

The composition of fiscal consolidations: a review of selected literature

While there is an ongoing debate about the best balance between cuts in expenditure and rises in tax, most consolidations involve a greater proportion of cuts to expenditure. This note reviews a set of empirical studies which seek to identify whether expenditure-based consolidations are associated with greater success. The empirical literature on budget consolidation uses descriptive statistics and regression models to analyse the factors that influence whether a budget consolidation is successful. In this literature, the start of a fiscal consolidation is defined by a change in the cyclically adjusted primary budget deficit¹ with some studies taking account of debt to GDP ratios.² These indicators are typically measured again in the two to three years after a consolidation as an indication of 'sustainability' or 'success'.³

[Tavares \(2003\)](#) looked at 19 OECD countries from 1960 – 1992 with 72 cases of fiscal adjustment⁴. The study found that on average, successful⁵ adjustments reduced spending by 1.71% of GDP and increased revenue by .87% of GDP. In contrast, unsuccessful adjustments reduced spending by .58% of GDP and increased revenue by 1.59% of GDP (9).

Wagschal and Wenzelburger (2008: 41) looked at 23 OECD countries from 1945 – 2000 and found twenty-six cases of consolidation⁶ noting fifteen successful⁷ and ten unsuccessful cases⁸. They found that of the fifteen successful consolidations, eight reduced their expenditure ratio⁹ and seven increased it during the period. However, of the ten unsuccessful consolidations, two increased their expenditure ratio and eight increased it during the period. The change in the expenditure ratio of the successful consolidations was -6.8% of GDP, while for the unsuccessful cases it was -2.6% of GDP (41). Similarly, the change in the revenue ratio for the successful episodes is -0.5% of GDP compared to an increase of 1.4% of GDP for the unsuccessful episodes (61).

[Alesina, Perotti and Tavares \(1998\)](#) look at 72¹⁰ fiscal adjustments from 1965 - 1995¹¹. They find 23 are successful¹² and 49 are unsuccessful. The study reported that for successful adjustments 'two-thirds of the deficit reduction comes from spending cuts, while in unsuccessful adjustments only about one-quarter of the adjustment is on the spending side' (201).

¹ The budget deficit before interest payments on the national debt are taken into account.

² The change (as a proportion of GDP) varies and is generally in the range of ½% to 2% over a period of one to three years. Some studies also take account of debt-to-GDP ratios, and the change varies from a constant ratio over the period to a reduction of 10%.

³ The definition of a sustainable consolidation focuses on both budget surplus (looking for around a 2% reduction) and debt-to-GDP ratios (ranging from the measure staying constant to 10% improvements).

⁴ Where a fiscal adjustment is a change in the primary deficit by at least – 1.5 percent of GDP in a single year

⁵ Success is achieved if at least either 'in the three years after the tight period, the ratio of the primary deficit to DGP is on average 2 (or more) percent of GDP below its level in the initial year of the adjustment' or 'three years after the initial adjustment year, the debt to GDP ratio is at least 5 percent of GDP below its level in the last year of the tight period' (8-9)

⁶ 'Type A: if a negative primary balance (i.e. primary deficit) improves during at least two years by a minimum of one percentage point per year and, at the same time, the public debt ratio during this period remains at least constant)

Type B: if there is an average primary surplus of at least two percent of GDP during at least two years and, at the same time, the public debt ratio falls by an average of two percentage points per year during two years. In total, the reduction in the public debt ratio over the whole consolidation period must be at least 10 percentage points. In order to fulfill the criteria a buffer of 0.2 percentage points must be maintained.' (29)

⁷ Success is defined where the public debt ratio in the third year after the consolidation phase is at least at the same level as in the last year of the consolidation phase

⁸ The authors excluded New Zealand (2000 – 2005) from the sample as it was not yet possible to evaluate its success at the time of writing (62).

⁹ Public expenditure as a percentage of GDP in the first year of the consolidation compared to the final year.

¹⁰ As success (see footnote 30) could not be measured for the period 1993-95 those cases are excluded here.

¹¹ 'A year of tight fiscal policy as a year when the ratio of the primary deficit to GDP falls (or the ratio of the surplus to GDP increases) by at least 1.5 percentage points' (200)

¹² An episode is '...is successful if one of the following two conditions applies: either, in the three years after the tight year, the ratio of the primary deficit to GDP is on average at least 2 percentage points below its level in the tight year; or, three years after the year of the adjustment, the debt-to- GDP ratio is at least 5 percentage points below its level in the adjustment year.'

Within this literature there is analysis of the marginal effects of composition on the likelihood of success. A selection of the findings is reported below.

[Alesina and Ardagna \(1998\)](#) looked at 51 episodes of fiscal adjustment¹³ in 15 countries from 1960 - 94 and related the composition of expenditure to deficit and debt reduction¹⁴ and economic growth¹⁵. They find 19 cases are successful in terms of reducing deficits and / or debt and 23 are associated with economic growth. The study found that successful adjustments reduced cyclically adjusted primary expenditures by 2.73% of GDP while unsuccessful adjustments resulted in an increase of 1.1% of GDP (498). Successful adjustments increased revenues by 1.66% of GDP and unsuccessful adjustments increased revenues by 2.48% of GDP. In a regression model the study found that in expenditure-based adjustments¹⁶ the probability that the episode is successful is 0.53 and this probability decreases to .26 if the adjustment is revenue based (504).

[Von Hagen et al \(2002\)](#) used duration models to analyze the effect of the fiscal adjustments on the longevity of fiscal consolidations¹⁷. The study is based on data for 20 OECD countries from 1960–1998 with 65 episodes¹⁸ of fiscal consolidation where the average deficit reduction is 2.29% of GDP. Von Hagen et al found ‘expenditure cuts contribute 52% (that is 1.23% in 2.37% of cyclically adjusted GDP) to the adjustment in successful consolidations, compared to only 12% in unsuccessful ones. Unsuccessful consolidations thus rely almost exclusively on increasing revenues’ (515). In the duration model, ‘the consolidation episode is said to end when the cyclically adjusted primary deficit deteriorates in a given fiscal year’ (516). The study found that a 10% increase in the contribution of primary expenditures to a fiscal adjustment increases the likelihood that a consolidation will end¹⁹ by approximately 9%, while a commensurate increase in the contribution of revenues increases the likelihood that the consolidation will need to continue into the future²⁰ by approximately 10% (518).

[Zaghini \(1999\)](#) looked at 98 consolidation episodes²¹ in 14 European countries from 1970-1998. The study reported that the average change for successful²² fiscal consolidations is a reduction in expenditure of 1.44% of GDP and an increase in revenues of 0.43% of GDP (22). This compared to unsuccessful consolidations which had a reduction in expenditure of 0.04% of GDP and an increase in revenue of 1.87% of GDP. Through regression analysis, the study found that the probability of success is more than doubled when shifting from a taxation based adjustment²³ to one based fully

¹³ ‘A period of fiscal adjustment is a year in which the cyclically adjusted primary balance improves by at least 2% of GDP, or a period of two consecutive years in which the cyclically adjusted primary balance improves by at least 1.5% of GDP per year, in both years.

¹⁴ High debt is where the debt/GDP ratio is above 70% at the beginning of the adjustment and the change in debt is where the growth rate of the debt/GDP ratio was higher than 5% in the year before the adjustment.

¹⁵ Economic growth is looked at in various ways: comparing GDP growth during and after the adjustment period with two years previous to it and to differences with the G7 average.

¹⁶ Using a dummy variable that takes the value of 1 if cyclically adjusted primary expenditures as a share of GDP decrease by more than the average during the adjustments and if cyclically adjusted transfers and public wages, both as a share of GDP, decrease by more than the average during the adjustments. Episodes in which these dummy variables have the value of zero are called revenue-based adjustments (504-5).

¹⁷ Success is present when, ‘in two years after the initial adjustment, the government budget balance stands at no less than 75% of the balance in the first year of the consolidation episode.’ (519). This analysis estimates empirical hazard models which help to explain the factors associated with ‘exiting’ a fiscal consolidation.

¹⁸ Episodes are defined where ‘either the cyclically adjusted (total) government budget balance increased by at least 1.25% of cyclically adjusted GDP in two consecutive years, or the cyclically adjusted budget balance increased by at least 1.5% of cyclically adjusted GDP in one year and was positive but perhaps less than 1.25% in both the preceding and the subsequent year.’ (514).

¹⁹ Using a hazard rate analysis (a low hazard rate indicates that the consolidation is likely to continue into the next period and a high hazard rate indicates that it is likely to end in the period).

²⁰ See footnote 17 for a brief explanation of the hazard rate indicator.

²¹ A period of very tight fiscal policy is such that either the GDP improves by at least 1.6% in one year or the GDP improves by at least 0.8% a year for two or more years. A period of very loose fiscal policy is where either the CPB worsens by at least 1.4 percent over one year or the CPB worsens by at least 0.7 percent a year for two or more years. (17)

²² A period of tight fiscal policy is successful if three years after the end of the adjustment the public debt/GDP ratio has been reduced by at least 5% relative to the average value of the same ratio computed during the whole consolidation period

²³ Where 40% of the contraction achieved by expenditure cuts and 60% through tax increases.

on public expenditure cuts (24). The report also reviewed the composition of the 49²⁴ 'tight'²⁵ episodes and found that almost 80% of the reduction in the structural primary deficit was through a reduction in public expenditures. In contrast, 98% of the budget improvement came from tax increases in the unsuccessful episodes (34).

[Lambertini and Tavares \(2005\)](#) analysed 99 cases fiscal adjustment²⁶ in 20 OECD countries between 1970 – 99. The study found 50²⁷ of these cases were successful²⁸. The study (2) looked at how much of the deficit reduction comes from spending cuts versus tax increases and found that an increase of one standard deviation of the sample mean raises the probability of success by 3 percentage points²⁹ (2).

[Ardagna \(2004\)](#) reviewed data from 17 OECD countries from 1975 to 2002 providing 413 observations. They study looked at the relationship between the composition³⁰ and successful consolidations³¹. It found that 'a one percentage point decrease in government spending as a share of GDP increases the likelihood of success from 0.19 to 0.27 and a one percentage point increase in taxes raises the probability of a success from 0.19 to 0.30' (1060).

[EC \(2007\)](#) analysed a sample of 27 European countries from 1970 - 2006³². This provides 146 years of consolidation³³ with one third of those being identified as successful³⁴. The study found that consolidations tend to fail because they do not 'manage to preserve the sizable increases in government revenues on which they were built; and they do not manage to control expenditure in the first place' (229) 'At the end of a successful fiscal consolidation total primary expenditures net of cyclical factors are on average almost 2 % of GDP lower than before the episode, mainly thanks to restraints on current expenditure. Conversely, unsuccessful consolidations largely rely on higher revenues, while primary expenditure net of cyclical factors is on average increased.' (210) In a regression model, the study found that expenditure-based consolidations are associated with successful consolidation efforts for the period under study. However, looking specifically at the period from 1990 – 2006, the pattern does not hold, suggesting that there is a '...possible shift in the recipe for success over time' (226).

²⁴ The study found that 12 out of the 49 episodes were considered successful.

²⁵ A tight phase refers to a period in which either the CPB improves by at least 1.6 percent over one year or the CPB improves by at least 0.8 percent a year for two or more years. A loose phase refers to a period where either the CPB worsens by at least 1.4 percent over one year or the CPB worsens by at least 0.7 percent a year for two or more years. The study finds 49 tight and 49 loose episodes. (17)

²⁶ 'A period of fiscal adjustment is a year for which the primary deficit is cut by at least 1.5% of GDP relative to the year before' (24).

²⁷ According to the three criteria (see footnote 26) 47 cases were successful.

²⁸ 'A fiscal adjustment is successful when the average change in the primary deficit-to-GDP ratio is less or equal to zero in the three (or, alternatively, two) years following the year the deficit was cut.' (9)

²⁹ Percentage point change in the level of government consumption as a share of GDP in the year of the fiscal adjustment (24).

³⁰ Decreases in government spend and increases in tax revenue.

³¹ 'In the basic model, a successful fiscal stabilization is an episode in which the cyclically adjusted primary balance improves, and, 2 years after, the debt-to-GDP ratio is at least three percentage points lower than in the year of the fiscal tightening' (1053).

³² Although for some countries data was available for a shorter period.

³³ Define an episode of consolidation as 'an improvement of the CAPB of at least 1.5% of GDP which is either achieved in one single year [cold shower consolidation] or over a period of three years where in each single year the improvement of the CAPB is less than 1.5 % of GDP and the CAPB does not deteriorate by more than 0.5 % of GDP compared to the year before [gradual consolidation]' (201).

³⁴ 'A consolidation in line with Definition 1 is successful if the following condition applies: in the three years after the end of the consolidation episode the CAPB does not deteriorate by more than 0.75 % of GDP in cumulative terms compared to the level recorded in the last year of the consolidation period. In other words, at least half of the overall minimum fiscal correction required to qualify as consolidation has to be safeguarded three years after. A consolidation is deemed unsuccessful if this condition is not met' (202).

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