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Fiscal multipliers and policies in France and Italy: What has happened in the decade after the Great Recession?

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Abstract

This note has a twofold ambition. First, it empirically evaluates public spending multipliers for France and Italy, over the period 1986–2018, using an embryonic Keynesian model and a methodology based on cointegration with structural break. The estimates report that multipliers are above unity and statistically significant for both countries, which validates the necessity of a massive expansion in government spending during hard times. Second, it shows that during and after the Great Recession these countries never implemented a truly expansionary fiscal policy in order to reach full employment output or, at the very least, the level of output that would have prevailed without the crisis.

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1. INTRODUCTION

The Great Recession has considerably marked the structure of advanced economies. For some of them, especially in the Eurozone, the negative consequences have been so severe that it seems no exaggeration to speak of a "lost decade". Considering the magnitude of the shock in 2009, one would have thought there would have been room for a massive fiscal expansion in order to offset the collapse of private sector demand. Such a demand management policy is clearly based on Keynes' (1936) theory and follows a well-known logic: the role of an increase in government spending is to move a depressed economy toward full employment.

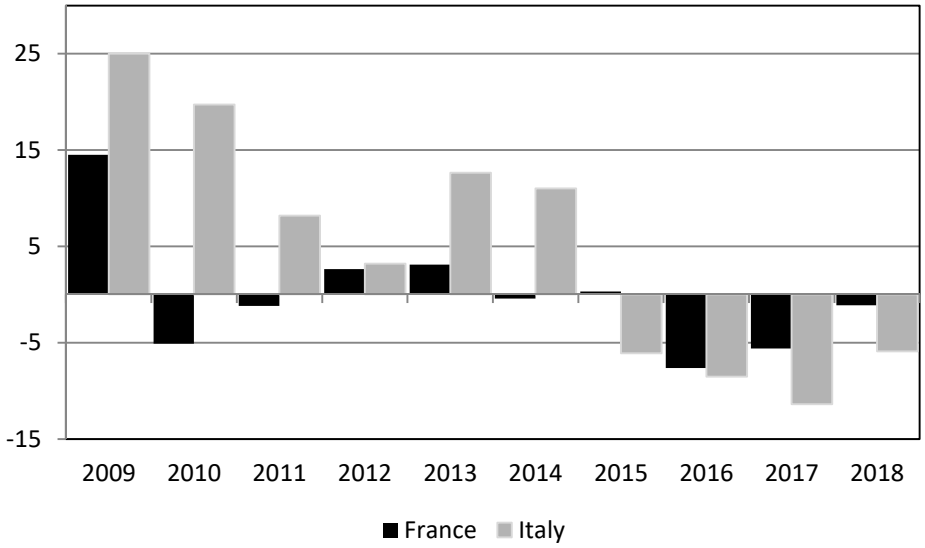
In this vein, the purpose of this paper is twofold. First, it evaluates empirically a long-run fiscal multiplier for the French and Italian economies on the basis of a simple Keynesian model. Second, our results emphasize the absence of any truly countercyclical fiscal policy during the Great Recession and after. This echoes previous studies, showing the highly unaccomplished character of what we usually call a Keynesian fiscal policy for France and Italy with dramatic consequences for the economic activity.

The paper proceeds as follows. Section 2 briefly deals with some macroeconomic performances over the last decade for both countries. Section 3 discusses the empirical strategy adopted. Section 4 presents our main results and shows the hard truth about fiscal policy in France and Italy. Lastly, section 5 draws some conclusions.

2. FRANCE AND ITALY DURING THE GREAT RECESSION AND THEREAFTER

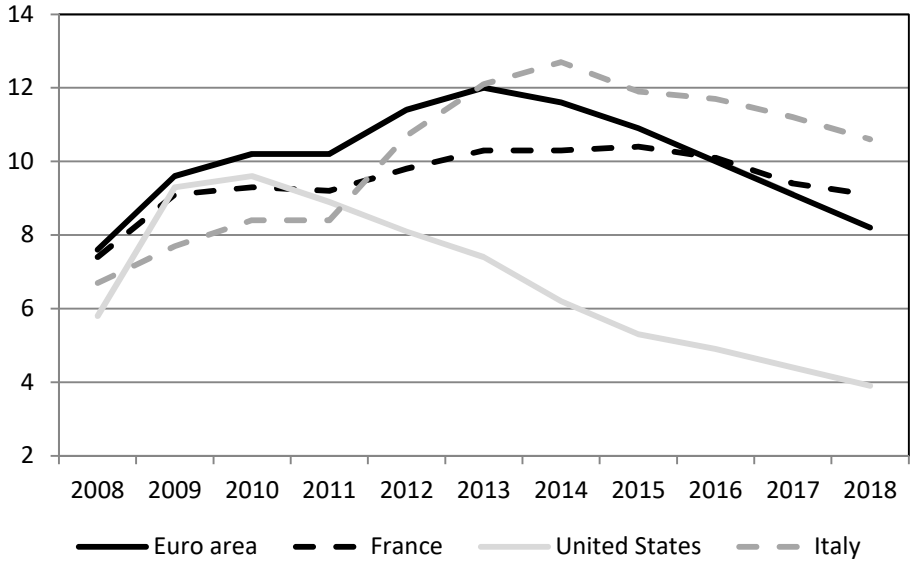
Like many countries, France and Italy were hit hard by the Great Recession and it is only because of the coordinated fiscal policies adopted for a short span of time, at the end of 2008, that a collapse comparable to the Great Depression was avoided. Nevertheless, as shown in Figure 1, the crisis was so severe that the number of French and Italian company failures exploded over the year 2009.

Figure 1: Growth rates of the number of French and Italian company failures



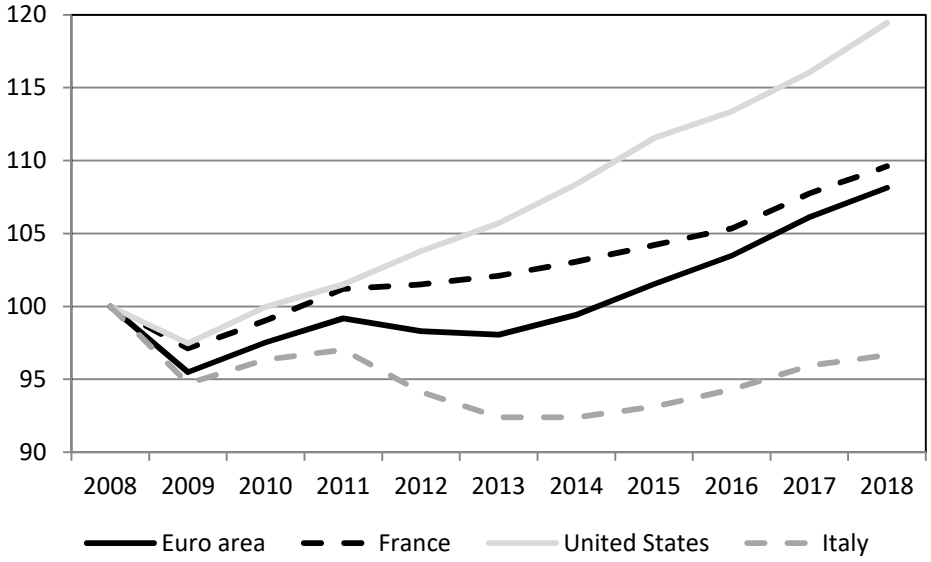
Source: For France, author's calculations based on Institut National de la Statistique et des Etudes Economiques (INSEE)/French national institute of statistics and economic studies. For Italy, calculations are based on Danovi *et al.* (2018) and Cribis company, Fallimenti delle imprese in Italia, q4 2018/Company failures in Italy, fourth quarter of 2018.

Figure 2: Unemployment rates as percentages



Source: Annual macroeconomic database of the European Commission (AMECO)

Figure 3: Index of Real GDP (base year in 2008)



Source: Author's own calculations based on AMECO

Accordingly, unemployment soared as the various economies were plummeting. Figure 2 reports the rate of unemployment for the United States, the Euro area, France and Italy in order to allow comparisons of the impact of recession and the way recovery was shaping. It underlines how the economic context was radically different in the two regions. Whereas the rise in the rate of unemployment was higher for the US in 2009, from a trough of 5.8% to a peak of 9.6%, European, Italian and French unemployment rates kept on increasing until, respectively, 2013, 2014 and 2015. Today, the narrative is well known: the main difference in terms of economic activity is to be found in the rapid implementation of austerity policies, in various forms, in Europe. On the one hand, in Greece, Italy, Portugal and Spain the drastic reduction in government spending was accompanied by tax hikes. On the other hand, France adopted a slightly different policy since austerity essentially took the form of an increase in taxes starting in the fourth

quarter of 2011. Unsurprisingly, when half of an area decides to commit "economic suicide", the comparison with the United States over the decade is a cruel exercise in terms of economic performance (see Figure 3). Indeed, recovery from the Great Recession more or less followed the same shape until 2010–2011. The situation of France with regard to the US is even more striking since the dashed line and the grey line run very close arguing for a homogenous recovery in both countries before the beginning of austerity. Logically, unemployment rates in the Euro area and France responded immediately to the first austerity measures (in the form of fiscal contractions and/or tax hikes) by reaching new peaks. Italy's experience is very informative about the deflationary nature of the Eurozone. The willingness of policy makers to meet European commitments in terms of public finances destroyed the economic recovery so that talk of "a lost decade" does not seem to be exaggerated in the case of Italy. Some clarifications are needed before going further. We do not claim that the US did not undertake a reduction in government spending (actually it did) but simply that the first and necessary fiscal impulses were larger than in the Euro area countries as shown in Table 1 below. We believe that such initial gaps between France, Italy, the Eurozone and the US made a difference in terms of economic recovery, constituting evidence in favour of a strong fiscal stimulus during hard times.

Table 1: Percentage growth rates of real government spending

	France	Italy	Euro area	United States
2008	0.83	0.83	2.66	2.87
2009	2.78	1.48	2.82	3.88
2010	1.01	–1.78	–0.04	0.34
Average 2008–2010	3.81	–0.33	2.78	4.23

Source: Author's own computations based on AMECO

3. EMPIRICAL STRATEGY

In this paper we follow Krugman's (2000) defence of simple models in the specific case of practical applications. Then, as an initial approach, we adopt the useful methodology put forward by Atesoglu (2013) who evaluates the fiscal multiplier for the United States utilizing the reduced and embryonic form of a theoretical Keynesian model. Such a model classifies expenditures as autonomous and induced. Consumption, imports and taxes are considered as induced and dependent on GDP. The remaining expenditures (i.e. gross private investment, total government spending and exports) are considered to be independent of GDP. It is to note that, from a theoretical point of view, we voluntarily remain in the scope of the simplest version of the well-known Keynesian cross model.[1] This is a strong assumption but such a choice allows us to work with a manageable 'starter pack' in order to easily evaluate fiscal multipliers and to quickly proceed to empirical applications. Besides, as it will be shown in the next section, such an approach

[1] Though it is beyond the scope of this short article, future research will have to develop and amend this initial approach.

does not necessarily lead to an overestimation in the values of the multiplier with regard to the recent econometric literature. Consequently, we estimate the following model:

$$Y_t = \alpha INV_t + \beta GOV_t + \gamma EXP_t + C + \varepsilon_t \quad (1)$$

where Y_t, INV_t, GOV_t, EXP_t, C and ε_t are, respectively, real gross domestic product, real gross private investment, total real government spending, real exports, a constant and a random error term. Here, the estimated coefficients α, β and γ represent a proxy for the multipliers of private investment, government spending and exports and are all expected to be positive and statistically significant.

When series are non-stationary we need to use cointegration techniques such as those developed by Engle-Granger (1987) or Johansen (1988) in order to estimate equation (1), with the latter often being thought superior. Nevertheless, such analysis assumes that the distribution of the series remains constant over time. This hypothesis is particularly difficult to maintain especially when data run over several decades, exposing us to the presence of structural changes. When this issue is ignored it may be difficult to reject the null of no cointegration between the series or to provide plausible estimates. Consequently, in order to overcome this problem we make use of Gregory and Hansen's (1996) test which is designed to detect cointegration in the presence of regime change. Thus, we start with the model:

$$y_{1t} = a + b\, y_{2t} + \varepsilon_t \qquad t = 1,\ldots, n \quad (2)$$

where y_{1t} is the dependent variable, y_{2t} an m-dimensional vector of independent variables, a a constant, b an m-dimensional vector of slopes and ε_t is a random error term. If y_{1t} and y_{2t} are both non-stationary but the random term is stationary, Engle and Granger (1987) consider that the two variables are cointegrated. In the presence of structural change, that is to say a change in the constant a and/or a change in the slope b, Gregory and Hansen (1996) show that the usual tests are misspecified. Then, they propose three models to take structural change into account. First, model (C) incorporates a level shift represented by a variation in the constant:

$$y_{1t} = a_1 + a_2\varphi_{t\tau} + b\, y_{2t} + \varepsilon_t \quad (3)$$

with $\varphi_{t\tau}$ a dummy variable defined as:

$$\varphi_{t\tau} = \begin{cases} 0 & \text{if } t \leq [n\tau] \\ 1 & \text{if } t > [n\tau] \end{cases}$$

Here, n is the sample size, $\tau \in (0, 1)$ is the unknown parameter, denoting the relative timing of the change point and [.] is the integer part. a_2 is the variation in the constant at the time of the shift. Second, model (C/T) incorporates a level shift with a time trend:

$$y_{1t} = a_1 + a_2\varphi_{t\tau} + b\, y_{2t} + ct + \varepsilon_t \quad (4)$$

Third, model (C/S) is a regime shift since it allows a break on both the constant and the slope of the cointegrated equation:

$$y_{1t} = a_1 + a_2\varphi_{t\tau} + b_1\, y_{2t} + b_2\, y_{2t}\varphi_{t\tau} + \varepsilon_t \quad (5)$$

The test statistic is ADF*= $\inf_{\tau \in T}$ ADF(τ) where ADF(τ) is the cointegrating augmented Dickey-Fuller statistic calculated with the OLS residuals from our three models. These test statistics are the smallest values among all the ADF statistics that can be evaluated for (C), (C/T) and (C/S) and represent evidence against the null hypothesis of no cointegration. Besides, it should be noted that such a procedure is valid up to a limit of four regressors, which remains above our three explanatory variables contained in (1).

Table 2: Unit root tests in level and first differences

	France			Italy		
	ADF	PP	DF-GLS	ADF	PP	DF-GLS
Y_t	–1.611	–1.786	–1.541	–1.405	–1.450	–1.089
ΔY_t	–4.072***	–4.072***	–4.137***	–3.800***	–3.800***	–3.649***
INV_t	–2.030	–2.312	–2.069	–1.436	–1.614	–1.327
ΔINV_t	–4.081***	–4.081***	–4.097***	–4.115***	–4.115***	–4.065***
GOV_t	–2.520	–2.585	–1.937	–2.196	–1.652	–2.387
ΔGOV_t	–4.240***	–4.240***	–1.945*	–3.486**	–3.369**	–1.797*
EXP_t	–2.239	–2.343	–2.291	–2.652	–2.769	–2.708
ΔEXP_t	–5.501***	–5.501***	–5.384***	–5.565***	–5.565***	–5.629***

Notes: ADF, PP and DF-GLS are, respectively, augmented Dickey-Fuller, Phillips-Perron and Dickey-Fuller generalized least square tests. For ADF (and DF-GLS) tests lags are chosen according to the Schwarz information criterion (SIC) allowing for a maximum lag length of 8. We retain Andrews' bandwidth for PP tests. All series are tested with both an intercept and trend at level and with a constant at first differences. At level, critical values at 1, 5 and 10% for ADF and PP tests are –4.27, –3.55 and –3.21 and for DF-GLS test –3.77, –3.19 and –2.89. The null hypothesis is that each series has a unit root against the alternative of no unit root.
(***), (**) and (*) denote statistical significance at the 1%, 5% and 10% levels.

Next, our variables for both countries are available from the annual macroeconomic database of the European Commission (AMECO) over the period 1986–2018.[2] GDP (code OVGD) is given at 2015 reference levels, government spending is the sum of government (i) consumption expenditures at constant 2015 prices (code OCTG) and (ii) gross investment at current prices (code UIGG) divided by the price deflator of gross fixed capital formation (code PIGT). Lastly, gross private investment (code UIGP) is also divided by the price deflator and exports of goods and services (code OXGS) are evaluated at constant 2015 prices.

4. MULTIPLIERS AND FISCAL POLICIES IN FRANCE AND ITALY

As a first step, we need to test the existence of unit roots in order to determine the nature of our series. We decide here to provide a battery of unit root tests starting with the well-known augmented Dickey-Fuller (1981) and Phillips-Perron (1988) tests. We supplement our analysis with ADF-GLS (see Elliott *et al*., 1996) tests in order to cross-check our results. After a graphical inspection of each series we decided to implement our tests assuming both an intercept and trend. Results are reported in Table 2. It turns out that all the series for France and Italy seem to be non-stationary at level and stationary at first differences. This involves the use of cointegration techniques to evaluate equation (1).

Table 3: Cointegration tests

EG test		EG tau-statistic	p-value
France		–0.838	0.993
Italy		–1.914	0.892

GH test		$GH_{(C)}$	break	$GH_{(C/T)}$	break	$GH_{(C/S)}$	break
France		–4.252	2012	–4.378	2012	–6.128**	2003
Italy		–3.797	1993	–3.793	1993	–8.339***	2000
	1%	–5.77		–6.05		–6.51	
CV	5%	–5.28		–5.57		–6.00	
	10%	–5.02		–5.33		–5.75	

Notes: EG and GH tests refer, respectively, to Engle and Granger and Gregory and Hansen tests. P-value for cointegration tests is calculated from MacKinnon's table. $GH_{(C)}$ is the ADF statistic of Gregory and Hansen's (1996) test for the null hypothesis of non-cointegration in a model with a change in the constant, $GH_{(C/T)}$ is the test for a model with a change in the constant including a time trend and $GH_{(C/S)}$ is the test for a model with a change in both the constant and the cointegrating slope coefficient. The number of optimal lags is determined in each test according to SIC allowing for a maximum lag length of 8. CV is the acronym for critical values. ***, ** and * denote statistical significance at the 1%, 5% and 10 % levels.

[2] See Ameco Online.

The first part of Table 3 displays standard cointegration tests based on Engle and Granger's (1987) two-step approach. We clearly fail to reject the null of no cointegration. On the whole, we hypothesize that the absence of a long-run relationship between our series could be due to a structural break in the cointegrating equation. Therefore, we use Gregory and Hansen's (1996) procedure which allows for the presence of structural breaks in the cointegrating vector and tests the null hypothesis of constancy against the alternative of a structural break at an unknown date. Results are summarized in the second part of Table 3 and reject the absence of a long-run relationship at the 5% level of statistical significance for France and at the 1% level for Italy. In each case, the specification retained concerns the case of a "regime shift", i.e. a change in both the intercept and the slope of the cointegrated equation.

Given the existence of cointegration, we can now estimate equation (1) within the scope of model (C/S) in order to determine the value of the fiscal multiplier. Looking at the case of France, Table 4 emphasizes that breaks concern only the constant and the multiplier for exports. After the break date in 2003, the new value for the export multiplier is 0.43 (0.83 – 0.40) and 578.3 for the intercept term. Conversely, the estimates for investment and government spending multipliers are unchanged throughout the period. So, the fiscal multiplier is 1.4 for France over the period 1986–2018 and is highly significant. For Italy, structural breaks affect all parameters and coefficients except for the value of the fiscal multiplier which is about 1.7 throughout the period. Such a value is higher than the French multiplier and could be explained by the fact that Italy has been operating for a considerable span of time below its full-employment level. In some sense, we come across the literature on state-dependent fiscal multipliers.

Table 4: Long-run estimates of equation (1) with a regime shift

$$Y_t = C_1 + C_2\varphi_{t\tau} + \alpha_1 INV_t + \alpha_2\varphi_{t\tau} INV_t + \beta_1 GOV_t + \beta_2\varphi_{t\tau} GOV_t + \gamma_1 EXP_t + \gamma_2\varphi_{t\tau} EXP_t + \varepsilon_t$$

France

C_1	C_2	α_1	α_2	β_1	β_2	γ_1	γ_2
356.57***	221.75***	1.26***	–0.07	1.40***	0.03	0.83***	–0.40***
(9.98)	(2.87)	(12.90)	(–0.46)	(16.31)	(0.19)	(16.90)	(–4.46)

Italy

C_1	C_2	α_1	α_2	β_1	β_2	γ_1	γ_2
331.94***	308.51***	0.66***	0.49**	1.72***	–0.44	1.42***	–0.85***
(7.35)	(3.85)	(3.59)	(2.52)	(8.85)	(–1.70)	(30.06)	(–13.68)

Notes: t-statistics are in (). ***, ** and * denote statistical significance at the 1%, 5% and 10 % levels.

At this stage, we need to underline a fundamental point. It is to be noted that our estimated multipliers both remain in the range reported by the empirical literature. With respect to France, a study by Biau and Girard (2005), based on a structural VAR

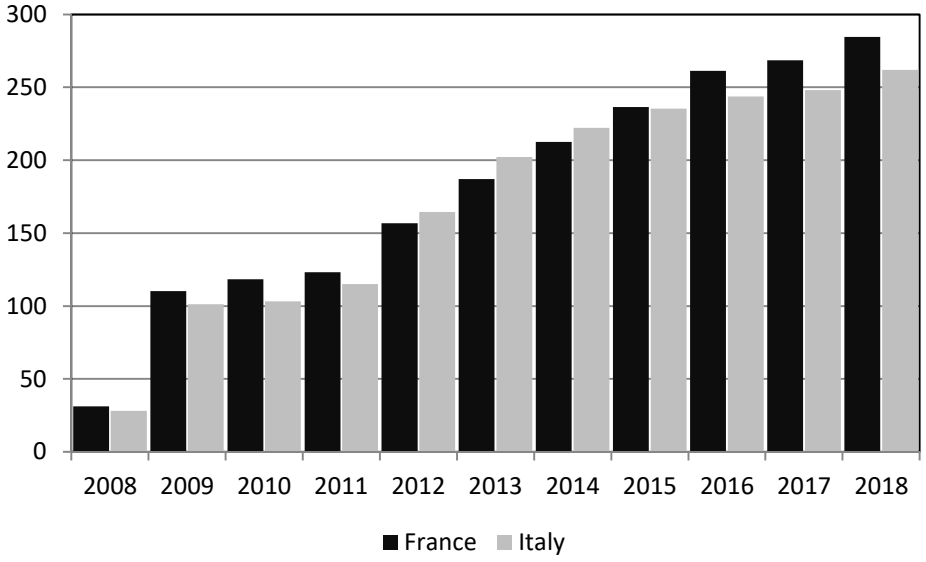
approach, reports a comparable order of magnitude of 1.4. A work by Batini *et al*. (2012) estimates three kinds of fiscal multipliers for different time horizons. For instances, over the period 1970–2010, they find a linear Keynesian multiplier for the French economy of 1.5 whereas the regime-dependent multiplier is 2.6 in recession and 1.4 in expansion. More recently, Cléaud *et al*. (2017) report, amongst others, a linear multiplier evolving according to the retained definition of public spending. On the one hand, their impact multiplier is equal to 1.6 when public spending is the sum of government consumption and government investment as in Biau and Girard (2005). On the other hand, they obtain a smaller multiplier of 1.1 with an alternative definition of government spending. Bentour (2022), in a series of experiments over the period 1998–2019, examines the effects of public debt variation and of the business cycle on fiscal multipliers. Assuming an endogenous public debt he reports a negative multiplier in expansion (–0.3) and a positive one in recession (2.7) after one year. As for Italy, our findings also fall in the range obtained by the current literature. Then, Giordano *et al*. (2007) estimate a fiscal multiplier equal to 1.7 after twelve quarters. Batini *et al*. (2012) provide smaller results with a linear multiplier of 0.8 and time-varying multipliers of 1.8 during hard times against 0.4 during good times. Acconcia *et al*. (2014) estimate a multiplier at provincial level ranging from 1.5 to 1.9 by using a quasi-experiment approach where shocks are represented by a law fighting political corruption that resulted in episodes of large, unanticipated, temporary contractions in local public spending. Piacentini *et al*. (2016) calculate multipliers for northern and southern regions of Italy showing that spending cuts produce larger negative impacts in the south. Accordingly, they report a multiplier of 1.8 in the south and close to 1.5 in the north. Recently, Deleidi (2022), using a structural VAR model over the period 1995–2019, finds strong Keynesian effects with significant public spending multipliers between 1.8 and 2 after three years. Moreover, when dividing government expenditures between consumption and investment, the impact of each public spending becomes even larger. Lastly, Obst *et al*. (2020) estimate the effects of income distribution and fiscal policy for fifteen European countries. Their results display a government spending multiplier close to 2.9 for France and 1.7 for Italy. Then, when comparing with the range provided by the contemporary econometric literature, our estimations seem to be rather prudent, avoiding overestimated values of the multiplier for these two countries.

We are now able to compute *ex-post* the amount of public spending necessary to reach the level of GDP that would have prevailed without the Great Recession over the decade 2008–2018. To achieve this, we calculate a counterfactual GDP by extrapolating the average growth rate over the period 1986–2007 (until the year preceding the financial crisis). The corresponding results are summarized in the Appendix. They clearly illustrate the gap between the realized value of GDP and its counterfactual value, *i.e.* in the absence of financial crisis. Starting from the multiplier formula, we know that $\Delta Y = k\Delta GOV$ where k is the value of the multiplier and ΔY the increment in GDP following an increase in the amount of government expenditures ΔGOV. Next, let us define GOV_{CF} as the level of public spending compatible with the value of GDP that would have prevailed without the financial crisis and GOV_R the realized (or current) level of government expenditures. From the multiplier formula we know that $Y_{CF} - Y_R = k(GOV_{CF} - GOV_R)$. First, ΔY is the gap between the value of counterfactual GDP, Y_{CF}, that assumes away the Great Recession, and realized GDP. Second, ΔGOV represents the gap between public spending that allows reaching counterfactual GDP and the realized level of public spending. Consequently, rearranging the equation gives:

$$GOV_{CF} = GOV_R + (Y_{CF} - Y_R)/k \quad (6)$$

Here, expression (6) is simply the fiscal impulse necessary to maintain GDP at its counterfactual level, knowing the estimated value of the government spending multiplier. Computing (6), for each year between 2008 and 2018, shows that it is extremely difficult to label French fiscal policy as truly Keynesian. In this country, the government spending shortfall, i.e. the difference $GOV_{CF} - GOV_R$, has been about €141 billion over the period 2008–2009 as shown by Figure 4. Actually, a truly expansionary fiscal stimulus would have allowed to reach, at least, the level of output and employment that the economy would have experienced without the financial crisis. So, the fiscal stimulus decided by the French government could be called at best an unaccomplished Keynesian policy. The case of Italy is unequivocally worse considering the smaller size of its GDP and a public spending shortfall about €129 billion over the same period. On average, something of an anti-Keynesian policy prevailed in Italy between 2011 and 2015 as shown by the increasing distance between Y_{CF} and Y_R(see the Appendix). The consequence is rather ironic since the public spending necessary to reach the level of counterfactual GDP at the end of the decade, in 2018, is around €262 billion (a fiscal impulse representing 15% of its GDP) while in 2009 it is around €101billion ('only' 6% of its GDP). From a Keynesian perspective, waiting means the implementation of an ever stronger stimulus. Lastly, it is interesting to note that our results are close to what Charles *et al*. (2019), using a different methodology, and Atesoglu (2013) found, respectively, for France and the United States. Actually, the fiscal stimulus has never been as large as would be necessary to reach the level of GDP that the economy would have known assuming away the Great Recession.

Figure 4: Government spending shortfall in France and Italy (billions of euros)



Source: Author's own calculations based on estimated multipliers from Table 4 and AMECO.

5. CONCLUSION

In this paper, we have evaluated the level of government spending multipliers for France and Italy between 1986 and 2018 using a cointegration technique that allows for structural breaks. Our estimates indicate that multipliers are well above unity and very significant for both countries. This validates in principle the necessity of a massive expansion in government spending during a period of recession or very sluggish growth with depressed private demand.

Nevertheless, our computations indicate unambiguously that these two countries never implemented such a policy. At best, French fiscal policy can be labelled as an 'amputated' or unaccomplished Keynesian policy and Italy provided probably one of the best examples of what is an anti-Keynesian policy with baneful effects, through its austerity program, between 2011 and 2015. Therefore, considering that the fiscal impulses were never sufficient over the decade 2008–2018, French and Italian governments did not really try to quickly reach the level of output that would have prevailed without the crisis and much less the level of output corresponding to full employment.

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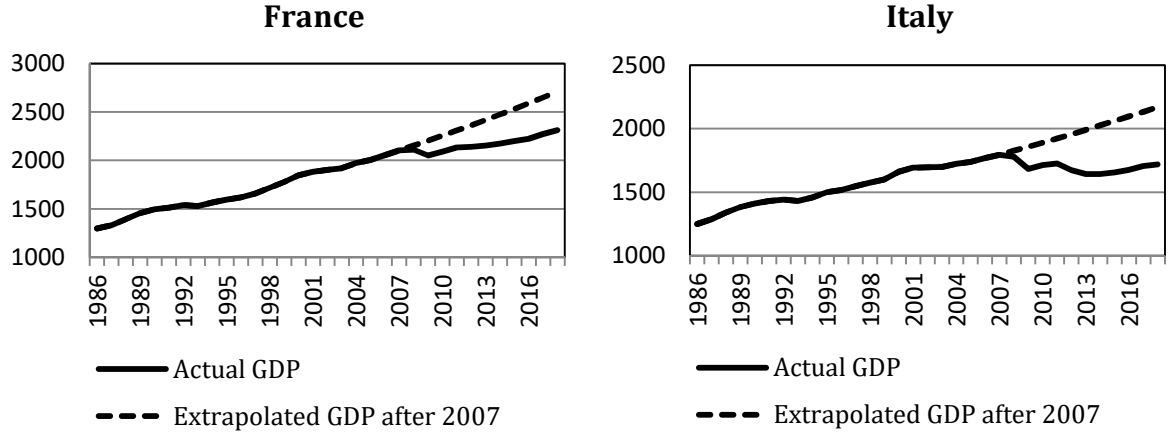
APPENDIX: ACTUAL AND EXTRAPOLATED GDP



Source: Author's own calculations based on AMECO. Average growth rates are, respectively, 2.33% and 1.74% for France and Italy over the period 1986–2007. All amounts are expressed in billions of euros.