

Fiscal consolidation and public debt in the European Union: Reevaluating the relationship

Lara Greta MERLING

Bucharest University of Economic Studies, Romania
lara.merling@gmail.com

Alexandru VLADOI

Bucharest University of Economic Studies, Romania
alexvladoi@gmail.com

Abstract. *The initial shock from and response to the Global Financial Crisis (GFC) in 2008 had a profound impact on the fiscal balances and subsequently the government debt ratios of countries in the European Union (EU). This paper examines the relationship fiscal consolidation measures and the changes in debt ratios that followed. The findings highlight that the negative feedback of fiscal consolidation on economic growth in this context can translate into increases, rather than decreases in government debt ratios. As debt levels in most European Union countries are reaching record levels in the aftermath of Covid-19, these results warn of the risks of a stunted recovery if a similar approach as in the aftermath of the GFC is pursued.*

Keywords: fiscal policy, public debt, expansionary austerity.

JEL Classification: E6, E62, E65, H6.

1. Introduction

In 2020, the Covid-19 pandemic triggered the largest downturn and economic shock for the global economy and the European Union (EU) and record deficit spending in member states as part of their response to mitigate the crisis. The effects of the pandemic are still ongoing, and what seemed like a path to a recovery is now put at risk by the spillover effects of Russia's war in Ukraine, including the impact on energy prices, access to energy, and commodity prices overall, as well as a large influx of refugees (IMF Regional Economic Outlook, 2022).

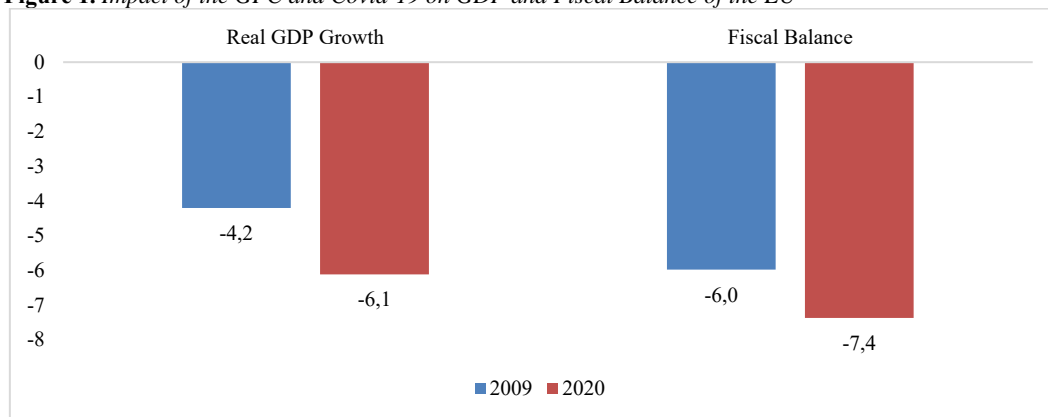
Fiscal policy in the European Union is guided by the rules established through the Maastricht Treaty (1992) which set a limit on deficit spending and targets for overall government debt. In the aftermath of the Global Financial Crisis (GFC) in 2008, these guidelines served as an impetus to re-orient the fiscal policy to focus on reducing the increased deficits and growing debt that resulted from the response to the GFC. The ideas of "expansionary austerity" and dangers to growth of reaches certain debt thresholds were gaining momentum in the economic literature strengthening the case for a rapid shift to fiscal consolidation (Alesina and Ardagna, 2010; Reinhart and Rogoff, 2010). The resulting shift towards rapid fiscal consolidation resulted in a stunted recovery for the European Union and a double-dip recession in 2012, persisting high unemployment and low growth (IMF World Economic Outlook, 2022).

In the current uncertain and fragile context, a misguided policy response from the European Union can put a recovery at risk and have long-term consequences for Europe's future, its competitiveness and social cohesion. Through this study, we aim to strengthen the understanding on how the actual results of the post-GFC response were different than what policymakers expected and draw lessons from those errors. The European Union has put its fiscal rules on pause as part of the pandemic response and is looking to reevaluate whether they are fit for purpose.

This paper provides a reevaluation of the relationship between fiscal consolidation on government debt in the post GFC period, through an analysis of the scale of consolidation undertaken by countries in the European Union, the expected impact it would have on government debt, and the actual impact. The analysis builds on a Blanchard and Leigh (2013) study that showed that economic forecasts failed to correctly predict the negative impact of fiscal consolidation on growth in the immediate post GFC period. This paper extends a similar analysis to look at the impact of changes in fiscal balance to gross government debt from 2012 until 2019, highlighting a pattern of overestimating the expected reductions in debt.

2. Macroeconomic context

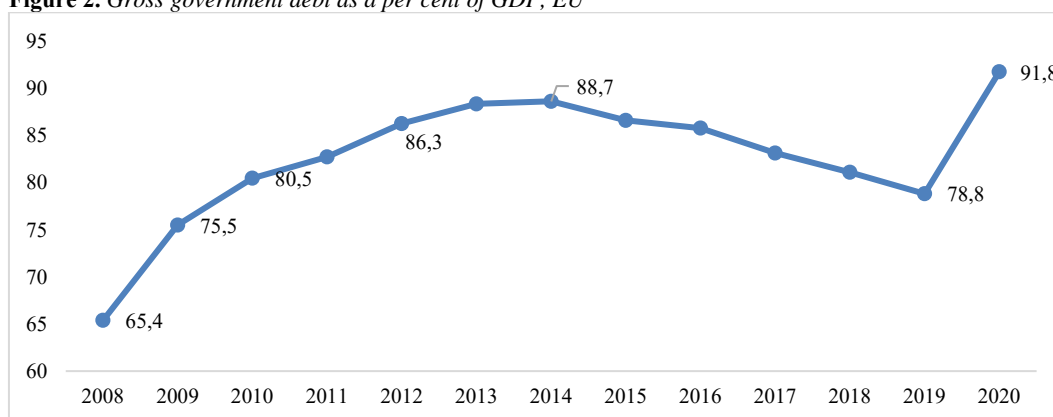
The global economic has faced two major shocks and economic downturns in recent years. First the GFC, triggered by a crisis in the financial system in 2008, that impacted Europe most severely in 2009. In 2020, Covid-19 spread through the world, as the pandemic brought economic activity to a halt, creating both a sanitary and economic crisis. Figure 1 illustrates the impact of these shocks on the EU.

Figure 1. Impact of the GFC and Covid-19 on GDP and Fiscal Balance of the EU

Source: IMF WEO 2022, <https://www.imf.org/en/Publications/WEO/weo-database/2022/April>

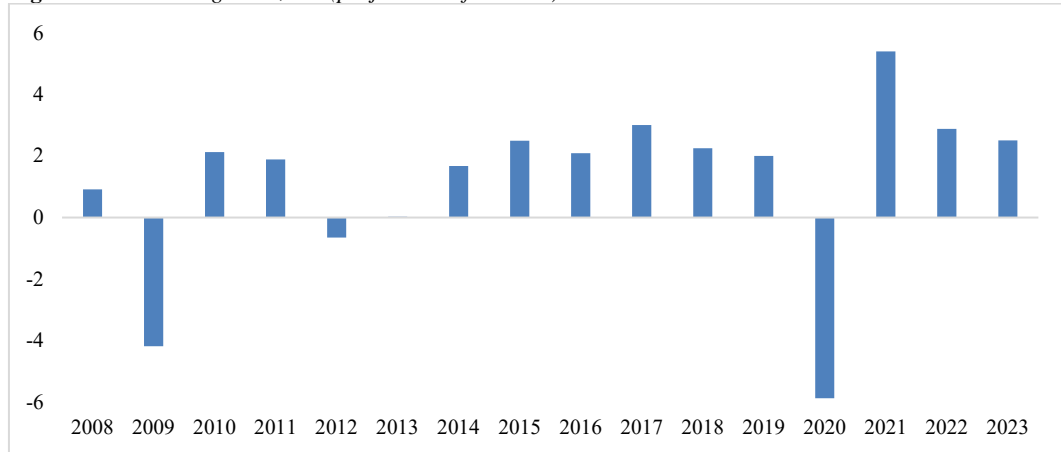
Overall, growth in the EU declined by about 4.5 per cent of GDP in 2009, compared to 6 percent in 2020. The impact to the fiscal balance was also more pronounced in 2020, with deficits reaching 7.4 per cent. The EU mobilized to respond to the pandemic and put in place measures of support for businesses and workers alike, stepping up spending on health. The initial debt level prior to the pandemic did not hamper the response.

Figure 2 shows the gross government debt ratio in the EU from 2008 until 2020. In the aftermath of the GFC the rising debt in 2009 and 2010 was seen as a cause of panic with calls for action on reducing the deficit. The Group of 20 Finance Ministers endorsed exiting crisis policies, in part to rebuild financial buffers and called for “growth-friendly” consolidation plans (G20, 2010).

Figure 2. Gross government debt as a per cent of GDP, EU

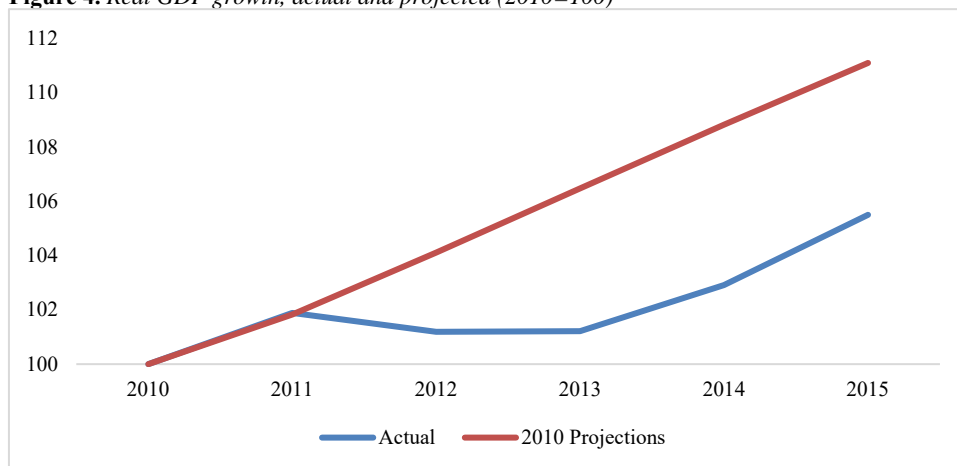
Source: IMF WEO 2022, <https://www.imf.org/en/Publications/WEO/weo-database/2022/April>

As shown in Figure 3, the pace of the recovery slowed down in the EU in 2011, and negative growth returned in 2012. While the initial impact of Covid-19 was larger, the strong response was followed by a rebound in 2021, and expectations for the recovery to continue in 2022 and 2023. However, since, Russia’s war in Ukraine and the continued spread of the virus have added to the downside risks in this forecast (IMF REO, 2022).

Figure 3. Real GDP growth, EU (projections after 2021)

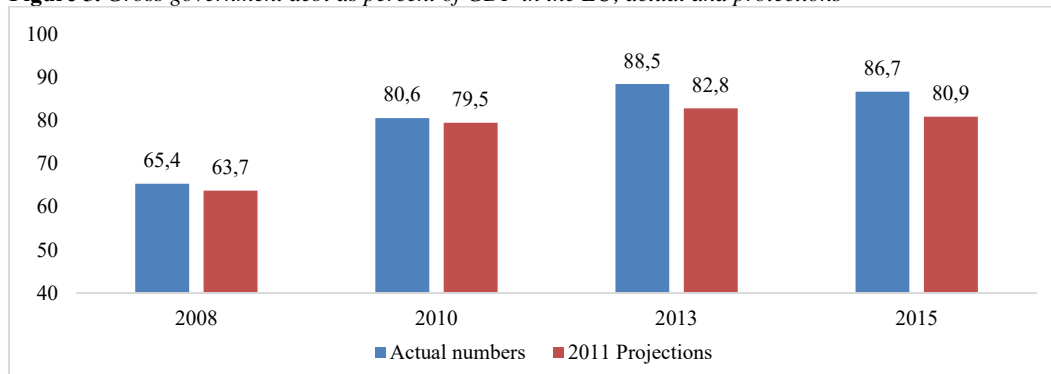
Source: IMF WEO 2022, <https://www.imf.org/en/Publications/WEO/weo-database/2022/April>

The risks of a premature shift in the supportive policy stance are reflected in Figure 4, which shows the expected recovery path for the EU in 2010, when authorities push to pursue a more aggressive fiscal consolidation strategy and prioritize debt reduction. The actual growth path was much lower, and by 2015 the GDP level in the EU was almost 6 per cent that it was forecast in 2010. The lower-than-expected growth meant that the goal of reducing debt ratios was not met either, with expected debt-to-GDP ratios higher than envisioned despite the reduced spending levels.

Figure 4. Real GDP growth, actual and projected (2010=100)

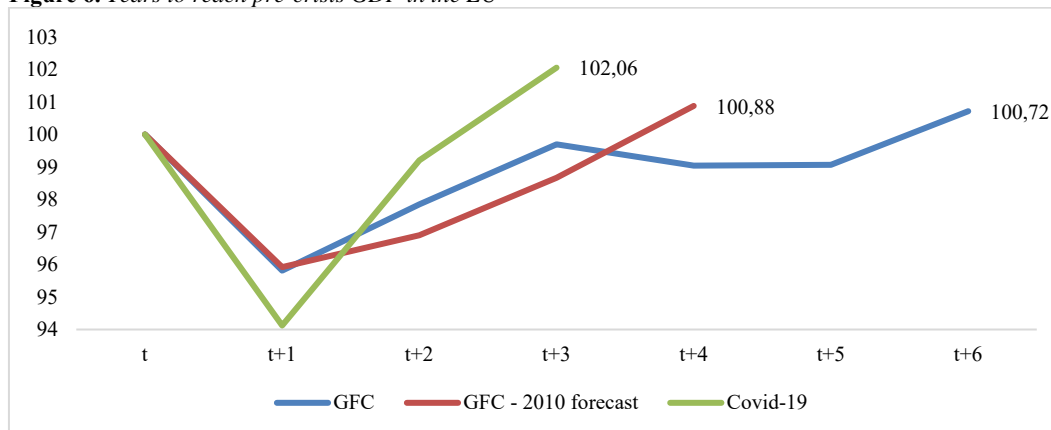
Source: IMF WEO 2022, <https://www.imf.org/en/Publications/WEO/weo-database/2022/April>; IMF WEO 2011, <https://www.imf.org/en/Publications/WEO/weo-database/2011/April>

Figure 5 shows the gross government debt ratio in the EU for selected years since the onset of the GFC, comparing the actual levels with the expected levels predicted in 2011. This is to be expected given the much lower actual GDP growth, since the debt burden is calculated as a share of the overall size of the economy.

Figure 5. Gross government debt as percent of GDP in the EU, actual and projections

Source: IMF WEO 2022, <https://www.imf.org/en/Publications/WEO/weo-database/2022/April>;
IMF WEO 2010, <https://www.imf.org/en/Publications/WEO/weo-database/2010/October>

Figure 6 shows the expected time to reach the pre-crisis output after the GFC and after Covid-19, as well as the actual number of years it took for the EU to reach its 2008 GDP after the GFC. With what seemed to be the onset of a recovery, in 2010 the IMF predicted the EU would reach its pre-GFC size in 3 years. With the EU sliding back into a recession in 2012, it took until 2014 to reach the same level of output as in 2008. The EU is now predicted to reach its 2019 pre-Covid level of output in 2022. However, a shift in policy stance, as well as other risks building up could derail this recovery.

Figure 6. Years to reach pre-crisis GDP in the EU

Source: IMF WEO 2022, <https://www.imf.org/en/Publications/WEO/weo-database/2022/April>;
IMF WEO 2011, <https://www.imf.org/en/Publications/WEO/weo-database/2011/April>

3. Literature review

The slow and uneven recovery from the GFC had a negative impact on employment levels, as well as other social indicators in the EU. Szczepański (2013) finds that as a result of fiscal consolidation and lower growth, poverty levels in the EU increased, and the EU went off track from meeting its own employment and well-being goals set for 2010. Additionally, the large spending cuts implemented in the EU in the aftermath of the GFC are linked to rising income inequality and disproportionately affected youth and women (Szczepański 2013).

A rise in unemployment and subsequently an increase in poverty and material deprivation as a result of austerity measures implemented by the EU, and growing polarization between Northern and Southern Europe is found by Darvas and Tschekassin (2015). Fiscal consolidation executed mostly through spending cuts resulted in cuts in public spending for research and development, increasing the gap in research and innovation between EU members, and hurting the competitiveness of the EU overall (Veugelers, 2014).

Blanchard and Leigh (2013) published a seminal paper on the growth forecast errors in the aftermath of the GFC, between 2010 and 2013, based on underestimating the negative impacts of fiscal consolidation on growth. Their paper studied the relationship between levels of fiscal consolidation and growth and found that for each additional per cent of fiscal consolidation GDP growth was one per cent lower than forecast. This shows that the shift to fiscal consolidation slowed the recovery and did not have an expansionary impact. Kareem et al. (2020) extended this methodology to cover a longer timeline, from 2003 to 2017, finding the larger than envision impact on growth extends for that entire period.

These empirical findings are in contradiction with what prominent voices within the economics literature predicted as the impact of implementing fiscal consolidation measures. The most widely cited literature on the expansionary potential of austerity measures is the work of Alberto Alesina et al. (1997, 2010, 2012). According to Alesina et al. (1997, 2010, 2012) fiscal consolidation episodes have an expansionary impact on growth, particularly if the measures implementing to reduce the fiscal balance are centered on spending cuts, particularly public wages and transfers. The expansionary effect is expected from increased confidence and private investment that follow from consolidation measures.

Reinhart and Rogoff (2010) published a paper that warned of a fiscal cliff and reduced growth once countries reach a gross public debt level above 90 per cent of GDP, as a result of a decrease in confidence that would put pressure on a government's ability to continue borrowing and funding its deficit. This paper was famously found by a then graduate student to contain a spreadsheet error that once corrected resulted in the analysis no longer finding the same relationship for the 90 per cent threshold (Herndon et al., 2014).

Beyond the spreadsheet error, Guajardo et al. (2013) and Baker and Rosnick (2014) raised additional issues with the methodology underpinning both the Reinhart and Rogoff (2010) results and Alesina et al. (1997, 2010, 2012) pointing to the inability of their studies to distinguish between the relationship of causality. While some relationship between growth level and fiscal deficits might exist in the data, it can also be interpreted in a different manner, namely that during episodes of faster growth deficit and debt levels fall.

Botta and Tori (2018) conducted an empirical examination of the transmission mechanisms through which Alesina (1997, 2010, 2012) argues austerity measures are expansionary. Assuming fiscal consolidation measures are constructed to reflect the optimal type of consolidation proposed by proponents of expansionary austerity, the effects are transmitted through expectation and financial channels. Particularly in the context of the Eurozone, fiscal consolidation measures triggered hikes in sovereign bond yields in countries implementing them, worsened financial distress, and did not increase confidence and credibility of governments for financial markets (Botta and Tori, 2018).

Rather, yields for European countries stabilized as a result of interventions from the European Central Bank (ECB) and its introduction of unconventional monetary policies (Galariotis et al., 2018). The actions of the ECB spillover to non-eurozone countries that are part of the EU, stabilizing their yields as well (Trifonova et al., 2018). Zabala and Prats (2020) attribute the improved growth performance and increased stability in the EU since 2015 to the ECB ramping up its asset purchase program and the increase in the ECB's balance sheet. Foresti and Marani (2014) find that when certain episode of expansionary austerity are identified, the expansionary effects are the result of a policy mix where the behavior and support from the central bank is key.

4. Methodology

To examine the relationship between fiscal consolidation and debt levels, we build on the Blanchard and Leigh (2013) paper that constructed a methodology to analyze the relationship between fiscal consolidation and economic growth. With debt levels reported and measures as a share of GDP, we expect the findings on underestimating the negative impact on growth to translate to overestimating the impact of fiscal consolidation in this context to reducing debt levels. This methodology was tested to control for initial levels of debt, initial levels for the fiscal balance, the presence of a banking crisis, level of fiscal consolidation of trading partners, stock of foreign liabilities (Blanchard and Leigh, 2013). None of these factors changed impacted the results.

We focus on 2012 as a starting point for this analysis, looking at the projections made for that year from 2010. The analysis is extended to 2019. Given that 2015 is when the ECB ramps up its asset purchases and interventions, we analyze both the entire period 2012 to 2019, as all as 2012 to 2015 and 205 to 2019. As data for the analysis, we use the IMF World Economic Outlooks release and forecasts made yearly from 2010 onwards and compile them into one data set compatible with STATA.

We then proceed to measure the debt forecast error as the difference between the change in the gross government debt forecast and actual historical timeline values for government debt. This is regressed over the forecast for fiscal consolidation that represents the targeted change in the net fiscal balance from the previous year. The debt forecast error in the year is then regressed over the planned fiscal consolidation and debt forecast from the year t . We follow this formula:

$$\text{Forecast error } \Delta GGD_{i,t:t+1} = \alpha + \lambda_t + \beta \text{ Forecast } \Delta F_{i,t:t+1|t} + \epsilon_{i,t:t+1}$$

$\Delta GGD_{i,t:t+1}$ is the change from year t to year $t+1$ of gross government debt in country i .

$\Delta F_{i,t:t+1|t}$ is the change in the net fiscal balance (a positive number means fiscal consolidation)

λ_t represent the fixed-year effects. If the forecast was accurate, in the null hypothesis β is zero.

The regressions are run through STATA with Huber-White standard errors that adjust for heteroskedasticity. To down-weight outliers we run a robust regression (Andersen, 2008) and the Cook's distance method that discards observations with a Cook's distance greater $\frac{1}{4}$ of the sample size (Hamilton, 2012).

5. Results

The results are reported with heteroskedasticity-robust standard errors.

Table 1. Results for all EU members and Eurozone members for 2012

	All countries	Outliers: Cook's Distance	Outliers: Robust regression	Eurozone	Eurozone Outliers: Cook's Distance	Eurozone Outliers: Robust regression
Coefficient	3.064 (1.847)	1.512** (0.539)	1.577* (0.837)	3.323 (1.966)	1.674*** (0.443)	1.798** (0.835)
Constant	-4.779 (4.398)	-0.516 (1.580)	-1.863 (1.342)	-7.471 (5.166)	-2.210* (1.107)	-1.776 (1.322)
Observations	27	25	25	19	17	17
R-squared	0.190	0.063	0.134	0.258	0.197	0.236

Table 2. Results for all EU members and Eurozone members for 2012-2019

	All countries	Outliers: Cook's Distance	Outliers: Robust regression	Eurozone	Eurozone Outliers: Cook's Distance	Eurozone Outliers: Robust regression
Coefficient	1.445** (0.567)	1.216*** (0.207)	1.041*** (0.164)	2.022*** (0.723)	1.390*** (0.335)	1.261*** (0.195)
Constant	-0.737 (0.826)	-0.703** (0.312)	-0.706*** (0.270)	-1.751 (1.101)	-0.881** (0.393)	-1.087*** (0.323)
Observations	210	203	209	148	142	147
R-squared	0.082	0.124	0.162	0.144	0.133	0.224

Table 1 shows the results for 2012 and Table 2 covers the period from 2012-2019. The coefficient for both the entire group and Eurozone members is much larger for 2012 but the results are outside of the 0.01, 0.05, and 0.10 confidence level. When applying the additional tests to remove outliers, the coefficient after Cook's distance test is used for the Eurozone countries falls in the 0.01 confidence level and shows a relationship that denotes that for each additional point of fiscal consolidation, the government debt was 1.67 per cent higher than expected.

In the larger sample included in Table 2 all coefficients are significant at the 0.05 or 0.01 level. A similar relationship is detected but with a smaller coefficient. For all countries we find that each additional point of fiscal consolidation, debt is 1.445 per cent higher with a confidence level of 0.05. For Eurozone countries this is more pronounced, with a coefficient of 2.022 at a 0.01 confidence level. When removing the outliers in this case the coefficients drop for all samples but remain higher than 1 per cent and are statistically significant at the 0.01 level.

Table 3. All EU countries, 2012-2015 and 2015-2019

Years	All countries		Outliers: Cook's Distance		Outliers: Robust regression	
	2012-2015	2015-2019	2012-2015	2015-2019	2012-2015	2015-2019
Coefficient	1.416* (0.717)	0.553 (0.406)	1.127*** (0.259)	1.216*** (0.207)	0.774*** (0.238)	0.762*** (0.255)
Constant	0.314 (1.478)	-0.796* (0.411)	0.629 (0.578)	-0.703** (0.312)	0.597 (0.495)	-0.905*** (0.295)
Observations	105	130	101	203	105	130
R-squared	0.074	0.024	0.093	0.124	0.093	0.065

Table 4. Eurozone countries, 2012-2015 and 2015-2019

Years	Eurozone		Eurozone Outliers: Cook's Distance		Eurozone Outliers: Robust regression	
	2012-2015	2015-2019	2012-2015	2015-2019	2012-2015	2015-2019
Coefficient	2.183** (1.047)	0.600 (0.443)	1.168*** (0.439)	0.947*** (0.278)	1.145*** (0.293)	0.854*** (0.265)
Constant	-1.479 (2.118)	-0.921* (0.497)	0.279 (0.688)	-1.039*** (0.302)	-0.106 (0.604)	-1.207*** (0.338)
Observations	74	92	71	85	73	92
R-squared	0.139	0.037	0.095	0.124	0.177	0.103

Note: In the tables, ***, **, * respectively denote statistical significance at the 0.01, 0.05, 0.10 level.

The following step looks at the period up to the ramp up in asset purchases from the ECB and after, first for all EU members and then just for the sample of Euro area countries. This breakdown highlights the lower errors in the debt forecast after 2015 for both samples. When removing the outliers there is still a statistically significant relationship between consolidation and the errors on debt forecasts. For the Eurozone, which is directly impacted by ECB policies this coefficient falls below 1 for the two statistically significant results obtained when removing the outliers.

6. Conclusions

The EU appeared to be on a path to recovery following the Covid-19 shock. However, with risks once again on the downside, any missteps from policymakers risk protracting the crisis. The EU has currently suspended its fiscal rules as part of the pandemic response and plans to undertake an evaluation of these principles (European Commission, 2021). In the aftermath of the GFC the push for rapid fiscal consolidation in pursue of reducing debt levels backfired: expectations for expansionary effects of austerity policies did not materialize overall, while the protracted crisis was damaging to growth prospects, as well as social indicators.

Our results add to the case that fiscal consolidation, particularly in a post-crisis context does not effectively reduce debt ratios. Furthermore, the post-2015 results suggest the ECB policy played a larger role in stabilizing debt levels. When reviewing the fiscal rules of the EU these issues should be considered, as a pro-growth stance supported by the ECB can be a more effective way to reduce debt burdens without pursuing fiscal consolidation measures with potentially negative impacts on inequality, poverty, and unemployment.

References

- Alesina, A. and Ardagna, S., 2010. Large changes in fiscal policy: Taxes versus spending. *Tax Policy and the Economy*, 24(1), pp. 35-68.
- Alesina, A. and Ardagna, S., 2013. The design of fiscal adjustments. *Tax Policy and the Economy*, 27(1), pp. 19-68.
- Alesina, A., Favero, C. and Giavazzi, F., 2019. Effects of Austerity: Expenditure- and Tax-based Approaches. *Journal of Economic Perspectives*, 33(2), pp. 141-162, <<https://doi.org/10.1257/jep.33.2.141>>
- Alesina, A. and Perotti, R., 1997. Fiscal adjustments in OECD countries: composition and macroeconomic effects. *Staff Papers*, 44(2), pp. 210-224.

- Andersen, R., 2008. *Modern methods for robust regression* (No. 152). Sage.
- Blanchard, O.J. and Leigh, D., 2013. Growth forecast errors and fiscal multipliers. *American Economic Review*, 103(3), pp. 117-120.
- Botta, A., and Tori, D., 2018. The theoretical and empirical fragilities of the expansionary austerity theory. *Journal of Post Keynesian Economics*, 41(3), pp. 364-398. <<https://doi.org/10.1080/01603477.2018.1431789>>
- Darvas, Z.M. and Tschekassin, O., 2015. *Poor and under pressure: The social impact of Europe's fiscal consolidation*. Bruegel policy contribution.
- DeLong, J.B. and Summers, L., 2012. Fiscal Policy in a Depressed Economy. *Brookings Papers on Economic Activity*, 43(1), pp. 233-297.
- Directorate-General for Parliamentary Research Services (European Parliament) and Lecerf, M., 2016. Poverty in the European Union: The crisis and its aftermaths: in depth analysis. Publications Office of the European Union. <<https://data.europa.eu/doi/10.2861/128014>>
- Foresti, P. and Marani, U., 2014. Expansionary Fiscal Consolidations: Theoretical Underpinnings and Their Implications for the Eurozone. *Contributions to Political Economy* 33(1), pp. 19-33.
- Galariotis, E., Panagiota, M. and Spyros, S., 2018. The impact of conventional and unconventional monetary policy on expectations and sentiment, *Journal of Banking and Finance* 86, pp. 1-20.
- Goldey, W. and Lavoie, M., 2007. Fiscal policy in a stock-flow consistent (SFC) model. *Journal of Post Keynesian Economics*, 30(1), pp. 79-100. <<https://doi.org/10.2753/PKE0160-3477300104>>
- Hamilton, L.C., 2012. *Statistics with Stata: version 12*. Cengage Learning.
- Herndon, T., Ash, M. and Pollin, R., 2014. Does high public debt consistently stifle economic growth? A critique of Reinhart and Rogoff. *Cambridge Journal of Economics*, 38(2), pp. 257-279.
- International Monetary Fund, 2010. Exiting from Crisis Intervention Policies. *Policy Papers*, 2010(22). <<https://doi.org/10.5089/9781498337892.007>>
- International Monetary Fund, 2019. 2018 Review of Program Design and Conditionality. *IMF Policy Paper*.
- Ismail, K., Perrelli, R., Yang, J. and Duttagupta, R., 2020. Optimism Bias in Growth Forecasts-The Role of Planned Policy Adjustments. IMF Working Papers 229. <<https://doi.org/10.5089/9781513560373.001.A001>>
- Pillay, N., 2013. Report on Austerity Measures and Economic and Social Rights. Geneva: Office of the High Commissioner for Human Rights.
- Reinhart, C.M. and Rogoff, K.S., 2010. Growth in a Time of Debt. *American Economic Review*, 100(2), 573-578. <<https://doi.org/10.1257/aer.100.2.573>>
- Szczepanski, M., 2013. *Social dimension of austerity measures: Cases of four EU countries in receipt of financial assistance*.
- Trifonova, S., Atanasov, A. and Kolev, S., 2016. The Effects of the ECB's Unconventional Monetary Policy on the Non-Euro Area EU Member States. *International Journal of Economics and Business Administration*, IV, Issue 4, pp. 93-112. <<https://doi.org/10.35808/ijeba/114>>
- Veugelers, R., 2014. *Undercutting the future? European research spending in times of fiscal consolidation*. Bruegel Policy Contribution.
- Wieland, V., 2022. Overview of how major economies have responded to the Covid-19 pandemic.
- Zabala, J.A. and Prats, M.A., 2020. The unconventional monetary policy of the European Central Bank: Effectiveness and transmission analysis. *The World Economy*, 43(3), pp. 794-809.