

# Cyclicalities in the Fiscal Policy of Nepal<sup>#</sup>

T.P. Koirala, Ph.D.<sup>1</sup>

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## Abstract

*This paper examines discretionary fiscal policy response to the business cycle of Nepal using annual time series ranging from 1975 to 2013. The Cyclically Adjusted Balance (CAB) of overall budget balance is utilized as a measure of discretionary fiscal actions and the output gap as measures of business cycles. Graphical depiction of the CAB accompanied with the output gap shows that the government of Nepal has been pursuing counter-cyclical fiscal policy in the post liberalization period and pro-cyclical in the pre-liberalization period. In line with the recent empirical finding that only counter-cyclical fiscal policy is capable in performing stabilization function, this paper found that the fiscal stimulus of the government of Nepal has also been adding aggregate demand during downturns (bad time) and withdrawing demand during upturns (good time) as envisaged by counter-cyclical discretionary fiscal policy. The counter-cyclicalities as such is strong during 2000s whereas there is mild pro-cyclicalities during the period 2011-13. For computing CAB, this paper assumes unitary elasticity of revenue with respect to output gap and zero expenditure elasticity with respect to output gap. The output gap has been estimated based on the trend component of the GDP using Kalman filter method. Factors like stronger institutions and sound macroeconomic policies might overcome recent pro-cyclicalities of Nepal and allows room for counter-cyclical fiscal policy in the future. Similarly, the phenomenon of high fluctuations in the fiscal impulse over time indicates uncertain and inconsistent fiscal stance of the government. It demands for focus more on automatic stabilizers rather than more discretionary fiscal actions by broadening tax bases and social safety nets.*

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**Key Words:** Cyclically adjusted balance, Output gap, Counter-cyclical, Fiscal stance, Fiscal impulse.

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1. Assistant Director, Nepal Rastra Bank, Research Department, Central Office, Baluwatar, Kathmandu, Nepal. e-mail: [tpkoirala@gmail.com](mailto:tpkoirala@gmail.com).

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## I. INTRODUCTION

Sound and sustainable government finance is necessary for promoting economic growth and stability. It is an ingredient for poverty reduction too (IMF, 2006). Fiscal adjustment is the key to achieve sound and sustainable fiscal position. It may involve either tightening or loosening the fiscal stance, depending on individual country circumstances. Loose fiscal policy can lead to inflation, crowding out, uncertainty and volatility, all of which hamper growth (Gupta, et al., 2004) whereas tight fiscal policy lead to deflation and even hampering growth. Good quality fiscal adjustment can also mobilize domestic savings, increase the efficiency of resource allocation, and help meet development goals (IMF 2006). Therefore, fiscal policy is a tool of demand management of the economy.

One way to analyze the interaction between fiscal policy and demand condition is to understand, how do demand conditions affect fiscal position? (or how do fiscal policy react to the business cycle?). This question is sharp contrast with, how does fiscal policy affect demand conditions? (does it support growth, and how?). Classical endogeneity problem, i.e. whether fiscal policy respond to output cycle or whether output is affected by fiscal policy gives rise to the choice of the approaches for empirical analysis of the relationship between fiscal policy and economic activities. The former approach of analysis dominates the latter under the ground that every assessment of the impact of a policy change must take into account the economic circumstances (business cycle) when the policy was implemented. Such an analysis can also be used for accessing the "underlying" fiscal stance (expansionary or contractionary) of the economy (Fedelino, Anna and Horton 2009). Fiscal policy is indicated as counter-cyclical if it expands (expansionary) when the economy slows down (bad time). Counter-cyclical fiscal policy adds aggregate demand during downturns (bad time) and withdraws demand during upturns (good time). Fiscal policy is indicated as pro-cyclical if it is expanded (expansionary) when the economy goes up (good time). Fiscal policy is indicated as a-cyclical (neutral) if its stance does not change over business cycles.

Governments have responded by aiming to boost economic activity through two channels: automatic stabilizers and discretionary measures, i.e. fiscal stimulus (Horton, and Ganainy, 2006). If fiscal variables (e.g. budget balance) move in response to automatic effects induced by changes in the macroeconomic environment (i.e. while economic activity slows down, revenue decrease and expenditure increase, react to cycle), fiscal policy is said to follow automatic stabilizer. Cyclical changes make fiscal policy automatically expansionary during downturns and contractionary during upturns. Such automaticity is absent in discretionary fiscal policies as such fiscal policy is influenced by the discretion of the policymakers. If fiscal variables (e.g. budget balance) move in response to discretionary policy actions (e.g. tax cut, expenditure increase), the policy is said to be discretionary fiscal policy (IMF, 2006). Therefore, the effect of business cycle is filtered to net out the effect of discretionary fiscal policy from that of automatic stabilizer. For instance, the impression of expansionary/contractionary discretionary policy action may be misleading if policy stances have the combined effect of automatic stabilizers and discretionary policy actions. Therefore, the demarcations of the policy responses whether that corresponds to discretionary policy action or that is

through automatic effects of macroeconomic environment have different policy implication.

Theories suggest that fiscal policy should not be pro-cyclical to perform its stabilization function. Keynesian models recommend countercyclical monetary and fiscal policies. Neoclassical models of optimal fiscal policy recommend that fiscal policy should be a-cyclical (Barro, 1979) or counter-cyclical (Baxter and King, 1993). Gavin and Perotti, (1997) found pro-cyclical of fiscal policy especially in emerging markets and low-income countries. The pro-cyclical is not limited to Latin American economy only (Talvi and Vegh, 2000). There is evidence that Asian economies have pursued more counter-cyclical fiscal policies in the 2000s, compared with the 1980's and 1990's. There is widespread evidence that fiscal policy in emerging and less developed economies is pro-cyclical rather than counter-cyclical, in part because of political incentives to run larger deficits in good times, when financing is available (Talvi and Végh, 2000).

Deficit in government budget is a normal phenomenon in Nepal. Every year the level of budget deficit has been increasing. Resorting to huge deficit, discretionary policy actions of the government have been implemented to achieve the macroeconomic goals of high economic growth and economic stability. The government should observe cyclical behavior of different macroeconomic variables prior to setting and implementing policy goals. As counter-cyclical fiscal policy is capable in performing economic stability, the study on the role of the fiscal policy in performing stabilization function in case of developing countries like Nepal is an emerging policy debate. In this context, this paper aims to investigate whether fiscal policy in Nepal is counter-cycle or pro-cyclical. The paper will thus be useful for macroeconomic policy making in the area of fiscal adjustment for macroeconomic stabilization in the present Nepalese context. The counter-cyclical of Nepal's fiscal policy as found in this paper is in line with the finding of counter-cyclical fiscal stance of Global and Asian economies during the last ten years (IMF, 2013). Globally, the response of fiscal policy to macroeconomic conditions has become more countercyclical in the past 10 years; it implies that discretionary policies have been effective in dampening the business cycle (IMF, 2013). The policymakers took several fiscal measures to cushion the downturn in the aftermath of global financial crisis (2008-09). In the last decade, most Asian economies have pursued more countercyclical fiscal policies than in the 1980s and 1990s. India and Vietnam, having become more pro-cyclical in the past decade, stand out as exceptions within emerging Asia (IMF, 2013).

There is considerable debate regarding the responses of the fiscal policy to economic environment (business cycle). The response of fiscal policy to business cycle is a matter of individual country circumstances. In Nepal, the relationship between fiscal policy and business cycle has not been analyzed before. Similarly, fiscal policy as counter-cyclical or pro-cyclical may also depend on the sample period used for the analysis. Therefore, this paper tries to fill the gap whether the discretionary fiscal policy in the developing countries like Nepal are influenced by business cycle. If economic circumstances are influencing fiscal policy, we try to investigate the nature of such cycles, counter-cyclical or pro-cyclical.

## II. METHODOLOGY

In this paper, a measure of economic downturns and some identities of fiscal stimulus have been used to analyze how fiscal policy has typically responds to downturns. Economic downturns are the periods during which either growth rate of GDP is negative or the output gap is unusually negative. Measuring downturn simply in terms of negative growth is not so sensible because that would miss periods during which output is significantly below potential but still rising. Therefore, output gap is the difference between actual and potential output (a measure of business cycle). Annual data ranging from 1975 to 2013 have been utilized for the analysis. Various issues of economic survey and budget speech of Ministry of Finance, government of Nepal are the sources of data.

As an identity, the CAB is the budget balance of the government (revenue minus expenditure) adjusted for the effects of cyclical output fluctuations on revenue and expenditure. It is one measure of discretionary fiscal policy action (fiscal stimulus). In other words, the CAB is the difference of total revenue and expenditure of the government where revenue and expenditure are corrected for the effect of the output gap (Fedelino, Anna and Horton 2009). It is computed to show the underlying fiscal position when cyclical movements are removed (Price and Dang, 2011). Accordingly, current OECD methodology defines CAB as a residual after netting out variations in revenues and spending as a result of deviations in actual output from potential (Girouard and André, 2005).

As estimated CAB is one measure of discretionary policy actions, the starting point to derive this is to define identity as:

$$\Delta OB = \Delta CB + \Delta CAB - \Delta INT \quad \text{..... (1)}$$

From (1) the changes in the overall balance  $\Delta OB$  (total revenue minus total expenditure) can be decomposed into (i) changes in cyclical balance  $\Delta CB$ ; the automatic response of fiscal variables to changes in output (ii) changes in cyclically adjusted balance  $\Delta CAB$ ; the response of fiscal variables to changes in discretionary policy and (iii) changes in interest payment  $\Delta INT$ . Generally interest payments  $\Delta INT$  are often kept separate because their movements do not correlate with cyclical output changes. Excluding interest payment from (1) gives:

$$\Delta CAB = \Delta OB - \Delta CB \quad \text{..... (2)}$$

The changes in CAB, therefore is the difference between the changes in OB and CB (represents automatic stabilizer). Automatic stabilizers (AS) are defined as the change in the cyclical balance:

$$AS = \Delta CB = \Delta OB - \Delta CAB + \Delta INT \quad \text{..... (3)}$$

Automatic stabilizers are one of the factors that explains changes in overall balances  $\Delta OB$ . Their name derives from the fact that they both help “stabilize” the business cycle and are “automatically” triggered by the tax code and by spending rules. For example, taxes that are a function of income react automatically to the cycle. Similarly, some

spending programs also react automatically to the cycle, such as unemployment benefits or other social transfers.

Since, OB is just the difference between total revenue and expenditure without any adjustment, the known value of CAB gives CB. Obtaining CAB requires an estimate of the output gap and elasticities of revenue/expenditure to the output gap. Output gap is the difference between actual and potential output (a measure of business cycle). It is expressed as percentage of potential output as:

$$\text{Output gap} = 100 * (Y_t - Y_t^*) / Y_t^* \quad \dots\dots\dots (4)$$

Where,  $Y_t$  is actual output and  $Y_t^*$  is potential output. In estimating potential output, Kalman filter method has been applied.

After getting cyclically adjusted revenue and cyclically adjusted expenditure separately, the difference of them yields CAB. The cyclically adjusted revenue  $R_i^*$  is defined as:

$$R_i^* = R_i \left( \frac{Y_i^p}{Y_i} \right)^{\epsilon_i} \quad \dots\dots\dots (5)$$

Where,  $R_i^*$  is cyclically adjusted revenues; it is the nominal revenues that would prevail with no output gap.  $R_i$  is nominal revenues. The  $Y_i^p$  and  $Y_i$  are potential and actual GDP respectively; The ratio  $(Y_i^p / Y_i)$  in (5) represents the output gap. The  $\epsilon_i$  is elasticity of output gap with respect to revenue. If  $\epsilon_i > 0$ , revenues are considered pro-cyclical. Similarly, cyclically adjusted expenditure is defined as:

$$G_i^* = G_i \left( \frac{Y_i^p}{Y_i} \right)^{\eta_i} \quad \dots\dots\dots (6)$$

Where,  $G_i^*$  is cyclically adjusted expenditure,  $G_i$  is nominal expenditure and  $\eta_i$  is the elasticity of expenditure with respect to the output gap. Then the cyclically adjusted overall balance (CAB) is the difference between cyclically adjusted revenue and cyclically adjusted expenditure as.

$$CAB = R_i \left( \frac{Y_i^p}{Y_i} \right)^{\epsilon_i} - G_i \left( \frac{Y_i^p}{Y_i} \right)^{\eta_i} \quad \text{or} \quad CAB = R_i^* - G_i^* \quad \dots\dots\dots (7)$$

The CAB can be computed with the assumption that revenues and expenditures that would have prevailed if output had been at potential (a scaling variable). If revenue elasticity is equal to one and expenditure elasticity is equal to zero the cyclically adjusted balance becomes:

$$CAB = R \left( \frac{Y^p}{Y} \right) - G \quad \dots\dots\dots (8)$$

The CAB is considered free of business cycle fluctuation, or in other words business cycles are eliminated. Cyclical analysis can be inferred when comparing CAB with actual balance as given in Table 1:

**Table 1: Business Cycle and Fiscal Balance**

Business Cycle	Fiscal Balance	Economic Inference
Boom: $Y > Y^* \Rightarrow R > R^*, G \leq G^*$	CAB < Actual Balance	Public finances are in better shape than they would be because the economy is in a boom
Recession: $Y < Y^* \Rightarrow R^* > R, G^* \leq G$	CAB > Actual balance	Public finances would have been in better shape, if the economy were not in a recession.

Cyclically adjusted balance can also be an indicator to quantify fiscal stance. Impact of fiscal policy on domestic demand is assumed to be captured by the CAB. It depends on the estimate of the output gap. Fiscal stance quantifies how much fiscal policy adds to or subtracts from domestic demand. Fiscal stances are of two types; expansionary (or loose) fiscal stance and contractionary (or tight) fiscal stance. Cyclically adjusted balance (CAB) is one of the commonly used indicators of fiscal stance. Fiscal stance based on the CAB are:

$$FS_t = -CAB_t \quad \dots\dots\dots (9)$$

$$CAB_t < 0 \Rightarrow \text{Expansionary}(FS_t > 0) \quad \dots\dots\dots (10)$$

$$CAB_t > 0 \Rightarrow \text{Contractionary}(FS_t < 0) \quad \dots\dots\dots (11)$$

Fiscal stance is Neutral if  $CAB_t = 0$

Fiscal impulse measures the change in fiscal stance over time.

$$FI = FS_t - FS_{t-1} \quad \dots\dots\dots (12)$$

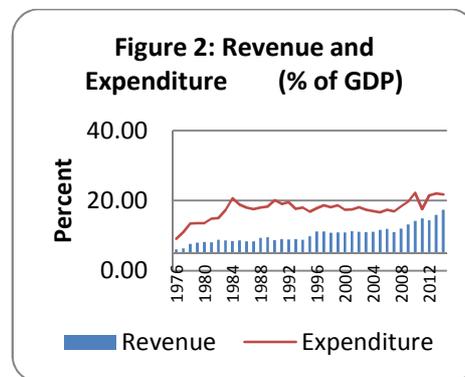
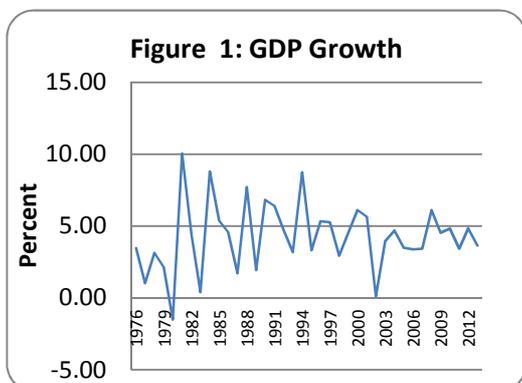
Where,  $FI$  is fiscal impulse,  $FS_t$  is fiscal stance in period  $t$ ,  $FS_{t-1}$  fiscal stance in one period lag. High fluctuations of CAB over the periods indicate inconsistency and uncertain discretionary fiscal policy of the government.

### III. ANALYSIS OF THE STUDY

The study of fiscal policy responses to cyclical fluctuation of output is one way to access counter-cyclicality or pro-cyclicality of discretionary fiscal policy actions. As the basic objective of the paper is to access the historical counter-cyclicality or pro-cyclicality of fiscal policy in Nepal, different fiscal identities are used for the analysis. Use is made of annual data comprising GDP and fiscal variables from 1975 to 2013. Overall fiscal balance (primary and current balance are not used in the present paper) is the variable of interest to gauge responses of fiscal policy to cyclical output. Government's total revenue minus expenditure yields overall fiscal balance. Cyclical effects on total revenue and total expenditure are decomposed using elasticities of revenue and expenditure with respect to output gap. The cyclically adjusted revenue and expenditure so estimated can be used to compute cyclically adjusted overall fiscal balance. Normally fiscal policy discretion responds to cyclical pattern of output.

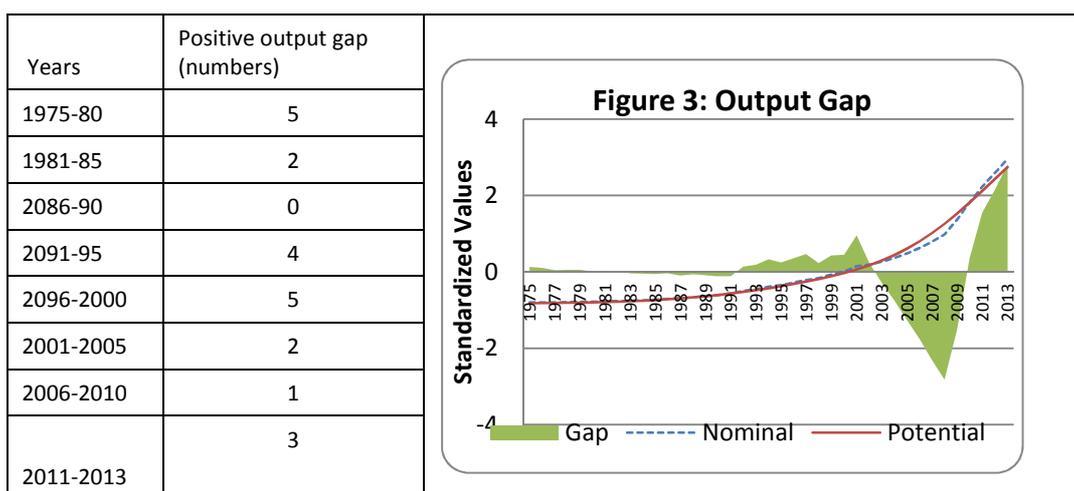
Nepal as one of the least developed countries obtaining around 4.3 percent economic growth over the past five years. Long-run real GDP, measured since 1975 to 2013, is also fluctuating around an average of 4 percent, a low level (Figure 1). The rates of growth show high volatile before 2000 followed by relative calm with significant decline in 2003 in exception. The prevalence of monsoon-based agriculture production in the economy is one of the factors determining low and fluctuating growth in Nepal.

The revenue and expenditure each remained 16 percent of GDP, on an average, during the sample period (Figure 2). During the last five years, the overall balance as percent of GDP stood at 5.7 percent, on an average. The gap of revenue and expenditure as percent of GDP is narrowing down over the recent past. Revenue as percent of GDP is trending upward whereas the expenditure is not showing such trend after 1985; and it is fluctuating within the band of 5 percentage point. The government of Nepal each year has implemented discretionary policy options to achieve the macroeconomic goals of obtaining high economic growth accompanied with economic stability, reduction of poverty and unemployment. Appropriate fiscal stimulus and stabilization measures are the important fiscal tool in dampening cyclical fluctuations of the economy. In this context, this paper aims to investigate whether fiscal policy in Nepal is counter-cycle or pro-cyclical.



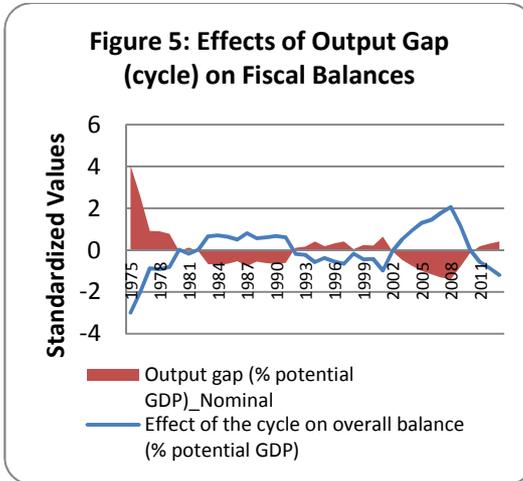
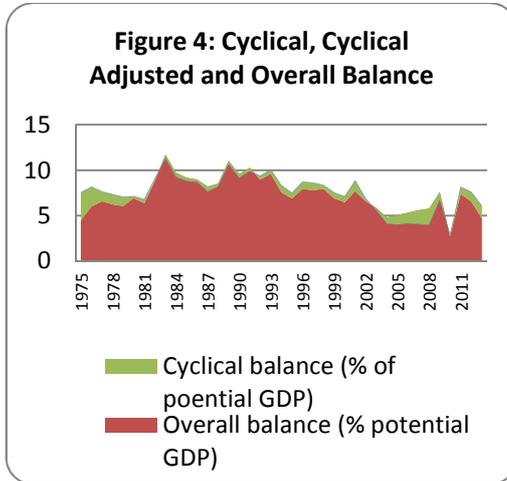
In order to understand response of discretionary fiscal policy to business cycle, the effect of automatic stabilizer should be eliminated in the fiscal indicators. Discretionary fiscal actions are those that change the Cyclically Adjusted Balance (CAB) of the budget whereas the automatic stabilizers are those that change the cyclical budget balance. Based on the estimates of the output gap together with estimates of income elasticities of revenues and expenditures, we extract the cyclical component from budget balance.

Estimated value of output gap is the input for the estimation of CAB. Output gap is the difference between actual and trend component of nominal GDP which is the proxy for business cycle of the economy. Kalman filter method has been used to estimate trend component of nominal GDP and hence to obtain output gap. Positive output gap (represented by actual output is greater than potential output), is considered good time for the economy whereas negative output gap represents bad time. The output gap shows interesting picture that the output gaps at the recent past are found quite high compared to the period over distant past (Figure 3).



The output cycles after 1992 show quite fluctuating whereas it is relatively calm before the period. During 1992 to 2002, there is positive gap whereas sharp negative gap is experienced since 2002 to 2008 followed by sharp positive gap thereafter. A positive output gap (actual GDP greater than potential GDP) implies that resources are over utilized and vice versa.

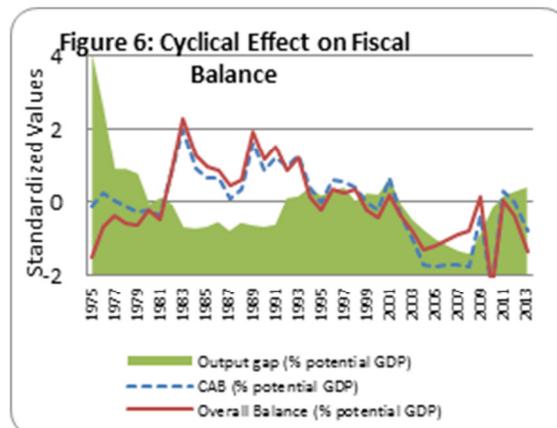
The output gap as estimated above can be the input for the estimation of elasticity of revenue w.r.t. output gap and elasticity of expenditure w.r.t. output gap. The difference of elasticity adjusted revenue and expenditure gives CAB. Following the finding of OECD estimates (IMF, 2008) this paper also assumes unitary elasticity of revenue (as revenue is positively related to income) and zero expenditure elasticity (expenditure items except few are not related to income) with respect to output gap. Fiscal policy discretion is measured by changes in CAB whereas automatic stabilizer is measured by changes in CB. The impact of cyclical balance (percent of potential GDP) on overall balance is depicted in Figure 4.



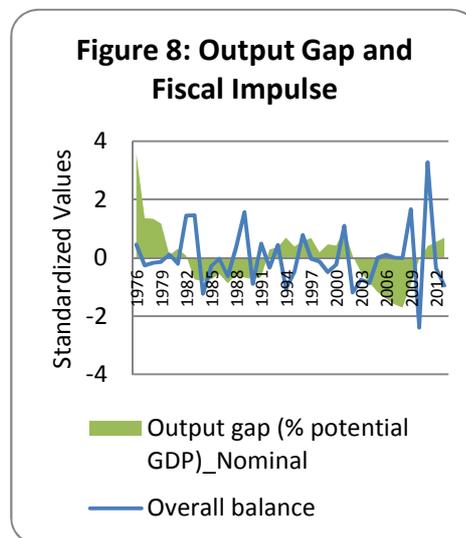
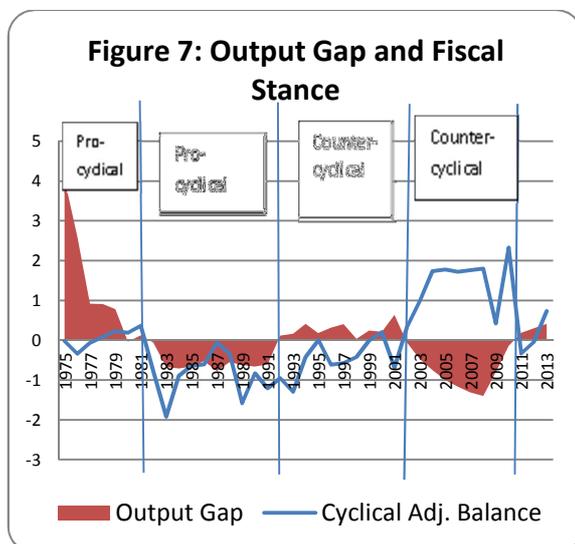
The cyclical impact as percentage of potential GDP is represented by green area in the Figure 4. The cyclical impact during 2005 to 2008 is high and declined in 2009 and started increasing till 2013. The shaded area represents output gap which is the difference between potential and actual output as shown in Figure 5. The effect of the cycle on overall balance as percentage of potential GDP is determined by output gap. The pick in output gap corresponds to trough in cycle of overall balance. For instance, positive output gap during 2003-09 is the mirror image of cyclical effect of overall balance during the period (Figure 5).

The output gap determines the measures of CAB and overall balance (Figure 6). The measure of overall balance is above (below) the CAB at the period when output gap is negative (positive). It implies that there is certain cyclical impact on overall balance as determined by output gap.

### Output Gap, Fiscal Stance and Fiscal Impulse



Fiscal stance (expansionary or contractionary) quantifies the addition or withdrawal of domestic demand through fiscal policy. The measure of domestic demand is output gap. The CAB is one of the important indicators of fiscal stance (deficit indicates expansionary fiscal policy). The CAB also indicates the net effect of the changes in discretionary policy actions.



Fiscal policy is indicated as counter-cyclical if it is made expansionary when the economy slows down (bad time). Similarly, fiscal policy are said to be pro-cyclical when it is made expansionary during economic boom. Over the long run Nepalese fiscal policy is consistently expansionary as the CABs as percentage of potential GDP are negative. The CAB was around negative of 8 percent in 1975 decreased lowest of 11 percent in 1983 and it reverts back to 6 percent in 2013. However, the changes in CAB are not consistently increasing as they are varying over time as determined by the output gap.

The CAB as one of the indicators of fiscal stance (expansionary or contractionary), it measures discretionary fiscal policy response to output cycle. A graphical depiction of the changes in CAB accompanied with output gap measures whether the fiscal policy is counter-cyclical or pro-cyclical. A discretionary fiscal policy is said to be counter-cyclical if CAB shows an upward trend accompanied with the downturn of the economy (negative output gap). Similarly a pro-cyclical fiscal policy indicates a situation of decreasing CAB corresponding to upturn of the economy (positive cycle). In light of this, a demarcation of counter-cyclical or pro-cyclical discretionary fiscal policy of Nepal over the study periods has been presented in Figure 7. Fiscal policy during the period 2005-11 shows counter-cyclical pattern as positive CABs (in terms of normalized values) are accompanied with negative output gaps (negative cycle). The counter-cyclicity of fiscal policy is found to be weak for the period 2011-13 as both the CABs and output gaps during the period are showing upward trend. If we examine fiscal policy periods back to 1980s and 1990s, discretionary fiscal policy shows pro-cyclical pattern during 1980s followed by counter-cyclical during 1990s. As CABs measure the fiscal stance of an economy, recurrently fluctuating CAB depicts policy uncertainty and inconsistency over the time (Figure 6). It implies uncertain and inconsistent fiscal stance of the government of Nepal.

#### IV. CONCLUSION

This paper tries to find whether the discretionary fiscal policy of Nepal is responding counter-cyclically or pro-cyclically to business cycle. Using annual time series data ranging from 1975 to 2013, discretionary fiscal policy found to be counter-cyclical during post liberalization. It implies that discretionary fiscal policy of the government has also been pursued in obtaining stabilization objective. In the post-liberalization period, the counter-cyclicality is stronger during 2000s than 1990s. Discretionary fiscal policy shows pro-cyclical pattern during 1980s, implied that that government was raising deficit during upward movement of the economy. A mild pro-cyclicality is found during last two years (2011-13) of the sample period. Factors like stronger institutions and sound macroeconomic policies might overcome recent pro-cyclicality of fiscal policy and allows room for counter-cyclicality fiscal policy in the future.

The measure of output gap and CAB are the input for the analysis. The change in CAB has been used as a measure of discretionary fiscal actions. This paper assumes unitary elasticity of revenue (as revenue is positively related to income) w.r.t. output gap and zero expenditure elasticity (expenditure items except few are not related to income) w.r.t. output gap to estimate cyclically adjusted revenue and expenditure and hence the CAB. The output gap has been estimated based on the trend components of the GDP using Kalman filter method. The CAB, which corrects the effect of the output gap on revenue and expenditure, is taken as an important indicator of fiscal stance in this paper. Though fiscal stance of government of Nepal is consistently expansionary as represented by negative CAB over the period, the changes of CAB are not found consistent as those changes are determined by varying output gaps. The fiscal stance over time, as indicated by fluctuating fiscal impulse of overall balance, indicates uncertain and inconsistent fiscal stance of the government. It demands for focus more on automatic stabilizers rather than discretionary fiscal impulse by broadening tax bases and social safety nets.

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