Economic Growth and Debt Dynamics

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The empirical evidence available for Malta shows that the evolution of national income and the implied cyclical developments have important implications for deficit and debt dynamics. There is widespread agreement in the economic literature that economic activity and fiscal developments are relatives. This does not mean that the economic literature on fiscal consolidation is not rife with conflicting theories and observations of the relationship between the two. In particular is fiscal indiscipline a cause of weak economic activity and soaring public debt or is it the other way round; weak economic activity leads to soaring debt levels and unsustainable public finances? Central to this debate is the conventional Keynesian hypothesis that fiscal austerity reduces aggregate demand and economic activity versus the notion of "expansionary austerity" where fiscal retrenchment is deemed to strengthen households and business confidence, lower interest rates and thereby raise aggregate demand. But even if one were to accept the Keynesian hypothesis that fiscal consolidation reduces aggregate demand, under what conditions would fiscal contractions lead to successful fiscal consolidation despite the negative impact on growth? This would depend on the sensitivity of economic growth to fiscal shocks; in other words it will depend on the size of fiscal multipliers.

1. Debt Accumulation and its Sources

Several papers in the economic literature explore the main sources underlying sharp debt accumulation in history. Most of these episodes were related to major military events or to financial crisis. Reinhart and Rogoff (2009) suggest that public debt could rise by almost 90% in a space of three years following a banking crisis whilst Baldacci et al (2009) indicate a rise in the debt-to-GDP ratios of about 40 percentage points following banking crisis.

For advanced economies rising trends in the debt ratios are evident since the 1970s and a combination of positive interest-growth differential and deteriorating primary balance often underlines such trends (Abbas et al, 2011). Indeed Abbas et al show that whilst high and middle income growth countries (countries experiencing trend growth rates above 3%) have managed to stabilise the rising trend in debt to GDP ratios since the mid 1980s, low growth economies continued to sustain the rising debt-to-GDP ratios experienced since the early 1970s.

This suggests that low economic growth has a central role in determining debt accumulation either through the relatively sudden impact of financial crisis or through a more protracted impact of weak economic activity. A selection of major advanced economies[1] (including those with relatively high debt-to-GDP ratios above 100%[2]) further supports the hypothesis that economic growth has been a lagging indicator of debt accumulation since the 1980s. The chart below indicates that the average real growth of the preceding twelve years is negatively correlated with the debt to GDP ratio (see green trend line with R^2 of 0.3). The correlation is however not perfect suggesting that other economic factors such as inflation, interest rates, discretionary fiscal policy and stock-flow adjustments can influence public indebtedness.
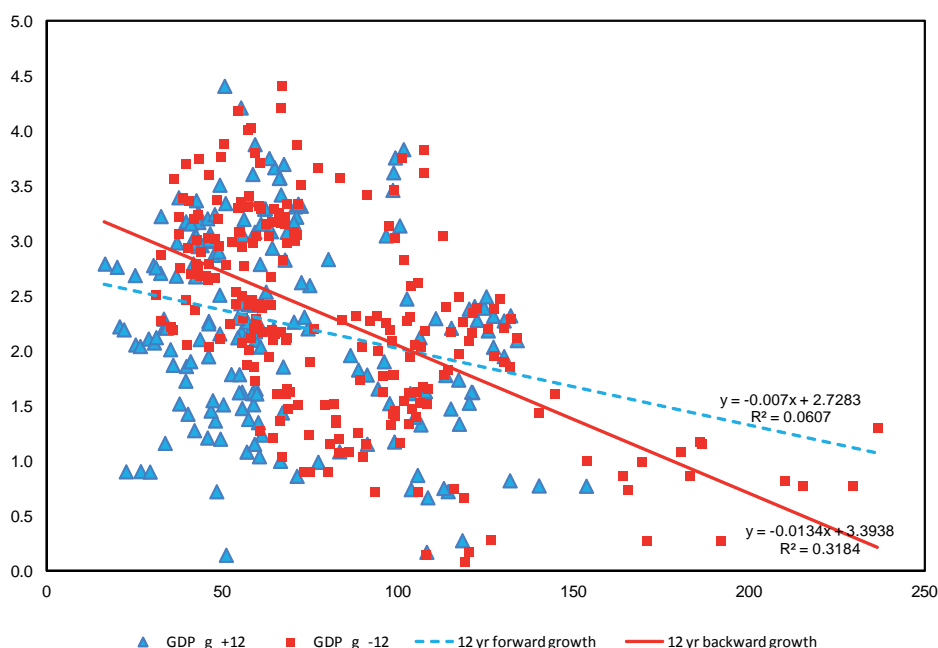
2. The Impact of High Debt on Economic Growth

However it is also interesting to note in the Figure below that 12 year forward growth rates are not strongly correlated with public indebtedness. In other words high indebtedness is not necessarily as strong an indicator of weak economic activity at least over the subsequent twelve years. This does not mean that high debt cannot be associated with low growth. A simple correlation analysis does not control for other factors determining growth nor does it determine causation. There are various channels through which high public indebtedness could undermine long-term growth: high public debt could adversely affect capital accumulation, raise long-term interest rates, raise future distortionary taxes, and create financial instability and uncertainty about prospects and policies.

Reinhart and Rogoff (2010) find that the difference in median growth rates of GDP between low debt (below 30% of GDP) and high debt (above 90% of GDP) groups is 2.6 percentage points in advanced economies over the period under analysis. However these estimates are based on simple correlation analysis which again does not control for reverse causality; that low growth could be causing high indebtedness rather than the other way round. By contrast Kumar and Woo (2010) use a regression-based model which controls for other determinants of growth whilst avoiding the problem of reverse causality by using initial values of debt to determine subsequent levels of growth. **On average, a 10 percentage point increase in the initial debt-to-GDP ratio is associated with a slowdown in annual real per capita GDP growth of around 0.2 percentage points per year**. The impact is somewhat smaller in advanced economies where a 10 percentage point increase in initial debt-to-GDP ratio is associated with a growth slowdown around 0.15–0.2% in advanced economies, compared to 0.3–0.4% in emerging economies. IMF (2010) estimates based on a dynamic general equilibrium model similarly suggest that a 10

Figure1: Economic Growth and Public Indebtedness
(Panel Data for Advanced Economies* between 1980 and 2012)

△ GDP_g_+12   ■ GDP_g_-12   - - - 12 yr forward growth   — 12 yr backward growth

$y = -0.007x + 2.7283$
$R^2 = 0.0607$

$y = -0.0134x + 3.3938$
$R^2 = 0.3184$

* France, Germany, Italy, Spain, Belgium, Portugal, Greece, UK, Japan, USA
Source: IMF World Economic Outlook Database

percentage point decrease in the debt ratio of the Euro Area, US and Japan would raise GDP by 1.4% over the long-term.

3. Fiscal Adjustment and Debt Reduction

In the advent of the great recession, the significant increase in public indebtedness, particularly in many advanced economies, has brought to the fore the question of successful fiscal consolidation. On the interaction between growth and fiscal consolidation two alternative schools of thought are evident in the economic literature.

According to the Keynesian view fiscal contractions reduce aggregate demand and growth in the short-term. Does this mean that fiscal contractions do not necessarily lead to a reduction in public indebtedness? This depends on **the size of the fiscal multipliers** which in turn depends on the time period under analysis, the development stage and the openness of the economy, the exchange rate regime and the monetary policy reaction function, monetary conditions and the initial value of the debt coupled with the composition of the fiscal adjustment. **The higher the fiscal multiplier the more costly is the impact of fiscal consolidation on growth to the extent that if the economic impact is significant (often associated with high multipliers exceeding 0.9; see Blanchard et al, 2012, for estimate of the range of multipliers in a recession) fiscal consolidation could actually be self-defeating and lead to higher rather than lower debt**.

4. Expansionary Austerity?

The economic literature however also indicates instances where fiscal contraction can be growth enhancing even in the short-term (Alesina and Perotti, 1995, 1996). Barry and Devereux (1995) show that when using a neo-Keynesian framework that embodies inter-temporal effects of the Ricardian Equivalence, a fiscal contraction conducted through a reduction in government spending may support economic activity through an impact on expectations. In particular, the reduction in future tax burden associated with a fiscal contraction is hypothesised to generate an improvement in consumption and investment that leads to an increase in aggregate demand and to an improvement in output (and in some cases even employment). The extent of the aforementioned dynamic depends, however, on the magnitude and perceived permanence of the fiscal measures.

Nevertheless, in a seminal paper in the World Economic Outlook (2010) the IMF clearly qualifies the conclusions of the "expansionary austerity" studies of the 1990s. In particular the IMF casts doubt on the identification of periods of fiscal adjustment through the use of changes in the cyclically adjusted budget balance since this is shown to bias the results in favour of showing expansionary effects of fiscal consolidation in the short-term whilst downplaying the contractionary effects of fiscal consolidation. The IMF paper draws out the following important conclusions on this matter:

1. **Fiscal consolidation exerts a contractionary effect on economic activity**. Typically a fiscal effort of 1% of GDP reduces GDP by 0.5% within two years and raises unemployment.

2. Monetary policy and flexible exchange rates can cushion somewhat the impact of fiscal contractions. **However if interest rates are close to the zero lower bound and exchange rates do not react (for instance when exchange rates are fixed) the effects of fiscal consolidation on economic activity can be at least twice as large in the short-term**. In this case, a one percentage point of GDP in fiscal consolidation is expected to reduce GDP by 1% within two years.

3. Furthermore, **if fiscal consolidation is coordinated among countries when monetary policy is constrained by the zero lower bound the impact on GDP of a small open economy can be twice as large as the fiscal shock due to international spillovers**. This is a particularly important finding for the conduct of fiscal coordination during a severe recession in a monetary union such as the Euro Area. It is important to note that in the absence of escape clauses allowing for recessionary periods fiscal rules greatly enhance fiscal policy coordination when Euro Area economies face common shocks. If this occurs at a time when monetary policy has reached the limits of the zero lower bound, fiscal consolidation can become self defeating and propel a monetary union into a debt spiral. This is indeed a major concern surrounding the current fiscal governance framework. It could also be a valid explanation of the failure of programme countries in the Euro Area to meet deficit and debt targets despite the severe austerity measures. This finding clearly underlines the **importance of the application of escape clauses in fiscal rules and the relevance of ensuring that the rules are as counter cyclical as possible**. But even in the absence of such common shocks, the lack of monetary policy independence within a monetary union makes it more difficult for fiscal consolidation to take place since the efficiency of fiscal consolidation is reduced if not supported by monetary stimulus.

4. Another important qualification of the IMF paper relates to the debate about the composition of fiscal consolidation. The results suggest that expenditure consolidation tends to be more growth friendly than tax-based consolidations. But part of this difference emanates from the reaction of the monetary authorities which tend to accommodate spending cuts which are typically less inflationary but tend to raise policy rates particularly when indirect taxes are raised because these raise inflation. In a monetary union, a member state facing unilateral shocks to its economy is unlikely to benefit from monetary support when carrying out expenditure based consolidation programmes. On the other hand it can take advantage of indirect tax measures which are unlikely to have an impact on the inflation rate of the whole monetary union particularly if the country is small. **As a result, the presumed superiority of expenditure based versus revenue based fiscal consolidation with respect to their impact on economic growth is minimised in a monetary union**.

5. **Fiscal consolidation in countries associated by financial markets with higher sovereign default risk can implement fiscal consolidation at a lower cost to growth** as this reduces the perceived risk. Nevertheless, there is no clear evidence of "expansionary austerity" even among such cases.

5. Fiscal Multipliers

A central theme to the economic impact of fiscal consolidation is the magnitude of fiscal multipliers. The smaller the multiplier the less taxing fiscal consolidation is on economic activity. A major hypothesis that has been explored in recent literature is the **asymmetry of fiscal multipliers across the business cycle**. In particular Auerbach and Gorodnichenko (2012) show that **multipliers of government purchases are larger in recessions typically twice as large as in normal times**. The IMF suggests that in periods of recession constrained by the zero lower bound, fiscal multipliers can range from 0.9 to 1.7[3]. **This implies that fiscal stimulus is more effective and fiscal consolidation is more costly in recessions**. This further attests to the importance of ensuring counter-cyclical fiscal policy.

Nevertheless, Auerbach and Gorodnichenko (2012) make some **other important qualifications** to these findings which are of direct relevance to a country like Malta. First

of all, **fiscal multipliers are inversely proportional to the debt-to-GDP ratio**. Furthermore, the cyclical variation in the size of the output multiplier vanishes as the level of debt approaches 100%.

Secondly, **rigid labour market actually increase the output response of fiscal stimulus in recession and the cyclical variation in the fiscal multiplier becomes more pronounced**. This pattern is consistent with the view that more rigid labor markets can result in enhanced effectiveness of government spending shocks to stimulate output during a downturn. It also suggests that fiscal consolidation can be more costly during a recession in the presence of labour market rigidities.

Finally, macroeconomic theory suggests that **fiscal multipliers are likely to be smaller in open economies due to the significant leakages in the form of imports**. Auerbach and Gorodnichenko (2012) do not find evidence supporting this conclusion although omitted variable bias is suspected. Indeed Ilzetzki et al. (2010) report that the government spending multiplier is larger in closed economies than in open economies.

These findings suggest a limited role of fiscal stimulus in recessionary periods for a small open economy like Malta with a debt-to-GDP ratio in excess of 60%. They also suggest that fiscal consolidation in a recession can be less costly to such an economy and therefore still effective in reducing debt ratios. **Furthermore, the European Commission (2012) estimate that the critical multiplier[4] for Malta above which fiscal contractions can lead to a short-term increase in the debt-to-GDP ratios to be 0.9**. This is a relatively high multiplier which reduces the probability that fiscal consolidation fails to reduce the debt-to-GDP ratio. Critical values range from as low as 0.5 for Greece and 0.6 for Italy to as high as 2.8 for Estonia with most established within the 0.7 to 0.9 range.

6. Short-term vs. Long-term Effects

Whilst high fiscal multipliers can undermine the success of fiscal consolidation efforts in the short-term, **a study conducted by the IMF (2009) which involved debt decomposition concluded that the top ten largest reductions in debt ratios in advanced economies over the past three decades occurred largely by running primary surpluses. Nevertheless, the same study also found that it was much easier for governments to run stronger primary balances when growth was higher**. In fact, higher growth raises revenues and when this revenue is not spent, the effect on debt dynamics can be very strong.

The question is, how long does it take fiscal consolidation to reduce public indebtedness? The European Commission (2012) (The Quarterly Report of the Euro Area) provides another very interesting analysis of fiscal multipliers complementing the work on fiscal multipliers by the IMF in the World Economic Outlook of October 2012. The analysis concedes that fiscal consolidation can lead to an increase (not decline) in the debt ratio at least in the first two years of the consolidation process. If confidence is restored immediately with fiscal consolidation (and assuming financial markets are not "myopic") this period can be reduced slightly. But if confidence is not restored, the situation deteriorates even further.

It is however worth noting that the recent experience among the Program Countries in the EU experiencing sovereign bond market distress suggests that **sovereign bond yields in distress situations can remain excessive even in the case of the more "credible" of the fiscal consolidation strategies especially if it is not supported enough by expansionary monetary policy**. Furthermore, the high persistence scenario presented in the same paper is not to be discounted either. This crisis has already been going on for seven

years after all and the persistence implied by the paper is really a reference to the high multipliers which typically prevail under recessionary conditions compared to normal times. **This suggests that the increase in the debt ratio could remain above a baseline case where the primary balance is simply stabilised for a range of minimum four years to a maximum of infinity under a very worse case scenario**. Judging by recent experience in the sovereign debt crisis in Europe one also has to keep in mind that consolidation often takes place over a number of years since it is difficult to implement drastic measures over one year when the fiscal adjustment required could be as high as 12 percentage points of GDP. Indeed the scale of the necessary adjustment during the European sovereign debt crisis suggests that the consolidation process in countries could take as much as 4 to 5 years. **So probably we are seeing a minimum of 6 years under very optimistic assumptions before debt to GDP turns to baseline and more years before the debt to GDP ratio actually starts to decline**.

Another interesting point that emerges from this analysis is the pivotal role of the monetary authorities to make sure that excessive sovereign bond yields are addressed through central bank purchases. **In the absence of such action and support from the central bank the confidence in sovereign markets is unlikely to be restored thus undermining completely the fiscal consolidation over an indefinite period!**

7. Growth Friendly Fiscal Consolidation; Expenditure vs. Revenue Based Consolidation

Milesi-Ferretti and Roubini (1998) show that a consumption tax affects the choice between time spent in productive activities such as labour and education and the time spend in leisure in favour of the latter, thus reducing the growth rate of the economy. At the same time, the same study also finds that income taxes also lead to a similar dynamic while concurrently also negatively affecting capital accumulation, therefore reinforcing the notion that a revenue based consolidation process would have negative implications for economic growth. An analysis conducted by the OECD (2010) supports the view that revenue based consolidation weighs down on economic growth. In particular, **the OECD finds that corporate taxes are the most harmful type of taxes for economic growth, followed by personal income taxes and then consumption taxes**.

Baldacci et al. (2011) take into account the current post-financial-crisis context, noting that the fiscal adjustment needed will have to take place in an environment of extended private sector deleveraging and economic uncertainty, thus also implying that fiscal consolidation might have to be achieved over a longer time span compared to past consolidations. In particular, while finding that successful debt consolidation is in general more likely when it is based on expenditure policy, they also find that **with respect to consolidation following a banking crisis, a revenue based strategy may also increase future growth potential**. However, akin to studies mentioned earlier, they also stress the importance of simplifying the tax system by **reducing excessive tax rates and broadening the tax base**, thus not harming tax efficiency. Additionally, Baldacci et al. also note that political fragmentation and the proximity of elections both make debt reduction more difficult and, as a result, they call for credible medium-term fiscal plans which are backed by strong and transparent fiscal institutions.

It is also intuitive that the extent of effort in one type of consolidation strategy or the other may depend on the initial degree of revenue and expenditure ratios of government. In this regard, the IMF (2009) noted that many advanced economies already have a fairly high revenue-to-GDP ratio and that therefore a large part of the adjustment effort would

need to take place on the spending side. The OECD (2012) also noted that the extent to which revenue or spending will have a bearing on consolidation will necessarily depend on whether spending is already high.

The IMF (2010) supports the view that expenditure based fiscal consolidation is more growth friendly than revenue based consolidation. However the IMF paper qualifies this result by showing the extent to which this result is due to the reaction of monetary policy. **In the absence of accommodating monetary conditions the difference between the two is likely to be less significant**. The study also suggests that the impact of expenditure based consolidation differs depending on the expenditure being reduced. **Consolidation through lower public investment or government consumption tends to be costly in terms of economic growth whilst lower transfer payments are relatively benign**.

The IMF (2009) and OECD (2012) also propose structural reforms within the tax system. In particular, **both suggest a broadening of tax bases by eliminating tax expenditures (such as tax credits and deductions), the reduction in tax rates, and the improvement of the extent to which taxes correct for externalities** (for example, tax support towards research and development and environmental taxes). Both the IMF and OECD also suggest improving the fight against tax evasion, as well as improved efficiency in public finances, particularly should a consolidation strategy based on freezing spending be pursued. In particular, it is argued that costs should be minimised by aiming to improve allocative efficiency (better use of resources) and technical efficiency (maximising output for a given input). In addition, the OECD (2012) also notes the importance of addressing drivers of future spending pressures, in particular in the case of spending related to pensions and population ageing. The OECD (2012) further suggests that when necessary increases in taxes or marginal tax rates are identified,

measures should be oriented to those tax bases that have less distortionary effects as this can help make fiscal consolidation on the revenue side less costly to long-term output.

8. Local Policy Considerations

Despite the vast economic literature on the subject matter there is very little pertaining directly to the effects of fiscal consolidation on growth in Malta. Work relating to the short-term effects of tax policy on economic output stems from analysis carried out by the Economic Policy Department involving the Structural Annualised Econometric Model for Malta (SAMM)[5]. **This analysis shows that the effects of fiscal policy on economic output depend heavily on the type of fiscal consolidation measure being considered**. As already discussed in a previous section, the success of consolidation in reducing the debt ratio depends heavily on the value of the fiscal multiplier which measures the impact of consolidation on growth. The fiscal multiplier shows the extent by which GDP reacts to a change in a fiscal variable – thus a **low income multiplier would be most desirable for fiscal consolidation but less desirable for counter cyclical fiscal policy in a recession**.

A short-term analysis conducted using the SAMM suggests that fiscal multipliers vary depending on the type of fiscal measure considered. Multipliers typically range from 0.4 to 0.7, though specific cases where the multiplier has exceeded the 0.9 threshold have also been noted. Thus in most (even if not all) cases fiscal multipliers are below the critical value estimated by the European Commission beyond which austerity undermines growth to the extent that it leads to a rise rather than a fall in the debt-to-GDP ratio.

It is however worth noting that expectations are not modelled in SAMM and a Keynesian consumption

function is used with no elements of Ricardian equivalence embedded in such a function. This is not necessarily a constraint in the very short term. However over the long-term this could become an element which limits the comparability of the multipliers derived from SAMM to those found in the literature. It is also important to note that monetary policy and exchange rate policy are assumed to be exogenous in SAMM. This is a realistic assumption given that Malta does not enjoy monetary independence being part of the Euro Area. However this further limits the comparability of these multipliers with those of other countries often found in the literature.

The results also suggest that despite the openness of the Maltese economy fiscal multipliers are not always insignificant as the literature review may have indicated for open economies like Malta's. Another limitation of the SAMM multipliers is the notion of investor confidence. SAMM does not model the reaction of financial markets to fiscal consolidation efforts and does not distinguish between the levels of indebtedness. **It is worth remembering that the literature suggests that multipliers tend to decline as debt-to-GDP ratios tend to 100%, mainly due to confidence effects[6]. Such effects are not captured by SAMM. The scenarios presented would thus be consistent with the hypothesis that home country bias[7] in sovereign debt markets allows Malta to benefit from higher fiscal multipliers despite the level of public indebtedness**. As long as this hypothesis holds the SAMM multipliers can be assumed to be realistic.

SAMM also fails to capture long-term supply side effects. Additional work in this area which involves a longer-term perspective has been carried out by Mifsud (2004). In this case, the effects of fiscal policy on output in Malta is analysed using a **structural vector error correction approach. The main results suggest that tax shocks (in the form of higher taxation) have** a persistent negative effect on output while expenditure shocks (in the form of increased government expenditure) have a temporary expansionary effect.

The results of the structural VAR approach is consistent with the Keynesian view that fiscal consolidation is contractionary in the short-term and is thus consistent with SAMM results in the short-term. However, the structural VAR approach adds that **tax reforms tend to have persistent effects which are not captured by SAMM whilst expenditure reforms tend to have only temporary effects on economic activity**. Unfortunately, the model does not distinguish between the effects of various tax and expenditure measures. The structural VAR approach supports the OECD and IMF policy recommendations that fiscal consolidation is less damaging to economic activity in the long-term if it is expenditure driven and that **longer term growth should be fostered through appropriate tax reforms**.

A limitation of the model adopted by Mifsud is that it does not discern which type of expenditure would be most appropriate to stimulate growth in the short-term. While this is just one side of the consolidation approach, more insight can be gathered in terms of the revenue side.

A more recent analysis by Borg again using a structural VAR supports the conclusions derived from the SAMM estimates. In particular the cumulative expenditure multiplier exceeds the 0.9 threshold over a period of between one and two years from the initial shock. It is also interesting to note that by comparison the cumulative tax multiplier reaches 0.5 in the first year (compared to 1.0 in the case of expenditure) and rises to a maximum of 0.8 (compared to 1.2 in the case of expenditure) by the second year. The size of the expenditure multipliers exceed the 0.9 threshold established by the Commission whereas the tax multipliers are below the critical threshold. Similar results were obtained by SAMM supporting the notion that

for the Maltese economy, fiscal consolidation in bad times is best undertaken through tax measures whilst counter cyclical fiscal policy is best carried out through expenditure. It is also interesting to note that Borg does not find any persistent effect of both tax and expenditure shocks which contrasts with the findings by Mifsud.

9. Conclusion

This paper reviewed extensively the literature on the effect of fiscal consolidation on growth and vice-versa and suggests that high indebtedness in advanced economies is often preceded by a protracted period of slow growth but is not necessarily followed by a period of low growth. Nevertheless, the economic literature suggests that high indebtedness could undermine long term economic growth though the magnitude of such an impact is not clear and may not be large.

The paper has also analysed the effectiveness of fiscal consolidation in reducing public sector indebtedness and recognises that this depends significantly on country-specific circumstances which mainly determine the fiscal multipliers that prevail at any point in time, the support that is available or otherwise through expansionary monetary policy and the constraint imposed by the zero lower bound.

Empirical evidence suggests that in the case of Malta, as long as fiscal multipliers do not exceed 0.9, fiscal consolidation could be successful in reducing public indebtedness even in the short-term. Depending on the type of fiscal consolidation measures, short-term fiscal multipliers in Malta typically range from 0.4 to 0.7, though specific cases where the multiplier has exceeded the 0.9 threshold have also been noted. This suggests that in general fiscal consolidation in Malta causes less damage to economic growth and can be successful even in reducing public indebtedness in the short-term, though one

cannot generalise this conclusion to all types of fiscal consolidation.

In general recent studies by Borg suggest that fiscal consolidation in bad times is best undertaken through tax measures whilst counter cyclical fiscal policy is best carried out through expenditure. In particular carrying out fiscal consolidation through expenditure measures is likely to increase (rather than reduce) the debt ratio in the first two years in view of fiscal a multiplier which exceeds the 0.9 critical threshold. This does not apply for tax measures where cumulative multipliers are below the critical threshold. Nevertheless, one should not dismiss the possibility that the long-term effect of revenue-based fiscal consolidation on growth could be more persistent though such findings are not consistent throughout the empirical evidence provided by structural VAR analysis. More research is however needed on alternative forms of revenue-based fiscal consolidation and their impact on long-term growth.

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Endnotes:

[*] The views expressed in this research article are those of the authors and do not necessarily reflect those of the Economic Policy Department, Ministry for Finance. The authors are grateful to Godwin Mifsud, and the staff of the Economic Policy Department for helpful comments and suggestions.

[1] United Kingdom, France, Germany and Spain.

[2] United States, Japan, Italy, Belgium, Greece and Portugal.

[3] The range depends on the forecast institution and the estimation method used.

[4] The threshold is inversely proportional to the debt ratio and the sensitivity of the budget to the business cycle.

[5] SAMM is a Keynesian structural model incorporating more than 1,600 variables, 378 behavioural equations and 278 identity equations. The model is based on an input/output structure.

[6] In a highly indebted economy, fiscal expansion could undermine investor confidence leading to expectations of higher taxes in the future, lower profits and hence lower private spending and increased savings (often referred to as Ricardian equivalence). Investors would only be willing to buy government bonds in exchange for a higher interest rate. As a result fiscal multipliers would be lower.

[7] Home country bias would imply that investors are not concerned about a future tax hike or the solvency of Government and therefore no impact on interest rates or increased savings would arise.