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A VAR model for Fiscal Multipliers and the Future of Fiscal Policy in European Monetary Union

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Abstract

Fiscal multipliers have been a core issue for the effectiveness of fiscal policy. During the financial economic crisis of 2007–8 there has been a revival of interest in re-estimating the size of the multipliers. Empirical literature showed that fiscal multipliers are dependent either on structural characteristics of the economy (exchange rate regime, openness, etc.), or on business cycles or on fiscal characteristics (level of debt, the choice between expenditures and taxes, etc.) of the economies. The aim of this paper is to contribute to this discussion by developing a VAR model to compute the effects of fiscal policy to output for the 19 member states of EMU for the period 2002-2019. Controlling for size of the countries, level of Debt to GDP ratio and openness. Based on these findings we will discuss the difficulties of fiscal consolidation in EMU economies. We argue that EMU is facing a deadlock, the necessity of fiscal consolidation on the one hand and the unavoidable risk of uneven results of fiscal contraction in the member states due to different size of multipliers on the other hand. The only alternative for EMU is to take a step forward towards a fiscal union. In this case fiscal policy should be balance different political priorities and preferences and at the same time be timely and effective.

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Keywords: Fiscal policy, European Monetary Union, debt, Fiscal cooperation, Fiscal multipliers.

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1 Introduction

The financial and pandemic crises have brought to the forefront again the old issue of macroeconomics and the need and effectiveness of fiscal policy. One of the overarching issues that has shaped the debate over the effectiveness of fiscal policy is the size of fiscal multipliers. Recently, there has been increasing interest in re-estimating fiscal multipliers and, at the same time, examining the factors that may affect their size (Bentour, 2022, Horvath, R.,et al., 2020). This debate is crucial because the high debt of the countries will re-open the discussion of fiscal adjustments in the coming years. The examination of the fiscal multiplier will be at the centre of the debate of the next several years where the core issue of macroeconomics will be (again) the fiscal consolidation of the economies. The speed of fiscal consolidation, the size and the composition of fiscal response all depends on the fiscal multipliers.

In European Monetary Union (EMU) where uniform rules will be applied after the re-activation of Stability and Growth Pact multipliers will define the return of the countries to sound fiscal position. So, the estimation of fiscal multipliers and the factors that affect their size is now more important than ever (Collingro, and Frenkel, 2020). The relevant literature focuses mainly on the estimation of the fiscal multipliers (Deleidi, Iafrate, and Levrero, 2021; Silva, Carvalho, and Ribeiro, 2013; Burriel et al. 2010) without analysing the consequences of the difference in the size of multipliers might have in the fiscal framework of EMU. Our study seeks to highlight this issue. Thus, we will attempt to contribute to this discussion by reviewing the relevant literature and critically analysed the relevance of this debate in the framework of fiscal cooperation in the EMU to highlight its strengths and weaknesses. Based on the findings of the literature we argue that the difference in the size of multipliers among the economies of the member-states of EMU (Ianc, and Turcu, 2020) will impede fiscal consolidation (Beetsma et al., 2022). The aim of this paper is, first, to analyse recent empirical literature for the size of fiscal multipliers and, second, based on this discussion to critically assess the fiscal framework of EMU. We argue that EMU will face an existential dilemma, either will be transformed to an economic union or the recessionary fiscal adjustment programmes will return with unpredictable consequences.

This paper is divided in four parts. In the first part we review the literature of the multipliers. As will be analysed below, we find two broad categories of models that estimate fiscal multipliers: DSGE and VAR models. Many existing studies in the broader literature have examined several factors that may influence the size of the multipliers. Some focus on the business cycle, others focus on the nature of fiscal intervention (taxes or expenditure shock, the level of debt, etc.) and others focus on the structural characteristics of the economy (such as openness, exchange rate regime, etc.). In the second part we develop a VAR model to compute fiscal multipliers. We use yearly data from AMECO for the 19 member states of EMU for the period 2002-2019. Base on Blanchard and Perotti (2002) we use Impulse Response Function (IRF) to estimate impact multipliers controlling for size, level of debt to GDP ratio and openness of the countries. In the third part we analyse, based on the empirical findings, the framework of fiscal cooperation in EMU. We conclude, in the final part, with a critical discussion of the EMU's alternatives for fiscal consolidation. After the end of the pandemic crisis, a discussion concerning the future of fiscal policy in the EMU will be more critical than ever.

2 Keynes vs. Monetarists on Fiscal Multipliers

Fiscal policy raised a lively debate between Keynesians and Monetarists during 1960's and 1970's. The traditional Keynesian theory placed the government's spending at the centre of the stabilisation effort, given its high fiscal multipliers. A core argument from the Keynesian perspective was the liquidity trap, where interest rates approach zero bound, preventing further reductions-making multipliers greater than unity. This leaves room for government intervention due to the impact that government spending has on inflation. With a fixed nominal interest rate, an increase in government spending increases inflation, thus reducing the real interest rate, which in turn increases current spending and consumption, creating a feedback loop.

In the 1960s, Milton Friedman's revival of the monetarist theory gave a different view. Based on two

main arguments that consumption is based on permanent and not current income and that the increase of the interest rate crowds out private investments, monetarists downgraded the role of fiscal policy. Eventually, they believed, the economy would return to the natural level of unemployment having accumulated a high level of debt.

The above argument was strengthened by the New Classical approach, which introduced the assumption of rational expectation and continuous market clearing. Based on this, rational agents, either consumers or investors, understand that debt-financing government spending will ultimately be paid by future taxes. Based on their expectations for an increase in future taxes, agents set aside part of their current income to pay future taxes, offsetting the effects of government spending on aggregate demand (Barro, 1989a).

The models of the New Classical tradition were developed further into Real Business Cycle (RBC) and Dynamic Stochastic General Equilibrium models. RBC models bolstered the ineffectiveness of government spending as a stabilisation tool. These models, assuming infinitely lived intertemporal optimising agents, found negative or zero fiscal multipliers if government spending was financed by debt and less than one multiplier if spending was financed by taxes. These results were as expected, given that RBC models incorporate strict neoclassical assumptions.

On the other hand, Dynamic Stochastic General Equilibrium models attempted to introduce some factors that could affect the estimation of the multipliers. More specifically, they investigated different structural characteristics of the economy, such as the degree of openness, the existence of rigidities, the presence of liquidity constraints, etc. Moreover, some models incorporated characteristics of the economic environment, such as the role of monetary policy and the exchange rate regime. Finally, a different strand of this literature focused on the nature of fiscal shocks, namely, the decision between government expenditure and taxes, whether shocks are permanent or temporary, and the credibility of fiscal shocks.

The New Keynesian theory, which was introduced in dynamic stochastic general equilibrium literature in early 2000 (referred to in the literature as NK-DSGE models), disputed the New Classical view based on three lines of argument. First, incorporating the existence of nominal rigidities, the liquidity trap and non-Ricardian (rule of thumb) behaviour of some agents in the models made the effects of government spending positive and significant. We will start explaining the existence of non-Ricardian consumers.

The prerequisite of Ricardian equivalence is that the capital market must be perfect. However, if some individuals are finance-constrained, their consumption choices are based on their current and not permanent incomes. Therefore, the existence of this kind of consumer strengthens the effects of government spending on aggregate demand and output, thus restoring the efficiency of fiscal policy. This approach has introduced the distinction between Ricardian and non-Ricardian behaviour. So, if consumers are liquidity-constrained, i.e., non-Ricardian, they tend to spend a greater part of their income. Consequently, if fiscal policy is targeted towards them, multipliers will be higher. This is shown in Gali et al. (2007), who allowed for a share of financially constrained consumers whose consumption increased in response to an increase in government spending, thus leading to a higher multiplier. Also, Eggertson and Krugman (2012) developed a NK-DSGE model where households were financially constrained. They showed that fiscal policy can ease these constraints, promoting household spending. This argument is backed by Turini et al. (2012), who claimed that households are also constrained by the depreciation of their collateral. Again, fiscal policy restores consumer spending and has a positive effect on output.

A second strand of the relevant literature is based on price and wage rigidities. Woodford (2011) demonstrates that nominal rigidities in price and wages lead to a higher multiplier given that, for instance, firms react to an increase in aggregate demand by increasing output and not prices. Further, with rigid prices, the real wage does not diminish (at least in the short run), and the income of non-Ricardian households increases, stimulating aggregate demand and output. A different idea is put forth by Giavazzi and Pagano (1990), who coined the term ‘expansionary fiscal contraction’. Analysing Denmark and Ireland during the 1980s, they support that economic growth and private consumption are positively correlated. Based on this finding, they support that fiscal contraction has a positive impact on private consumption and output. Moreover, an anticipation of further reduction of government spending and taxation stimulates even more private consumption.

Finally, a core argument of NK-DSGE models is based on the traditional Keynesian theory that, as said

above, refers to the liquidity trap. In particular, when nominal interest hits zero, lower bound monetary policy is ineffective, so, as the NK-DSGE models show, the real interest rate rises and the economy enters a deflationary loop. Under the above circumstances, fiscal policy could positively affect prices, decreasing the real interest rate; eventually, output increases will drive the economy back to full employment. The work of Eggertsson (2011), Woodford (2011) and Cristiano et al. (2011) shows that fiscal multipliers can be larger than unity (reaching a level between three and five) at the zero-lower bound. However, none of this research incorporates the non-conventional monetary measures that a Central Bank could perform to directly increase liquidity.

We conclude the review of the DSGE literature by presenting three major studies: the Smets-Wouters (2003) model developed by the European Central Bank, the Laxton-Pesenti (2003) model developed by the International Monetary Fund and Ratto et al.'s (2009) European Commission model. The Laxton-Pesenti model includes two subjects, the euro area and the Czech Republic. It assumes forward-looking rational expectation agents (firms and households), monopolistic competition and rigidities in goods and the labour market. Also, this model allows for import substitution to a small degree, given that the Czech Republic is a small country compared to the euro area. The model indicates that GDP increases as government spending increases, but it did so to a lesser degree during 2009–10, and it returned to the baseline at the end of 2010. The interesting finding is that after 2010, the GDP fell below the baseline.

The Smets-Wouters (2003) model had the same set-up as that of Laxton and Pesenti (2003) and reached the same conclusion. However, Ratto et al.'s (2009) model provided a more in-depth treatment of government intervention; namely, it introduced policy rules for government expenditure, capital and income taxes. Moreover, it incorporated rule-of-thumb households that consisted of an estimated 35% of European households. The results follow those of the other two models, yet without having a negative impact on GDP.

A second strand of the empirical literature for estimating fiscal multipliers is based on Vector Autoregression (VAR) models. The advantage of these models is that they are not based on a theoretical framework. Further, VAR models are easier to estimate and better incorporate non-linear behaviour than DSGE models, especially when the economy deviates from its steady state. The last point is crucial, given that recent literature indicates that multipliers are state-dependent, i.e., they are affected by the state of the economy being larger in times of recession. This is in line with Keynesian theory, which emphasises fiscal expansion as a more suitable policy to restore full employment. The downward stickiness of prices and wages, mainly due to institutional factors, allows fiscal expansion to affect output and employment, thus making multipliers higher. Moreover, fiscal multipliers are smaller when the financial position of a government is weak. These are the features that characterise economies in present times.

In the past several years, researchers in the field have shown an increasing interest in using VAR models for estimating multipliers. We may identify two main strands of this literature. First are the models that incorporate the business cycle, and second are the studies that include structural characteristics. Starting with the former, Auerbach and Gorodnichenko (2012), using a regime-switching VARs model, estimated the impact of fiscal adjustment on the United States, Europe, and Japan, allowing for fiscal multipliers to vary across recessions and booms, and found that the size of fiscal multipliers is different between expansion and recession with increasing values during recession. Batini et al. (2012), following the same line of argument using regime-switching models for the United States, found large differences in the size of spending multipliers in recessions and expansions, with fiscal policy being considerably more effective in recessions than in expansions. Riera-Crichton et al. (2015), using non-linear methods, estimated that in extreme recessions, multipliers are even higher, reaching 3.1. The above results are also validated by the work of Silva et al. (2013), which shows that the public spending multiplier is positive in recessions, while in expansions it is smaller. So, too, is the tax multiplier higher in recessions. On the other hand, Ramey and Zubairy's (2018) the study of the United States did not conclude with a statistically significant difference of the values of multipliers during a period of economic slack estimating a multiplier below unity. Yet in periods of zero lower-bound interest rates, results are more mixed, and under certain specifications, multipliers could be as high as 1.5.

The other strand of the literature focuses on the structural characteristic of the economy for estimating the multiplier. Blanchard and Perotti (1999) used a mixed structural VAR model and estimated the effects of shocks in government spending and taxes on US activity in the post-war period, incorporating institutional information about the tax and transfer systems to identify the automatic response of taxes and spending to economic activity. The results showed that government spending has a positive effect on GDP, while taxes have a negative effect on GDP.

A further finding indicated that an increase in both spending and taxes has a negative effect on investment spending. Based on a novel quarterly dataset of government expenditure in 44 countries, Ilzetski et al. (2013) showed that the impact of government expenditure shocks depends on country characteristics, such as the level of development, exchange rate regime, openness to trade and public indebtedness. A positive spending shock affects output to a greater degree in industrial countries than in developing countries. Fiscal multipliers are larger under a fixed exchange rate regime and are near zero under a floating exchange rate regime. Fiscal multipliers are smaller in open economies than in closed ones. Finally, fiscal multipliers are negative in high-debt countries.

This conclusion is reaffirmed in Hory's (2016) study. Based on a sample of 48 emerging and advanced economies, it was estimated that emerging market economies have smaller fiscal multipliers than advanced economies. Hory (2016) also included factors such as imports, public debt, savings, unemployment and financial development and found that all responded in the same way in both emerging and advanced economies.

Finally, the leading structural factor that affects the efficiency of fiscal policy is the public debt for emerging market economies and the openness to trade for advanced economies. Using an annual dataset of 120 countries over the period 1960–2014, Chian (2017) also confirmed these findings. More specifically, Chian (2017) examined four structural characteristics of the economies, namely, the level of debt, the level of financial development, the financial conditions and the business cycle, and found that fiscal multipliers are larger in advanced economies when debt is low and the economy faces financial crises or recession.

Corsetti et al. (2013), using a panel of OECD countries, examined how the effects of government spending vary with the economic environment, i.e., the exchange rate regime, public indebtedness and health of the financial system. They showed that currency regimes affect the value of fiscal multipliers, and output and consumption multipliers are higher in times of financial crisis. Born, Jussen and Muller (2013) also analysed fiscal multipliers under fixed and floating exchange rate regimes using a panel vector autoregression model for OECD countries. Their findings indicated that government spending multipliers are considerably larger under fixed exchange rate regimes.

The basic weakness of this type of model is the lack of data, given that periods of deep recession are not very often, making it difficult to estimate the non-linearity of the multiplier. Further, the reduced-form VARs are quite simple; they include only total spending, net taxes and output and thus are prone to omitting variable biases. VAR models have also received much criticism for the 'fiscal foresight problem' (Leeper et al. 2008). If agents are forward-looking, they can anticipate changes in fiscal policy. Thus, the effects of fiscal shocks appear before implementing fiscal decisions. In other words, there is a lag that may lead to a biased estimation of fiscal multipliers.

3 The model

Our aim is to develop a panel VAR model for the estimation of fiscal multipliers. Fiscal multiplier is defined as the change in real output caused by a one-unit increase in a fiscal variable. The magnitude of multipliers can vary drastically across time horizons. Following Blanchard and Perotti (2002), the impact multiplier is measured as:

$k_t = \frac{IRF_{(dg-dy)t}}{IRF_{(dg-dg)t} * b_1}$ and the cumulative multiplier is defined as $k_t = \frac{CIRF_{(dg-dy)t}}{CIRF_{(dg-dg)t} * b_2}$

Where, $IRF_{(dg-dy)_t}$ is the IRF of GDP growth rate to a shock to government spending or social sector spending growth rate at time t.

$IRF_{(dg-dg)_t}$ is the response of government spending or social sector spending growth rate to its own shock at time t.

b_1 is the ratio of government spending to GDP ratio, on average over various countries for the entire period.

b_2 is the ratio of social sector spending to GDP ratio, on average over various countries for the entire period.

The prefix C is for cumulative response and T denotes an extended time period.
Cumulative multiplier at time T measures the outcome of fiscal policy at a longer forecast horizon and can be termed as long-run multiplier. The study takes an extended time period of 10 years to report the long-run multiplier.
We use yearly data for the period 2002–2019. We choose this period because the new currency was introduced in EMU in 2002 and we extend the period until 2019 to avoid including data from the turbulent time of the pandemic crisis. The entire dataset is collected from AMECO. Our attempt is to estimate the impact of fiscal policy, controlling for exogenous key variables, namely debt to GDP ratio, openness, and size of the country. So we divide the sample of countries in three categories namely big and small countries, open and less open countries and high and low debt countries. For each group we run the appropriate test (stationarity, stability, Akaike information criterion-AIC-, Bayesian information criterion -BIC, Hannan–Quinn information criterion -HQ) and compute both government's final consumption expenditures and social benefits expenditure multiplier for each group separately and then we compare the results.
To do this, we construct two new variables, openness, and size, which are explained below.
The first variable is straightforward. In order to analyse the impact of debt on fiscal multipliers, we distinguish two levels of debt to GDP ratios – countries with debt to GDP ratio less than 60%, and countries with debt to GDP ratio above 60%. This choice follows Maastricht criterion for debt level. This has also been justified by the influential work of Rogoff and Reinhart (2010). Rogoff and Reinhart showed that low levels of external debt (below 60%) do not impede economic growth whereas when debt to GDP levels exceeds 90%, economic growth is slowed. According to this analysis, we present a table with the average Debt/GDP ratio during the period 2002–2019 for the 19 member states of EMU.

Table 1: Debt to GDP ratio in EMU countries

Country	Average %Debt/GDP 2002-2019
Belgium	100.16
Germany	69.46
Estonia	7.23
Ireland	63.64
Greece	144.80
Spain	69.88
France	82.17
Italy	120.20
Cyprus	76.57
Latvia	29.63
Lithuania	29.88
Luxembourg	16.32
Malta	61.23
Netherlands	55.87
Austria	75.02
Portugal	100.47
Slovenia	48.47
Slovakia	43.89
Finland	49.07

The table shows that only 4 countries (Portugal, Belgium, Greece and Italy) had a Debt/GDP ratio level of above 100% during the period 2002–2019. Seven countries have an average ratio of Debt/GDP between 60% and 90%, namely Germany, Spain, France, Austria, Malta, Cyprus, and Ireland. Finally, Finland, Slovakia, Netherlands, Slovenia, Luxembourg, Lithuania, Latvia, and Estonia have a Debt to GDP ratio below 60%, which is the threshold of the Maastricht treaty.

As far as openness is concerned, there are a lot of indicators for openness. First, we need to clarify that by openness we mean trade openness, in contrast with financial or economic openness. Thus, for trade openness, the relevant literature uses four different indicators. First, the World Bank uses the export share/import share/trade share (exports + imports) indicator. This is a simple indicator that expresses import/export/trade volume as a percentage of nominal GDP calculated for 199 countries from 1960. This is a continuous indicator and the results are expressed as a percentage of nominal GDP. Second, a very similar indicator is the Real Trade Share that was developed by Alcala and Ciccone (2004) and it used the real GDP at PPP. The results are expressed as a percentage of real GDP. The calculations are made for 173 countries for the period 1960–2014. Tang (2011) developed the Generalised Trade Openness Index that represents the trade volume as a share of GDP for the countries. The difference is that GDP is not included in nominal values, but is defined by CES-function of the country's GDP and the GDP of the rest of the world. The results are continuous and the scale is 0–100. Tang (2011) uses 167 countries for the period 1960–2016. Another indicator is the Composite Trade Share developed by Squalli and Wilson (2011) for 231 countries for the period 1977–2016. This is the trade volume (exports + imports) as a share of GDP that is adjusted by World Trade Share. Finally, Li et al. (2004) developed the Adjusted Trade Share that calculated the imports divided by GDP and adjusted for the nation's share in world production. Li et al. (2004) used 233 countries for the period 1960–2016.

We use the World Bank's indicator for trade openness for two reasons: its simplicity and its straightforward results. Thus, we calculate (import + export)/GDP for each country of EMU and take the average for the period 2002–2019. The results are summarized in the table below:

Table 2: Openness in EMU countries

Country	OPENNESS (Average (import+exports)/ GDP
Belgium	1.697885
Germany	0.877403
Estonia	1.624752
Ireland	2.023187
Greece	0.685237
Spain	0.652593
France	0.664827
Italy	0.61248
Cyprus	1.424018
Latvia	1.204607
Lithouania	1.445988
Luxembourg	3.800397
Malta	3.101549
Netherlands	1.531066
Austria	1.134377
Portugal	0.836911
Slovenia	1.544905
Slovakia	1.816997
Finland	0.861888
Average	1.44953

In the last row, we calculate the average and define the countries whose values are above this average as open.

The last explanatory variable is the size of the country. To our knowledge, no study has investigated the relations between size of a country and fiscal multiplier. In case of a monetary union, this is a core issue because if the mechanism and rules of fiscal discipline are the same for each country and the multiplier is found to be dependent on the size of a country, then it would be easier for some countries to restore its fiscal position, while for some countries, either fiscal austerity must last longer or fiscal discipline must be more dire and consequently more recessionary. To address this issue, we construct a new variable. We define the size as the nominal GDP of each country as a share of the GDP of the whole monetary union, and then we calculate an average for the period 2002–2019 for each country. The results are summarized in the following table:

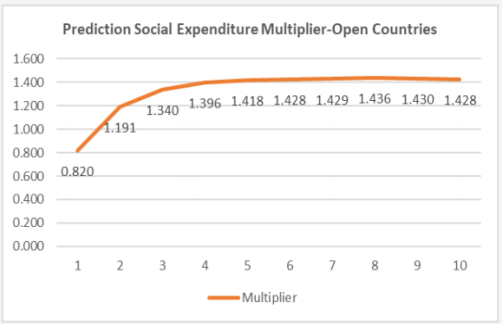
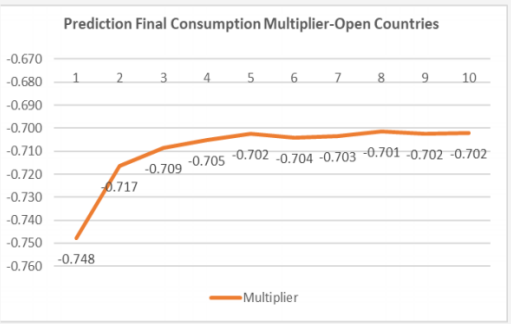
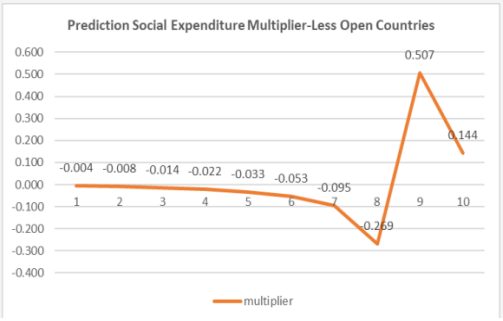
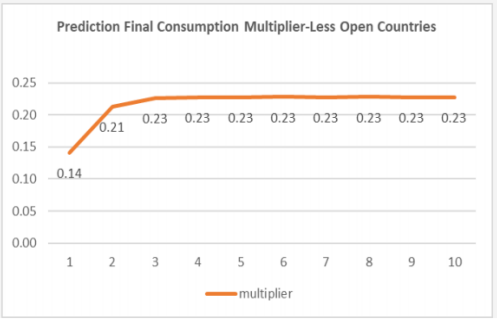
Table 3: Size of EMU countries

Country	**SIZE %GDP/GDPEMU (%average 2002-2019)**
Belgium	3.4199%
Germany	25.2119%
Estonia	0.1510%
Ireland	1.9240%
Greece	1.8118%
Spain	9.6647%
France	18.0807%
Italy	14.5319%
Cyprus	0.1572%
Latvia	0.1872%
Lithuania	0.2827%
Luxembourg	0.3831%
Malta	0.0688%
Netherlands	5.9410%
Austria	2.7569%
Portugal	1.5783%
Slovenia	0.3220%
Slovakia	0.6448%
Finland	1.7560%
Average	**4.6776%**

In the last row, we calculate the average and define big countries as those whose values are above this average and small countries as the ones whose values are below this average. The results seem to follow intuition given that the big countries include Germany, France, Italy, Spain, Netherlands, and the rest (Belgium, Austria, Ireland, Greece, Finland, Portugal, Slovakia, Luxemburg, Slovenia, Lithuania, Latvia, Cyprus, Estonia, and Malta).

We continue by reporting the results. We start with open and less open countries.

Table 4: Fiscal Multipliers for Open and Less Open countries

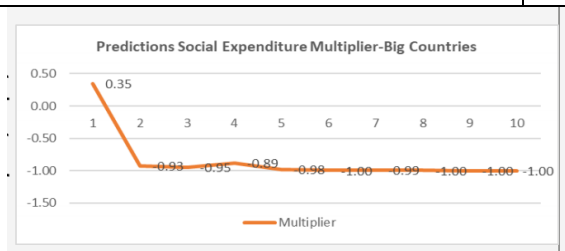
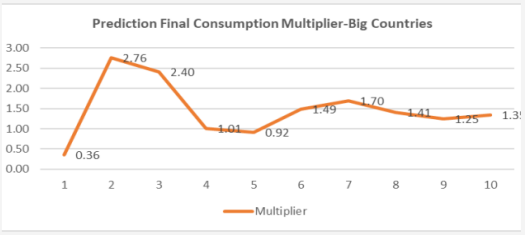
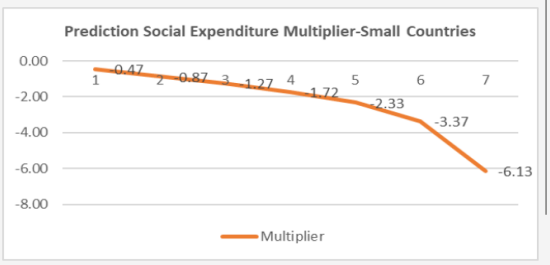
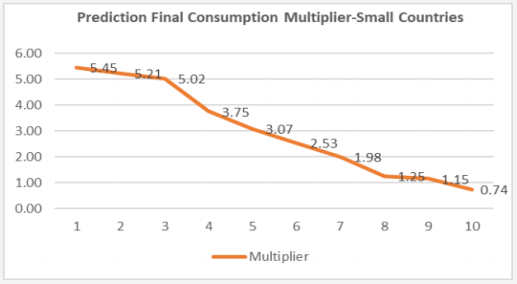
	Social Expenditures Fiscal Multiplier	Final Consumption Fiscal Multiplier
Open Countries		
Less Open Countries		

The above graph indicates that, as with the group of open countries, the social expenditure multiplier has small impact on GDP, while Final Consumption Multiplier is positive, yet very small. The positive effect is due to small volume of imports that characterises less open countries.

Comparing multipliers for open and less open countries we see that in open countries the final consumption multiplier is negative while in less open countries is positive. This is consistent with economic theory and is based on the volume of imports which in open countries is higher than in less open countries. In both subgroups of countries this multiplier is small. As for the social expenditure multiplier in open countries is positive while is negative and negligible in less open countries. This has a reasonable explanation given that social benefit expenditures are targeted towards low-income individuals or households that consume primarily services that produced by domestic economy. Another line of explanation could be that vulnerable households are spend part of their income and save the rest for unexpected circumstances.

We continue by analysing the results for big and small countries.

Table 5: Fiscal Multipliers for Big and Small countries

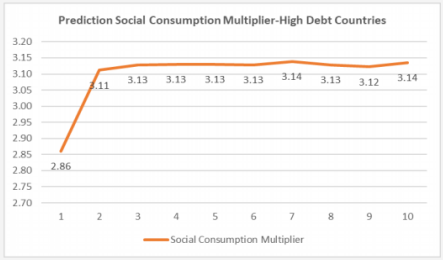
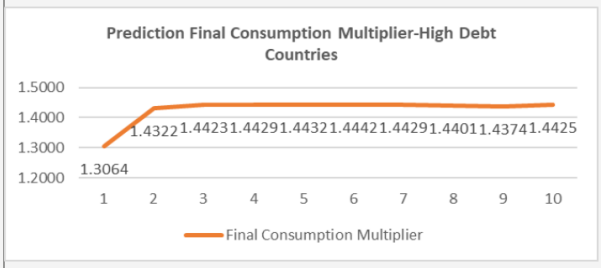
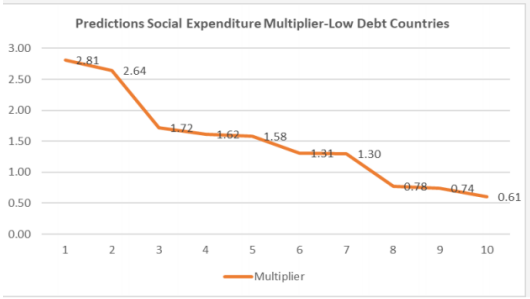
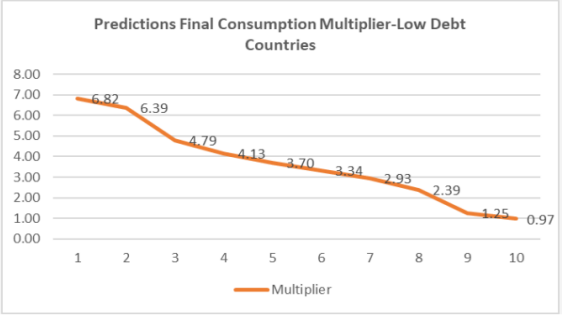
	Social Expenditures Fiscal Multiplier	Final Consumption Fiscal Multiplier
Big Countries		
Small Countries		

The interesting finding for government's final consumption multiplier is that is very high and reduces steadily. Small countries can easier mobilise resources and this explains the high multiplier.

On the other hand, social expenditures multiplier is negative. In small countries the allocation of resources in favour of social benefits deprives resources from development making thus, multipliers negative. Another reason refers to the existence of non-Ricardian households which have not access to the financial sector. Thus, any money transfer from government is rather saved than spend to come up against unexpected future expenses.

Finally, we present the findings for countries with low debt and countries with high debt.

Table 6: Fiscal Multipliers for High and Low debt countries

	Social Expenditures Fiscal Multiplier	Final Consumption Fiscal Multiplier
High Debt Countries		
Low Debt		

Comparing the two multipliers for high debt countries we conclude that social expenditure multipliers is higher than final consumption multiplier. This could be explained on the ground that social benefit expenditures are targeted in low income households that have lower tax obligations. Instead, final consumption multiplier is lower due to high taxes that characterises private consumption diminishing thus the effect on final product.
In low debt countries we see that final consumption multiplier is significantly higher than social expenditures multiplier. This could be explained because social benefits are targeted towards low-income households who save a bigger part of their income. Both Multipliers decreases constantly after first year.
Comparing low and high debt countries final consumption multiplier is much higher than multiplier in high debt countries, as expected. This is because in high debt countries government should devote resources for repaying debt. On the other hand, social expenditures multiplier is the same in the first year.

4 Fiscal cooperation in the European Monetary Union

In the previous section we showed that fiscal multipliers depend on structural and institutional characteristics and our model reaffirmed the differences in multipliers across member states of EMU. So, given that the size of fiscal multipliers vary substantially among member states of EMU how will the efforts of fiscal consolidation be affected and what consequences will this have for the stability of EMU? In this section we will attempt to analyse this issue. At the heart of this analysis is the Stability and Growth Pact which guarantees the stability of the common currency. Thus, the independence of European Central Bank and the focus of monetary policy on inflation requires sound fiscal position of the member states. Any breaches from the rules of fiscal discipline should be detected and corrected according to the rules. But fiscal multipliers will eventually, define the effectiveness of fiscal adjustment programmes and, ultimately, fiscal design of EMU. Yet, this design of economic policy seemed to reach its limit since the beginning of financial crisis given that at the beginning of the crisis, industrialised countries undertook fiscal measures to dampen the economic consequences of economic recession. This seemed to be supported by even the International Monetary Fund (see, for example, Blancard, Cotarreli, Spilimpbergo, Symansky 2009).
However, the fiscal effort was short-lived: the increase in government debt changed the priorities of the economic policy. The initial fiscal expansion for combating the economic recovery soon gave way to fiscal consolidation. The austerity measures that some countries imposed to control their deficits proved highly recessive.
As said the European Monetary Union, the Stability and Growth Pact provides the framework of fiscal consolidation. The Stability and Growth Pact (SGP) serves four objectives. First, it ensures that national fiscal policies will not threaten the objective of the Central Bank, namely price stability, and it will protect the credibility of the common currency. Second, SGP prevents negative externalities on the other member states of the European Monetary Union. Third, budget surpluses allow countries to use discretionary fiscal policies when needed, which is necessary, especially in the absence of other corrective mechanisms, such as interest or nominal exchange rates. Finally, sound public finance strengthens catch-up effects, reassuring the convergence of economies.
The fear that fiscal diversion shortly after the financial crisis of 2007-8 might endanger the fiscal sustainability of eurozone countries, thus leading to a debt crisis, led to fiscal austerity measures. The high debt of the southern countries, together with their structural problems, initiated economic adjustments programmes that imposed front-loaded fiscal measures with the task of dealing with high debt and enhancing the confidence of local economies. Therefore, countries should rapidly engage in fiscal consolidation efforts in a recessionary environment. These measures reached unparalleled levels in the case of Greece. Moreover, the Programmes of Economic Adjustments applied in Spain, Portugal, Ireland and Greece, and the general framework of fiscal austerity, created negative spill-over effects throughout the European economy (IMF 2010). Fiscal contraction targeted compliance with the numerical tasks of 3% for public deficit and 60% of public debt imposed in the reformed Treaty on Stability, Coordination and Governance signed in 2012, which forced countries to achieve 1/20 of the

yearly adjustment until 2032 to achieve the target. Under these developments, the dilemma that many economies faced concerned the attainment of long-run fiscal sustainability, on the one hand, and the avoidance of a deep recession that fiscal effort created.

This dilemma was addressed by Blanchard and Leigh (2013, 2014) and the International Monetary Fund (IMF 2010) in their influential research that showed that larger-than-expected fiscal consolidation was associated with lower growth rates. Barrel et al. (2012) also attempted to analyse the effects of fiscal consolidation controlling for the size of debt stock, the political will to deal with the size of debt and the costs of consolidation. Based on a series of simulations using the National Institute Global Econometric Model (NiGEM) in 18 OECD economies, Barrel et al. (2012) found that fiscal multipliers are negative when fiscal policy is restrictive because it reduces growth in the short-run in almost all countries. A lower debt stock reduces pressures on real interest rates and consequently may increase output in the long term. The larger the economy, the larger this effect.

The above analysis helped us to highlight one of the most salient issues of European economic framework. The economic unification in Europe was designed to deal with the major problems of the 70's and 80's, which were inflation and the rigidities caused by state intervention in the economy. So, sound fiscal position of the member states and low inflation has been the two pillars of European economic structure. This means that any deviation from the rules endangered European economic viability and induce austerity measures. This implies that some countries should follow strict programmes of fiscal adjustments. Given the differences in the size of multipliers this may cause (what I called) the multi-speed fiscal adjustment Europe (see Chatziapostolou T. 2022b), given that some countries will succeed in restoring their fiscal position faster and more effectively than others.

Today the challenges are totally different (climate change, migration, pandemic etc) and as a result the public debt has skyrocketed casting doubts on the viability of European economic governance. So, we argue that the rules of fiscal discipline of EMU are outdated and insufficient to tackle the contemporary problems. For this, European Union should be equipped with new funds and mechanisms making a big step towards economic integration, otherwise European Union will face either new 'exits' or a new round of fiscal austerity and perhaps severe recession in some countries. The only way out is a new economic paradigm with sustainable, fair, and equal development for all countries of the EMU.

5 Conclusion - Policy Implication

The above findings have some interesting policy implications. After several years of state intervention, the Keynesian state reach its limits and appeared to compound the problem rather than offer a solution. Regardless, monetarists shift the focus of the economic policy to the concern of inflation that soared in the early 80s. The new economic orthodoxy that emerged from this turbulent period was undergirded by two major pillars; the adoption of monetary policy solely as an anti-inflationary tool, and the effort states put into ensuring budget surpluses. It is out of this political and economic climate of the 80s that the Stability and Growth Pact emerged. The recent pandemic crisis and the subsequent political turmoil and return of inflation after several decades are demonstrative of the limits of the economic orthodoxy that has prevailed since 1980.

The Stability and Growth Pact has been suspended to stave off any unwanted economic consequences of the pandemic. Since then, the debt of the member states of EMU has soared and the fear of a new round of crisis, a debt crisis this time, has been invoked to justify the re-activation of fiscal rules. Recently, the European Central Bank decided to increase interest rates to combat inflation, which challenged states further in their efforts to finance their debt and work towards economic recovery. Thus, the core issue of the monetarist doctrine is that the appropriate economic policy dictates the independence of the Central Bank in order to maintain price stability, which appears to have reached its limit under the current circumstances.

The above discussion showed that the reactivation of the Stability and Growth Pact (the branch of the fiscal discipline of the monetarist doctrine) would be problematic given that certain countries ought to follow strict programmes of fiscal adjustments. In the face of these challenges, some argue in favour of

institutional discretionality (Amato et al., 2022), while others believe that since individual states can no longer be solely responsible for their fiscal balance, the need for a new set of fiscal rules must be highlighted (Blanchard et al., 2021).

The evidence presented in this thesis suggests that the fiscal institutional and legal framework of EMU has neither been designed nor been effective to deal with such an enormous increase in public debt. To apply identical fiscal rules to different countries could ultimately revive the old discussion of the two-speed Europe, this time in the sense of not development but fiscal adjustment (the multi-speed fiscal adjustment Europe). If this comes true, then the European Union will face new 'exits' or a new round of fiscal austerity and perhaps severe recession in some countries. The only way out is a new economic paradigm with sustainable, fair, and equal development for all countries of the EMU.

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