analysis from multiple perspectives, as the fiscal policy can both directly and indirectly influence how a given exogenous shock acts on a given economy, particularly by deciding or adjusting the extent of the spread of the shock and the longevity of the shock's influence on the economy.

The consensus in the established empirical literature is that there is an inverse correlation between the economic growth rate and macroeconomic instability.⁵⁾ [Figure II-2] shows the average real GDP growth rates of the OECD

4) Lucas (1987); Krusell and Smith (2002); and Barro (2009)

5) Ramey and Ramey (1995)

[Figure II-1] Correlation between Growth Rates and Macroeconomic Volatility

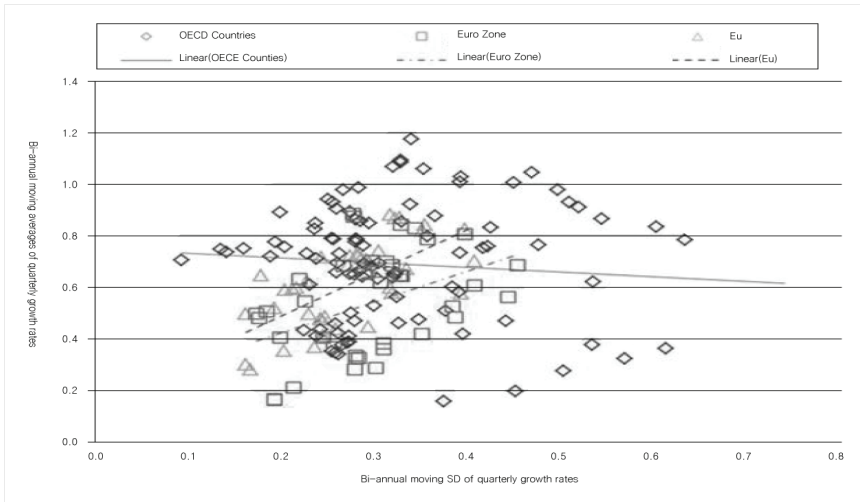


Source: OECD Statistics

member states as well as the Eurozone/European Union (EU) member states by quarter, between 1980 and 2013, and between 1995 and 2013, respectively. The window of analysis moves every two years, showing the average growth rates along the x-axis and the standard deviations (SD) along the y-axis. The higher the quarterly growth rate, the lower the standard deviation for the same given point in time.

However, this inverse correlation reflects the exceptional pattern of low growth that emerged during the last financial crisis and that is indicated in the bottom right corner of the graph. Once we limit our period of analysis to the years before 2008, as in [Figure II-2], we no longer observe a clear and consistent correlation between average growth rates and volatility. As Kroft and Lloyd-Ellis (2002) point out, when we take into account the differences in the correlation resulting from given economic fluctuations, a positive correlation is obtained between growth rates and volatility during a crisis, while volatility serves to lower growth rates in between crises. Sutherland and Hoeller also point out the influence of economic fluctuations on the correlation, concluding that macroeconomic volatility does not necessarily hinder growth at all times, and

[Figure II-2] Correlation between Growth Rates and Volatility before GFC



Source: OECD Statistics

that only volatility having to do with massive and negative shocks limits economic growth.

In Korea's case we observe a weak inverse correlation between growth rates and volatility in the standard deviation. The linear correlation coefficient is quite weak in comparison with other advanced economies. Moreover, whereas the exclusion of the latest global financial crisis served to weaken the linearity of the correlations in most other states, Korea stood as an exception to this rule. The averages in the EU/Eurozone rather point toward a positive correlation.

When we group the Korean data into different types of economic situations,⁶⁾ we begin to observe, as in [Figure II-4], that the correlations between the quarterly real economic growth rates and the bi-annual moving standard deviations of quarterly growth rates move in opposite directions depending on

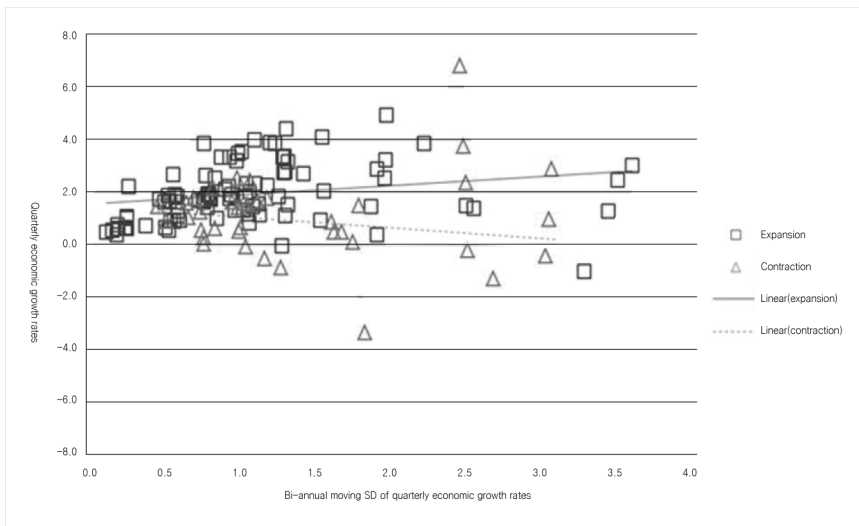
6) According to Statistics Korea, the expansion phase refers to the interval between the left nadir and the next zenith on the business cycle graph, and the contraction phase refers to the interval between the given peak and the next right nadir on the graph

〈Table II-1〉 Correlation Coefficients between Growth Rates and Standard Deviations

	Canada	France	Germany	Japan	United Kingdom	United States	European Union	OECD	Korea
Overall	-0.5	-0.6	-0.6	-0.6	-0.6	-0.5	-0.7	-0.6	-0.1
Until 2006	-0.4	-0.3	-0.2	-0.5	-0.3	-0.4	0.3	-0.1	-0.2

Source: OECD Statistics

[Figure II-3] Correlations between Quarterly Economic Growth Rates and Macroeconomic Volatility in Korea



Source: OECD Statistics

the types of economic situations. During the expansion phase, positive correlations are obtained, while negative correlations emerge during the contraction phase. These directions, however, are easily changed by outliers.

We can also understand short-term trends in macroeconomic volatility by measuring the lengths of business cycles and the margins of change in the fluctuations. Égert and Sutherland (2012) compare the last century's data on

the business cycles in seven OECD member states—i.e., Canada, Germany, France, the United Kingdom, the United States, Japan, and Sweden—to identify the patterns and characteristics of business cycles. The authors note that the business cycles in these countries have grown longer over the last century, with expansion phases longer than contractionary ones, thus leading to asymmetry in each cycle. In particular, it was the prominent length of the expansion phase leading up to the latest global financial crisis that deepened the severity of the recent recession, leading to the utter collapse of public confidence in the once held consensus that the stability experienced during the Great Moderation period would be enough to fend off economic volatility. Researchers have identified multiple causes for the global spread and reinforcement of the current shock, including the extension of international trade, the openness of financial markets, and the increasing business cycle synchronization patterns of OECD member states.⁷⁾ The shift to a new economic structure requiring ever-increasing intra-industry trade is a major factor promoting business cycle synchronization among countries trading with one another.⁸⁾ Policymaking is another factor, as the synchronization among government policies adds to the synchronization of business cycles, as pointed out by Fonseca et al. (2010) and Forbes and Rigobon (2002). Statistics Korea concludes that recent business cycles in Korea have been relatively free of the tendency toward asymmetry, a condition associated with drawn out expansion phases in other countries. Furthermore Kang (2014) notes that economic fluctuations in Korea have increasingly decreased, as they have elsewhere in the world.

Given the correlation between macroeconomic volatility and economic growth, we need to discuss the implications of the protracted low growth trend worldwide in the aftermath of the global financial crisis, and the growth-friendly policies of various states derived based on the resilience or vulnerability of each given domestic economy to macroeconomic shocks. Ideally growth-friendly policies would also promote macroeconomic stability, though in many instances the former are actually in a trade-off relationship with the latter. In making

7) Artis et al. (2008)

8) Burstein et al. (2008)

policy decisions, policymakers should not only have an accurate grasp of the given economic situation, but also conduct thorough a priori review of whether the policy options they are considering will be complementary or contradictory to the goal of securing macroeconomic stability.

In general, fiscal policy exerts short-term impacts on a given economy in two ways: either by adjusting macroeconomic risk factors and their influences, or by directly adjusting the total demand. Managing macroeconomic risk factors is key to improving the fiscal balance and enhancing fiscal sustainability, ultimately by improving the responsiveness of the market and thereby reducing fiscal risk factors on the whole. The decrease in fiscal risk factors is particularly important to the interest rates on treasury bonds. As market sensitivity to fiscal imbalance has been growing at a prominent pace – in comparison to sensitivity to other factors – since the onset of the financial crisis, it has become all the more important for governments worldwide to recognize and manage fiscal risk factors.⁹⁾

Especially pertinent to the discussion of total demand is the role of fiscal multipliers. Fiscal multipliers provide the most commonly used measures of identifying the macroeconomic effects of a given fiscal policy. While fiscal multipliers were certainly popular topics of research and academic debate even prior to the onset of the latest financial crisis, the volume of research on these topics has grown even larger in recent years as researchers and policymakers worldwide strive to measure the impact of their economic stimulus programs and find various measures of fiscal reforms to realize greater macroeconomic stability.¹⁰⁾ As the prolonged phenomenon of low growth compels governments to find and strike the right balance between stimulus and stability, research flourishes on such topics as the volatility of fiscal multipliers and the factors thereof.

Nevertheless, analyses on fiscal multiplier estimates, whether theoretical or empirical, show great variances in results depending on the methods applied, and also depending on the nations and the periods of time included in the

9) Caceres et al. (2010); Schuknecht et al. (2010)

10) Coenen et al. (2012); IMF (2012)

analyses.¹¹⁾ While the factors that affect and decide fiscal multipliers are indeed diverse, they also vary greatly according to each given nation's development status, economic conditions, and policy features.

While there are numerous studies in Korea that employ the macro-economic models of given research institutions and/or produce estimates using

〈Table II-2〉 Influences on Fiscal Multiplier Size

	Decisive factors		Literature
Structural characteristics	Openness to external trade	The more closed a national economy, the greater the fiscal multipliers.	Barrell et al. (2012), Ilzetzi et al. (2013)
	Rigidity of labor market	The more rigid a labor market, the greater the fiscal multipliers.	Cole & Ohanian (2004)
	Size of automatic stabilizers	The greater the sizes of automatic stabilizers, the smaller the fiscal multipliers.	Dolls et al. (2010)
	Currency exchange system	Fiscal multipliers tend to grow smaller in floating exchange systems.	Born et al. (2013), Ilzetzi et al. (2013)
	Debt level	The higher the debt level, the smaller the fiscal multipliers.	Ilzetzi et al. (2013), Kirchner et al. (2010)
	Public fiscal management	The better-ordered the system of fiscal management(e.g., taxation), the smaller the fiscal multipliers.	
Temporary factors	Economic phase	Fiscal multipliers tend to grow larger in times of recession.	Jorda and Taylor (2013), Batini et al. (2012), Baum et al. (2012)
	Monetary policy	The more limited the role of the monetary policy, the larger the fiscal multipliers.	Erceg and Linde (2010), Woodford (2011)
	Fiscal adjustment structure	Fiscal multipliers grow in size in proportion to investment and consumer spending.	Gemmell et al. (2012)

Source: Batini et al. (2014)

11) IMF (2012); Gechert and Will (2012); Barrell et al. (2012), etc.

the technique of structural vector autoregression (SVAR), few analyze recent statistics generated in the aftermath of the global financial crisis.¹²⁾ Choi and Son (2013), for instance, estimate the changes in the effects of fiscal spending multipliers over time using the TVP-SVAR model. In their analysis, both current and peak multipliers are shown to have been declining steadily since 2000. Moreover, their comparison of the spending multiplier to the GDP gap shows that the spending multiplier tends to grow significantly larger during the contractionary phase, thus confirming the correlation between fiscal multipliers and economic fluctuations observed in other recent studies.

2 Macroeconomic impact on fiscal situations

While the various fiscal policy decisions exert resounding and significant influences on the national economy and macroeconomic settings, macroeconomic conditions also influence fiscal choices both directly and indirectly. Policymakers therefore need to carefully consider the loop of interactions between the two sides. Macroeconomic conditions affect fiscal situations most commonly by way of automatic stabilizers, and also by the debt-to-GDP ratios that influence fiscal stability indicators. Indirectly, changes in economic growth trends can also induce different responses from the market, thus affecting fiscal sustainability.

Automatic stabilizers are generally understood as factors of fiscal policymaking that minimize economic volatility without deliberate governmental intervention.¹³⁾ Previous studies have reached conflicting conclusions regarding the effectiveness of automatic stabilizers,¹⁴⁾ but the current trend of low growth naturally serves to reduce the sizes of fiscal multipliers by decreasing the amount of tax revenue and increasing the amount of unemployment benefits, and thereby partially expanding the fiscal role of the government. In other words, considering the expansive tendencies of automatic stabilizers amid the general trend of low

12) Kim, Song, and Kim (2009); Kim (2012); Kim (2011); Choi and Son (2013), etc.

13) Eaton and Rosen (1980)

14) Blanchard (2006); Dolls et al. (2010)

growth and the worldwide effort to restore fiscal stability, automatic stabilizers tend to fail to produce the intended contractionary effects. However, the severity of that failure also depends upon the structural strength of the given country's fiscal system.

The debt-to-GDP ratio, being susceptible to macroeconomic conditions, is another key target of the fiscal policy. The fiscal policy readjusts the debt-to-GDP ratio by way of fiscal multipliers, the initial debt ratio, and other multiple factors that affect the macroeconomic environment. Eyraud and Weber (2012) observe that, given a high initial debt ratio and large fiscal multipliers, the debt-to-GDP ratio rises in the early days of a discretionary fiscal contractionary policy, notwithstanding the policy's aim. This is because the large fiscal multipliers serve to contract the output, while the contractionary policy is hardly capable of dramatically lowering the debt ratio at least at the beginning.

While states worldwide strive to restore and enhance their fiscal stability in the aftermath of the global financial crisis, policymakers around the globe continue to struggle with such policy questions as how to pace fiscal stabilization efforts in Europe, and how to square contractionary measures with the logic of expansive balance espoused in the 2015 budget in Korea. Numerous states that have resorted to contractionary measures over the last several years have successfully recovered to pre-crisis levels of fiscal balance, but have yet to see tangible improvements in their debt ratios. As these governments remain steadfastly focused on fiscal contraction and stabilization amid low economic growth, there is increasing criticism over the prolonged nature of these contractionary measures.

Debates over fiscal stabilization policies commonly center on the proper composition of policy programs, their effectiveness, their possible harm to economic growth, and their implications for social equity. The fiscal stimulus packages that many governments adopted in the immediate aftermath of the global financial crisis consisted for the most part of cash transfers and investments serving short-term purposes. As the amounts of these types of expenditure, with their relatively great spending multiplier effects, decreased afterward, the economic growth rates in many countries began to take manifest dips.¹⁵⁾ Moreover, the decreasing amounts of cash transfers also raised worries about worsening social inequality. The continuous stagnation of economic growth

has therefore spurred public distrust in the contractionary fiscal policy, and has also spawned many studies that assert that the repercussions of fiscal multipliers only expand during recessions.

Mounting worries about the weakness of economic recovery reflect not only the repercussions of the fiscal multiplier effect, but also the overall decrease in the amount of public capital goods available due to the decrease in public investment. According to the IMF (2014b), the ratio of public capital goods, which play a crucial role in sustaining long-term economic growth, has been on a steady decline over the last few decades. In numerous advanced economies, much of the existing social overhead capital (SOC) stock is operated inefficiently or in poor condition. The decrease in public investment under the contractionary fiscal policy therefore not only reduces the total demand in the short run, but also contributes to the deterioration of growth potential in the intermediate and long run by contracting supplies.

The contractionary approach to fiscal stabilization raises certain issues in relation to social equity as well. Over the last several years, numerous states worldwide have expanded unemployment and poor household benefits as part of their stimulus packages. Rolling back these benefits under a new contractionary approach would naturally increase the inequality of fiscal distribution.¹⁵⁾

Finally, macroeconomic conditions can indirectly affect fiscal policy options by inducing or shaping market responses. In principle, the long-term growth potential (the so-called “fundamentals”) of a given economy is the main criteria for evaluating the sustainability of a policy approach. Markets, however, respond more dramatically to short-term changes in growth potential. Examining the correlations among the credit default swap (CDS) spreads, growth rates, and potential growth rates in advanced economies, Cottarelli and Jaramillo (2012)

15) According to the OECD (2013), the fiscal stabilization programs of member states, between 2009 and 2012, have led to a 20 percent decrease in governmental investment in fixed assets in the EU member states and the United States, and a 40 percent decrease in Spain

16) Even if states cut down on these benefits as a way to return to pre-crisis levels, redistribution of income and wealth matters crucially in elections and other political calculations, which is why truly rational decision making often eludes policymakers in the context of such matters

find that, while CDS spreads and growth rates are in inverse relation, neither of these two factors show any significantly strong correlations to potential growth rates. The authors conclude that the sensitivity of markets to the political and economic conditions of individual states and to short-term increases in uncertainty has increased since the global financial crisis.



Fiscal Stance Indicators

Fiscal policy affects and shapes a country's economy in quite diverse and complex ways. From the standpoint of the policymaker who needs to make the “right” policy decision, it is crucial to identify how these complex ways (in which a policy produces (or fails to produce) the intended outcome) are related and impact one another. In understanding the constant interaction between a fiscal policy and the given economic conditions at large, the policymaker needs the help of an appropriate methodology and proper indicators of both the fiscal policy performance and the economic situation. In general, fiscal policy indicators overlap with indicators that are used to evaluate fiscal stances. Here we need to briefly discuss what is meant by “fiscal stance.”

The term “fiscal stance” is a common concept in policymaking circles, international organizations, and among media but a standard and accepted definition of the term has not yet been established in academia.¹⁷⁾ In the established literature, the term “fiscal stance” is mainly used to mean three things: (1) the main emphasis and significance of a state's management of its fiscal resources and concerns; (2) the significance of quantitative changes in fiscal resources and spending (i.e., changes in the fiscal input); and (3) the significance of the economic impact of a given fiscal policy (i.e., changes in fiscal output).

First, “fiscal stance” may refer to the emphasis or priority of a given government's budget preparations and drafts. Here the concept is used to refer

17) Philip and Janssen (2002)

to the basic aim or trajectory of the given fiscal policy, rather than any quantitative evaluation.¹⁸⁾ On the other hand, the other two meanings of “fiscal stance” are not separable concepts, but rather constitute indicators with which we can observe and measure the quantitative changes in the amounts of fiscal input and output, and their impact on the entire economy. The term “fiscal stance” can also be used to identify, using fiscal statistics, changes in either fiscal input (as indicated on budget balance sheets) or fiscal output (as manifested in the economy).

The tendency to understand fiscal stance as a conceptualization of the fiscal policy impact on a given economy has spawned innumerable empirical demonstrations and analyses of the correlations between quantitative fiscal changes and changes in economic indicators.¹⁹⁾ These empirical studies naturally raise the question of how we might quantitatively measure and analyze changes in the fiscal stance. Accordingly, international organizations began to develop diverse concepts and measures of the fiscal balance as well as measures of fiscal impulse in order to identify the characteristics of different fiscal stances. The diverse debates in international and domestic policy circles concerning fiscal stances therefore take the fiscal balance, the measure of fiscal impulse, and other similar indicators and measures as their bases.

The ability to identify and measure fiscal stance holds great significance from a governmental perspective, as doing so constitutes the first step toward devising appropriate fiscal policy responses by allowing the government to identify how exactly its fiscal decisions impact the domestic economy. The IMF²⁰⁾ asserts that an ideal fiscal stance index must be capable of reflecting a comprehensive range of governmental activities, and must also be based upon budget documents and other available statistics. Of course in reality it is extremely difficult to devise an index that can render accurate diagnoses of fiscal

18) This may be a definition that is more faithful to the literal (i.e., dictionary-defined) sense of the word “stancz”

19) The problem of how to measure and identify changes in fiscal stance from the input standpoint will be discussed in greater detail in the next part. Suffice it to say that diverse quantitative and economic models and methods have been developed to accommodate the quantitative analysis of these changes and their correlations to economic indicators

20) <https://www.imf.org/external/pubs/ft/pam/pam49/pam4902.htm> (accessed April 27, 2014)

impact while being conceptually neat and proper at the same time. For we need to take into account the economic impact of diverse governmental activities and other macroeconomic variables that are beyond budget documents.

1 Review of fiscal stance indicators

The first and foremost step toward starting the discussion on how fiscal policy affects the economy is to decide on ways to measure the quantitative aspects of fiscal policy and its impact. Our choice of which aspects are to be quantified and which methods are to be used to that end may differ depending on which perspective or definition we adopt with respect to fiscal policy. The concept of the “overall balance” often provides the most standard and basic way to think about a given fiscal policy’s impact on the overall economy. The overall balance, defined as the difference between fiscal spending and net lending (i.e., lending minus repayment), represents the increase or decrease in the total demand resulting from the government’s activities. Increases in demand, leading to fiscal deficits, characterize an expansive fiscal stance, while decreases in demand, leading to fiscal surpluses, characterize a contractionary stance. Keeping track of the changes in the overall balance over time, we can identify how different fiscal stances and governmental activities impact the economy. Of course, the overall balance strictly concerns the effect or outcome of fiscal policy on total demand only, and therefore may not be suitable for an evaluation of fiscal policy with respect to its diverse goals. Therefore, researchers make use of other various concepts to evaluate fiscal stances and policy impact, such as the primary balance, fiscal stance indicators, the structural fiscal balance, and the like. At times, they also develop new indices based upon a multiplicity of these concepts and indicators.²¹⁾ In this part, we shall discuss some of the main

21) Chand (1993) points out the risks inherent in the use of a single indicator only, such as the cyclically adjusted balance or the measure of fiscal impulse, in fiscal analyses. A change in a given fiscal situation can exert impact on the given economy in diverse ways, depending on its origin - whether expenditure, revenue, expenditure carried forward, etc. Using a single indicator makes it impossible to distinguish among the diverse causes and outcomes involved in a changing fiscal situation and does not allow the user to identify the dynamic aspects of the change occurring

fiscal stance indicators commonly used in the literature.

A. Current fiscal balance, consolidated fiscal balance, primary balance, and operating balance

The current fiscal balance refers to the difference between current revenue and current expenditure. In general, the concept is used to describe governmental contributions to the increase in national savings. The term encompasses the assumption that current expenditure is governmental spending that does not contribute at all to economic growth. Given this assumption, it is unclear how a given current fiscal balance represents the status of either economic growth or fiscal stability. Indirectly, however, current fiscal deficits stand for decreases in national savings, which will cause decreases in investment and asset accumulation throughout the given economy and ultimately interfere with economic growth. Of course, not all types of fiscal expenditure—particularly those categorized as capital expenditure—are productive. Moreover, we cannot conclude for certain whether some categories of spending categorized as current expenditure—such as those on healthcare and the maintenance of social infrastructure—exert no impact at all on the mid- to long-term improvement of productivity.

The primary balance, on the other hand, is a concept that deducts interest payments from fiscal expenditure. Whereas the majority of categories of fiscal expenditure and revenue reflect the conscious policy choices of the government, interest payments follow the logic of the existing debt level and the going market interest rates. Accordingly, tracking changes in the primary balance can help us identify changes in the fiscal stance with greater clarity. In particular, states with relatively high debt-to-GDP ratios struggle to keep their primary balances in surplus because doing so is central to minimizing the debt-to-GDP ratio (and thereby enhancing fiscal stability).²²⁾ In particular, major fluctuations in interest rates caused by macroeconomic changes make it at times necessary for the

22) X From the perspective of debt dynamics, a government can reduce the debt-to-GDP ratio by minimizing the difference between the economic growth rate and the interest rate and by simultaneously adjusting the size of the fiscal balance

government to refer to the primary balance rather than the overall balance in order to make better fiscal decisions.

The consolidated fiscal balance is obtained by subtracting the net expenditure from the net revenue of the current year, excluding revenue and expenditure carried forward from the previous years. This is a useful concept for identifying the current fiscal situation and its impact on the economy. The Korean government began to estimate consolidated fiscal balances in 1979, following guidelines set out in the IMF's *Government Fiscal Statistics Manual (GFSM)* 1974. At present, the Korean government follows the GFSM 1987 standard, and uses the consolidated fiscal balance as a basis for identifying the stability of fiscal operations and for determining the basic aims of its fiscal policy.²³⁾ However, the presence of savings-type pension funds, such as the National Pension, in Korea makes it difficult to use the consolidated fiscal balance as the sole measure of the government's fiscal impact on the Korean economy. Moreover, as the consolidated fiscal balance is currently cash-basis only, it also adds up the balance of social security funds, like the National Pension, on a cash basis as well. As such, it does not adequately reflect issues and problems with the future prospects of such funds and with the accrual basis. The scope of the consolidated fiscal balance, as it is now, is also too narrow to reflect the overall stability of the entire public sector.

The operating basis stands for transaction outcomes that bring about changes in the government's net worth, and therefore bears close correlation to the fiscal sustainability of the government's policy choices.²⁴⁾ Standing for the difference between government revenue and expenditure, excluding the expenditure on, and the revenue from the disposal of, non-financial assets,²⁵⁾ the operating balance provides a fitting tool for an analysis of changes in the fiscal balance that is adjusted according to inflation. Why is such inflation-based adjustment necessary? An increase in the inflation rate raises the nominal interest payment and consequently worsens the fiscal balance. It also reduces the nominal

23) Ministry of Strategy and Finance (2013), *Consolidated Fiscal Balance of Korea*

24) IMF (2014a)

25) Fixed assets, inventory assets, unproductive assets, etc. (IMF 2014a)

value of debts, causing overestimation of the debt-to-GDP ratio. This is where the operating balance comes in handy, as it is adjusted according to the impact of changes in the value of debts—resulting from inflation—on the interest payment, thus allowing for more accurate assessment of the fiscal situation.

B. Cyclically adjusted balance and structural balance

The cyclically adjusted balance (CAB) and the structural balance both indicate the fiscal impact on the economy, eliminating the possible influences of macroeconomic changes. The amounts of government revenue and expenditure may change as a result of a government's conscious policy choice. However, the amounts of government revenue and expenditure also inevitably and structurally reflect economic changes at large. For example, during an economic boom (i.e., when the economy is growing at a rate higher than the potential growth rate), the amount of tax revenue increases thanks to additional income and sales taxes, while the amount of expenditure on unemployment benefits and other such social security benefits decreases. The CAB is an effort to ascertain changes in a given fiscal situation by strictly dividing between changes caused by natural economic fluctuations and those caused by conscious policy decisions, and removing the influence of the former.

The structural balance controls for all factors other than changes in fiscal policy decisions. In addition to economic fluctuations, the list of other factors eliminated by the structural balance includes changes in the prices of assets and commodities, and the influences of one-off measures.^{26),27)}

The CAB and the structural balance, in other words, eliminate changes in the fiscal balance resulting from economic fluctuations, and therefore represent what the fiscal balance would be when the given economy is operating at its

26) Examples of non-repetitive factors that nonetheless exert significant impact on the fiscal balance include revenue from the sale of communications frequencies and of various licenses, debt assumptions, and the acquisition of private-sector pension funds

27) Some researchers use the structural balance and the CAB interchangeably. The EU recommends use of the term "CAB" to refer to the fiscal balance from which the influences of both economic cycles and one-off measures have been eliminated

〈Table III-1〉 Adjustment steps for Economic Fluctuations and Other Factors

Phase	Description
Phase 1: Controlling for one-off measures	<ul style="list-style-type: none"> – Eliminates the influences of one-off measures – The influences of one-off measures are added back to the calculation of the CAB
Phase 2: Controlling for economic fluctuations	<ul style="list-style-type: none"> – Aggregated approach: applies elasticity to overall revenue and expenditure – Disaggregated approach: applies elasticity to different categories of revenue and expenditure one by one
Phase 3: Controlling for other effects	<ul style="list-style-type: none"> – Eliminates direct effects and indirect effects via wealth – Eliminates effects of changes in compositions of outputs – Eliminates effects of changes in the prices of assets (shares, real estate, etc.) and commodities

Source: Bornhorst et al. (2011)

potential level. Researchers frequently use these two measures as they reflect changes resulting from fiscal policy choices more accurately.

Controlling for the effect of economic fluctuations begins with distinguishing between changes in government revenue and expenditure caused by economic fluctuations, and those caused by other factors. If we equate the overall balance as the sum of a cyclical balance and a CAB, and let R^C and G^C stand, respectively, for changes in government revenue (R) and expenditure (G) resulting from economic fluctuations, we arrive at the following formula:

$$CAB = OB - CB = R - G - (R^C - G^C) = R^{CA} - G^{CA}$$

Let us assume that the formula, $OG = (Y - Y^*) / Y^*$, represents the output gap. Then the government revenue, when the economy is operating at its potential level (i.e., when $Y = Y^*$), becomes R^* , which is a function of the elasticity, $\theta_R > 0$, on the output gap in revenue, as follows:

$$R = R^* \left(\frac{Y}{Y^*} \right)^{CR} = R^* (1 + OG)^{CR}$$

As this formula shows, when a given economy is operating at a sub-potential level (i.e., in recession), the actual government revenue (R) becomes smaller than the potential-level revenue (R^*). Similarly, the government spending at a sub-potential level can also be expressed as $G = G^* \left(\frac{Y}{Y^*} \right)^{CR} = G^* (1 + OG)^{CR}$. Henceforth, the CAB as a proportion of GDP excludes the effects of economic fluctuations from the overall balance, while the overall balance in this case is expressed as an approximate function of elasticity and the output gap, as in:

$$\frac{CAB}{Y} = \frac{R^* - G^*}{Y} \approx \frac{OB}{Y} - \theta^0 OG$$

Notwithstanding the conceptual usefulness of the CAB and the structural balance, there are some methodological complexities surrounding the application of these concepts to analysis. First, we need to exactly define and estimate the potential GDP. Next, we need to find ways to estimate the changes in government revenue and expenditure that result naturally from economic fluctuations at large. It is the absence of specific methods for estimating these key variables that leave the two concepts susceptible to the analyst's arbitrary handling. Though there is a growing body of research on the best measures to employ, with some international organizations and governments even developing their own, there are no universally agreed upon measures being consistently employed.

C. Measure of fiscal impulse

While the measure of fiscal impulse, used by both the IMF and the OECD, provides an indicator of whether a given fiscal stance is expansive or contractionary, it is not based upon any macroeconomic model, and therefore fails to account for the full influence of a given fiscal policy, shaped and affected by macroeconomic conditions, on the given economy. According to the comparison made by Heller et al. (1986), the IMF's measure is obtained by subtracting the economically cyclical fiscal balance from the overall balance (akin to the CAB). More specifically, the IMF defines the measure of fiscal impulse as a relative change in the fiscal stance, i.e., as the margin of a given

change in the fiscal stance indicator (FIS). Assuming that Y_t and Y_t^* , respectively, stand for the GDP and the potential GDP at time t , and that g_0 and t_0 , respectively, stand for the ratio of government expenditure (minus expenditure on unemployment benefits) to the potential output and the ratio of tax revenue to the real output, we can obtain the measure of fiscal impulse, the IMF way, as follows:

$$FIS = (\Delta G - \Delta T) - (g_0 \Delta Y^* - t_0 \Delta Y)$$

$$FI = 100 \times \frac{FIS}{Y_{t-1}}$$

The FIS, which the IMF uses to measure changes in fiscal stances, refers to the amount of cycle-neutral fiscal balance minus the amount of expenditure on unemployment insurance benefits (UIBs). Let B and B^* stand for the fiscal balance and the cycle-neutral fiscal balance, respectively. Then the formula for estimating the cycle-neutral fiscal balance,²⁸⁾ using the amounts of revenue and expenditure at the given point in time, would be $B^* = t_0 Y - g_0 Y^*$. The formula for determining the FIS would therefore be as follows:

$$FIS = B^* - (B - UIB)$$

$$= (t_0 Y - g_0 Y^*) - [T - (G - UIB)]$$

$$= (G - UIB - g_0 Y^*) - (T - t_0 Y)$$

The OECD uses a similar concept, dividing the margin of a given change in the structural balance by the amount of nominal GDP. Unlike the IMF, however, the OECD uses the elasticity of revenue and expenditure to estimate the cycle-neutral fiscal balance. As the OECD method does not require the use of a certain base year and applies the concept of elasticity directly, and therefore appears more rational in theory, it also raises the need to gather additional data to estimate accurate levels of elasticity.²⁹⁾ With m_G and m_R , respectively,

28) A cycle-neutral fiscal balance is estimated using the ratio of fiscal revenue to GDP at the point in time when the given output gap is closest to zero, and the ratio of fiscal expenditure to the potential GDP

standing for the elasticity of revenue and expenditure, the OECD formula for calculating the FIS is as follows:

$$FIS = \Delta G - \Delta - R(m_G - m_R)[\Delta Y^* - \Delta Y]$$

As with the IMF's measure, the OECD's FI measures the deterioration in the fiscal balance after eliminating economic cycle factors. When the resulting figure has a positive sign (+) in front of it, it indicates that the discretionary fiscal stance of the given year was more expansive than the one of the preceding year.

2 Fiscal stance and fiscal effort

The evolution of the global crisis into the Eurozone crisis presented the EU with a series of seemingly insurmountable challenges, from both internal and external sources. The crises in Greece, Ireland, and Spain have forced the member states to revisit and reflect upon problems that had been overlooked until now amid the expansion and growth of the union, leading them to reform economic and fiscal supervisory systems.

In the meantime, the EU (2013) has come to emphasize the fundamental conceptual difference between the fiscal stance and the fiscal effort, suggesting a new indicator for evaluating the effectiveness and appropriateness of fiscal policies. While the CAB and related concepts afford ease of interpretation and explanation, and also support international comparisons as they are used by numerous organizations worldwide,³⁰⁾ there are a few major shortcomings with these concepts that prevent us from interpreting changes in the CAB as representing the fiscal efforts made by governments.

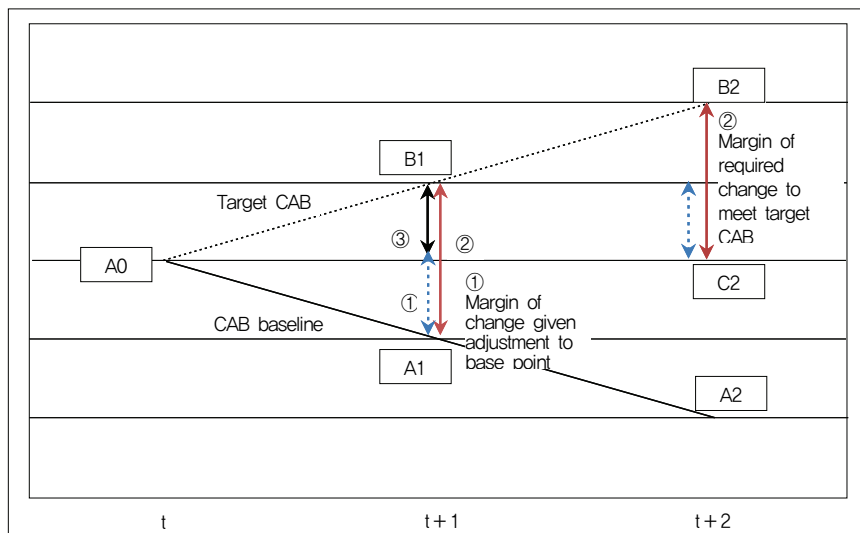
29) While it is difficult to calculate the elasticity of fiscal revenue with accuracy due to time lags in revenue collection, the elasticity estimate can significantly affect the resulting cyclically adjusted balance

30) The CAB makes interpretation and explanation only relatively easy, not absolutely easy. No methodological consensus has yet emerged regarding how to estimate the potential output or how to adjust economic cycles

The concept of fiscal effort can be understood as “the change in the balance (compared to the non-action scenario) due to clearly identified government action.”³¹⁾ However, a change in the ratio of the CAB to the GDP may indicate not only a change in government policy, but also a change in economic conditions at large. Therefore, an observed fiscal change does not always reflect conscious fiscal effort on the part of the government. The CAB carries other methodological and technical shortcomings as well, including its incapacity to completely eliminate all cyclical factors as well as a number of other endogenous factors of change.³²⁾

The attempt to observe and measure the fiscal stance and effort using the CAB is often called the “top-down approach.” The “bottom-up approach,”

[Figure III-1] Concept of Fiscal Effort



Source: EU (2013)

31) EU (2013)

32) Other problems include the presence of the influences of one-off measures, the need for frequent statistical revisions, and the impossibility of rendering timely output gap estimates

sometimes referred to as the “narrative approach,” has been developed in response to the perceived shortcomings of the top-down one. The fundamental difference between the two approaches arises with respect to the benchmarks used. In the top-down, CAB-based approach, the benchmark is the potential level. In the narrative approach, the benchmark is the unchanged policy. Let us suppose that a given economy has remained at its potential level for three years (i.e., from t to $t + 2$), with the CAB declining accordingly. In such a scenario, the government can appear to maintain a contractionary fiscal stance in effect, as seen from the perspective of the CAB, without making any conscious effort to that end.

If, however, the government decides to adjust the CAB to a certain target level (like the dotted line shown in [Figure III-1]) by employing diverse policy measures, the margin by which the CAB is to be adjusted, i.e., the amount of fiscal effort required, will be determined on the basis of the baseline, which is the level the CAB would likely reach in the subsequent fiscal term if there were no policy changes attempted. In [Figure III-1], if the government decides to raise the CAB to level B_1 in $t + 1$ by inducing a certain margin of change (i.e., $B_1 - A_0$), the CAB, in the end, will rise to the same level (A_0) as it was at time t . Therefore, the amount of fiscal effort needed to raise the CAB to the target level of the term $t + 1$ will be the margin between B_1 and A_1 , and not the margin between B_1 and A_0 .

The narrative approach, on the other hand, identifies the amount of fiscal effort a government makes on the basis of the express information that the government provides on its budgets or other documents.³³⁾ Here it is crucial to identify and understand what the baseline situation is. For instance, discretionary tax measures are means by which a given state changes the existing tax law so as to increase or decrease the amount of tax revenue it raises. The baseline here is the situation of non-action, in which no particular amendments are made to the tax law. The Korean government, for its part, announces tax law amendment bills every year, summarizing for the public the changes to

33) That is, “the sum of the value that government authorities have attributed to the measures in their budget at the time of adoption” (EU 2013)

be made to the tax regime that could cause changes in tax revenue in the subsequent year. As these drafts are debated and reviewed in the National Assembly, certain specific changes may be made. Nevertheless, we can infer the approximate amounts of changes in tax revenue that the government intends to achieve in the years that follow from these bills.

As the vast majority of states worldwide endorse the principle of no taxation without law, states officially change the amounts of tax revenue they raise by means of legal enactments and amendments in general. However, the amounts of government expenditure shift from year to year not only in accordance with changes made to law, but also in response to certain factors that are beyond the control of the given economy. It is therefore comparatively more difficult to identify and predict the margins of discretionary change in the case of expenditure than in the case of revenue. For instance, in trying to estimate the required changes in the amounts of expenditure spent on wages for government employees or other spending items, we often encounter the difficulties of deciding which non-action scenario should serve as the benchmark for comparison and, consequently, of identifying what would constitute changes in expenditure as results of policy actions.

In the bottom-up approach though one may interpret a given non-action scenario as indicating the neutrality of the given government's fiscal stance with respect to revenue, that interpretation cannot extend into the expenditure side since the amount of fiscal expenditure may vary due to factors that are beyond policy control even without intentional policy changes. Using the bottom-up approach, short-term changes in the CAB therefore may bear only weak correlations to conscious fiscal efforts.

Another key shortcoming of the bottom-up approach lies in the rather arbitrary manner in which the method is used. There is no clear consensus among researchers worldwide regarding how to define and measure the size of fiscal effort. Quantitative observation therefore may vary according to time and nation. The approach is also not immune to the influences of economic fluctuations, the purposes and scopes of individual researchers' research agendas, or to the political and institutional settings surrounding the implementation of given policy measures.

3 Discretionary fiscal effort (DFE) index

To reiterate: the top-down approach, which is the main approach researchers use to assess fiscal policies, involves identifying and evaluating the fiscal stance underlying a given policy using the CAB. However, the approach is incapable of measuring how much fiscal effort the given government needs to make in order to meet certain fiscal targets or goals. The narrative or bottom-up approach, on the other hand, facilitates researchers' attempts to measure and analyze the fiscal effort made by the government as the approach involves making use of officially announced and documented government data, and is therefore particularly suited for use on the revenue side. The EU (2013) has called for policymakers and researchers in member states to recognize the shortcomings of the top-down approach in the evaluation of fiscal effort and make use of a new indicator, the discretionary fiscal effort (DFE), which combines the advantages of both approaches, as a supplementary tool of analysis.

The DFE applies the narrative approach to the revenue side and the top-down approach to the expenditure side, and thereby avoids much of the uncertainty on the revenue side that can significantly affect estimation of the CAB. In particular, the indicator provides an effective tool with which we may identify the type and size of fiscal effort involved in changing the structure of economic growth and/or the potential output.

Let N^F stand for the policy-induced change in the nominal value of government revenue; Y_t , the nominal GDP; E_t , the adjusted expenditure³⁴); and δ , the mid-term nominal potential growth rate.³⁵) Then, the formula for estimating the DFE is as follows:³⁶)

34) The formula for the adjusted total expenditure is $E_t = G_t - U_t^{??} - I_t$, i.e., the amount of total expenditure subtracted by the amounts of non-discretionary spending, such as unemployment insurance benefits ($U_t^{??}$) and interest payments (I_t)

35) Where Y_t equals the smoothed average of the yearly potential GDP growth rates, the following obtains:

$$pot_t = \left[\left(\frac{Y_{\tau+?}}{Y_{\tau-\delta}} \right)^{1/10} - 1 \right] \times 100$$

On the revenue side, the DFE involves making use of the based upon the narrative approach. This, in turn, means the effects of all policy measures regarding revenue as manifested in the nominal value of revenue. Most of these effects are cumulative, in the sense that the effects of anticipated/expected (legal or administrative) policy changes are added onto the effects of the existing policy measures. The anticipated policy changes are often called “discretionary tax measures” (DTMs).³⁷⁾ The effect of the DTMs, as measured by the bottom-up approach, may show much greater variability correlated with changes in the short-term revenue elasticity than when the top-down approach is used.

On the expenditure side, the DFE essentially applies the top-down approach, estimating and adjusting the change in the amount of total expenditure minus the amount of non-discretionary expenditure on UIBs and interest payments from one point in time to another and in accordance with changes in the potential GDP.

4 Adjusting the effects of one-off measures using macroeconomic data

The concept of fiscal balance is an amalgam of the outcomes and processes of diverse governmental activities. There are therefore multiple ways for us to understand the fiscal balance. From the perspective of economic cycle adjustments, we should understand the fiscal balance as consisting of factors that are much subjected to economic fluctuations as well as other factors. We can use the former type of factors to estimate the CAB on the basis of either the fiscal stance indicator or the structural balance. We can also understand the fiscal balance as consisting of outcomes of one-off measures as well as outcomes of ordinary fiscal activities. One-off measures³⁸⁾ refer to unrepeated

36) EU (2013)

37) Princen et al. (2013): “A DTM can be broadly defined as any legislative or administrative change in policy that has an impact on tax revenue, whether it is already finally adopted or only likely to be implemented”

fiscal activities of large scale and impact, such as the generation of non-tax revenue from the sales of communications frequencies or temporary increases in tax revenue thanks to tax amnesties.³⁹⁾ These measures exert dramatic impact on the fiscal balance of the given term, but such impact does not last for long subsequently. Although non-recurrent and transitory, the short-term influences of these measures can work significant short-term changes in the time series of the fiscal balance that ought not to be ignored. Therefore, trying to estimate the CAB using fiscal balance indicators without controlling for or eliminating the effects of one-off measures can lead to fatal errors. Thus we ought never to attempt to identify the fiscal stance or analyze long-term fiscal sustainability without taking into account the influences and impacts of these temporary, short-term measures.

In order to estimate the structural balance, which is another important indicator of the fiscal stance, we also need to eliminate the effects of these one-off measures. The same rule applies to the estimation of the DFE. Different researchers have used different methods to identify and quantify the effects of one-off measures. The OECD's *Economic Outlook*, which lists a comprehensive range of statistics on the fiscal status of major economies worldwide, identified two main types of one-off measures⁴⁰⁾ to be accounted for and adjusted until June 2008. There were sustained criticisms, however, regarding the consistency and scope of the OECD method, causing the organization to shift from national transfer accounts to capital transfers after 2008.

The EU provides better-organized individual methods of a more comprehensive range for estimating the impact of diverse one-off measures. However, the absence of clear standards and the inadequacy of available information limit the ability to define and conceptualize one-off measures and conduct interstate comparability. Nevertheless, insofar as the EU continues to

38) Joumard et al. (2008): “. . . large non-recurrent fiscal operations with no implication for fiscal sustainability and at best very limited impact on economic activity”

39) Other examples include the transfer of private pension funds into public ones, debt amnesties, temporary increases in taxes, and the like

40) One-off measures, adopted circa 2000, involving the sales of Universal Mobile Telecommunication System (UMTS) licenses and other items of massive capital expenditure (e.g., debt assumptions)

apply the same standards and stick to comparisons between different points in time than between different states, it will be able to produce structural balance estimates that are relatively consistent and well-controlled.

Journard et al. (2008) introduced a new method making use of macroeconomic data, particularly national account statistics, focusing on the fact that the majority of one-off measures are expressed as items of capital transfers from national accounts. Comparing the data from nine OECD member states from the period between 1995 and 2007, the authors discovered that the levels and trends of net capital transfers,⁴¹⁾ which have little to do with one-off measures, indeed stayed consistent in each given country, thus demonstrating the possibility of estimating the impact of one-off measures by applying the Hodrick-Prescott (HP) filter and eliminating the influence of trends from individual states' net capital transfers. The authors overcame the end-point problem associated with the HP filter structure by setting higher smoothing parameters than usual.⁴²⁾

41) According to the System of National Accounts (SNA) 2008, a capital transfer refers to an unrequited transfer that serves as the ground for the formation or accumulation of capital on the recipient' s part. Examples of capital transfers include investment grants and disaster compensations that a given government provides for businesses, nonprofit organizations, individuals, etc., as well as inheritance and gift taxes and other such capital charges that the government collects from other sectors

42) For instance, the smoothing average (λ) to apply to yearly statistics should be 400 instead of 100. These adjustments, however, may make it more difficult to observe and identify structural changes

IV

Analysis of Countercyclicality of Fiscal Policy

1 Estimation of Indicators

A. Potential growth rates and output gaps

The first step toward estimating the structural or cyclically adjusted balance, as is often required in any assessment of discretionary fiscal policy measures, is to estimate the potential output. While the concept of potential output continues to be somewhat controversial, it is generally understood as referring to the maximum level of production that can be sustained without causing extra burdens on the economy, i.e., accelerating inflation.⁴³⁾ Researchers equate the difference between the total supply and the total demand with the output gap,⁴⁴⁾ and use the output gap as an important conceptual basis for diverse macroeconomic policy discussions, including those on fiscal and monetary policies. In fiscal policy discussions, for instance, a negative output gap (i.e., where the actual output falls short of the potential output) indicates that the given economy possesses excess capacity, and therefore is in need of an

43) Ladiray et al. (2003): "Potential output is defined as the maximum level of durably sustainable production, without tensions in the economy, and more precisely without acceleration of inflation"

44) The output gap is generally expressed as the difference between the actual output (Y) and the potential output (Y^*) in proportion to the potential output (i.e., $(Y - Y^*)/Y^*$)

expansive fiscal policy that raises the total demand.

The potential output and the output gap are abstract concepts that are used to assess and predict short-term economic fluctuations and mid- to long-term growth trends. Compared to other better-defined concepts, these two concepts are impossible to observe and measure in concrete reality, and henceforth require other diverse statistical and econometric methods for operationalization and estimation. The estimation of the unobservable, abstract potential output therefore closely touches upon the theoretically disputed subject of the origins of economic fluctuations. While different methods offer different strengths and shortcomings (e.g., the ease of application or compatibility with established theory), differences in estimates obtained using different methods do not appear to exert decisive influences on estimates of economic fluctuations.⁴⁵⁾

In this study, we use two different methods—namely, the simple HP filter and the Canadian Parliamentary Budget Office (PBO) method—to analyze quarterly and yearly statistics and ultimately derive an estimation of potential output. In this process, the GDP is divided between labor input and labor productivity, and model-augmented filtering is applied to each model using the HP filter so as to compare and contrast the results to those obtained by applying the simple HP filter. The graphs below show estimations of the potential output and output gap using the simple HP filter.⁴⁶⁾

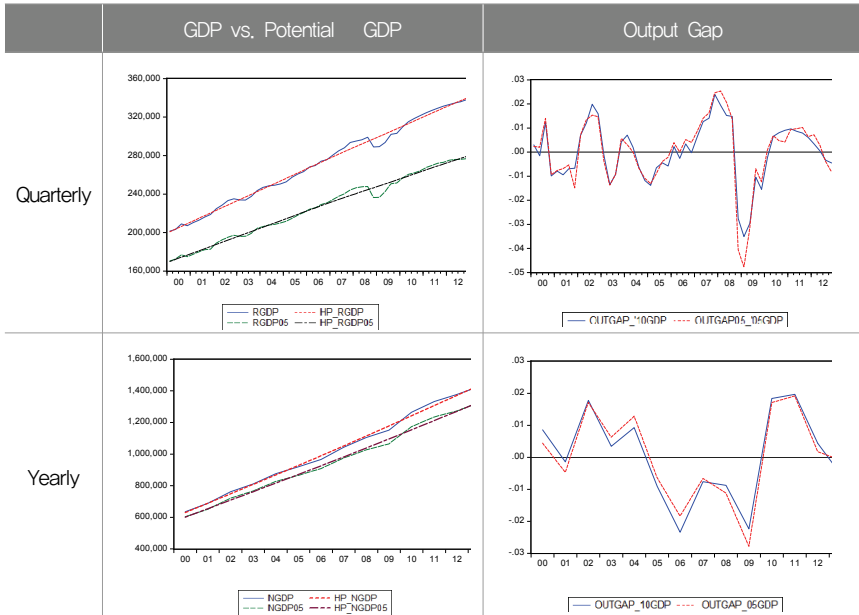
Let us now consider the PBO method, which approaches the issue from the perspective of labor supply. Let us break down the nominal GDP into labor input (L) and labor productivity (Y/L), as shown in the formula below:

$$Y_t = L_t \times \frac{Y_t}{L_t}$$

45) Kim (2012)

46) As a result of the Bank of Korea's revision of the GDP base year, the new time series introduced in 2010 can be applied to years dating back to 2000, while the old time series introduced in 2005 can be used to years up to and including 2012. In this study, both time series standards are used with respect to the years 2000 through 2012/2013.

[Figure IV-1] Application of the Simple HP Filter



Note: The numerals "05" next to the alphabetical legends indicate the use of GDP data from 2005.

For labor input we use the total number of hours worked, which is decided on the basis of the employment rate (LFER) of the working-age population or the labor force population (LFPOP)⁴⁷⁾ and the average number of hours worked (AHW).⁴⁸⁾ Depending on whether the data subject to analysis are quarterly or yearly, we multiply them by either 3 or 12 to estimate quarterly or yearly labor input.

47) Based on Statistics Korea's Census on the Economically Active Population (i.e., on persons employed for four weeks or longer at the time of the census)

48) Based on Statistics Korea's survey on labor availability (formerly known as the *Census on the Work Hours of Paid Employees*), which measures the average monthly work hours of employees in businesses (across industries) employing five or more persons each

$$L = LFPOP \times LPER \times AHW \times 3(\text{or } 12)$$

In order to identify and estimate the potential output tendencies, the tendencies of the factors listed above are first estimated. Using asterisks (*) to indicate either the potential state or a tendency, the potential output, Y^* , is estimated using the tendencies of other individual factors, as shown below:

$$Y^* = [LFPOP^* \times LFER^* \times AHW^* \times 3(\text{or } 12)] \times \left(\frac{Y}{L}\right)^*$$

The model-augmented filtering (MAF) method is used to estimate the tendencies of individual factors.

The labor force population, the first factor of labor input, refers to the size of the population at or above the age of 15, and shows little to no abrupt changes in the short run. There is therefore no need to estimate the tendency of the labor force population beyond actually measured statistics. However, as Statistics Korea provides no actual data on the status of the Korean labor force population pertaining to the period 2012/2013, we appropriated the size of the population at or above age 15 as indicated in Statistics Korea's official population forecasts. The institution provides low-, middle-, and high-level forecasts on demographic changes according to various demographic assumptions. While it provides all three levels of forecasts with respect to labor input, the difference among them is rather trivial. Accordingly, we use only the middle-level forecasts in our analysis.⁴⁹⁾

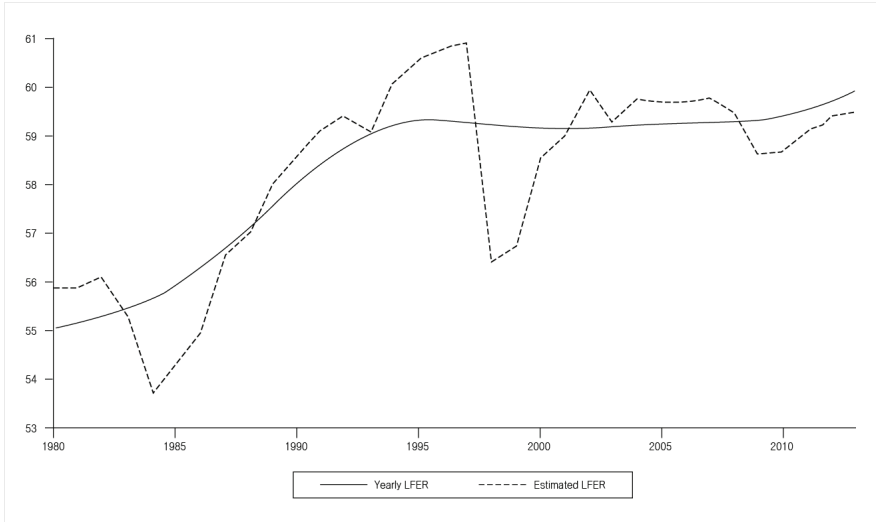
The labor force employment rate is the ratio of persons at or above age 15 who are employed:

$$\text{Employment rate (LFER)} = \frac{\text{Number of persons employed}}{\text{Number of persons at or above age 15}} \times 100$$

49) The quarterly demographics have been interpolated from the yearly demographics, given the slow curves in population tendencies

[Figure IV-2] Yearly Employment Rates and Estimated Trend

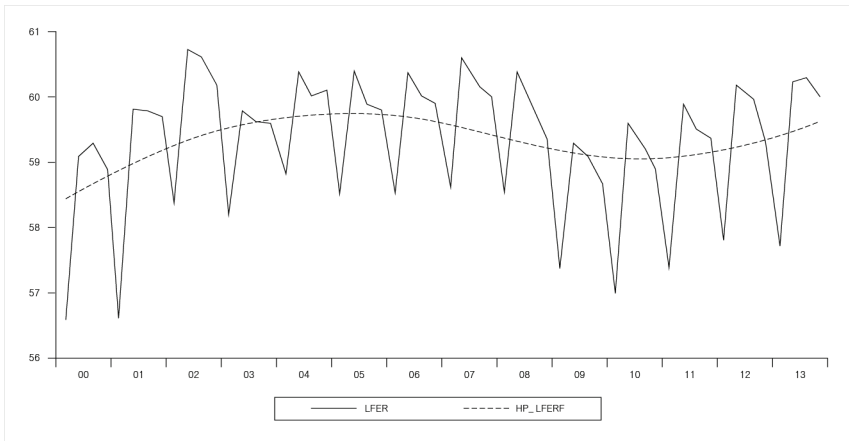
(Unit: %)



Source: Statistics Korea (yearly)

[Figure IV-3] Quarterly Employment Rates and Estimated Trend

(Unit: %)



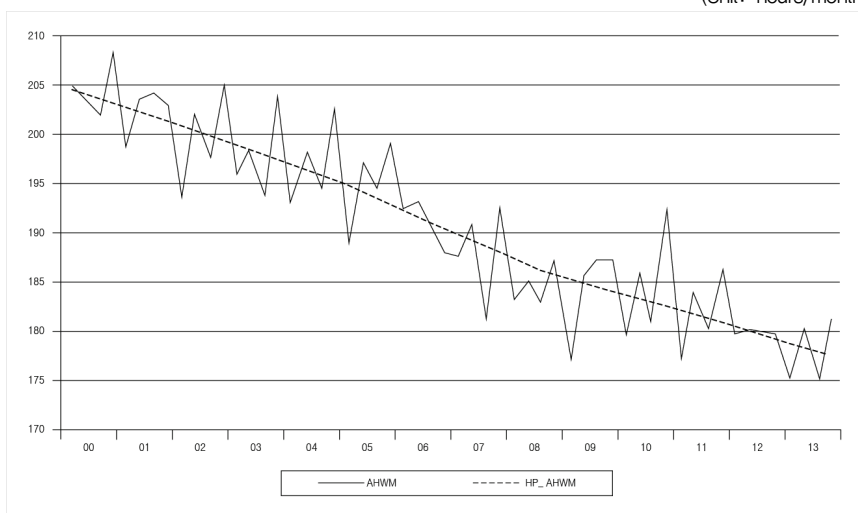
Source: Statistics Korea

Consider the long-term tendencies. The LFER in Korea began to rise steadily from the mid-1980s, before plummeting in the immediate aftermath of the Asian Financial Crisis of 1997. Although the rate soon began to spike again afterward, it has yet to recover its pre-crisis height. Though the latest global financial crisis also led to an abrupt drop in the LFER, it was by a considerably smaller margin compared to the one seen around the time of the Asian Financial Crisis. The LFER has been rising somewhat in recent years, but has not yet returned to its pre-crisis height.

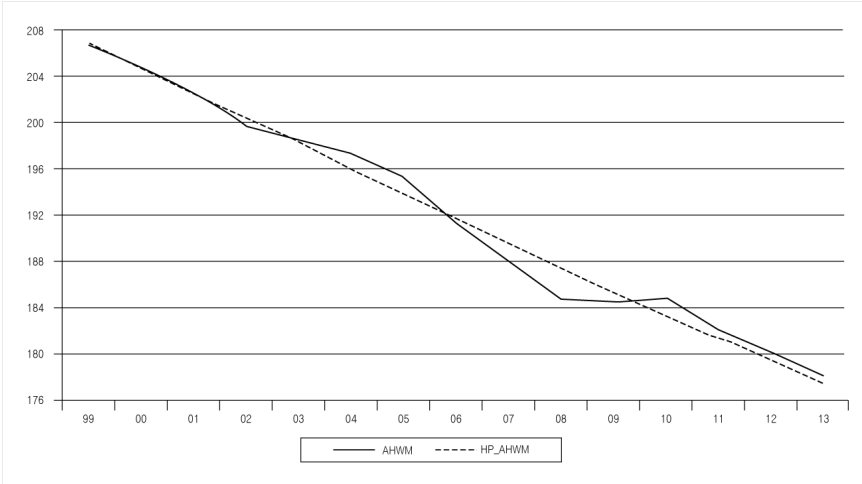
Due to the absence of official estimates on the prospective employment rate, the MAF method was used instead, adding model Seasonal AR (1) to the residuals of model MA (3), given the strong tendency toward seasonality and the movement of residuals in quarterly employment rate fluctuations. The resulting estimates on 12 quarters (three years) were added to the actual employment rate records, to which the HP filter was then applied so as to estimate the trajectory of the employment rate in a manner that is relatively free of the end-point bias.

[Figure IV-4] Quarterly Average of Hours Worked per Month and Their Estimated Trend

(Unit: hours/month)

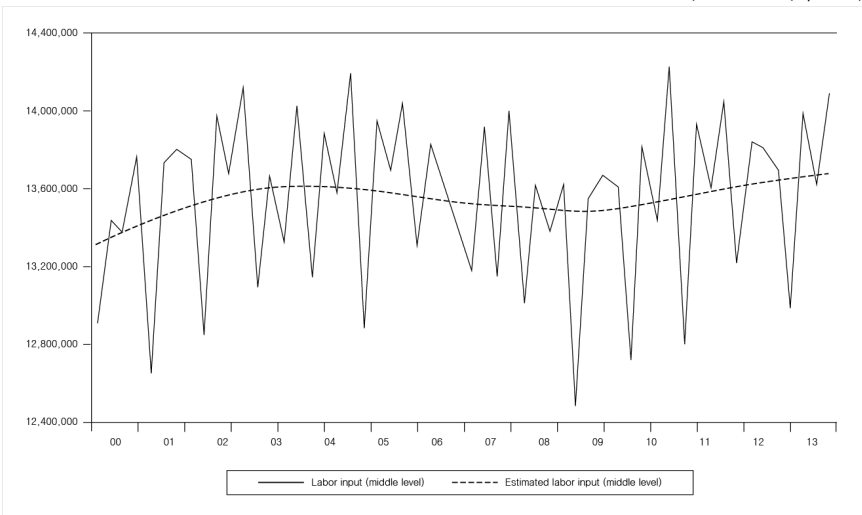


[Figure IV-5] Annual Average of Hours Worked per Month and Their Estimated Trend



[Figure IV-6] Quarterly Changes in Labor Input and Estimated Trend (Medium Population Forecasts)

(Unit: hours/quarter)

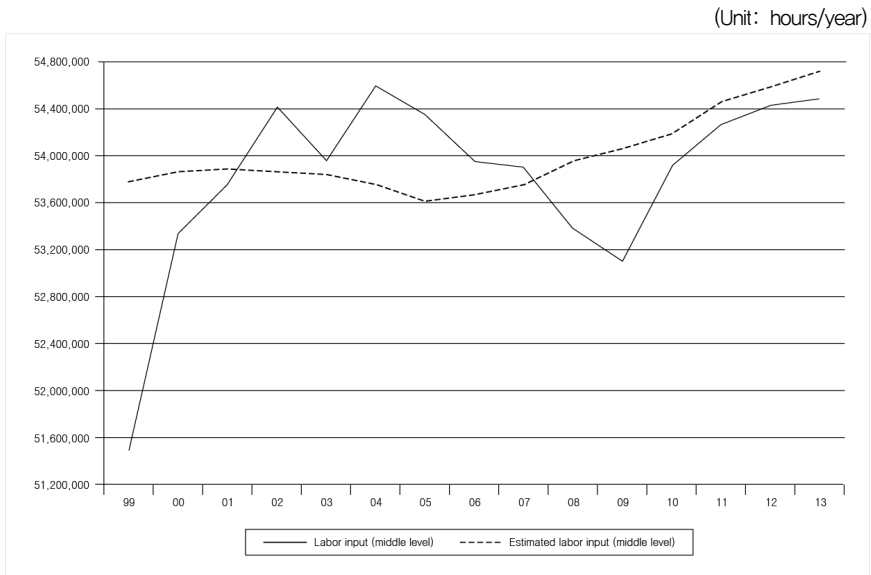


The average hours worked (AHW), in the meantime, draw a steady decline over time. Quarterly statistics, in particular, show great susceptibility to the influences of not only seasonality, but also of other factors of economic conditions at large. For prospective estimates, a new model was developed, adding the MA (3) variables to the residuals of model AR (4). As in the case of employment rate estimates, the prospective 12-quarter estimates were added to the actual statistics, to which the HP filter was then applied in order to identify the trajectory of average hours worked.

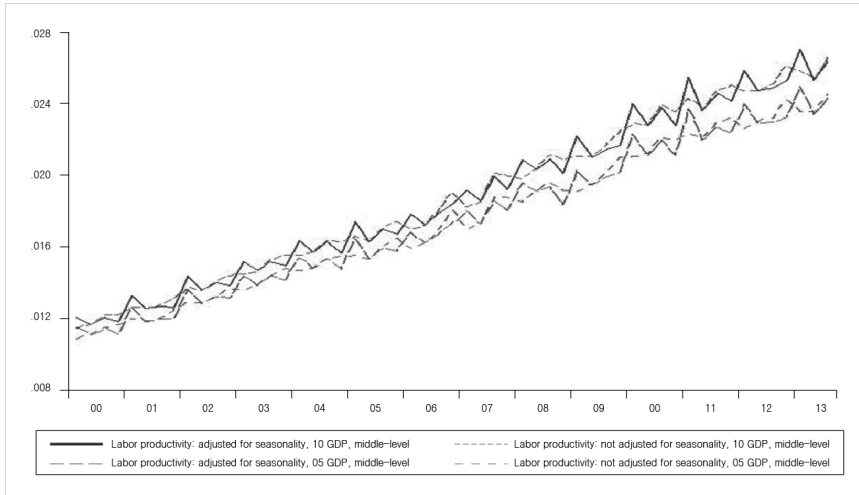
The estimates on labor input (L^*), based on estimated changes in the tendencies of the foregoing factors, are charted in [Figures IV-6] and [IV-7].

Given the steady increase in the size of the working-age population (LFPOP) and the commensurate decline in the average hours worked, as well as the strong tendency toward seasonality in the employment rate (measured quarterly), labor input shows changes in the long run, without showing a clear and consistent tendency.

[Figure IV-7] Annual Changes in Labor Input and Estimated Trend (Medium Population Forecasts)



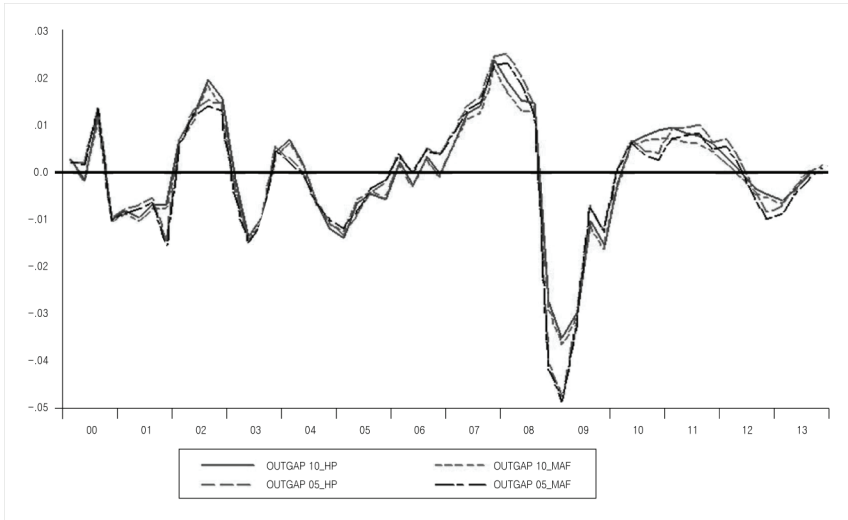
[Figure IV-8] Comparison of Quarterly Labor Inputs (Medium Population Forecasts)



Labor productivity (Y/L) is obtained by dividing the GDP by labor input. The strong seasonality of quarterly employment rate estimates causes significant seasonal changes in the time series of labor input, as shown in [Figure VI-6]. Considering this seasonality of the labor input time series, we used a GDP time series without controlling for seasonality, so that the influence of seasonality is retained in both the numerator and the denominator. [Figure VI-8] compares the labor productivity estimates that were obtained using two different GDP time series—one with its seasonality controlled for and the other without its seasonality controlled for. As explained, the GDP time series without its seasonality controlled for reflects the seasonality of the labor input more accurately, thus mitigating the effect of seasonality in the labor productivity time series.

As for quarterly labor productivity estimates based on the seasonality-retaining GDP time series, we used the MAF method to identify their tendency. We then utilized this labor productivity tendency along with the labor input tendency to estimate the potential quarterly output, and this potential output was then used with the GDP time series with its seasonality controlled

[Figure IV-9] Comparison of Output Gaps (Medium Population Forecasts)



so as to estimate the quarterly output gap.

We can use yearly statistics in the same way to estimate the potential yearly output and the yearly output gap.

B. Cyclically adjusted balance and structural balance

As shown in <Table III-2>, we estimated the structural balance and the cyclically adjusted balance (CAB) over three steps.⁵⁰⁾ Although in theory we ought to consider the effects of not only economic fluctuations and one-off measures but also of fluctuations in asset and commodity prices, here we shall confine our attention to the effects of economic fluctuations and one-off measures only.

50) The existing literature on the CAB does not provide a clear definition of the process by which one-off measures are processed, eliminating the influences on elasticity only

In trying to identify the effects of non-recurrent but significant one-off measures, we cannot completely rule out the involvement of subjectivity and arbitrariness. The absence of a clear and universal standard by which to judge policy measures as one-off measures prevents us from making consistent comparisons, and leaves our attempt to determine the effects of such measures vulnerable to debate. And yet applying a single method, rather mechanically, to adjusting government revenue and expenditure in light of the effects of economic fluctuations may cause significant distortions and conceptual errors, depending on whether there have been one-off measures implemented during the time period subjected to the analysis. For instance, a government may experience a sizable, unintended, and non-recurrent increase in its revenue during a given period of time. Our estimates of the elasticity of government revenue to economic fluctuations may vary significantly depending on whether we decide to include or exclude that one-time increase in revenue in our elasticity calculations. As the concept of elasticity is intended to measure the correlation between changes in economic conditions at large and changes in the government revenue structure, trying to estimate the elasticity of government revenue using data from which the effects of one-off measures have not been properly eliminated may undermine the validity of the resulting estimates and further complicate interpretation.

In this study, we identify and analyze various types of one-off measures one by one. Subject to our analysis are such major types of one-off measures as the sale of communications frequencies, debt relief, pension transfers, tax exemptions, the sale of licenses and authorizations, and large-scale fiscal contributions and transfers, as well as some other one-off measures that are sizable in scope, but that do not fundamentally affect the elasticity of government revenue. The types of one-off measures we analyze here all impact government revenue to a certain extent (i.e., 0.05 percent of the GDP, as in the case of the EU).⁵¹⁾

51) The OECD has only been adjusting statistics for the sales of communications frequencies and for large-scale debt relief in certain nations since 2000. Even these adjustments can affect resulting fiscal estimates differently, depending on which basis (cash or accrual) has been used

〈Table IV-1〉 Non-Recurrent Events Significantly Affecting the Fiscal Balance

(Unit: KRW 100 million)

Year	Expenditure ¹⁾		Revenue ²⁾	
	Item/description	Actual amount	Budget	Actual
1988			3,644	2,227
1989			11,685	12,752
1990	Natural disaster management fund, e.g., major floods of the Han River	1,690	7,480	7,480
1991	Natural disaster management fund, e.g., Typhoon Gladys	2,224	5,5	5,5
1992			22	22
1993			0	0,7
1994			7,500	11,307
1995	Natural disaster management fund, e.g., Typhoon Janis	4,415	4,921	1,303
1996	Natural disaster management fund	3,488	11,903	10,403
1997			13,500	5,607
1998	Natural disaster management and homeless relief funds	20,477	12,500	2,647
1999	Natural disaster management fund	12,706	38,736	33,009
2000	Natural disaster management fund	8,114	35,153	398
2001	Natural disaster management fund	8,955	30,432	37,129
2002	Natural disaster management fund, e.g., Typhoon Lusa	47,888	67,029	67,402
2003			16,070	13,494
2004			485	5,863
2005			1,233	1,203
2006			20,434	7,699
2007			497	1,012
2008			10,124	706
2009	Compensation for losses in real estate subsidies	18,600	12,190	0
2010			18,599	0
2011	Expenses on managing foot-and-mouth disease and aviation influenza crises	9,457	15,200	0
2012	Natural disaster management fund	10,998	19,000	0
2013	Compensation for fiscal losses in local governments	31,289	77,000	2,650

Notes: 1) Only events that raised the spending of reserve funds by 0.1 percent or more were included in the expenditure side, (Events that did not raise the spending by 0.1 percent or more, but nearly so, are indicated in italics)

2) While both the expected (budget) and actual proceeds from the sales of shares in public corporations are indicated, only deals that constituted at least 0.1 percent of the GDP each were included in the revenue side as pertinent one-off measures

Source: Ministry of Strategy and Finance, *Annual Account Settlement Reports* (yearly)

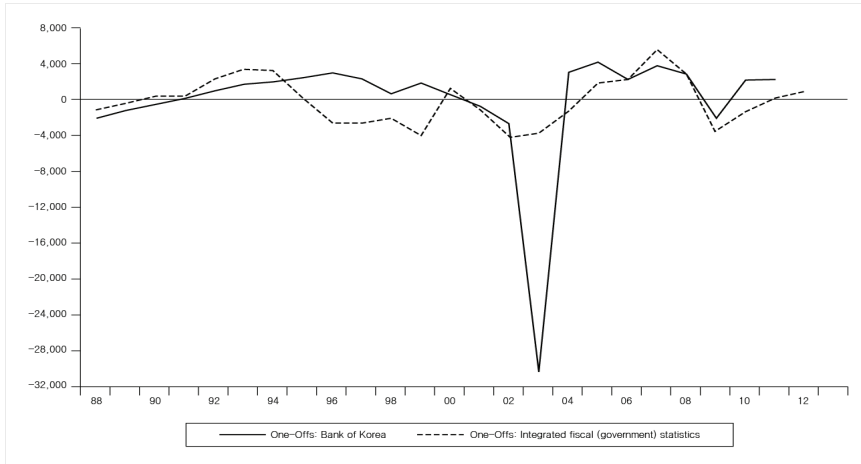
The sales of communications frequencies in Korea that are pertinent to our analysis took place twice, in 2011 and 2013, with an upcoming third sale to take place in 2015. Prior to 2011, communications service providers were required to pay “contributions” or user fees to the government in exchange for the frequency ranges they used.⁵²⁾ The introduction of the frequency range bidding system in 2011 led bid prices to be incorporated as part of the income of the Broadcasting and Communications Development Fund and the Information and Communications Promotion Fund under Article 11.6 of the Electronic Waves Act. These bids generated an additional KRW 1.7 trillion and KRW 2.4 trillion, in 2011 and 2013, respectively, in revenue for the Korean government. Although the one-time sum of contributions from the IMT-2000-unmobilized communications service providers (dating back to 2001) amounted to KRW 1.3 trillion, the new system has since allowed these service providers to pay their contributions in equal installments, thus minimizing fluctuations in government revenue.

Broadly speaking, periodical compensations for the losses of public corporations do constitute debt relief. However, such cases of “debt relief” are relatively trivial in size and take place regularly, and therefore should not be seen as one-off measures. We may identify the debt relief of KRW 22.2 trillion for the Korea Deposit Insurance Corporation and the Korea Asset Management Corporation in 2003 as a significant one-off measure. Nevertheless, because this action involved no direct cash transactions, it did not cause any change to comprehensive fiscal statistics using the cash basis, and appear only under the government sector in the Bank of Korea’s National Account statistics using the accrual basis. On the other hand, the conversion of KRW 46 trillion in the Public Asset Fund into treasury bonds, from 2003 to 2006, did involve actual cash transactions, and therefore appears in both governmental comprehensive fiscal statistics and National Account statistics. Other non-current events that significantly affect the cash-based comprehensive fiscal balance include the creation of funds set aside for natural disasters and emergencies (on the

52) Added to the Informatization Promotion Fund since 1996, and to the Information and Communications Promotion Fund since 2004.

[Figure IV-10] Comparison of One-Off Measures Estimates: Statistics of the Bank of Korea vs. the Government Statistics

(Unit: KRW 1 billion)



expenditure side), and proceeds from the sale of public corporations (on the revenue side), as summarized in the table below.

While we may use the Bank of Korea's macroeconomic statistics, the Korean government's comprehensive fiscal statistics already provide CAB estimates on the cash basis. Therefore, we use the Bank of Korea's statistics only for identification and comparison purposes, not for actual estimations of the structural balance.

In adjusting fiscal balances for economic cycles, we need to divide our attention between natural economic fluctuations and fluctuations caused by discretionary factors. In order to identify and determine changes in the fiscal balance resulting from natural economic fluctuations, researchers generally estimate the elasticity (or sensitivity or semi-elasticity) of fiscal factors to changes in the GDP. Not only do researchers differ on which specific methods to use to estimate elasticity, but they also diverge on how to use and apply the elasticity estimates—whether together on the total revenue and expenditure, or individually on different items. Researchers also differ on which type of elasticity is to be used (e.g., sensitivity vs. semi-elasticity, long-term average vs. short-term

average, etc.). As explained, the CAB is affected by the compositions of revenue and expenditure; their elasticity to the GDP; and the potential GDP ratio to the GDP. As the sensitivity of the fiscal balance to economic fluctuations depends on the types of fiscal revenue involved, we need to obtain different elasticity to the GDP (or the output gap) at different levels of sensitivity to economic fluctuations. As in Girouard and Andre (2005), assuming that X stands for the balance after the capital expenditure and the net interest payment have been subtracted from other income (including non-tax revenue), the CAB can be expressed using the following formula:

$$\begin{aligned} CAB &= R^* - G^* + X = R \left(\frac{Y^*}{Y} \right)^{\epsilon_R} - G \left(\frac{Y^*}{Y} \right)^{\epsilon_G} + X \\ &= \sum_i R_i \left(\frac{Y^*}{Y} \right)^{\epsilon_{R_i}} - \sum_j G_j \left(\frac{Y^*}{Y} \right)^{\epsilon_{G_j}} + X \end{aligned}$$

We can largely divide the total revenue, as indicated in the Korean government's comprehensive fiscal statistics, between current revenue and capital revenue. The current revenue is subdivided between tax revenue and non-tax revenue, with tax revenue consisting of income and gains taxes, social security contributions, wage and workforce taxes, property taxes, goods and service taxes, international transaction taxes, and other taxes. Studies that use the OECD method to estimate elasticity run regression analyses to estimate the elasticity of personal income taxes, corporate taxes, social security contributions, and indirect taxes, and generally assume the elasticity of all other items of tax revenue to be one in proportion to the GDP.

θ_{R_i} , which stands for the elasticity of the output gap between different amounts of tax revenue, can be conceptually factored down as a multiple of the elasticity (θ_{t_i, tb_i}) of tax revenue and tax bases, on the one hand, and the elasticity ($\theta_{tb_i, y}$) of economic fluctuations in the tax revenue, on the other.⁵³⁾

53) The OECD method involves using indicators of resource utilization - e.g., the difference between the actual output and the potential output and the difference between actual unemployment rate and structural unemployment rate - in order to measure economic fluctuations

The former is especially prone to institutional and structural influences, such as the given tax system, structure, and bases.⁵⁴⁾

Central government statistics on net expenditure can mainly be divided into current expenditure and capital expenditure, and net loans. Current expenditure, for its part, consists of spending on goods and services, interest payments, subsidies and grants, and current transfers. Estimations of structural changes in current expenditure due to economic fluctuations presuppose unemployment-related transfer-type spending only. Interest payments, in particular, tend to be more of the results of past fiscal policy than of economic fluctuations. The formula therefore assumes the elasticity of the GDP in relation to non-interest current expenditure, and assumes the elasticity of the GDP to be one with respect to all other items.

In using the OECD method to estimate elasticity, Park and Park (2002) and Kim (2012) also borrow the van den Noord (2000) method to estimate the elasticity of each given amount of tax revenue. This study uses the estimation results offered by Kim (2012), pertaining to statistics up to and including the year 2011, in order to estimate the CAB.⁵⁵⁾

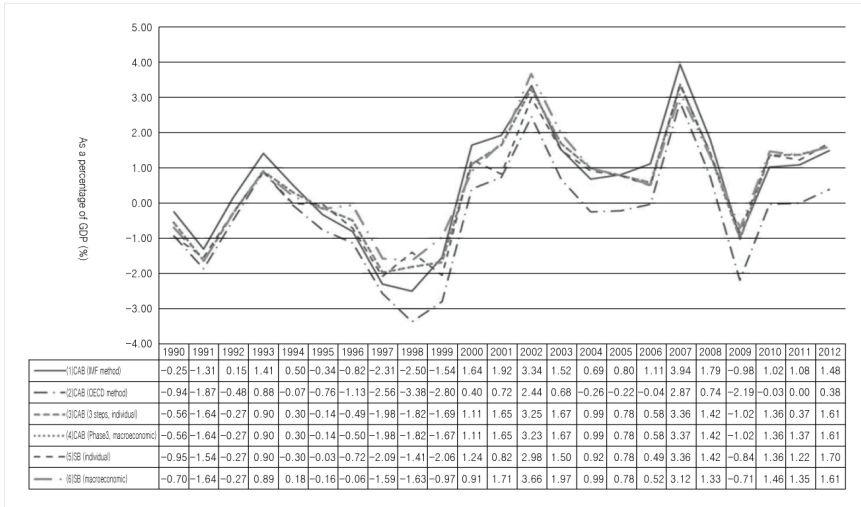
This study makes use of the two methods, on top of the IMF and OECD methods, in order to take into account the effects of one-off measures, while also incorporating the results of structural balance estimations using both domestic and macroeconomic statistics.⁵⁶⁾ Although the IMF method and the OECD method apply elasticity estimates in different ways, they yield remarkably similar results when it comes to percentages of GDP. On the other hand, the inclusion or exclusion of the effects of one-off measures leads to significant

54) The structural factors that affect elasticity are numerous, including the progressive personal income tax rate and the ceiling on national healthcare insurance premiums, among others

55) While Kim (2012) offers varied estimates depending on the duration of each analyzed period (i.e., whether before or after the latest global financial crisis) and the model used, this study uses the medians of these figures, i.e., 0,815 for personal income tax, 0,443 for social security contributions, 1,703 for corporate tax, 0,918 for indirect taxes, and -0,128 for non-interest current expenditure

56) (1) and (2) represent the CABs estimated using the IMF and the OECD methods, while (5) and (6) represent the CABs that take into account the effects of one-off measures in three steps, as in Bornhorst et al. (2011). (3) and (4) represent structural balances. While (3) through (6) all reflect the effects of one-off measures, (3) and (5) are based on individual data, and (4) and (6) on macroeconomic statistics

[Figure IV-11] Comparison of Various Estimates of CAB and Structural Balance (SB)



differences in the extents to which yearly fiscal balances are adjusted, and therefore yields significantly different results in structural balance estimates as percentages of GDP.

C. Discretionary fiscal effort (DFE)

To reiterate, the DFE is an indicator that supplements the top-down approach to the estimation of the CAB and the structural balance by adding elements of the narrative approach. The concept is favored for its ability to help the researcher identify, ex-ante, whether a given government has intentionally introduced certain policy measures aimed at certain fiscal changes, and how appropriate those measures have been overall. These are facts that often elude estimations using the fiscal indicators of the top-down approach.

However, there are myriad difficulties that prevent us from identifying, with confidence, the exact intent of the policymaker when using the narrative approach. The narrative approach is considered to be appropriate for identifying the government’s intent in making changes to the tax system. Nevertheless, while

the Korean government does announce and explain intended changes to the tax system on an annual basis, one can hardly find statistics exactly showing the effects of each change. It was only a short while ago that the Korean government began to suggest estimated effects of the overall tax reform as part of its announcements. The range of data available for narrative-approach analysis is also limited, including information released by the National Assembly Budget Office (NABO) and National Assembly committees, and occasional announcements from the government after tax reforms are implemented.

This study uses the DFE in order to identify, ex-ante, the government's intent before and in introducing a proposed change to the fiscal policy, and whether the introduced change will be appropriate for the Korean economy. The DFE analysis this study makes is therefore confined to government announcements and the like that were made before a policy change took effect, rather than to ex-post data and information showing the actual effects of such changes. More specifically, this study uses internal estimations made by tax-handling ministries and departments, and combines them with other external press releases and announcements to calculate the medians as prospective indicators of proposed tax reforms.

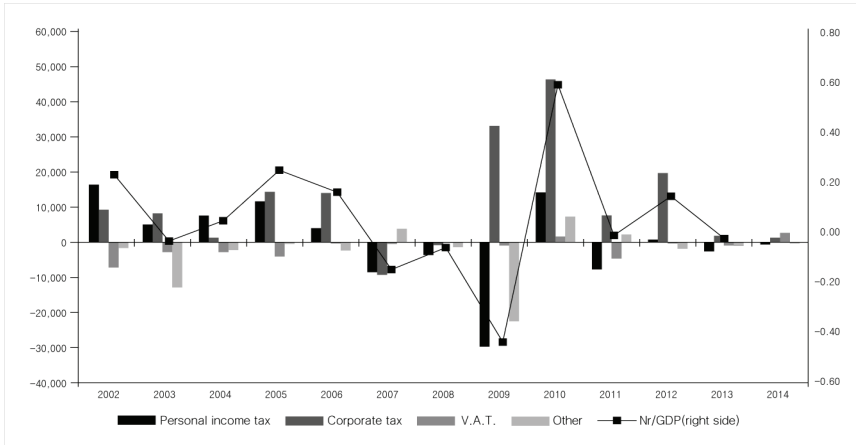
Assuming that N^R stands for policy-induced change in fiscal revenue (in nominal value); Y^t for the nominal GDP; E^t for the adjusted fiscal expenditure; and pot for the intermediate potential growth rate, the DFE can be defined as follows:

$$DFE_t = EFE_t^R + DFE_t^G = \frac{N_t^R}{Y_t} - \frac{\Delta E_t - pot \cdot E_t - 1}{Y_t}$$

The policy-induced change in fiscal revenue, N^R , indicates a change in the tax revenue identified using the narrative approach. [Figure IV-12] shows the ratio of the change in the total tax revenue to the nominal GDP.⁵⁷⁾

57) The estimations are based on data dating back to 2002, as no statistics on tax reforms prior to that year are available in Korea

[Figure IV-12] Estimates of DFE



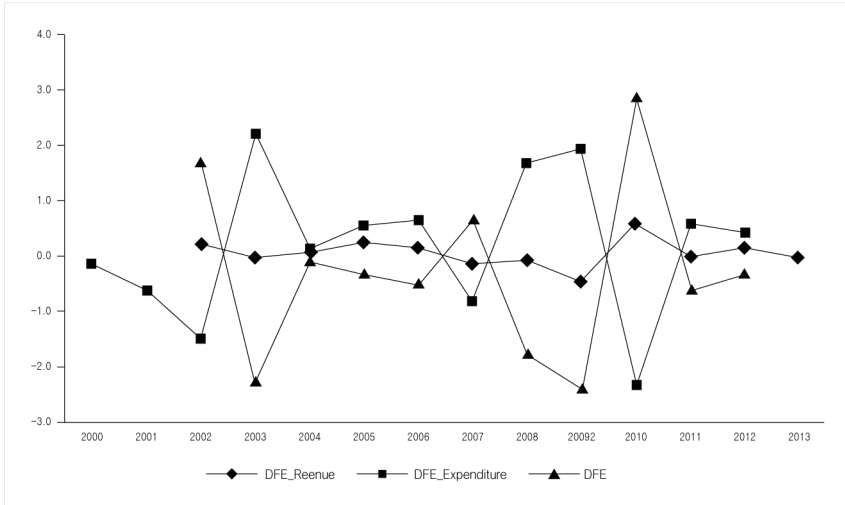
The adjusted total expenditure excludes non-discretionary spending items such as unemployment-related expenditure and interest payments, and can therefore be expressed as $E_t = G_t - U_t^{nd} - L_t$. Integrated fiscal statistics in Korea lack separate statistics on unemployment-related spending. Accordingly, the unemployment insurance expense data indicated on the Ministry of Employment and Labor's "Financial Statements of Employment Insurance Fund" were used instead.

[Figure IV-13] shows the effects of the DFE on expenditure and revenue as percentages of GDP. The change in expenditure concerns the adjusted total expenditure, i.e., expenditure not including such non-discretionary spending items as unemployment spending and interest payments. The intended change amounts to the part of the change in the adjusted expenditure over time (ΔE_t) minus the part of the increase in expenditure ($pot \cdot E_{t-1}$) in natural response to the increase in the potential GDP growth rate. The DFE, as a gap between the discretionary (intended) change in revenue and the discretionary (intended) change in expenditure, is significant in a way different from either the CAB or the structural balance. Whereas the CAB and structural balance are estimated using

[Figure IV-13] DFE: Expenditure vs. Revenue vs.

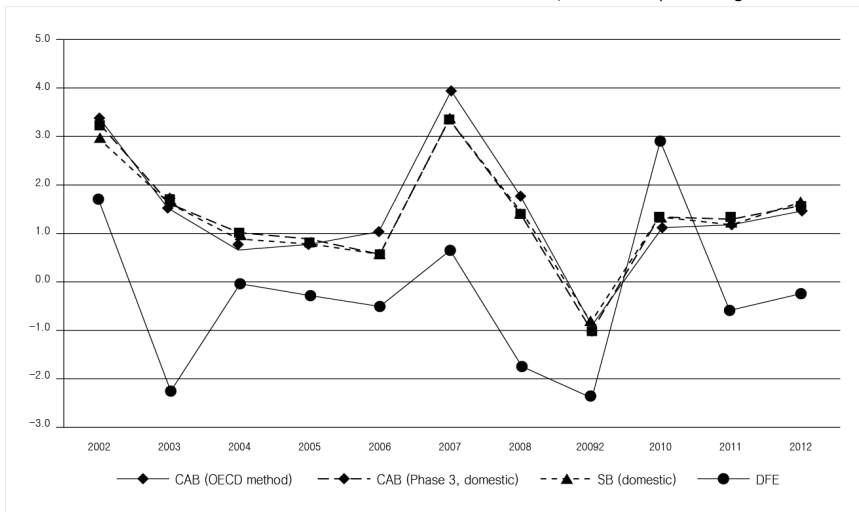
Balance

(Unit: as a percentage of GDP)



[Figure IV-14] Comparison of DFE and Other Fiscal Stance Indicators

(Unit: as a percentage of the GDP)



formulae that comprehend the entire fiscal balance, the DFE requires estimations of expenditure and revenue using different spending and revenue items.⁵⁸⁾

[Figure IV-14] compares the CAB, the structural balance, and the DFE, which are the three common indicators used to identify the fiscal stance. While all three indicators move in similar fashions overall, they show significant differences in terms of degree or extent, inviting the analyst to reach different interpretations at different points in time. The CAB and the structural balance indicate either fiscal deficit or fiscal surplus, and lead the analyst to conclude that the given fiscal policy has been expansive (deficit) or contractionary (surplus) in its effect on fiscal indicators. The DFE, on the other hand, eludes such either-or conclusions. When the sign in front of it is negative, i.e., when the expenditure has been increased by a greater margin than the revenue, it indicates that the government has intentionally opted for an expansive fiscal policy.

2 Evaluating the counter cyclicity of fiscal policy

The matter of evaluating whether a given fiscal policy stance is appropriate involves judging how well it has responded to and managed the given economic situation. While we need to use the multiple fiscal stance indicators discussed above to complete this task, we also need the help of other economic indicators. The output gap provides the most appropriate starting point for identifying the economic situation. However, the output gap method in and of itself does not help the researcher identify the potential GDP. Therefore, we need to choose another method for estimating the potential GDP. Our judgment of the economic situation, however, will differ depending on the potential GDP estimates we obtain.

An alternative to the output gap can be found in the Coincident Composite Index (CCI) provided by Statistics Korea. The CCI serves as an indicator of

58) For instance, the CAB requires that all factors of economic fluctuations be taken into account, whether on the expenditure side or on the revenue side. The basic fiscal balance also involves adjusting for interests in both expenditure and revenue. In other words, balance-related concepts all require that expenditure and revenue be adjusted exactly for the same factors

the current phase in the economic cycle.⁵⁹⁾ Assume that the trajectory of a given economy can be expressed as 100. Any margin of fluctuation greater than 100 then indicates that the economy is growing more rapidly than its trajectory indicates. Any margin of fluctuation smaller than 100 indicates that the economy is growing more slowly than its trajectory.

Another important indicator used to identify the fiscal stance is the fiscal impulse (FI). Although the CAB and the structural balance account for the influence of economic fluctuations on the fiscal stance and thereby indicate the impact of a given fiscal policy on the overall economy, these indicators fail to show how much of the change in the given economy is a direct result of intentional policy measures. The FI, on the contrary, divides the yearly differences in the fiscal balance by the GDP to determine how the fiscal stance changes or evolves from year to year. It provides a useful guide on the short-term changes in the trajectory of a given fiscal policy. The output gap is by far the simplest indicator of the fiscal stance, with its positive sign indicating a booming economy and its negative sign pointing to economic contraction.

As the CAB estimates in <Table IV-2> indicate, the Korean government tends to resort to a contractionary stance during economic expansions (as indicated by the CCI or the output gap), and rarely opts for an expansive fiscal stance when the economy is contracting.⁶⁰⁾ In other words, there is a certain asymmetry between the fiscal stance indicators (the CAB and the structural balance) and the given economic situation, while the contractionary fiscal policy stance has been the norm in Korea on the whole. The expansive stance tends to coincide with economic expansion. The FI, indicating short-term changes in the fiscal stance, may show a less contractionary tendency than the CAB and the structural balance but it also indicates the prevalence of the contractionary

59) The CCI is a composite index consisting of seven sub-indices that change in the same direction as the overall economic fluctuation, including the Retail Price Index, the Mining Productivity Index, the number of employees in non-primary sectors, etc.

60) This may be because the integrated fiscal balance reflects surpluses in the social security fund balance. Although the Korean government's basic position is to refer to the managed fiscal balance only without taking into account the social security fund balance, researchers still differ on whether the managed fiscal balance or the integrated fiscal balance is better for discussions of policy effects on the overall economy. This study estimates fiscal indicators on the basis of the integrated fiscal balance

stance overall (except for the FI based on “CAB2”), thus pointing to the persistence of asymmetry even in the short run.

The DFE, on the other hand, shows greater responsiveness to economic situations as identified by the *ex-ante* indicator than by either the CCI or the output gap. This is perhaps due to the fact that the DFE method focuses on identifying the *ex-ante* intent of policymakers in choosing one fiscal policy measure (or stance) over another, and therefore more closely reflects the given economic situation than do other indicators.

[Table IV-2] Indicators of Economic Situation and Fiscal Stance

		'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12
Economic situation	Ex-ante													
	Coincident													
	Output gap													
	ΔOutput gap													
Fiscal stance	CAB1													
	CAB2													
	SB													
	FI1													
	FI2													
	FI3													
	DFE													

Notes: 1) Colored blocks indicate expansion (i.e., either an expanding (growing) economy or an expansive fiscal stance)

2) The economic situation is evaluated on the basis of whether the margin of fluctuation in the *ex-ante* and coincidental indicators is greater than 100. Alternatively, it can also be evaluated on the basis of the sign (positive or negative) attached to the output gap

3) “CAB1” was estimated using the OECD method, while “CAB2” and “SB” were estimated using the Bornhorst et al. (2011) method, taking into account the effects of individual one-off measures

4) “FI1” is estimated using the IMF method for calculating the CAB, while “FI2” is estimated using the OECD method. “FI3” is a fiscal impact index based on “CAB2”

The onset of the latest global financial crisis, ignited by the collapse of Lehman Brothers in 2008, has generated abrupt declines along all business cycle indicators and in output. The economic growth rate reached its nadir in the first quarter of 2009, and began slowly to pick up its pace of recovery until mid-2010 or so. Although the economic growth rate managed to hover slightly above the average from late 2011 to early 2012, it soon declined and lagged behind the average until late 2013.



V

Conclusion

This study may not offer specific guidelines for policymaking, but it does analyze how appropriate the general stance in the Korean fiscal policy has been with respect to changes in the economic situation, particularly after the latest global financial crisis. There are numerous methods and indicators one can use and combine to perform an evaluative task like the present one. In addition to discussing and using some of the most common methods for fiscal stance evaluation worldwide, such as the business cycle index, the output gap, the cyclically adjusted balance (CAB), and the fiscal impact (FI), this study also introduces a new and supplementary indicator that the European Union has recently begun to use, i.e., the discretionary fiscal effort (DFE), and compares the estimates obtained from applying the DFE to the Korean case to the estimates obtained by using other more common methods.

The comparison of estimates from these diverse indicators of economic situation and fiscal stance indicate that the Korean government, on the whole, has responded to economic fluctuations (as indicated by the Coincident Composite Index (CCI) or by the changes in the output gap) relatively effectively since the onset of the global financial crisis as expressed by the CAB, the structural balance, and the FI. The DFE further reveals that Korean policymakers respond expansively to signs of contraction in the economy.

Considering that the DFE is the more appropriate measure for identifying policymakers' ex-ante intentions regarding fiscal and economic situations, it is expected to be a useful additional tool for assessing the appropriateness of chosen fiscal policy measures in the future.

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