Fiscal Rules, Policy and Macroeconomic Stabilization in the Euro Area

By Evi Pappa[1]

Abstract

I discuss the evolution of fiscal rules and of fiscal policy in the Euro Area. Fiscal rules have become opaquer, while their constraining impact is not clear cut. I review recent theoretical and empirical contributions on the effects of discretionary fiscal policy. There is no unique fiscal multiplier: fiscal policy effectiveness depends on several economic features and not all fiscal instruments are equally powerful stabilization tools. However, during a zero lower bound episode, any fiscal instrument can successfully lift the economy out of a recession. The active use of fiscal policy should be accompanied by a careful assessment of its impact on public debt sustainability. Finally, I report on the ability of the Next Generation EU funds in stimulating economic activity. Funds fostering investments in innovation and research and supporting small and medium-sized enterprises are effective countercyclical tools, while funds that foster education and health have more important medium-term repercussions.

1   Twenty years of a common currency and multiple fiscal policies and rules

Two decades after the creation of the euro, the coexistence of a single monetary and multiple fiscal policies still constitutes a big challenge which remains at the center of the policy debate, especially after the emergence of the pandemic crisis. Few days before COVID-19 started shaking the European economies (on February 5, 2020) the European Commission launched a call for a possible revision of the European Governance. Many academics and policymakers have raised serious concerns about the evolution of the fiscal framework in Europe. For example, Blanchard et al. (2019) has compared the evolution of fiscal rules in the European Monetary Union to the convoluted design of the Cathedral of Seville. Likewise, in his note at the "Fiscal Rules in Europe: Design and Enforcement" workshop in January 2020, Gaspar (2020) considers that the complexity of fiscal rules in Europe could even better captured by the intricate process behind another famous building also in Andalusia: the mosque-cathedral of Cordoba. According to the database maintained by DG

ECFIN of the European Commission, the number of rules in force across the EU28 rose tenfold between 1990 and 2016.

With so many rules at place, so many exceptions to the rules, and the absence of a central fiscal authority, policy uncertainty and instability has increased all over Europe. Unless some actions are taken in the next few years, we may end up comparing the evolution of fiscal policy rules in Europe with the tower of Babel. The European project of a monetary union with independent national fiscal policies is no doubt very ambitious and demanding. Yet, it seems that, lacking further coordination, countries might be no longer able to understand each other, and the union at some point might collapse. In order to reform the current system of governance one needs to understand the origins of the current fiscal rules, how they have evolved over time and their effectiveness to counteract the current unfavorable economic climate.

1.1 Evolution of Fiscal Governance and Rules in the EMU

1.1.1 A brief history

The Maastricht Treaty (1992), signed at the end of the 1990s recession, established the existence of a unique monetary authority and independent regional fiscal policies constrained by rules that would avoid possible negative externalities from irresponsible practices. The most cited fiscal rules first appear in the article 126.2 of the Treaty, where the famous limits for the deficit and debt to GDP ratio were established. The popularity of those two rules overshadowed the presence of additional rules in article 123 that bant overdraft facilities or monetization of debt, article 124 that forbids privileged access by Union institutions, and governments to financial institutions and the "no bail-out" clause, article 125.[2]

The resolution of the European Council on the Stability and Growth Pact (henceforth, SGP) on June 17, 1997 intended to establish the pact as a means to further enforce and maintain fiscal discipline within the EMU. The SGP brought about more rigidity in the fiscal rules. As outlined by the "preventive arm" regulation, all EU member states ought to submit an SGP compliance report (stability programs) each year, -- covering each country's expected fiscal development for the current and subsequent three years-- for the scrutiny and evaluation of the European Commission and the Council of Ministers. Apart from the medium-term objectives, the "corrective" arm introduces the Excessive Deficit Procedure (EDP). This procedure is triggered if a member state's budget deficit exceeds 3% of GDP.

During the first years after these rules were established, the improvement of economic conditions eased compliance (Buti et al., 2004). However, the prolonged (albeit not severe) recession between 2001 and 2003 has routed several deviations

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[2] In view of the current exceptional conditions, it is worth recalling that article 122.2 of the Treaty introduces a solidarity clause that allows the adoption of exceptional rules for states in economic difficulties due to catastrophic events.

from the fiscal rules. Chart 1 depicts the fiscal stance for the period 1997-2005 as measured by the change in the cyclically adjusted primary budget balance for selected European countries. It shows that the fiscal stance was loosening in 2001 and 2002 for several European countries. Political pressures from Germany and France for more flexibility questioned the effectiveness of the Pact and its very existence. The political turmoil was intensified in November 2003, when the Council of Economic and Financial Affairs of the European Union (ECOFIN) agreed to suspend the EDP of Germany and France, exempting these countries from receiving sanctions for non-compliance[3]. The tensions resulted in the reform of the Pact in 2005. The key element of the reform was the introduction of the structural balance criterion, which was intended to adapt the regulation to the specific circumstances of each country, providing the framework with greater flexibility and discretion.

Chart 1
Fiscal Stance 1997 - 2005

Change in the cyclically adjusted primary balance (% of Potential GDP) 1997 – 2005
(cyclically adjusted primary balance, years)
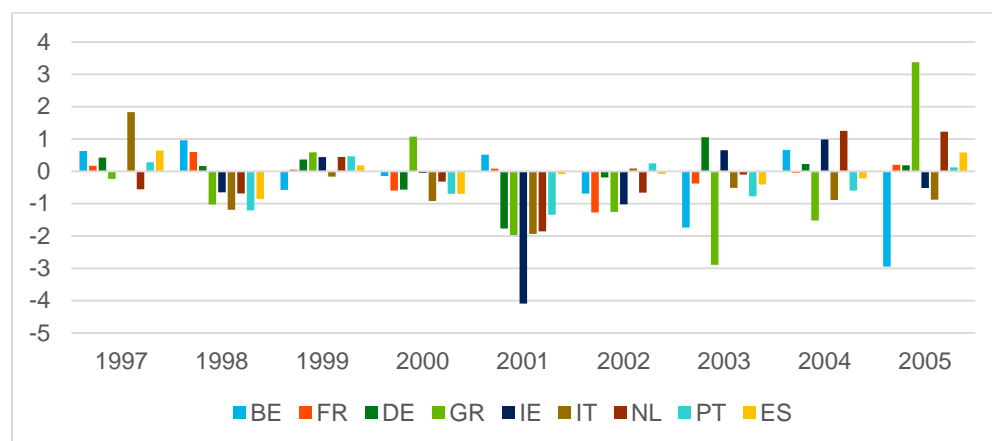
Sources: IMF, Fiscal Monitor

Pappa and Vassilatos (2007) provide theoretical arguments that justify the SGP reform. According to their model, more flexibility should result in welfare gains and macroeconomic stability as long as fiscal authorities engage in domestic stabilization policies. Another important policy implication of their results is that regional fiscal policy should focus on regional output gap stabilization. Thus, their analysis justifies the adoption of differentiated adjustment efforts to the MTO that incorporate the regional business cycle position, as well as support the change of focus towards debt stabilization in the reformed pact and the increased flexibility of the deficit criteria. It is further suggested that the tightness of fiscal constraints is not that unbearable in terms of welfare costs. These results are in line with the empirical

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[3] This event caused a confrontation between the ECOFIN Council and the Commission, which had to be resolved before the Court of Justice of the European Union.

results of Canova and Pappa (2006) who find that macroeconomic stability is barely affected by the presence of budgetary restrictions in the US states.

Despite the increase flexibility with the reform of the Pact, the arrival of the "Great Recession" revealed further deficiencies in the European Economic Governance framework. In October 2008, the crisis was seen as a liquidity problem, and the Eurogroup insisted that each country should inject money into its financial system. On second thoughts, the European Council on December 11th and 12th 2008 decided to adopt fiscal policy to boost economic activity. The Commission adopted the European Economic Recovery Plan, which consisted of a fiscal boost of 200 billion, equivalent to 1.5% of the EU's GDP. The recovery aimed to restore consumer and business confidence, restart lending and stimulate investment in the EU's economies with the goals of creating jobs and helping the unemployed back into work. As a consequence of this discretionary fiscal stimulus, together with the sharp drop in GDP and the efforts to save the banking system, the debt levels surged in many EU countries. The decisive stroke to this dim situation was given by the Greek prime minister of the time, George Papandreou, who revealed from the island of Kastelorizo in April 2010 that the country had gone bankrupt, marking the transition between the financial crisis and the debt crisis. The latter induced the adoption of further changes and reforms of the SGP by the European Council. The European Semester was introduced, and the Europe 2020 strategy was adopted.

The Post crisis period was characterized by further reforms. The EU economic governance, Sixpack (December 2011), describes a first set of European legislative measures to reform the SGP and introduced greater macroeconomic surveillance in order to improve compliance. On March 28th, 2012, twenty-five members of the EU signed the Fiscal Stability Treaty. This included the Fiscal Compact (as a budgetary component), establishing the golden rule, and dictating a balanced budget or surpluses. The Compact established a minimum limit for the structural deficit of 0.5% of GDP, unless the public debt is less than 60% of GDP (in which case the minimum limit increased to 1% of GDP) and proposed a significant correction mechanism to be automatically activated in the event of significant deviations. In May 2013, the "Two-pack" was developed as a complement to the "Six-pack" and the "Fiscal Compact" to strengthen the economic and budgetary supervision of the member states with financial stability difficulties.

### 1.1.2   The Fiscal Stance Previous to COVID 19

Post-financial and debt crisis reforms have helped most member states achieve their deficit goals. Chart 2 depicts the evolution of the fiscal stance from 2007 till 2019 measured as the change in the cyclically adjusted primary balance in different European countries. The fiscal stance was loosening in 2008-09, reflecting the impact of the stimulus measures at place immediately after the crisis, followed by a tightening aggregate fiscal stance over the period 2011-13, especially for the Euro periphery, reflecting comprehensive consolidation packages in euro area countries to

restore debt sustainability and correct the excessive deficits that had emerged during the sovereign debt crisis. After 2014 the fiscal stance was broadly neutral and mainly involved adjustments in Greece and Portugal.

Chart 2
Fiscal Stance 2007 - 2019

Change in the cyclically adjusted primary balance (% of Potential GDP) 2007-2019

(cyclically adjusted primary balance, years)
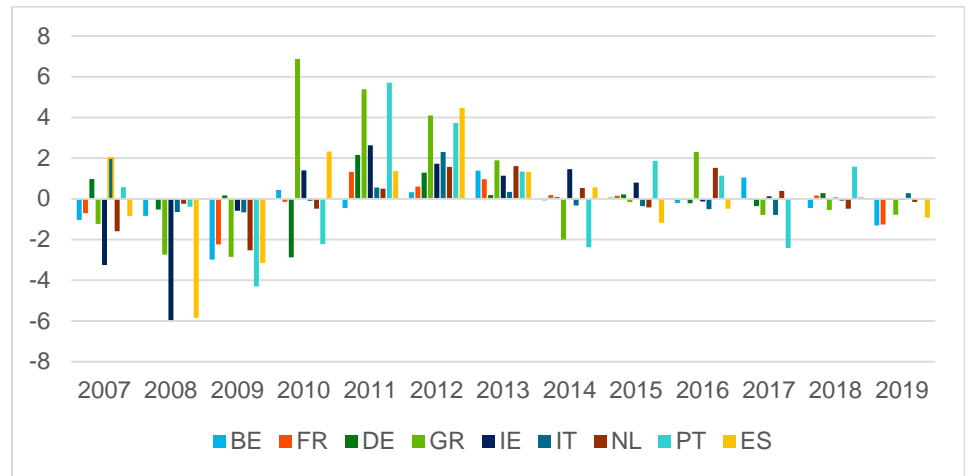
However, the debt level of the eurozone countries has skyrocketed. Chart 3 compares the level of debt of twenty-two EU countries in 2006 and in 2019. With the exception of Malta and Germany, all countries had a higher level of debt over this period. Nonetheless, most countries have managed to reduce debt significantly relative to the highest level reached during the crisis (France and Italy have failed to do so).

Chart 3 also reveals that there are significant differences in the debt level between different EU countries. At one end, Estonia, Latvia, Lithuania, and Luxembourg have low levels of debt-to-GDP ratios, while on the other end, Belgium, Greece, Italy, Spain, France, Cyprus and Portugal all have excessive debt levels, while the rest of the countries still have high debt levels.

Chart 3
Debt Levels 2006 - 2019

Debt-to-GDP ratios 2006 and 2019 and maximum value reached after the debt crisis

(debt-to-GDP ratios, years)
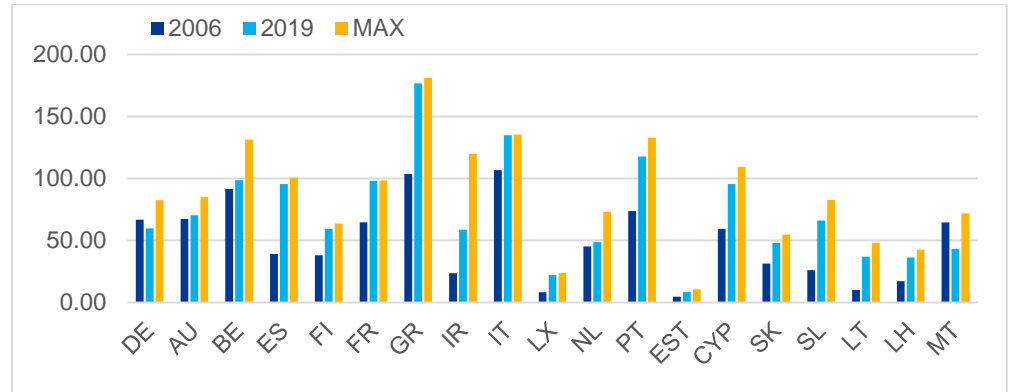
Sources: Eurostat

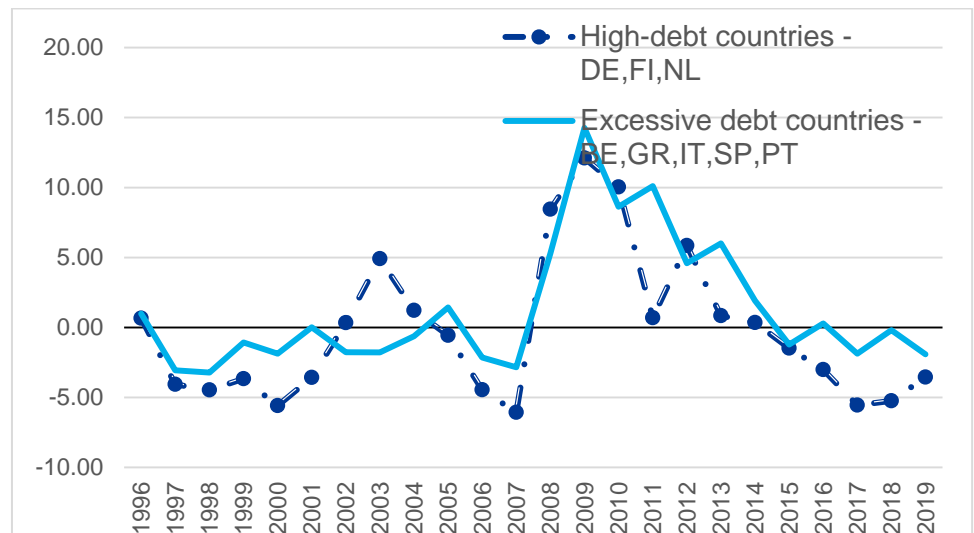Chart 4 displays the growth rate of the debt-to-GDP ratio between 1995 and 2019 for two groups of countries. We plot the average debt growth for Belgium, Spain, Greece, Italy and Portugal and we compare it with the one of Germany, Finland and the Netherlands.

Chart 4
Evolution of debt for different debtor groups

Debt-to-GDP growth 1997 2019

(debt-to-GDP growth rates, years)

Sources: Eurostat

It is apparent from the figure, that although debt has increased for all EU members after the financial crisis, the debt crisis affected disproportionally countries with already higher levels of debt, especially around 2011 when the spreads for Greece and Portugal reached record's high. Chart 4 also reveals that aggregate debt ratios began to decrease since 2015 as a result of the austerity measures, higher economic growth and interest rates on public debt at record lows. Yet, once again, countries with excess debt levels were still struggling to reduce their debt.

1.2   Effectiveness of the Fiscal Rules

Inspection of Chart 4 suggests that, despite their severity, fiscal rules and austerity measures did not deliver the expected reduction of debt levels.

There has been an extensive literature analyzing the desirability of fiscal constraints. On theoretical grounds, it is hard to evaluate whether the medium-term benefits obtained by constraining government actions exceed or not the short run costs incurred by the inability of fiscal policy to react to business cycle conditions. Therefore, the crucial question of the desirability of fiscal constraints needs to be evaluated empirically. However, the available evidence on the issue is, at best, contradictory. For example, Canzoneri et al. (2002) suggest that fiscal policy in the US and Europe has hardly focused on macroeconomic stabilization (at least over the last two decades) due to the lags in the legislative process and because automatic stabilizers are roughly given over the business cycle. Hence, limiting fiscal actions cannot dramatically alter the magnitude, the scope and the shape of cyclical fluctuations. Fatas and Mihov (2006), on the other hand, indicate that fiscal constraints are beneficial because they limit the variability of fiscal policy. While the literature has extensively examined whether fiscal restraints have provided some safeguard against the misuse of public funds (see e.g. Poterba (1994) and Bohn and Inman (1996) for a positive view; Von Hagen (1991), Milesi-Ferretti and Moriyama (2004) and Von Hagen and Wolff (2004) for a negative one), the macroeconomic consequences of imposing fiscal constraints have not been fully explored. Using data from 48 US states, Canova and Pappa (2006) measure thoroughly whether fiscal constraints alter the business cycle features of macroeconomic variables and/or provide an insurance against excessive levels of public deficits and debt. Their results indicate that the macroeconomic consequences of fiscal constraints have been overemphasized: direct business cycle costs are elusive and direct insurance gains are immaterial.

In recent years, a vast body of empirical research investigating the effectiveness of fiscal rules has emerged. Heinemann et al. (2018) implement a meta-regression-analysis for the budgetary impact of numerical fiscal rules based on 30 studies published between 2004–2014 and report a constraining and statistically significant impact of fiscal rules on fiscal aggregates at the national level. According to their results, deficit rules reduce on average the primary deficit between −1.5 and −1.2 percent of GDP. Yet, they show that the size and the statistical significance of the impact of rules on primary deficits is reduced below the usual levels if the primary study accounts for possible endogeneity issues. Curiously, they also reveal the

presence of publication bias. That is, they show that results obtained from working papers are on average associated with lower coefficients and levels of statistical significance compared to those from journal articles.

Here we present recent results from a very recent study by Dolado (2020) where newly available data sets on the strictness of fiscal rules by the IMF and recent EU data is used to test for the effectiveness of fiscal rules in reducing the debt level in 19 EU countries by means of the following regression: [4]

$$debt_{it} = \alpha + \beta rule_{it}^j + \gamma' X_{it} + \lambda_i + \lambda_t + \lambda_{euroi} + \epsilon_{it} \qquad (1)$$

where $debt_{it}$ is the debt-to GDP ratio in country i in year t, X_{it} is a vector of macroeconomic variables that includes real per capita GDP, the risk premium and inflation rate, λ_i are country fixed effects and λ_t are year fixed effects and λ_{euroi} is a dummy that takes value of 1 in the year in which the euro was adopted in the different member country i. Finally, variable $rule_{it}^j$, is an indicator which is considered to be exogenous and takes the value of 1 if country i in year t has rule j adopted, where j refers to four fiscal rules: expenditure rule ($j = ER$), debt rule ($j = DR$), deficit rule ($j = BBR$) and revenue rule ($j = RR$). Those rules can in turn be of national or supranational character[5].

Table 1 reports the estimates of the coefficient of interest β that measures the effectiveness of the fiscal rule to reduce the level of the debt-to-GDP ratio when equation (1) is estimated for each type of fiscal rule separately in columns (1) and (2), and jointly in column (3). None of the coefficients presented in the Table 1 is statistically significant, pointing to a total ineffectiveness of national and supranational rules to reduce the debt-to-GDP ratios in Europe.

Admittedly, since the timing of implementation of the fiscal rules is not independent of the debt level, equation (1) might be subject to reverse causality. For that reason, Dolado (2020) repeats the estimation by substituting the level of debt with changes in the level of debt in the left-hand side:

$$\Delta debt_{it} = \alpha + \beta rule_{it}^j + \gamma' X_{it} + \lambda_i + \lambda_t + \lambda_{euroi} + \epsilon_{it} \qquad (2),$$

so that β in this case captures the effect of having fiscal rules on the accumulation of debt and not on its level. The results of this exercise are presented in the second panel of Table 1. At the national level, fiscal rules continue to be ineffective in controlling public debt, irrespective of their nature. By contrast, in the case of the supranational expenditure rules (ER) imposed by the EMU, columns (2) and (3) present negative and statistically significant coefficients implying that having a supranational spending rule reduces debt accumulation on average by 6.4 percent per year. The coefficient of the supranational debt rule is also negative and statistically significant. The estimates suggest that the establishment of debt rules

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[4] The 19 countries are: Germany, Austria, Belgium, Cyprus, Slovakia, Slovenia, Spain, Estonia, Finland, France, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands and Portugal.

[5] The data for the different rules comes from the database of the International Monetary Fund "IMF Fiscal Rules Dataset, 2016". The data for the remaining variables is from AMECO.

has led to a reduction in debt accumulation of approximately 2.2% percent per annum. Similar results hold for the case of the balanced budget rule.

To sum up, balanced-budget and debt rules at the European level have been effective in reducing the accumulation of debt on average between 1995 and 2019. Expenditure rules seem more effective in keeping debt accumulation under control though, according to the estimates in Table 5, their effectiveness is still limited since, after their adoption, the debt-to-GDP growth gets reduced by at most by 6.4 percent per year. Given the high ratios of debt-to-GDP in many European countries the gains from the presence of such rules seems to be immaterial. Solving the insolvency problems for some European countries and avoiding future sovereign debt crisis might require more than simple compliance to the fiscal rules.

Table 1
The effectiveness of Fiscal Rules

Debt-to-GDP levels

Estimation of coefficient β in regression (1)

Fiscal Rules,	ER			DR			BBR			RR
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)
National	1.19		1.19	0.47		0.47	0.65		0.64	0.15
	(1.35)		(1.35)	(1.16)		(1.16)	(1.18)		(1.19)	(1.6)
Supranational		−3.10	-3.03		−0.39	-0.39		−0.39	-0. 34	
		(2.32)	(2.18)		(0.94)	(0.95)		(0.94)	(0.96)	
R squared	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989	0.989
Number of Observations	341	341	341	341	341	341	341	341	341	341

Debt-to-GDP growth rates

Estimation of coefficient β in regression (2)

Fiscal Rules,	ER			DR			BBR			RR
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)
National	0.86		0.86	0.31		0.24	0.96		0.87	0.86
	(0.94)		(0.94)	(1.35)		(1.18)	(1.22)		(1.23)	(0.8)
Supranational		−6.41**	-6.43**		−2.31***	-2.31***		−2.31***	-2. 25***	
		(2.61)	(2.57)		(0.69)	(0.71)		(0.69)	(0.97)	
R squared	0.556	0.555	0.556	0.555	0.559	0.559	0.556	0.559	0.560	0.555
Number of Observations	330	330	330	330	330	330	330	330	330	330

Sources:
Notes: Standard deviations are in parenthesis. *, ** and *** denote 10, 5 and 1 % confidence levels, respectively

1.3 Optimality of the Fiscal Rules

Economists and policy makers both agree on the optimality of countercyclical fiscal policy actions, namely increases in discretionary spending during recessions and reductions during booms. According to Keynesian theories, higher government spending or lower taxes during a recession may help economic recovery by stimulating demand. Many economic models would prescribe that deficits should be countercyclical (i.e., increase in recessions), but should not lead to a secular increase in debt over GDP, that is, spending increases during recessions should be compensated by discretionary spending cuts during booms. In their extensive review on the optimality of fiscal policy, Alesina and Passalacqua (2016) conclude that the debt-to-GDP ratio should be constant on average and rise in periods of abnormally low aggregate income. They also document that this rule is generally not satisfied by the data. As is apparent in Chart 4, Finland, the Netherlands and Germany, seem to comply with the optimal fiscal rule of constant debt-to-GDP ratio. Debt growth has increased during both the 2001 and 2008 recessions while it has decreased during the expansions. Yet, the countries which had already accumulated large debts before the crisis (i.e., Belgium, Italy, Greece, Spain and Portugal) have not followed the same pattern in the early 2000s recession and had a constrained capacity to accumulate further debt in the 2008 crisis (Greece had a partial default; Italy was on the brink of a major crisis in 2011).

Chart 5

Procyclicality of Fiscal Policy for EU27

Correlations of detrended GDP and GY ratio 1996 2019

(correlations between HP detrended real per capita GDP and the ratio of the final consumption expenditure of general government to GDP between 1996 and 2019)n
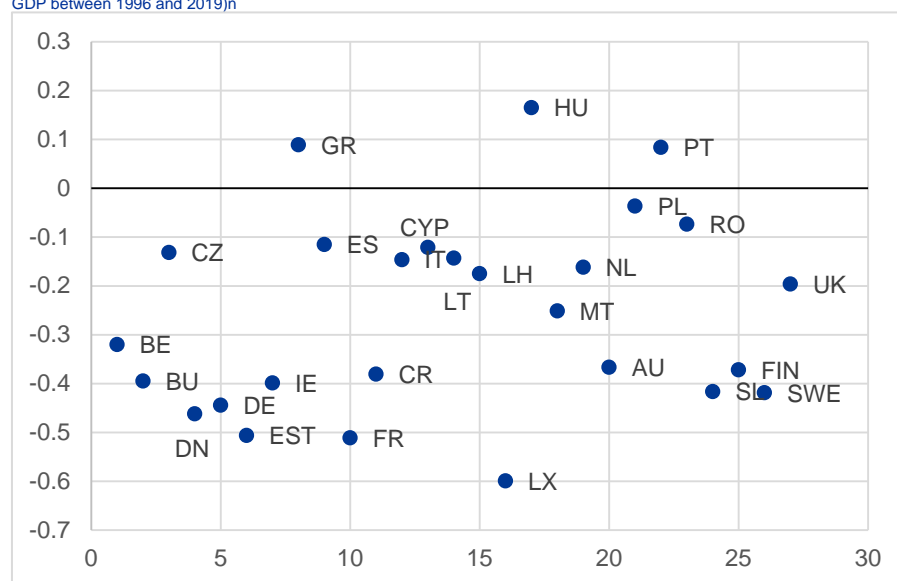
Sources: Eurostat

Chart 5 presents the correlation between deviations from potential output measured using the HP filter and the government spending-to-GDP ratio for 27 EU countries between 1996 and 2019[6], using quarterly data. It reflects the suboptimality of fiscal policy in some European countries from a different angle. On average, fiscal policy has been countercyclical, with the correlation of government spending to GDP ratio and detrended GDP being around -0.25. Most countries had followed a mildly countercyclical fiscal stance. Important exceptions are Portugal and Greece that, besides suffering a recession, have been under severe austerity programs during the last decade. In Italy, Cyprus and Spain, as well, government final consumption expenditure has moved little to undo cyclical fluctuations, while in Luxemburg, France and Germany, fiscal policy has been mostly countercyclical. Conventional measures of the output gap are surrounded by a significant degree of uncertainty. At any rate, even when looking at the output gap measured by the HP filter, government spending still seems to move sub-optimally with the cycle in many EU countries in the presence of rules that discourage the accumulation of debt.

2   Discretionary fiscal policy

Given the lags in implementation of fiscal policy, the experience from the Great Recession, the zero-lower bound constraint for monetary policy and the new pandemic crisis, the view in favor of adopting aggressive discretionary fiscal policies in recessions has become popular since automatic stabilizers are not enough. The Euro area business cycle dating committee (EABCDC) had already warned in its November 2019 report that the sluggish recovery of the Euro Area was slowing down, i.e. the eurozone economy was growing at the slowest rate since the debt crisis seven years ago. The slow growth would not be a problem per se if it was not combined by the constraints on the EMU's monetary policy due to the zero-lower bound. European long-term interest rates are in negative territory, and the ECB has restarted quantitative easing. Hence, fiscal policy looks like the only available tool to tame the cycle.

This section surveys the literature on the state of knowledge about the effectiveness of fiscal policy in generating economic stimulus.

2.1   How Can the Government stimulate the economy in theory?

The expansionary effects of fiscal variations can operate both through demand and supply side channels. On the demand side, fiscal policy changes affects agents' consumption and investment decisions, since they generate a negative wealth effect, for Ricardian agents that understand that a fiscal expansion today implies and increase in their future income through higher taxes in the future agents believe that the fiscal expansion would not be accompanied by a reversal of the fiscal stance in

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[6] We have also used annualized growth rates and a quadratic trend to determine the output cycle, results are similar.

the future. A fiscal expansion, even when generating a negative wealth effect, might still stimulate demand in an economy where agents are liquidity constrained (See, Gali et al.(2007)) and prices are sticky. An additional channel through which current fiscal policy can influence the economy is the interest rate. If fiscal policy is effective in stimulating demand it increases inflation expectations, if monetary policy does not offset completely the inflationary pressures through changes in the nominal interest rate, the real interest rate decreases and private demand components sensitive to the real interest rate react strongly to the initial fiscal stimulus. On the supply side, expansionary effects of fiscal adjustments work via the effect that tax increases and/or spending cuts may have on the individual labor supply decisions. For example, an increase in income taxes or social security contributions that reduces the net wage leads to an increase in the pre-tax real wage faced by the employer, squeezing profits, investment, and competitiveness. Fiscal policy can directly affect the labor force participation decision of households (Bruckner and Pappa (2012) and, hence, labor market tightness.

Given the several channels through which fiscal policy can affect the economy, its effectiveness to stimulate the economy depends on many factors. A standard measure to assess such effectiveness is the fiscal multiplier, namely how much one euro of tax cuts or spending increases translates in terms of GDP increases. Theoretically speaking, we cannot identify a unique fiscal multiplier. Fiscal policy has different effects depending on the tool used for the government expansion; the persistence of the fiscal change; the level of the country debt; the fiscal policy financing; the implementation lags; the level of inequality; the monetary policy stance; the state of the economy; the degree of fiscal decentralization and other features that characterize the economy such as the level of development, the exchange rate regime, openness, the quality of institutions etc. The literature on this topic is ever growing. Rather than reviewing a long list of papers with various estimates and conclusions, I will concentrate below on the academic research that has received more interest in the literature.
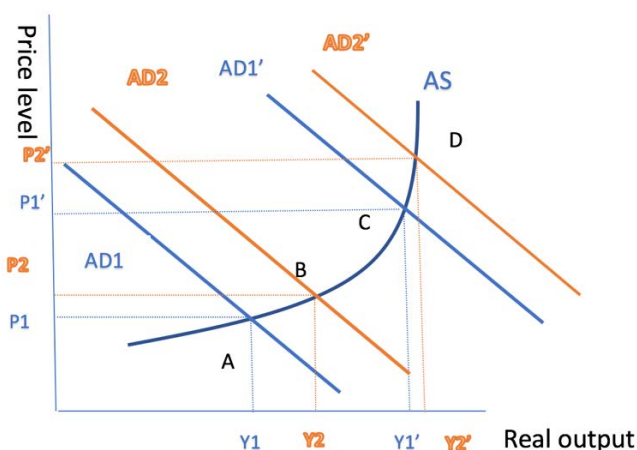
2.1.1   Government spending increases in recessions.

When thinking of the effectiveness of fiscal policy to stimulate the economy, most researchers and policymakers have a Keynesian cross model as their point of reference, which assumes that GDP is demand-determined. Fiscal policy is supposed to stimulate demand, yet its macroeconomic effects depend on aggregate demand and supply conditions. Chart 6 presents a standard textbook analysis for the effects of the fiscal policy stimulus under different macroeconomic conditions. When demand is low, fiscal policy has a bigger capacity to stimulate the economy. Through the lenses of the simple aggregate demand (AD) and aggregate supply (AS) model, fiscal policy has higher impact when output is away from full employment (moving from point A to point in B in Chart 6) and demand is low. It will be less effective when aggregate supply is almost vertical (moving from point C to point D in Chart 6) and demand is high.

Chart 6
Fiscal policy in theory: Expansions versus recessions

The AS-AD model and the effects of an increase in government spending in recessions versus expansions

Fiscal policy in recessions vs. expansions

Although the intuition is clear in Chart 6, the asymmetric stimulative effects of government spending in recessions is still subject to a hot debate argument in the literature. In their seminal work, Auerbach and Gorodnichenko (2012) used a regime switching VAR to find that fiscal expansions are more stimulating in recessions. However, Ramey and Zubairy (2018) and Alloza (2017) question the robustness of those results by showing that they turn out to be very sensitive to changes in the specification and the sample period, or to improvements in the methods for computing the multipliers. Barnichon et al. (2020) try to reconcile the two views by arguing that the difference of results lies in the sign dependence of the fiscal shocks, and that the multiplier associated with a negative shock to government spending is above one, being even larger in times of economic slack. On the theoretical front, Canzoneri et al. (2016) propose a model that features costly financial intermediation and countercyclical financial frictions which generates state-dependent effects of fiscal policy similar to the ones presented above. In their model, a fiscal expansion during a recession may lead to multiplier values exceeding two, while a similar expansion during an economic boom would produce multipliers falling short of unity.

Hence, contrary to the conventional wisdom, only few dynamic stochastic general equilibrium models can deliver higher output multipliers from government spending shocks in recessions. Moreover, the evidence for higher spending multipliers during recessions is fragile, and the most robust results suggest multipliers of one or below during these periods (see also Ramey (2019)). This is really discouraging since it points to the inability of government spending alone to fight recessions. It must be noted that multipliers, though smaller than one, are still positive which implies that government spending can still help lift the economy out of a severe recession. Yet, in order to do so, the amount of government spending needs to be substantial, as it has

happened in the past with the World War II government spending that lifted the US economy out of the Great recession.

Fortunately, the literature has identified instances in which government expenditure can still be effective in counteracting recessions and we analyze these cases in the next subsections.

2.1.2 Government spending increases are more effective at the zero-lower bound.

Several New Keynesian DSGE models show that government spending multipliers can be higher than one when monetary policy is constrained by the zero-lower bound (ZLB) on interest rates.

Monetary policy can offset the positive effects from the fiscal stimulus in normal times by reacting to future expected inflation through a rise in interest rates. When monetary policy reacts to expected inflation this way, it partially undoes the effects of the fiscal expansion. In terms again of the simple textbook analysis in Chart 7, active monetary policy shifts aggregate demand inwards after the fiscal expansion, moving the economy from point F to point G, reducing the initial impact of the fiscal expansion. The temporary effectiveness of fiscal policy when monetary policy is constrained at the lower bound is the most powerful and widely spread argument for the active use of discretionary fiscal policy in an economic environment of low-inflation and low-growth.

Chart 7

Fiscal policy in theory: Monetary fiscal policy interactions

The AS-AD model and the effects of government spending increases in different monetary policy regimes
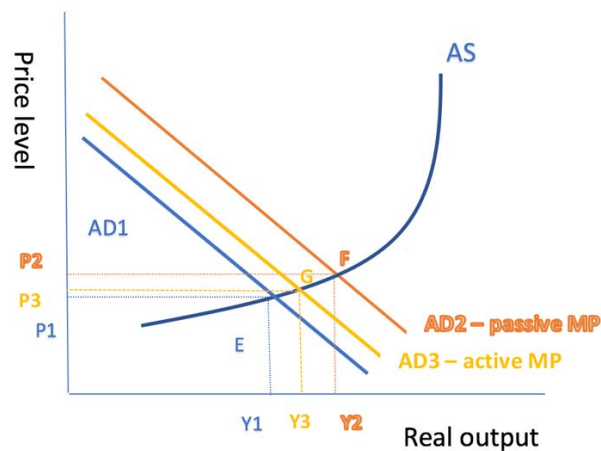
Fiscal policy with passive and active monetary policy

Research by Christiano et. al (2011), Canova and Pappa (2011), Eggertson (2011), Woodford (2011), Coenen et. al (2011), Blanchard et al. (2017), Farhi and Werning (2016), and Leeper et.al (2017) show that multipliers increase at the ZLB and with the duration of the government stimulus. The main mechanism in New Keynesian DSGE models works as follows: as expansionary fiscal policy increases inflation expectations in a setup where the nominal interest rate is zero, the real interest rate actually falls. This affects the intertemporal decision problem of the consumers, leading to higher private spending. Since the latter induces further inflation there is a reinforcing effect in the fall of the real interest rate, so that fiscal policy becomes even more effective. However, other authors have developed theoretical models that predict lower multipliers at the ZLB (see, e.g. Aruoba and Schorfheide 2013; Braun, Korber, and Waki 2013; Kiley 2014; Mertens and Ravn (2014). For that reason, it is important to revise once more the empirical evidence in order to draw sound conclusions on the effectiveness of fiscal policy at the ZLB.

The empirical estimates seem to agree that spending multipliers are higher at the ZLB. For example, Miyamoto et al. (2018) report estimates in the range of [1.5, 2.5] at the ZLB for Japan, while Ramey and Zubairy (2018) report estimates of around 1.5 for historical samples in the US.

The existence of strong complementarity between monetary and fiscal policies at the ZLB might change the way policy is conducted. However, as discussed in the previous section, large stocks of debt accumulated by some governments during the prolonged recession dramatically reduce their room for maneuver. As a result, in the current situation, assessing the trade-off between the active use of a fiscal expansion – with the potential to boost economic activity and raise inflation – and the risk of triggering unsustainable public debt dynamics is of key importance (Blanchard 2019). The active use of fiscal policy for stabilization purposes should always follow a careful assessment of the impact on public debt sustainability. Yet, Battistini and Callegari (2020) present a closed economy model in which they show that this assessment changes during periods of binding ZLB. A sequence of deficit-financed public spending shocks during a prolonged period at the ZLB could improve output, reduce inflation and, at the same time, lower the risk spread compared to a situation without fiscal expansion. Their model shows that the driver of this concurrent improvement in macroeconomic stabilization and debt sustainability through an unanticipated fiscal expansion is the large long-run fiscal multiplier of public spending in times of binding ZLB, as highlighted by the recent literature. The timing of the fiscal expansion yet is crucial in their model. An excessively delayed series of public spending shocks – starting when the risk-free rate is still low but continuing well into a period when monetary policy can react to inflationary pressures – would not benefit from the large fiscal multipliers of the ZLB. In effect, a delayed fiscal expansion could lead to soaring sovereign spreads and debt levels and, eventually, long-run output losses. As these dynamics would be further amplified in the presence of higher initial debt levels, the right timing for a fiscal expansion is crucial, especially for highly indebted countries.

2.1.3 The multiplier for government spending is higher in monetary unions

In a monetary union, monetary policy is also constrained as it does not directly react to the actions of regional fiscal policy. When monetary policy is conducted at the central level, or in fixed exchange rate regimes, fiscal policy can be more effective since the reaction of monetary policy to the inflation pressures is more limited. Farhi and Werning (2016) show that self-financed multipliers in a currency union are always below unity, unless the accompanying tax adjustments involve substantial static redistribution from low to high marginal propensity to consume agents, or dynamic redistribution from future to present non-Ricardian agents. Yet, outside-financed multipliers, which require no domestic tax adjustment, can be large, especially when the average marginal propensity to consume on domestic goods is high or when government spending shocks are very persistent. Iltzetzki et al. (2010) and Born et al. (2013) find higher estimates of multipliers in flexible versus fixed exchange rate regimes. Nakamura and Steinsson (2014), estimate the effect that an increase in government spending in one region of the union (relative to another region) has on relative output and employment. To estimate these effects, they use variations in historical regional military procurement associated with aggregate military build-ups. They find that, when relative per capita government purchases in a region rises by 1 percent of regional output, relative per capita output in that region rises by roughly 1.5 percent. The insight for why the regional relative multiplier is larger than the closed economy aggregate multiplier in the U.S. is similar to the intuition for why the government spending multiplier is larger under a fixed than a flexible exchange rate in the Mundell-Fleming model. Economies which maintain an exchange rate peg or belong to a currency union are characterized by large fiscal multipliers according to this model. Conversely, the multiplier is zero under a floating exchange rate regime since the increased activity due to higher government spending puts upward pressure on interest rates, which triggers capital inflows and leads to an appreciation of the currency. This, in turn, crowds out net exports and eventually offsets the effect of increased public spending on the demand for domestic goods. Under fixed exchange rates, in contrast, monetary policy accommodates the increased demand for domestic currency to prevent the currency from appreciating. As a result, private demand rises along with public demand, while net exports remain unchanged and the multiplier exceeds unity.

Chodorow-Reich (2019) surveys the estimates of sub-national multipliers for government purchases, temporary tax rebates, and transfers, reporting multipliers in the range of 1.5 to 2. Sub-national multipliers tend to be higher than the aggregate-level ones. In general, the relationship between subnational multipliers and aggregate multipliers depends on many features, including how the spending is financed, whether there are spill-overs across regions, whether there is a currency union, and whether the aggregate economy is at the ZLB. Canova (2020) warns to take the results of these studies with caution.

For example, two studies that look at the size of the regional multiplier at the Euro area come to opposite conclusions using different estimation techniques and instruments to extract government spending shocks. Following the estimation

methodology of Nakamura and Steinsson (2014) and using shocks to the supply of federal transfers (European Commission commitments) of structural fund spending by subnational regions as instruments for annual realized expenditure in a panel from 2000-2013, Coelho (2016) finds a relatively high local multiplier across the EU: 1.7 on impact and around 4.0 after three years at the EU cross-regional level. This author also shows that multipliers are generally higher in the post-2006 period of economic recession in Europe. By contrast, Bruckner et al. (2020) studying regional European data and using a standard panel model to estimate the effect that regional government spending has on regional gross value added, find that regional multipliers are smaller than one in general and that they depend positively on the degree of local fiscal autonomy. When they consider state-dependence, they report multipliers higher than one in the EU regions in recessions and in periods of labor market slack. Finally, they also show that there are significant spill-over effects among regions in the same country and that national cumulative multipliers of government spending shocks are higher than one in European countries.

Canova and Pappa (2007) provide evidence that regional fiscal policy can stimulate domestic demand for two big monetary unions, such as the USA and the EMU. In particular, they show that both expansionary government spending and tax cuts increase regional output, employment and the price level relative to the union average. It is worth highlighting their finding that using taxes as the fiscal instrument seems more adequate in the USA, while using government spending as the fiscal tool seems more adequate in Europe. Yet, Canova and Pappa (2006) reveal that fiscal policy, when constrained by balance-budget rules can have significant adverse real and price effects. More recent work by Amendola et al. (2019), building a factor-augmented interacted panel vector-autoregressive model of the Euro Area (EA) and estimating it with Bayesian methods, computes government spending multipliers in the EA. The multiplier is inversely correlated with the level of the shadow monetary policy rate. In particular, they show that the ZLB constraint is crucial for determining the size of the spending multiplier especially for the medium run. The average three-years multiplier is about 1 in normal times and between 1.6 and 2.8 at the ZLB, depending on the specification. Moreover, according also to their estimates, the EA data support the view that the multiplier is larger in periods of economic slack.

To sum up, the literature suggests that regional multipliers for government can be higher than aggregate multipliers. Additionally, for the Euro Area there is evidence pointing that these effects are larger at the ZLB.

2.1.4   Government spending has positive spill-over effects

National fiscal policies spill over to other countries through trade. A fiscal expansion in one country increases its imports from other countries. It could also increase domestic prices and the real effective exchange rate, reinforcing spill-overs, as the stimulating country loses competitiveness vis-à-vis the other countries. Given the implications of this trade channel for prices, it is important to consider the monetary policy response. For instance, interest rates may occasionally fail to react to price changes stemming from fiscal action if the economy is constrained by the ZLB. Spill-

over estimates of public spending tend to be positive, but generally small. A number of studies have estimated fiscal spill-overs from an increase in public spending through the trade channel for a panel of countries. For example, based on annual data from 1965 to 2004, Beetsma et al. (2006) estimate that a spending-based fiscal expansion of 1% of GDP in Germany would lead to an average increase in the output of other EU economies by 0.15% after two years; for an expansion originating in France, the impact is 0.08%. The estimated magnitude of spill-overs varies, with the heterogeneity related to the trade links, the state of the economy and the reaction of monetary policy. These authors report spill-overs from Germany to its neighboring countries (Austria, Belgium and The Netherlands) to be around 0.4% of GDP after two years. Auerbach and Gorodnichenko (2013) find spill-overs that are particularly high in recessions and more modest in expansions. IMF (2017) finds that spill-overs are up to four times as large when monetary policy is at the effective lower bound (0.3% after one year), compared with normal times (0.08%).

Recent work by Alloza et al. (2020) provide new estimates of fiscal expenditure spill-overs in the euro area, as well as simulations to provide a better understanding of their driving factors. Although effects are heterogenous, they confirm the existence of positive fiscal spill-overs within euro area countries. Using the Euro Area and Global Economy (EAGLE) model, Alloza et al. (2020) also show that spill-overs within the euro area are larger when interest rates do not increase in response to an increase in government expenditure. Their results square well with the findings of earlier work by Blanchard et al. (2015). The latter authors using a simple and a larger-scale DSGE version of a New Keynesian model of a currency union show that outside of a liquidity trap, the effects of higher core government spending on periphery GDP tend to be small and even negative. The small response of periphery GDP reflects that the central bank rises real interest rates, more than offsetting the stimulus arising from a depreciation of the periphery's terms of trade. These results concur with previous research by Wieland (1996) and Kollmann et al. (2014) indicating that fiscal spill-overs tend to be negative under fixed exchange rates (assuming that the central bank responds according to a standard policy reaction function). However, they also show that the spill-overs to periphery GDP are markedly different in a liquidity trap: Periphery GDP tends to rise, reflecting the weaker interest rate response. The size of the periphery GDP response to a core spending hike increases with the expected duration of the liquidity trap, with the import content of core government spending, and with the responsiveness of inflation. Higher core spending can provide a strong source of stimulus to the periphery if monetary policy is expected not to raise interest rates for a prolonged period of a couple of years or more.

Hence, both empirical and theoretical contributions agree that fiscal spill-overs are important in the Euro Area and, in particular, when monetary policy is constrained by the effective ZLB.

2.1.5   Tax and transfer multipliers

During recessions, the government might offer a tax cut as an economic stimulus instead of raising public spending. The issue of whether tax cuts are more or less

expansionary than increases in public spending is a critical one, and economists strongly disagree about the answer. The issue is also political. Right wing politicians believe in tax cuts and the left wing believe in spending increases.

Again, the empirical evidence is the only reliable way to assess which tools is more effective. Tax multipliers are generally negative since an increase in taxes lowers GDP. Evidence presented in Ramey (2019) from different studies suggest that that tax cuts are more expansionary than spending increases. Estimates of cumulative tax cuts multipliers vary in the [-5, -1.1] interval.[7]   Romer and Romer (2010) and Mertens and Ravn (2012, 2013) using narrative methods to identify tax shocks report high multipliers between –2 and –3. Mountford and Uhlig's (2009) report the highest estimates (-5) using sign restrictions, while Barro and Redlick (2011) estimate the lowest tax multipliers (around –1.1).

By contrast, the New Keynesian DSGE model estimates of tax cuts multipliers are typically below one, as Ramey (2019) reports, generating a conflict between the narrative-based time series estimates and the New Keynesian estimates. This divergence is present in the work of Coenen et al. (2012) who use seven different structural models mostly used by policymaking institutions, to simulate the effects of fiscal stimulus shocks using seven different fiscal instruments. There is a robust finding across all those models that government spending increases and targeted transfers to liquidity-constrained individuals have more sizeable output multipliers than tax instruments.

The literature regarding the expansionary effects of transfers is pretty thin. Coenen et al. (2012) report multipliers for general transfers in the range of 0.2 to 0.6 and for targeted transfers around 2. Romer and Romer (2016) construct a series of legislated increases in social security benefits in the U.S. from 1951 to 1991 and study the effect of innovations to their narrative variable on private consumption. They find that permanent benefit increases have a significant impact on consumption upon impact, while temporary increases in benefits have no significant effect on aggregate consumption.

Párraga Rodríguez (2016) provides evidence on the aggregate effect of government income transfers shocks using a panel dataset of 22 EU Member States during 2007-2015. She proposes a new measure of transfers shocks based on a dataset by public finance experts of the ESCB which records discretionary changes in old age pensions relative to a 'neutral policy' benchmark. The estimated old age pensions output multiplier ranges between 0 and 1, suggesting a limited effectiveness of fiscal transfers to stimulate the economy.

Unlike the case of spending multipliers, the literature seems to agree on the asymmetric effects of tax cuts in recessions versus expansions. Demirel (2016), using the Romer and Romer (2010) narrative tax shocks, finds that tax multipliers are larger during times of low unemployment than times of high unemployment. Also, Alesina, et al. (2018), using narrative of fiscal plans across OECD countries, report

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[7] For the sake of brevity, I refer the interesting reader to Table 2 in Ramey (2019)'s paper for a detailed report of cumulative tax cut multipliers.

higher multipliers in expansions. Sims and Wolff (2018) present empirical evidence and develop a model to back up their estimates that indicate that a tax rate cut is most stimulative for output in periods in which output is relatively high.

Finally, Correia et al. (2013) provide strong theoretical support on the use of tax cuts in a closed economy when monetary policy is constrained by the ZLB. These authors argue that distortionary taxes can be used to replicate the effects of negative nominal interest rates and completely circumvent the ZLB problem. They label this scheme "unconventional fiscal policy". The suggested policy involves engineering over time an increasing path for consumption taxes and a decreasing path for labor taxes, coupled with a temporary investment tax credit or a temporary cut in capital income taxes. Under such scenario, numerical calibrations indicate that the magnitude of the tax changes is implementable.

In sum, tax cuts offer promise as instrument to fight recessions in the data and also can be an effective tool to replicate the effects of negative interest rates in the presence of the ZLB in a closed economy model. Transfers seem to be less effective in stimulating the economy unless they are targeted to financially constrained households. Yet, the conclusion on the efficacy of taxes as an effective fiscal instrument lies on specific assumptions on the state of the economy. In the next subsection we discuss some specific circumstances in which taxes can be an effective countercyclical tool.

2.1.6   Fiscal policy and macroeconomic uncertainty

Macroeconomic conditions are at times uncertain. The onset of the financial crisis in 2008 brought an end to the 'Great Moderation' period, making prospects for global economic growth appear not just weaker, but also more uncertain. The COVID-19 pandemic is changing–or has already changed–our previous definitions of uncertainty because there is no reference case for the COVID-19 crisis in living memory. It is, then, only natural to ask:

How does uncertainty affect the effectiveness of fiscal policy?

There exist theoretical contributions that help us answer this question. Theoretical models linking uncertainty to investment and hiring decisions by firms (Bernanke (1983), McDonald and Siegel (1986), Bloom et al. (2018)) and to precautionary savings on the consumers side (Basu and Bundick (2017), Fernandez-Villaverde et al. (2011)) predict that agents respond more mildly to positive policy stimuli because they adopt a wait-and-see or precautionary behavior.

In the case of tax increases in periods of low macroeconomic uncertainty, agents may be willing and able to smooth consumption and maintain investment. In exchange, they may not be able to do so in a high-uncertainty regime, typically associated with tightening of the credit conditions to households and firms (See, Arellano et al. (2019) and Gilchrist et al. (2014)).

On the empirical front, Alloza (2017), looking at government spending shocks, reports that the response of output to a positive government shock is positive during times of low uncertainty, but negative (or not significant) during times of high uncertainty. In order to rationalize the fact that output may fall after a government spending shock, he explores an economic mechanism where information is scarce or noisy during times of high uncertainty. In this context, agents are concerned that the economy may take a downturn and lower their future income. A government spending shock during times of heightened uncertainty may then simply confirm these pessimistic views leading in turn to a decline in consumption and activity.

Bertolotti and Marcellino (2019) explore whether high uncertainty affects the fiscal stimuli of tax cuts. They find that tax changes of either sign, implemented when macroeconomic uncertainty is high, have always a harmful effect on GDP. Their empirical results indicate that the economy reacts more negatively to a tax increase when ex-ante macroeconomic uncertainty is high and, on the contrary, that tax cuts are more effective in stimulating the economy in periods of low uncertainty. Finally, they stress the importance of monetary and fiscal policy interactions in rendering fiscal policy effective in a high uncertainty regime.

In sum, both theoretical and empirical studies agree that high macroeconomic uncertainty reduces the expansionary effects of fiscal stimuli both for the case of tax and spending changes. They also point to the interactions of monetary and fiscal policy as a crucial factor for enhancing the stimulative effects of expansionary fiscal shocks.

2.1.7   Fiscal policy and the debt level

Government debt can have both direct and indirect effects for the transmission of fiscal policy shocks. Sutherland (1997) links debt levels to policy expectations to explain that a fiscal deficit may not have traditional Keynesian effects related to consumption increases. This would be the case if the current generation expects that fiscal adjustments would occur within the same generation. With a linear fiscal reaction function of government spending to debt, Corsetti et al. (2012) find that private consumption can rise to a government spending increase when agents expect a policy reversal.

Romer and Romer (2010) find that the effect of a U.S. tax shock on output depends on whether the change in taxes is motivated by the government's desire to stabilize the debt or is unrelated to the stance of fiscal policy. Favero and Giavazzi (2007)) show that omitting debt can bias the evaluation of the output effects of fiscal policy. As for the fiscal state-dependent fiscal policy effects, several empirical papers document more expansionary effects of government spending in low-debt than in high-debt states. Kirchner et al. (2010) show that higher government debt-to-GDP ratios in the Euro Area have negatively affected long-term multipliers over the period 1980-2008. Ilzetzki et al. (2013) present also evidence that fiscal multipliers are lower in countries with high debt-to-GDP levels. Nickel and Tudyka (2014) find that, at high levels of the debt-to-GDP ratio, the overall effect on real GDP of an increase

in government expenditure turns negative, crowding-out investment. Finally, Fotiou et al. (2020) find that the output effect of capital income tax cuts is government debt-dependent: it is less expansionary when debt is high than when it is low.

Overall, theoretical and empirical models agree that high levels of debt undermine the expansionary effects of fiscal policy irrespective of whether it is conducted through spending increases or tax cuts.

2.1.8   Can fiscal expansions create jobs?

With the emergence of the COVID-19 crisis policymakers realized that it was essential to keep employment contracts alive. One of the policies that was immediately put in place was direct subsidies to small and medium enterprises and businesses to help maintain their employees (furlough programs). It is natural hence to ask whether fiscal policy can create jobs.

Empirically there has been a plethora of studies investigating the effects of fiscal policy on employment. Monacelli et al. (2010) study the effect of government spending on the functioning of the U.S. labor market. Using a structural VAR, they find that a rise in spending equal to 1% of GDP raises labor market tightness by around 20%, and employment by 1.6%, lowering the unemployment rate by 0.6 percentage points. Recent cross-state studies further corroborate these findings. Chodorow-Reich et al. (2012) estimate the employment effects of a relatively unstudied form of government macroeconomic intervention that took central stage in the recent American Recovery and Reinvestment Act: fiscal relief to states during a downturn. They exploit cross-state variation in transfer receipts that comes from pre-recession differences in Medicaid spending. Their baseline specifications suggest that $100,000 of marginal spending increased employment by 3.8 job-years, 3.2 of which are outside the government, health, and education sectors. Shoag (2013) finds that $100,000 in government spending added around 4.8 jobs, of which 2.5 can be attributed to a reduction in unemployment, with the addition 2.3 stemming from a rise in labor market participation. Bruckner and Pappa (2012) raise a word of caution by showing that labor force participation, employment, and the unemployment rate all increase significantly and at the same time in response to government expenditure shocks in many OECD countries. However, Ramey (2012) argues that the increase in employment stemming from government expansions comes from an increase in government employment, not private employment, and concludes that, on balance, government spending does not appear to stimulate the labor market. Finally, in comparing tax cuts with government spending increases, Adnan et al. (2020) show that tax shocks have larger effects, in terms of magnitude and significance, on the unemployment rate compared to defense spending shocks.

Theoretically, Bruckner and Pappa (2009) and Monacelli et al. (2010) present New Keynesian DSGE models that can replicate the previous empirical findings. Interestingly, Rendhal (2016) presents a framework in which equilibrium unemployment dynamics can significantly enhance the efficacy of fiscal policy. In this model (with sticky nominal wages,) output is largely determined by demand at the

ZLB. As a result, a temporary rise in government spending increases output and lowers the unemployment rate. Since movements in unemployment are partly persistent, a reduction on impact is also expected to last into the future.

The transmission mechanism of fiscal policy appears to be closely intertwined with the labor market. A rise in government spending seems able to have positive effects on job creation and to jointly raise both employment and output.

2.1.9   Can increases in government employment be expansionary?

In the U.S. the "public option" for employment (Henceforth, POE, see Bivens (2018)) has gained popularity. According to this doctrine, by providing a public option for employment, the government becomes an "employer of last resort" for job seekers who are otherwise unable to find work in the private sector or through existing public structures. Generally, POE proposals are envisioned as providing a tranche of public money to states and localities to provide a steady buffer of jobs to those willing workers who remain locked out of work even after best practice in job creation policy has been followed. These jobs could be publicly managed, or they could support work in the non-profit sector.

A characteristic feature of POE proposals is that the job matters more than the output. The jobs associated with POE programs must be temporary jobs that disappear once the economy heats up and the private sector pulls people into employment from the public sector. In this section we review the literature that analyses the stimulating role of increases in public employment for both output and employment.

Few papers have analyzed the role of government employment to create jobs and stimulate the economy. Linnemann (2009) has shown, using aggregate U.S. time series, that increases in public employment generate positive responses of private employment and real output and a short-lived expansion in private consumption. Pappa (2009) reports mixed results for the employment response to government employment shocks using annual U.S. state and aggregate data over the period 1969–2001. Bermperoglou et al. (2017) estimate the macroeconomic effects of public wage expenditures in U.S. data by identifying shocks to public employment and public wages using sign restrictions. Their main finding is that public employment shocks are mildly expansionary at the federal level and strongly expansionary at the state and local level by crowding in private consumption and increasing labor force participation and private sector employment.

Theoretically, Michaillat (2014) develops a New Keynesian model in which the effect of government policy varies across stages of the business cycle. This author considers a policy in which the government increases the size of the public-sector workforce and measures the effect of this policy with the public-employment multiplier, defined as the additional number of workers employed when one more worker is hired in the public sector. The main finding is that this multiplier doubles when the unemployment rate rises from 5 percent to 8 percent. The government policy reduces unemployment more effectively in a recession than in an expansion

because crowding out is weaker during a recession. The extent of crowding-out is determined by the amplitude of the increase in labor market tightness. When unemployment is high, the government needs few vacancies to hire additional workers because the matching process is congested by job seekers; moreover, the number of job seekers is so large that the vacancies posted and job seekers hired by the government have little influence on tightness. Consequently, the increase in tightness is small and crowding-out is weak. The same mechanism leads to strong crowding-out when unemployment is low and the matching process is congested by vacancies.

2.1.10 The promise of government investment

In the last decade, and especially after the sovereign debt crisis, most of the Member States of the Euro Area have suffered a considerable reduction in public investment. Chart 8 displays the evolution of government investment-to-GDP ratio between 2006Q1 and 2019Q3 in Germany, France, and the Netherlands and in Spain, Italy, Greece and Portugal.

Chart 8

Government Investment as a percentage of GDP 2006-2019

Evolution of government investment as a share of GDP 2006-2019, selected EA countries
(share of government gross fixed capital formation to GDP, years)
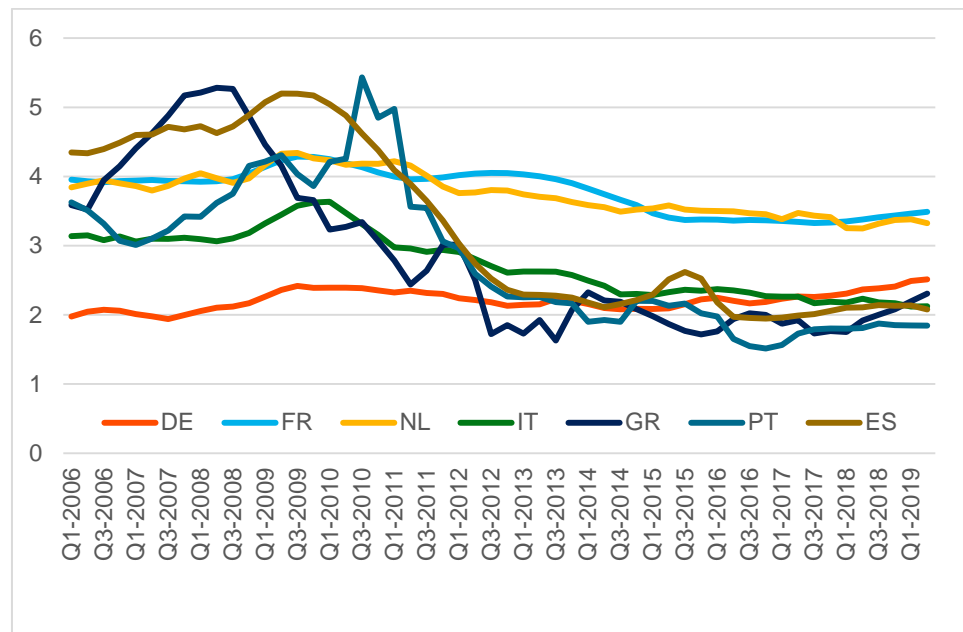
Sources: Eurostat

The cuts in public investment in the European periphery were devastating. Starting from an average of 4.1 percent of GDP between 2000 and 2007, public investment fell to 2.38 percent of GDP afterwards in the periphery countries. On the contrary, the cuts in government spending in investment have been less pronounced in France

and the Netherlands, whereas public investment in Germany was never affected by the sovereign debt crisis. In this section, we review the available literature on the macroeconomic role of government investment in order to evaluate whether those cuts were detrimental and the extent to which government investment can be used as a useful tool for fiscal stimuli. We also provide new insights about the effects of government investment shocks.

Pappa (2009) is one of the first papers that looks at the effects of shocks to government investment on the macroeconomy. Using data from the U.S. and sign restrictions in a SVAR model for shock identification, it is found that shocks to government investment increase output and the real wage persistently, and they have a positive, significant, but short-lived effect on private employment. Those findings are rationalized through the lenses of a DSGE model with price stickiness in which government investment increases the stock of public capital which, in turn, enhances private production. Basically, a government investment shock, apart from stimulating demand through the standard Keynesian channel, has an additional supply side effect that works through the production function when, as in the seminal work of Aschauer (1982 and 1989), public capital is assumed to be productive. In terms of the basic textbook analysis presented earlier, an increase in government investment implies a shift of both the aggregate demand and the aggregate supply to the right, from point H in Chart 9 to point K. However, since capital needs time to build, the movement from point J to point K takes time and this is why increases in government investment tend to generate persistent output increases.

Chart 9

Fiscal policy in theory: An increase in government investment

The AS-AD model and the effects of an increase in government spending in investment
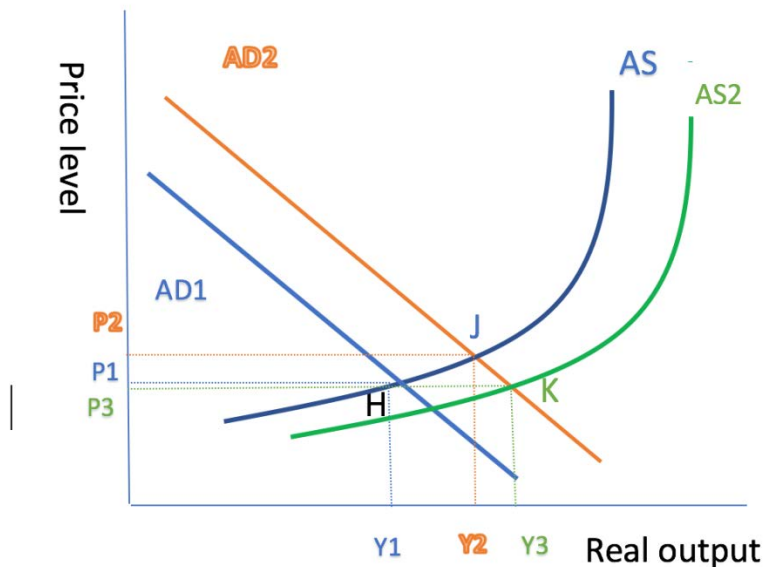
Increases in government investment

In a recent paper, Ramey (2020) revives the interest in research for analyzing the effects of government spending in infrastructure by reviewing the existing literature and putting a call for new research on the subject. The existing results support the positive long-run effects of infrastructure investment. Ramey (2020) provides theoretical analysis and empirical estimates that cast doubt on the positive short-run effects of infrastructure investment. In particular, she considers more realistic features of infrastructure investment, such as time to build and sector-specific demand effects, showing that those additional assumptions actually reduce the short-run aggregate stimulus effects of shocks to infrastructure investment, even when the long-run supply-side benefits are present. Earlier work by Leeper et al. (2010) shows that implementation delays can make the economic benefits from government investment difficult to synchronize with the business cycle. More specifically, as long as public capital is productive, the expectation of higher infrastructure spending generates a positive wealth effect, which discourages work and encourages consumption. Because private investment projects typically do not entail the substantial delays associated with public projects, it takes less time to build private capital. Private investment and employment, therefore, may be delayed until the public capital is built and raises the productivity of private inputs. Hence, in their model increases in public infrastructure result in negative employment and private investment responses. Boehm (2020), also, warns against using investment in public infrastructure as a short-run stabilization tool. His estimates on the fiscal multiplier associated with government investment during the Great Recession are close to

zero, while the corresponding estimate for government consumption multiplier is around 0.8. The investment multiplier is small because private investment falls drastically after government investment shocks. This high degree of crowding out is driven by the high intertemporal elasticity of substitution of investment demand, which has been shown to be a feature of a large class of macroeconomic models (See, e.g. Mankiw (1985)). Ramey (2020) also highlights the importance of the initial level of public capital relative to the socially optimal level. Long-run multipliers are higher if the economy is starting below the optimal level of public capital.

When we turn to the empirical evidence, the short-run effects of investment in public infrastructure are still debatable. Pappa (2009) estimates positive short and long run effects from public spending and Bruckner and Pappa (2015) provide additional evidence that news about infrastructure investment associated with the hosting of Olympic games, actually increase significantly private investment, consumption, and output. On the other hand, Boehm (2020) calculates the government investment multiplier to be practically zero. Thus, further empirical work is needed to evaluate the short-run effects of investment in infrastructure on the macroeconomy.

3   The Recovery Fund and its possible effectiveness

July 21, 2020 will be considered a historical date for the European Union (EU). On that date, the European Council has agreed to a new EU budget for 2021-2027 which, for the first time ever, includes funds that do not only come from national contributions but are also borrowed from international financial markets. The Council has made provision to back the current borrowing with taxes on future carbon emission, plastic use, and financial transactions, among others. Thus, an embryo of federal fiscal policy has been created. Apart from the regular budget (named Multi Annual Financial Framework), the agreement allows for the Next Generation EU (NGEU) funds, a new package of programs which, through a combinations of grants and loans to member states attempts to support the recovery from COVID-19 pandemic and foster investment leading to the transformation to a green digital economy.

The largest instrument among the NGEU funds, the Recovery and Resilience Facility (RRF), has been especially designed to counteract the negative economic effects of COVID-19 and help countries in difficulties by providing part of the funds national governments borrowed to help workers and firms. It should also facilitate the recovery, hopefully back to the growth path existing prior to the pandemic, by creating jobs and incentivizing the transformation of the EU economy to sectors and activities with large strategic potential. The expected fiscal expansion is huge. The total budget for 2021-2027 amounts to 5.7 percent of gross national income (GNI) of the EU. In comparison, the package approved in the US is 15.4 percent of GNI and the one in China is 4.2 percent of GNI. Will this effort succeed in creating jobs? Will the EU economy recover fast from the pandemic shock? Will the conversion to a greener economy be smooth? Will the programs start a virtuous growth cycle?

Questions of this type loom in the back of the mind of policymakers and academic economists. While expectations are optimistic, the large costs and the uncertain benefits of the proposed programs, and the unequalled nature of the current economic situation call for caution and care in thinking about the economic consequences of the fiscal expansions the EU is planning to undertake.

The existing literature supports the idea that large fiscal expansions can work to smooth the cycle. The analysis in the previous sections has revealed that fiscal policy expansions at the ZLB have the potential to push the economy out of a recessionary path with relatively little effort. However, macroeconomic uncertainty might counteract the effects of the fiscal expansion. We have also argued earlier that some policies could work better than others. For example, there is little controversy about the long-run effects of increases in public investment. However, the literature points to a weak role of government investment to smooth cyclical fluctuations. Letting the government act as an employer of last resource and creating jobs when labor market conditions are slack, might also help the economic recovery.

It is worth highlighting that the kind of fiscal expansion considered with the Next Generation EU (NGEU) fund is not unprecedented, in the Euro Area. EU policy has been targeting for 30 years now all regions of the European Union with the goal of supporting job creation, business competitiveness, economic growth, sustainable development, and to improve the quality of life of EU citizens. To reach these goals and to deal with the heterogeneous stages of development of different EU regions, a portion of the total EU budget is set aside for the so-called Cohesion policy in each budget cycle. For example, for the 2014-2020 cycle, the Cohesion policy program was endowed with over 355 billion Euros, almost a third of total EU budget.

The European Structural and Investment funds, which are the main tools to achieve the Cohesion policy goals, include four different programs: the European Regional Development Fund (ERDF), the Cohesion Fund (CF), the European Social Fund (ESF), and the European Agricultural Fund for Rural Development (EAFRD)[8]. The ERDF fund covers over 40 percent of the total budget, the EAFRD funds over 20 percent, and ESF and CF funds less than 20 percent each.

Canova and Pappa (2020) provide evidence on the dynamic macroeconomic effects of structural funds that the EU granted to member states (and regions) over the last 30 years. Thus, they offer some historical perspective to evaluate the likelihood of the success of the planned fiscal expansion. To gather information about the likely consequences of the planned fiscal expansion, they focus on the production, employment, productivity, investment, and real wage effects of the grants provided by two funds: (i) the Regional development fund (ERDF), whose aim is to foster investments in innovation and research, to favor the digital agenda, and to support small and medium-sized enterprises; and (ii) the European Social Fund (ESF), whose aim is to support investments in education and health, and to fight poverty. They construct average regional dynamic multipliers and cluster regional statistics using economic, geographical, or institutional characteristics. The scope is to collect

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[8] In the most recent budget cycle, the European Maritime and Fisheries Fund (EMFF) has been added.

stylized information which can shed some light on the effectiveness of those grants as cyclical stabilization tools and their potential to generate growth.

There are two important conclusions that Canova and Pappa (2020) reach. First, they show that the grants accrued to the regions through the two funds have very different effects. Table 2 reports the one, two and three-year cumulative average multipliers for the six regional macroeconomic variables of interest, separately for ERDF and ESF grants.

The ERDF funds have an important positive short term (one year) effect on all regional macroeconomic variables, making them potentially useful for rapid countercyclical policies. However, the positive regional impact dies out quickly and private sector gains dissipate within three years. On the other hand, the ESF funds take a while to exercise their effect, making them good candidates to achieve medium term objectives. The ESF grants have positive medium-term impact on investment, production, and workers' compensation but smaller effects on employment.

The average numbers reported in Table 2 mask considerable regional heterogeneity of outcomes. For example, at the three years horizon, the interquartile range of individual GVA multipliers generated by ERDF grants is [-5,5] and the interquartile range of employment multipliers is [-1.5, 0.3].

To examine whether the regional heterogeneity in multipliers is linked to interesting characteristics, Canova and Pappa (2020) cluster estimates using a number of indicators. First, they cluster them using national borders. If, say, labor market institutions matter, then regions belonging to a country should exhibit a more homogeneous response to the grants' stimulus and should display sign and magnitude similarities in terms of GVA and employment multipliers. Charts 10 and 11 map the joint distribution of GVA and employment multipliers at the three-year horizon for the two different funds.

Table 2

Average Cumulative Multipliers from European Structural and Investment funds

Average cumulative multipliers for ERDF and ESF funds

(macro variables, multipliers at different horizons)

Macroeconomic variables,	ERDF funds			ESF funds		
	1 year	2 years	3 years	1 year	2 years	3 years
GVA	2.42	1.56	0.56	-0.14	2.70	5.05
	(0.19)	(0.32)	(0.32)	(0.63)	(0.79)	(0.82)
Employment	0.86	-0.03	-0.42	-0.33	-0.62	-0.96
	(0.15)	(0.27)	(0.29)	(0.23)	(0.34)	(0.36)
Investment	8.07	0.53	-1.40	2.13	2.75	3.58
	(1.71)	(2.68)	(2.69)	(1.65)	(1.63)	(1.88)
Labor productivity	3.66	-3.65	-4.45	4.09	0.22	3.26
	(0.37)	(0.78)	(0.75)	(0.70)	(0.83)	(0.85)
Real Compensation	3.85	-2.62	-4.50	2.95	-1.54	4.54
	(0.36)	(0.85)	(0.84)	(0.32)	(0.62)	(0.69)

Sources: Canova and Pappa (2020)
Notes: Standard errors are in parenthesis

Chart 10

3-year cumulative ERDF GVA and employment multipliers across national borders
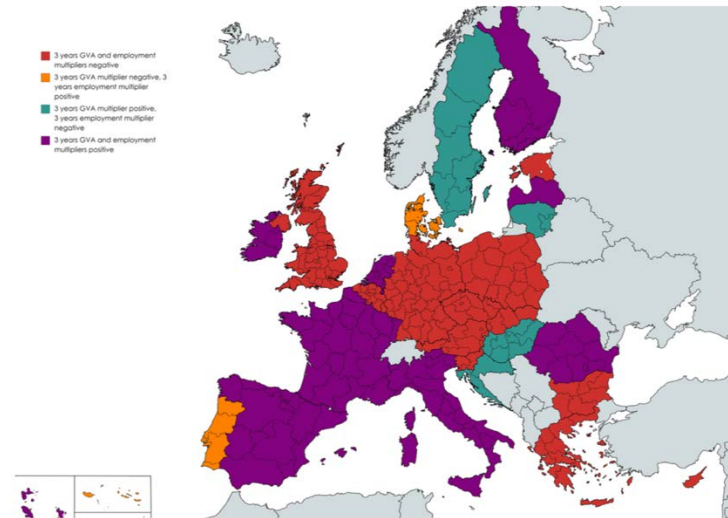
Source: Canova and Pappa (2020)

The second conclusion is that funds have not affected European countries in the same way. When looking at ERDF funds, for Spain, France, Italy, Ireland, the Netherlands, Finland, Latvia and Romania the average cumulative multiplier is positive and significant both for GVA and employment, while for the UK, Belgium, Estonia, Greece, Cyprus, Bulgaria, Austria, Germany, Poland, the Czech Republic,

Slovakia and Slovenia they estimate negative multipliers for both employment and GVA.

Chart 11

3-year cumulative ESF GVA and employment multipliers across national borders
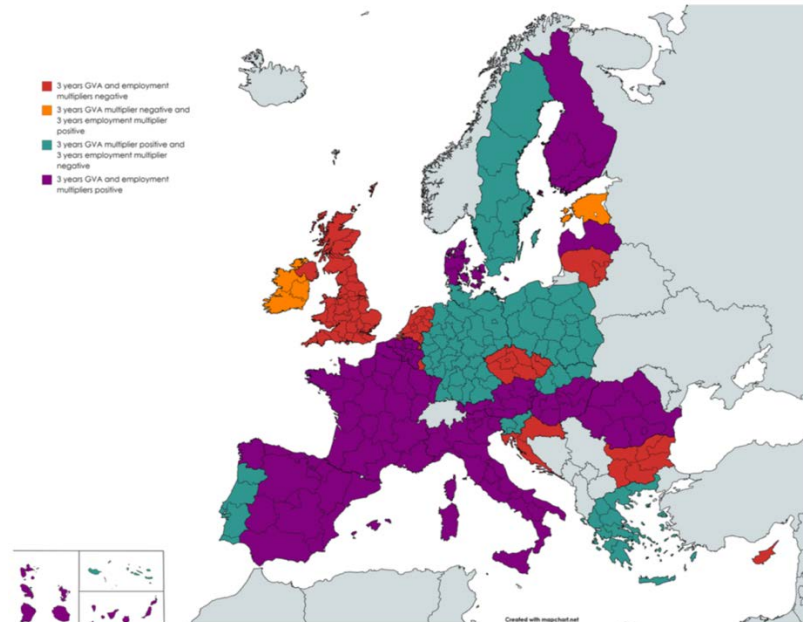
Source: Canova and Pappa (2020)

Similar to ESF grants, when a country displays a positive and significant cumulative three-year employment multiplier, it also displays a large and positive three years cumulative GVA multiplier (Spain, Italy, France, Denmark, Hungary, Finland). Particularly interesting for our purpose is the fact in three of four major Euro countries (Spain, Italy and France), ERDF and ESF grants do create jobs and increase private sector GVA leading to productivity improvements. In the UK, the country with the largest number of regions, three years cumulative employment and GVA multipliers are instead negative for both types of funds. Finally, multipliers for Germany, the country with the second largest number of regions, closely follow the patterns of Table 2: three-year cumulative employment multipliers are generally negative; three-year cumulative GVA multipliers are negative for ERDF grants and positive for ESF grants.

These differences cannot be explained by standard political and economic structural differences, such as differences in institutions, labor market structure, or degrees of corruption and quality of governance. Identifying possible factors that explain the remarkable performance of the regional funds in France, Italy and Spain and Finland and Romania is the subject of our current research. Yet, it is important to note that the latter three countries are those who suffered most from the COVID-19 pandemic. Thus, it is reassuring to observe positive multipliers in those countries for programs which have similarities to those launched by the European Council in July 2020.

4   Conclusions

We have started the analysis by revising the European fiscal framework and its development in the recent years. Fiscal rules are complex and ever evolving in the European Monetary Union. Their strictness and occasional violations have increased political uncertainty in Europe. When assessing their efficiency in reducing the debt burden, we have found fiscal rules related to expenditure expenses to be the most effective in reducing the accumulation of debt. Such rules decrease the growth rate of debt-to-GDP by 6.4 percent, while balanced-budget and deficit rules decrease the accumulation of debt by around 2 percent each.

Next, we have characterized optimal fiscal rules and highlighted that countries with high but moderate levels of debt, such as Finland, the Netherlands and Germany, seem to comply with the optimal fiscal rule of constant average debt-to-GDP. On the one hand, debt growth has increased in both the 2001 and 2008 recessions and decreased during the expansions in these countries. On the other hand, countries with large accumulated debts as a share of GDP, such as Italy, Greece Spain and Portugal, do not seem to behave optimally, possibly because of the presence of strict fiscal rules and the urge of consolidation after the sovereign debt crisis.

We continue the analysis by highlighting the benefits of discretionary fiscal policy, especially in times when monetary policy is constrained by the effective lower bound in interest rates. The review of the existing literature revealed the strengthens and weaknesses of fiscal policy as a stabilization tool and identifies those fiscal policy tools that can be more effective as countercyclical buffers relative to other tools that can have more long-lasting effects.

Finally, we have focused attention at the effectiveness of the fiscal expansion designed by the Next Generation EU. We bring good news for both economists and policymakers, as we show that such funds can work. Funds whose aim is to foster investments in innovation and research, to favor the digital agenda, and to support small and medium-sized enterprises have an important positive short term (one year) effect on all regional macroeconomic variables, making them potentially useful for rapid countercyclical policies. Funds whose aim is to support investments in education and health, and to fight poverty, are effective only in the medium run. Although the macroeconomic effects of such funds differ across countries, we show that they have been very effective for fostering employment, output and labor productivity in Spain, Italy and France, the countries that have been more severely y hit by the pandemic.

Finally, we cannot talk about fiscal stimulus and fiscal and monetary policy interactions without reference to the debt dynamics. One way or another, any strategic change must calibrate monetary and fiscal policy to an environment of high-debt. Achieving and maintaining an accommodative fiscal policy stance has proved difficult in the euro area. The decision of the European Council on July 21, 2020 has opened new avenues for the evolution of fiscal policy in Europe. It does so by including funds that do not only come from national contributions but are also borrowed from international financial markets, creating an embryo of federal fiscal policy. Still debt issued by national fiscal authorities in the euro area is subject to the

risk of default or restructuring and for some countries in Europe the level of national debt is dangerously high. The Achilles heel of Europe's financial markets remains the high level and risky nature of (national) government debt.

Fiscal accommodation can give rise to expectations of default or restructuring that counteract or reverse any initial stimulative effects. To make matters worse, the expectations of default or restructuring can be self-fulfilling. The ECB responded promptly to the COVID-19 crisis: On March 18, the ECB launched the €750 billion Pandemic Emergency Purchase Program (PEPP), which will last until the coronavirus crisis period is over but, in any case, at least until the end of 2020. The assets to be bought under the PEPP are mostly the same: the biggest amount goes to national and regional government bonds, supra-national debt, and various types of private sector bonds. On June 4, the ECB increased the maximum size of its purchases of government bonds under PEPP by €600 billion to €1350 billion and extended the horizon for those purchases at least to the end of June 2021. The ECB also emphasized that it wants to maintain flexibility in the purchases across asset classes and among jurisdictions. Through the PEPP, the ECB aimed, in part, to reduce widening spreads in government bonds for countries like Italy and Spain. Although the launching of the PEPP has reduced the possibility of self-fulfilling creditor runs on a euro area member state, the program is designed to safeguard appropriate monetary policy transmission and not to facilitate fiscal accommodation.

Corsetti et al. (2016) describe a benchmark institutional setup that would make it possible for the euro area to implement effective stabilization policy. This institutional setup has two key features. The first one is the introduction of a non-defaultable Eurobond issued by a "euro area fund," similar to the European Stability Mechanism. Along the same lines, according to the theoretical model of Jarocinski and Mackowiak (2017), the euro area is a "land of indeterminacy", where macroeconomic outcomes can be turned around by a single speech, or by announcing policies that are never implemented. These authors suggest the use of a non-defaultable public debt instrument as a macroeconomic stabilization device requiring only a fairly modest degree of centralization of fiscal decision-making among the euro area member states. The second feature is the ability for euro area member states to be able to restructure national public debt as a last resort in an orderly way. They have to do so, without prejudice to full participation in the European Union or the euro, and with the fund being treated equally with private creditors in case a member state failed to meet the fiscal criteria and was unable or unwilling to borrow exclusively from private creditors. The fund would stand ready to resume lending after national public debt had been restructured, as soon as the member state satisfied the fiscal criteria again. The COVID-19 crisis has already put the first element of this institutional setup on the table. European leaders and policy makers should also consider bringing in the second element along the difficult road to recovery from the pandemic crisis.

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