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# Does Fiscal Consolidation Really Get You Down? Evidence from Suicide Mortality

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**Abstract**

While linkages between some macroeconomic phenomena (e.g. unemployment, GDP growth) and suicide rates in some countries have been explored, only one study, hitherto, has established a causal relationship between fiscal consolidation and suicide, albeit in a single country. This study examines the impact of budget consolidation on suicide mortality across all Eurozone peripheral economies, while controlling for various economic and socio-demographic differences. The impact of fiscal adjustments is found to be gender, age and time specific. In particular, fiscal consolidation has short–, medium– and long–run suicide increasing effects on the male population between 65 and 89 years of age. A one percentage point reduction in government spending is associated with an 1.39%, 2.35% and 2.64% increase in the short–, medium– and long–run, respectively, of male suicides rates between 65 and 89 years of age in the Eurozone periphery. These results are highly robust to alternative measures of fiscal consolidation. Unemployment benefits and substantial employment protection legislation seem to mitigate some of the negative effects of fiscal consolidation on suicide mortality. Plausible explanations for these impacts are provided and policy implications drawn.

Keywords: Fiscal consolidation, Suicide, Eurozone periphery, Government policy, Labour market institutions

JEL codes: H30, H51, H55, H62, I18, I31, J18, C33

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# 1 Introduction

Although fiscal consolidation is widely discussed in the economic literature, much less has been published in terms of empirical evidence documenting its impact on suicide mortality. Some headway in filling this gap has been made in recent years, with studies focusing on descriptive or correlation analyses (see, for instance, Kentikelenis et al., 2011; Economou et al., 2011; Kentikelenis et al., 2012; Fountoulakis et al., 2012; Karanikolos et al., 2013) and on single country time series (Antonakakis and Collins, 2014). In this study, we report the first systematic multiple-country evidence of a relationship between fiscal consolidation and suicide mortality, basing our analysis on a Eurozone periphery panel dataset, thereby covering a large share of countries that have recently implemented fiscal consolidation in an attempt to restore confidence, competitiveness, and macroeconomic stability.

The purpose and reasoning behind any economic policy intervention is, among others, to allocate resources more efficiently. A wide range of policy areas have thus been explored via macroeconomic analyses ranging from extensive and repeated attention on unemployment, poverty reduction and economic development, and in some more limited work to macroeconomic analyses of broad heath and wellbeing effects (see, among others, WHO, 2001; Subramanian et al., 2002; Acemoglu et al., 2003; Andrés, 2005; Suhrcke et al., 2006; Gudmundsdottir, 2013).

Despite the volume of studies on the above issues, much less is known on the mental health effects of economic policy intervention, especially on suicide mortality. Given that one aspect of any country citizens welfare is their mental health (as indicated by among other things, suicide mortality), then arguably the impact on this of any economic policy choice should be extensively scrutinised, in at least qualitative terms or even via cost-benefit arithmetic. Hence, the provision of robust estimates of specific policy-induced suicide mortality are necessary to satisfy these purposes.[1] According to Lawson et al. (2014), the key drivers of population health lie outside the health sector. Despite that, the authors argue that, decision makers outside the health sector are primarily interested in delivering sector specific outputs other than health. Thus, economic approaches to priority setting can help align sectors to consider the intersectoral impacts of decisions within an integrated societal framework.

Following the global financial crisis of 2008, many European countries, especially in the Eurozone periphery, experienced an increase in their budget deficits and government debts in late 2009. That raised fears about a chain reaction of sovereign defaults on the Eurozone peripheral countries' debt, and possible contagion to other core Eurozone countries, that led to a crisis of confidence and a widening of bond yield spreads and credit default swaps between the Eurozone peripheral countries and the Eurozone's largest economy, Germany. These, developments have ultimately initiated a European sovereign debt crisis that has resulted in large financial interventions by individual governments and the 'Troika' (consisting of the European Commission (EC), the European Central Bank (ECB) and the International Monetary Fund (IMF)) in the Eurozone peripheral countries. These policy interventions occurred in an attempt to avert potential bankruptcies of highly indebted countries in the Eurozone periphery, potential contagion and ultimately the collapse of the Eurozone itself. In particular, fiscal austerity packages consisted of bailout packages to Eurozone peripheral countries that were accompanied by draconian and unprecedented fiscal adjustment measures. These consisted of large spending cuts, tax hikes, large privatisation schemes of publicly owned assets (with often largely overoptimistic initial sale values) and structural reforms, so as to restore competitiveness, achieve fiscal sustainability and promote growth.

[1] There is a well established link between unemployment and suicide, which tends to increase during economic downturns, particularly where it's not offset by welfare safety nets. For a more comprehensive list of suicide mortality determinants, see Chen et al. (2012).

Eventually, as business cycle theory suggests, every crisis comes to an end, and a 'good' policy is marked by its success in making the downturn of the business cycle shallower and shorter than it otherwise would have been. The controversy associated with austerity policies that many governments adopted relates to whether they made the downturn far deeper and longer than was necessary, with long-lasting consequences not only for wealth, but also for health. Thus a natural and important question is whether fiscal consolidation will hurt economic performance and health conditions over time.

In terms of the economic consequences, conventional wisdom suggests that reduction of debt into sustainable levels has long–run benefits.[2] However, there is no consensus reached yet on the short–run, or even the medium–run effects of fiscal austerity. Keynesian economists might suggest that spending cuts and tax hikes will reduce economic activity in the short–run (see, for instance, Blanchard and Perotti, 2002). On the other hand, some economists argue that fiscal consolidation may be expansionary even in the short–run, which is referred to as "expansionary fiscal contraction" (see, for instance, Giavazzi and Pagano, 1990; Alesina and Perotti, 1995; Giavazzi and Pagano, 1996; Giudice et al., 2004; Afonso, 2010; Alesina and Ardagna, 2010; Alesina, 2010).[3]

Increasingly, the pursuit of fiscal consolidation is being recognized by some economists as ineffective and prolonging the economic crisis unnecessarily (IMF, 2013).[4] In light of Figure 1, the Eurozone debt crisis and the subsequent fiscal consolidation may be considered to have led to a dramatic increase in government debts and deficits, deep recessions and skyrocketing unemployment rates in the Eurozone periphery since 2009. In particular, between 2009 and 2013, unemployment rates in Greece, Ireland, Italy, Portugal and Spain increased by 186.5% (from 9.6% to 27.5%), 9.2% (from 12% to 13.1%), 56.4% (from 7.8% to 12.2%), 54.7% (from 10.6% to 16.4%) and 45.8% (from 17.9% to 26.1%), respectively. Youth unemployment in the respective countries over that period increased by 126.8% (from 25.7% to 58.3%), 11.7% (from 24.7% to 26.8%), 57.5% (from 25.4% to 40%), 51.8% (from 25.1% to 38.1%) and 47.2% (from 37.7% to 55.5%). These figures are well above the Eurozone average increase of 26.3% (from 9.5% to 12%) and 18.8% (from 20.2% to 24%) in overall unemployment rates and youth unemployment rates, respectively. Labour market conditions in the Eurozone have worsened (and are projected to continue to this course) due to fiscal consolidation, constituting to the increase of unemployment rates (ILO, 2014) in the EU. According to ILO (2014), the current fiscal consolidation measures and the cuts in government spending have heavily affected the funds available for social programmes for the most vulnerable groups of women. In 2013, 45.2 million people where unemployed in the EU and it was forecasted that the unemployment rate will gradually decline from 8.6% to 8% between 2013 and 2018, albeit, significantly above that in 2008 (ILO, 2014). Real GDP per capita between 2009 and 2013 has seen a cumulative decline of 22.3% in Greece, 0.74% in Ireland, 3.11% in Italy, 2.84% in Portugal, and 2.92% in Spain as compared to the cumulative increase of 0.94% in the whole Eurozone according to Figure 1. Finally, government debt as a percentage of GDP between the same period increased by 35.0% (from 129.7% to 157.1%), 92.1% (from 64.4% to 123.7%), 13.9% (from 116.4% to 132.6%), 54.1% (from 83.7% to 129%) and 73.9% (from 54% to 93.9%), in Greece, Ireland, Italy, Portugal and

[2]For a recent detailed discussion of the macroeconomic effects of fiscal policy, see Afonso and Sousa (2012).

[3]The success or failure of fiscal consolidation depends on many factors, among which, its reliability on tax hikes primarily, the perceived risk of sovereign default, the number of countries that simultaneously apply such measures, and whether monetary policy is in position to offset budget cuts. For a discussion of these factors, see IMF (2010). Quite recently, the fairness of fiscal consolidation has entered the pool of these factors (Kaplanoglou et al., 2014).

[4]This is because any reduction in the fiscal deficit hurts the economy –at least in the short- to medium-term–, as it denotes that the government sector has a less positive contribution to the economy, which is compounded when the government is running a deficit.

Spain, respectively, well above the Eurozone average government debt to GDP of 92.6% in 2013.

[Insert Figure 1 around here]

Despite the economic deterioration, the effects of the economic crisis and the fiscal adjustments have to some extent been considered for health in the Eurozone periphery. Preliminary evidence indicates that the economic crisis and the implementation of austerity measures have worsened self-rated health status as well as several other health indicators (Kentikelenis et al., 2011; Vandoros et al., 2013; Zavras et al., 2013), increased the incident of mental disorders and alcohol abuse (Kentikelenis et al., 2011; Gili et al., 2013; Roca et al., 2013) and led to HIV outbreaks (ECDC, 2012).[5] Despite countries' attempts to make savings by switching to generic drugs, the policies that have been implemented to shift costs from the state to patients resulted in medicines growing less affordable and increasingly hard to access (Arie, 2013). Data, however, also suggest favourable health trends and a reduction of traffic deaths fatalities in the general population during recessions (Stuckler et al., 2009).[6] Moreover, egalitarian policies protecting the most disadvantaged populations with strong social protections have proved to be effective in decoupling the link between job losses and suicides (De Vogli, 2014).

Yet, the health effects have arguably not been consistently examined. Empirically robust evidence on the link between fiscal consolidation policies and suicide mortality has only been establish in Greece by Antonakakis and Collins (2014), or via descriptive and/or correlation analyses in Greece and other Eurozone peripheral countries (see, for instance, Kentikelenis et al., 2011; Economou et al., 2011; Kentikelenis et al., 2012; Fountoulakis et al., 2012; Karanikolos et al., 2013).

To address this gap in the literature, we specifically investigate the effects of fiscal austerity, among other socio-economic control variables, on suicide rates in all Eurozone peripheral countries, namely, Greece, Ireland, Italy, Portugal and Spain over the period 1968-2012. Our empirical findings suggest that fiscal consolidation, higher unemployment rates, negative economic growth and reduced fertility rates lead to signicant increases on overall suicide rates in the Eurozone periphery. The effects of fiscal consolidation are gender, age and time specific, with fiscal consolidation having short-, medium- and long-run suicide-increasing effects on the male population between 65 and 89 years of age. In particular, a one percentage point reduction in government spending leads to an 1.39%, 2.35% and 2.64% increase in the short-, medium- and long-run, respectively, of male suicides rates between 65 and 89 years of age in the Eurozone periphery. In addition, unemployment benefits and substantial employment protection legislation can mitigate the negative effects of fiscal consolidation on suicide mortality.

These results have potentially important implications for policy makers in economic and health ministries across Europe. Economic and financial issues have been dominating policy making in the Eurozone, while health and inequalities in health have arguably remained relatively low key. Given that economic and social policy decisions have profound effects for health and its fair distribution, health equity should perhaps be considered an important measure of the effectiveness of social and economic policy making, in addition to wealth equity (see, for instance, Marmot, 2012).

[5] Evidence also suggests that the Eurozone debt crisis and the policy responses disproportionately affected vulnerable populations in society (see, e.g., Schaltegger and Weder, 2014, for the effects of fiscal consolidation on income inequality).

[6] This is in line with the literature that finds that work-related, and other types accidents (e.g. due to drinking and driving behaviours) are likely to become more common during temporary expansions of economic activity (see, for instance, Evans and Graham, 1988; Ruhm, 1995). Dolan et al. (2014), however, finds that road traffic accidents increased substantially in Greece on the first two days following the announcements of austerity measures.

The remainder of this paper is organised as follows. Section 2 presents some brief remarks on the extant theory relating to suicide, outlines the sources of our theoretical expectations and sets out our key research hypotheses. Section 3, specifies the empirical methodology and the data used. Section 4 presents the empirical results and Section 5 summarises and offers some concluding remarks.

## 2 Theoretical Considerations and Key Hypotheses

Ultimately all macroeconomic policy is intended to enhance the welfare of residents in its own economy and sometimes those in others as well. Numerous studies have explored the impact of various macroeconomic phenomena on reported subjective wellbeing (Di Tella et al., 2001, 2003; Alesina et al., 2004) typically presenting intuitively plausible results. Suicide, however, serves as a very clear revealed objective measure of substantial life dissatisfaction and as a potential indicator of wider mental health issues and wellbeing issues in a given economy. It has been long been the subject of theoretical and empirical scrutiny. Durkheim (1897) and other sociologists in their wake have posited a positive relationship between suicide and age premised on the level of both social integration and social regulation in a given society. Economists too have entered the arena led by Hamermesh and Soss (1974) who advanced a rationality driven model of suicide founded on an assessment of the likely expected cumulative lifetime utility.

According to Hamermesh and Soss (1974), an individual $i$ at age $\alpha$ with permanent income $Y_p$ commits suicide if and when the total discounted lifetime utility, $Z_i$, plus the individual's taste for living, or conversely, his distaste for suicide, $b_i$, reaches zero:

$$Z_i(\alpha, Y_p) + b_i = 0 \tag{1}$$

with the present value of the individual's utility function defined as:

$$Z_i(\alpha, Y_p) = \int_{\alpha}^{\omega} e^{-r(m-\alpha)} U_m P(m) dm. \tag{2}$$

where $r$ is the private discount rate, $\omega$ is the highest attainable age, $U_m$ is the expected utility at age $m$, and $P(m)$ is the probability of survival to age $m$. Based on this model, the individual's expected utility, $U_m$, is inversely related with age, $m$, and positively related to the individual's permanent income, $Y_p$. The individual's taste for living, $b_i$, is assumed to be normally distributed, so that the age-adjusted aggregate suicide rate, defined as the fraction of individuals in the age cohort $a$ for whom $Z(\alpha, Y_p)$ reaches $-b$, is inversely related to the permanent income, $Y_p$.

Therefore on the basis of this framework, Hamermesh and Soss (1974) posit a positive relationship between suicide rates and age, and an inverse relationship with permanent income which can be expected to boost expected cumulative lifetime utility. The authors have empirically presented that these predictions hold over time and across US states. Based on the extensive and very comprehensive review of studies presented in Chen et al. (2012), this study extracts a full set of a priori expectations for the macroeconomic performance and socio–demographic control variables based on the consensus readily discernible in the literature.[7] These are set out in Table 3. However, in the context of fiscal consolidation (specifically public expenditure reductions) we posit the following hypotheses:

*Hypothesis 1*: Fiscal consolidation (e.g. public expenditure reductions) will increase suicide rates, via permanent income reductions.

[7]For a comprehensive list of suicide determinants see Chen et al. (2012)

*Hypothesis 2*: Fiscal consolidation will impact significantly differently across age cohorts. Specifically, we postulate that older age cohorts will be more likely to commit suicide as a consequence of fiscal austerity than younger age cohorts, given their reliance on fixed incomes and arguably less suicide offsetting behaviours (such as migration) being perceived to be available to them. For those individuals subject to pension reductions, clearly their permanent income is directly impacted and as Hamermesh and Soss (1974) would indicate this is posited to increase the suicide rate.

*Hypothesis 3*: The effects of fiscal consolidation on suicide rates will have both contemporaneous and lagged effects, consistent with the idea that consolidation may elicit their effects with some delay. Put differently, individuals might respond with some delay to changes in fiscal policy, thus dynamics should be incorporated in the econometric model.

*Hypothesis 4*: The effects of fiscal consolidation on suicide rates will be dampened by better labour market institutions. In particular, unemployment benefits and employment protection legislation would serve to mitigate the negative effects of fiscal consolidation on the most distressed and vulnerable part of the population.

# 3 Data and Methodology

## 3.1 Data

To conduct our analysis, we collect annual observations of suicide statistics for Greece, Ireland, Italy, Portugal and Spain between 1968 and 2012. Suicide data (defined as number of deaths by suicide and self-inflicted injury/intentional self-harm, based on the following international classification of diseases (ICD) codes, ICD-7 codes E963 and E970-E979, ICD-8 and ICD-9 codes E950-E959, ICD-10 codes X60-X84) and population data are extracted from the World Health Organization (WHO) Mortality Database and are extended up to 2012 with data on suicide and population supplemented from the official national statistics of each country and Eurostat, respectively. A snapshot of these series is presented in Table 1. Panel A of Table 1 reveals that the number of overall suicides between 2009 and 2012 (and 2011 for Italy) have increased by 30% (from 391 to 508) in Greece, by 4.56% (from 3971 to 4152) in Italy, by 4% (from 1025 to 1066) in Portugal, by 3.21% (from 3429 to 3539) in Spain, and declined by 3.8% (from 527 to 507) in Ireland. Similar changes have also been experienced by male and female suicides. Worryingly, since 2009, the number and rate of suicides are, in general, above their 1968-2012 average values.

[Insert Table 1 around here]

Based on the above data, we convert the number of suicides to suicide rates per 100,000 inhabitants, broken down by age and gender in each country. Selected years for these series reported in Panel B of Table 1, reveal similar trends as those for the number of suicides in Panel A of the same table.

Overall unemployment rate data have been obtained from the Annual Macro-Economic (AMECO) database of the European Commission, while gender-specific unemployment rates from the World Development Indicators (WDI) database maintained by the World Bank. The evolution of unemployment rates together with suicide rates, which is presented in Figure 2, is quite revealing. In particular, unemployment rates and suicide rates seem to be highly correlated. In fact, the correlation between overall suicide rates and unemployment rates is Greece,

Ireland, Italy, Portugal and Spain is 0.57, 0.09, 0.86, 0.36 and 0.68, while between male suicide rates and male unemployment rates, in the respective countries, is 0.77, -0.59, 0.78, 0.47 and -0.11, and between female suicide rates and female unemployment rates the correlation, in the respective countries, is -0.35, -0.39, 0.81, 0.43 and 0.45, over the period 1968-2012. It is thus clear, that the link between suicide mortality and unemployment is gender and country specific, indicating the necessity to take into account the gender heteogeneity and control for country-specific effects in the empirical analysis.

[Insert Figure 2 around here]

Table 2 presents suicide rates by time, 5-year age groups and by sex, for a selection of years. According to this table, there is also clear evidence that suicide rates increase with age and that males are more prone to commit suicide than females are, and which are in line with the theoretical justications of Hamermesh and Soss (1974) and Durkheim (1897).

[Insert Table 2 around here]

In Figure 3 which plots the Eurozone 5 peripheral countries' average suicide rates by age group and gender, reinforces the aforementioned age and gender heterogeneity. Nevertheless, it is also depicts a positive trend of suicide rates overtime, which is more pronounced in the male population. This indicates the necessity to control for Eurozone periphery-wide time-effects in the analysis.

[Insert Figure 3 around here]

In order to examine the effects of fiscal consolidation on suicide rates, we use several variables as proxies of fiscal consolidation. Given the large scale reductions in public sector salaries and pensions in the Eurozone peripheral countries, our principal proxy of fiscal consolidation is government expenditure. We collect data for general government final consumption expenditure as a % of GDP from the World Bank World Development Indicators (WDI) database.[8] For robustness purposes we also use a fiscal consolidation episodes indicator (FCE) based on Afonso (2010), the budget deficit, and taxes, as proxies of fiscal austerity (see below). In addition, we collect data on per capita real GDP growth from WDI so as to examine the cyclical nature of suicide mortality. Finally, to control for social and demographic factors on suicide rates and to minimize errors arising from unobserved effects, we collect data for fertility rates from the World Bank World Development Indicators (WDI) database and Eurostat; alcohol consumption from OECD Health database and divorce rates from EUROSTAT. Definitions, expected signs and descriptive statistics for all these variables are included in Table 3.

[Insert Table 3 around here]

In Figure 4 we present the evolution of some of the macroeconomic series over the period 1968-2012 that are used in this study. According to this figure, economic growth, budget deficit and public debt deteriorated since 2009, while government expenditure was severely cut since 2009 in the Eurozone periphery.

[Insert Figure 4 around here]

[8]Given that this measure might produce biased results during period when nominal GDP is falling, such as the period of the financial crisis, we have explored the robustness of our results by dividing general government final consumption expenditure by real GDP or by population. Our results, which are available upon request, remain qualitatively and quantitatively almost identical. This is due to the fact that the correlation between the three alternative measures is very high, namely 0.7521 and 0.7465, respectively.

### 3.2 Empirical Methodology

We estimate variants of the following specification:

$$S_{ijkt} = \alpha + S_{ijkt-1}\beta_1 + F_{it}\beta_2 + F_{it-1}\beta_3 + E_{it}\boldsymbol{\lambda} + D_{it}\boldsymbol{\mu} + \gamma_i + \delta_t + \varepsilon_{it} \quad (3)$$

where $S_{ijkt}$ is the log of suicide rates in country $i$ (where $i$ = Greece, Ireland, Italy, Portugal, Spain), population $j$ (where $j$ = overall, male, female), age group $k$ (where $k$ = all, 10–24, 25–44, 45–64, 65–89) and time $t$ (where $t$ = 1968,...,2012); $\alpha$ is a constant; $S_{ijkt-1}$ is the first lag of $S_{ijkt}$ and is included to account for dynamic effects and to filter autocorrelation of order one, AR(1), found in the series;[9] $E_{it}$ is a vector of economic characteristics affecting suicide rates, such as the growth rate of real GDP, $Growth_{it}$, and the unemployment rate, $Unemp_{it}$; $F_{it}$ is the fiscal consolidation variable proxied by: (i) the first difference of the natural logarithm of government expenditure as a % of GDP, $Gov\_Exp_{it}$, (ii) the first difference of budget deficit as a % of GDP, $Def_{it}$, (iii) government tax revenues as a % of GDP, $Tax_{it}$, and iv) fiscal consolidation episodes (FCE) indicator based on Afonso (2010). We also include a one period lag of the fiscal consolidation variable, $F_{it-1}$, so as to control for any time delayed effects of fiscal consolidation on suicide mortality. $D_{it}$ is a vector of demographic and social characteristics affecting suicide rates, such as alcohol consumption, $Alc_{it}$, divorce rate, $Divorce_{it}$ and fertility rate, $Fert_{it}$. $\gamma_i$ denotes country fixed–effects controlling for time–invariant country characteristics, and $\delta_t$ is a linear time trend, controlling for Eurozone periphery-wide time trends. The fixed–effects estimates are used to exploit within–country variations in economic conditions and have the potential to improve on time series analyses if there are substantial independent socio-economic fluctuations across countries over time. $\varepsilon_{it}$ is the error term.

The intuition for incorporating the range of right-hand side variables deployed in this study follows the consensus evident in the recent literature surveyed by Chen et al. (2012). Andrés (2005) and Viren (2005) establish a significant linkage between economic growth and suicide. Given positive economic growth enhances occupational and financial opportunities, people are more likely to be hopeful decreasing the probability of suicide. In a similar vein, unemployment serves as a predictor of future income and thus rising unemployment should be expected to lead to an increasing incidence of suicide and suicide attempts. Further, suicide may also be associated with a range of mental and physical illnesses that may raise the probability of suicidal behaviour.

In the seminal work of Durkheim (1897) suicide mortality was postulated to be strongly influenced by social regulations and its degree of integration. Arguably, divorce and fertility rates may be presented as indicators of social integration. Durkheim specifically highlights divorce as serving to reduce social integration and family ties resulting in stress, shame and a greater disposition towards suicidality. Accordingly, higher divorce rates tends to be related

[9] Given that the lagged dependent variable, $S_{ijkt}$, is correlated with the fixed effects, this gives rise to 'dynamic panel bias' (Nickell, 1981) that inflates the coefficient of the lagged dependent variable by attributing predictive power to it that actually belongs to the country's fixed effect. According to Judson and Owen (1999) the so-called least-squares dummy-variables (LSDV) estimator bias is present for panels with small time, $T$, dimension. A potential solution to this bias (and to potential endogeneity of other right-hand side variables), is to use a generalised method of moments (GMM) approach, e.g. system-GMM. However, this approach is designed for small time, $T$, dimension and large individual (country), $N$, dimension panels (for a discussion, see Roodman, 2009). Based on the fact that our panel consists of large $T = 44$ and small $N = 5$, and as Judson and Owen (1999) show that, based on Monte Carlo analysis, the LSDV estimator performs equally well or better than many alternatives when the time dimension is large ($T$=30), we thus employ the LSDV estimator as recommended by Judson and Owen (1999). However, all of our results using the LSDV estimator that are presented below are similar to those obtained using the (one-step) system-GMM estimator (that is robust to substantial heteroskedasticity) derived by Arellano and Bond (1991), and further developed by Blundell and Bond (1998) and Arellano and Bover (1995). The latter results are available upon request.

to higher suicide rates (see, for example Minoiu and Andres, 2008; Brainerd, 2001; Neumayer, 2003, among others).

Durkheim (1897) and Andrés (2005) make the case for fertility rate to be viewed as an indicator of social integration, suggesting high fertility rates are related to lower suicidality. The absence of children is thus associated by them with greater fluidity in family integration and social ties. Finally, Neumayer (2003) and Andrés (2005) find that, individuals with a higher alcohol consumption are more likely to commit suicide.

# 4 Estimation Results

## 4.1 Baseline Results: Short-run Effects

In Tables 4, 5 and 6 we report the main results with particular focus onto the short–run effects of fiscal consolidation on the overall, male and female population, respectively, in the Eurozone periphery.

[Insert Table 4 around here]

[Insert Table 5 around here]

[Insert Table 6 around here]

Turning to the results of Table 4, we observe that suicide rates are very persistent as the coefficient of the one year lagged dependent variable has a statistically significant positive effect on current suicide rates. Downturns of economic activity increase suicide rates across all ages. This result is in line with Breuer (2014). For instance, a one percentage point decline in a Eurozone periphery country's growth rate of real GDP per capita increases suicide rates of the population across all ages by 0.8%, and of the population between 10 and 44, and 65 and 89 years of age by around 1%. Moreover, the results of Table 4 suggest that increases in unemployment leads to significant increases in overall suicides rates of 10–24 years of age, with a one percentage point increase in a Eurozone periphery country's unemployment rate leading to a 1.12% increase in suicide rates in that age group. These results are in line with Breuer (2014) and Ruhm (2000). Breuer (2014) finds that, for European regions, a one percentage point increase in a European region's unemployment rate is predicted to increase suicide rates of working age population by about 0.87%, while the latter authors find that for the U.S., a one percentage point increase in a state's unemployment rate is predicted to increase overall suicide rates by about 1.3%. Our results are also quite similar to Stuckler et al. (2009) who find that, for 26 European countries, a 1 percentage point increase in unemployment is associated with a 0.79% rise in suicide at ages younger than 65 years. Unemployment is the leading cause of youth suicides in the Eurozone periphery, and as youth unemployment has deteriorated substantially in the eurozone periphery (see Figure 1), this is an alarming figure. Fertility rates are negatively related to suicide rates, especially in the overall population between the ages of 10 and 24, 25 and 44, and 65 and 89 in the Eurozone periphery.

Turning our attention to the impact of fiscal consolidation on suicide rates, we find that, fiscal consolidation is also a significant predictor of suicide mortality, having both significant contemporaneous and lagged effects on suicide rates across various age groups. In particular, reductions in government spending lead to contemporaneous increases in suicides rates in the population group of 45-64 and, especially, in the 65-89 group, while with one year lag increases in suicide rates in the population groups of 10-14, 25-44 and 65-89. For instance, for each one percentage point reduction in a Eurozone periphery country's government spending, the suicide

rate of the population between 65 and 89 is predicted to rise by about 1.09% (-0.67% plus -0.42%) in the short-run. This seems plausible, since the oldest age groups are naturally likely to be more inflexible following implementation of any fiscal consolidation that would reduce their incomes (especially from pensions). Younger segments of the population affected by fiscal austerity measures have a wider range of perceived opportunities beyond suicide. Finally, alcohol consumption or divorce rates do not exert any significant influence on suicide mortality in the overall population and across all ages in the Eurozone periphery.

Moving to the results for the male population reported in Table 5, it may be observed that they are similar to those for the overall population. In particular, government spending cuts, negative economic growth, reduced fertility rates and, to a lesser extent, increased unemployment have a significantly positive impact on male suicide rates. The male population group that is most heavily affected by spending cuts is the one between the 65 and 89 years of age. In this group, a one percentage point reduction in a Eurozone periphery country's government spending is significantly associated with a contemporaneous and a year lag increase of 0.82% and 0.57%, respectively, in male suicide rates. That is, for every one percentage point reduction in a Eurozone periphery country's government spending, the suicide rate of the male population between 65 and 89 is predicted to rise by about 1.39% ($= -0.82\%$ plus $-0.57\%$; column (10) of Table 5). Put differently, the short–run impact or 'health' multiplier of fiscal consolidation on male suicides in the 65-89 year group is -1.39%. To put things into perspective, final consumption expenditure as a percentage of GDP in the Eurozone periphery declined on average by 0.883 percentage points in $t = 2011$ (from 20.343% in 2010, to 19.46% in 2011) and by 0.822 percentage points in $t-1 = 2010$ (from 21.165% in 2009, to 20.343% in 2010), resulting in a 2.37%($= 1.705 \times$ 1.39%) increase in male suicide rates between 65 and 89 years in the Eurozone periphery on average in 2011. Given that the Eurozone periphery average male population in the 65-89 group in 2011 was 2,064,061, the 2.37% increase corresponds to 49 suicides in a Eurozone periphery country on average in 2011 solely due to fiscal consolidation. Following this approach, the number of males in the 65-89 age group who committed suicide solely due to fiscal consolidation in 2012 amounted to 44. Put differently, between 2011 and 2012, 93 males between the ages of 65-89 committed suicide in any Eurozone periphery country on average due to, *ceteris paribus*, fiscal consolidation; or 10.76% ($= (93/(456 + 404) \times 100)$) of all the suicides recorded in every Eurozone periphery country on average in 2011 and 2012, was due to fiscal austerity. In other words, 465($= 5 \times 93$) males in the 65-89 age group committed suicide in the whole Eurozone periphery between 2011 and 2012 due to fiscal consolidation measures.

In contrast, fiscal consolidation does not seem to have had any significant contemporaneous impact on female suicide rates. However, there are suicide–increasing effects for female in the 25-44 age group with a year lag of the implementation of austerity. For every one percentage point reduction in a Eurozone periphery country's government spending, the suicide rate of the female population between the ages of 25 and 44 is predicted to rise by 0.76%. The females in all the other age groups seem to be resilient to fiscal consolidation measures. Fertility rates, divorce rates and alcohol consumption are also significant predictors of female suicides. In particular, increases in fertility rates (alcohol consumption) have significant suicide–reducing effects among the female population between the ages of 45 and 89 (between the ages of 10 and 24, and 65 and 89), while increases in divorce rates lead to a significant increase of female suicide rates between the ages of 45 and 89 years of age.

Overall, these results suggest that suicides rates in the Eurozone periphery are of a persistent nature, and that the effects of economic growth, unemployment, spending cuts, fertility rates, divorce rates and alcohol consumption on suicide mortality are age and gender specific. More importantly, these results suggest that economic policies, such as fiscal consolidation, can also have an impact on suicide mortality, and potentially offer some guidance on the demographic

targeting of suicide prevention measures for the population of the debt-stricken economies in the Eurozone periphery.

### 4.2 Medium- and Long-run Effects

So far, fiscal consolidation has been assumed to have only a contemporaneous and a year lag effect, i.e. short–run impact, on suicide mortality. In order to provide information on the potential medium– and long–run effects of the fiscal adjustment process on suicide mortality, we: i) re–estimate model (3) with the inclusion of five year lags of fiscal consolidation and use the resulting estimates to summarize the predicted impact of a sustained one percentage point decline in government expenditure that begins in year $t$ and continues through $t+5$[10] (in similar fashion as in Ruhm, 2000), and ii) calculate the long–run multiplier of fiscal austerity on suicide based on the following equation:

$$\beta_{LR} = \frac{\hat{\beta}_2 + \hat{\beta}_3}{1 - \hat{\beta}_1} \tag{4}$$

The results of the medium–run effects of fiscal consolidation on suicides rates are reported in Table 7, while the cumulative adjustment path of suicide rates is presented in Figure 5.

[Insert Table 7 around here]

[Insert Figure 5 around here]

According to Table 7 and Figure 5, we observe that, although that the time profile varies with age and gender, a sustained cut in government spending is strongly associated with both short-run and medium-run increases in suicide rates in the Eurozone periphery, lasting up to five years following the application of fiscal consolidation. However, this varies across gender and age. In particular, persistent cuts in government spending significantly increase suicide rates of males across all ages in the medium–run, while no significant medium–run effects on the female population could be identified in the Eurozone periphery. The latter group seems to be resilient to sustained budget cuts in the medium run, as only contemporaneous and one year lag effects of budget cuts have a significant positive impact on female suicide mortality in the 65-89 and 25-44 age group in the Eurozone periphery. The age group most heavily affected by sustained budget cuts is the male population in the 65-89 age group, followed be males in the 25-44 age group. For instance, the expected bottom-line (medium-run) effect of a sustained one percentage point decline in a Eurozone periphery's government spending, according to Figure 5, is an increase of 2.35% ($= 0.92\% + 0.77\% + 0.66\%$) in the suicide rates of males in the 65-89 year group. Given that final consumption expenditure as a percentage of GDP in the Eurozone periphery declined on average by 3.55 percentage points[11] from 2009 to 2014 (i.e. in 5 years), the medium-run effects of fiscal consolidation translate to a 8.33% ($3.55 \times 2.35\%$) increase in male suicide rates in every Eurozone periphery country on average due to sustained fiscal consolidation. Based on data for population projections from Eurostat (code: $proj\_13npms$), the male population of

[10] The choice of a five–year lag is based upon the fact that: i) the coefficient of the sixth lag in the overall, male and female suicide mortality equation has a $p$-value greater than 0.10, and ii) given that fiscal consolidation, at the time of the writing of this study, is pursued for the 5th consecutive year, it seems warranted to assess its medium term impact on suicide mortality.

[11] The 3.55 is derived by the sum of the 0.822, 0.883 and 0.614 percentage point decline in government spending as a % of GDP between 2009 and 2010, 2010 and 2011, and 2011 and 2012, respectively, and by (because of data anavailability) the scenario of assuming the same 0.614 percentage point decline in government spending as a % of GDP between 2012 and 2013 and between 2013 and 2014.

65-89 years in the Eurozone periphery on average is projected to be 2,444,577 in 2014, resulting in 204 predicted male suicides in every Eurozone periphery country on average due to sustained fiscal austerity between 2009 and 2014. Put differently, 1020 male suicides between the ages of 65 and 89 are predicted to have been committed in the whole Eurozone periphery between 2009 and 2014 due to sustained fiscal consolidation.

Apart from the short-run (impact multiplier) and the medium-run effects of fiscal consolidation on suicide rates obtained above, we can also compute the long–run multiplier of fiscal consolidation on suicides rates based on equation (4). This stems from the fact that results of fiscal consolidation and their associated repercussions could have long-lasting impacts on the mental health of the most deprived sections of the population in the Eurozone periphery. According to Table 8, the long–run multiplier of fiscal austerity on overall and male suicide rates of the population between 65 and 89 years of age is $-2.77\%(= -0.0060/(1-0.6958))$ and $-2.64\%(= -0.0062/(1-0.7305))$, respectively. That is, for every one percentage point cut in a Eurozone periphery's government spending, the suicide rates of the male population between the 65 and 89 years of age is predicted to increase by 2.64%. To put things into perspective, final consumption expenditure as a percentage of GDP in a Eurozone periphery country on average declined by 1.705 percentage points (0.822 percentage points in $t-1=2010$ and 0.883 percentage points in $t=2011$), resulting in a 4.5% ($=1.705\times 2.64\%$) long-run increase in male suicide rates in the 65-89 age group because of fiscal consolidation. Again, based on population projections from Eurostat (code: $proj\_13npms$), the male population of 65-89 years in the Eurozone periphery on average is projected to be 2,355,280 in 2020[12], resulting in a 106 elderly male suicides in the long-run in every Eurozone periphery country on average, or in 530 elderly male suicides in the whole Eurozone periphery in the long run as a result of fiscal consolidation. This might, at first glance, seem contradictory to earlier results. However, it can be readily explained by the fact that, in the long run, people will be able to 'adjust' to the situation more efficiently (e.g. via migration, or, given the life expectancy of this age group, death, due to natural causes) compared to the short- or medium-run. In the short- or medium-run, resources and flexibility are limited, leaving little or no space to manoeuvre. Yet, the number of suicides associated with fiscal consolidation is still very high, even in the long-run.

[Insert Table 8 around here]

Overall, these results suggest that the effects of fiscal consolidation have long lasting effects on suicide rates of the aforementioned parts of the population in the Eurozone periphery.

## 4.3 Robustness Analysis

### 4.3.1 Alternative Proxies of Fiscal Consolidation

In this section we examine the robustness of our results by using alternative proxies of fiscal consolidation. In particular, we estimate model (3) with the following alternative fiscal consolidation proxies (based on data from the AMECO database):

1. budget deficit as a percentage of GDP. Specifically, we include the first difference of government budget deficit as a % of GDP, $Def_{it}$.

[12]The 2020 year is considered as the benchmark long-run run scenario, based on the fact that at least the Greek government is bound to the Troika's bailout scheme and the corresponding structural adjustments till 2020.

2. A fiscal consolidation episodes (FCE) indicator based on Afonso (2010) defined as:

$$FCE_{it} = \begin{cases} 1, & \text{if } \Delta b_{it} > \gamma\sigma, \\ 1, & \text{if } \sum_{k=0}^{1} \Delta b_{it-k}/2 > \sigma, \\ 0, & \text{otherwise,} \end{cases} \tag{5}$$

where $b$ is the primary structural budget balance in country $i$ and time $t$, and $\sigma$ is the standard deviation for the EU15 (specifically, $\sigma_{EU15} = 1.25$) while $\gamma$ is applied to determine a multiple of the standard deviation.[13] Following Afonso (2010) we use $\gamma = 1.5$.[14] Hence, a fiscal consolidation episode occurs when either the change in the primary cyclically adjusted balance is at least one and a half times the standard deviation in one year, or when the change in the primary cyclically adjusted balance is at least one standard deviation on average in the last 2 years.

3. government tax revenues expressed as a percentage of GDP, $Tax_t$.

Additionally, we include one period lag of the fiscal consolidation proxy variables, i.e., $FCE_{it-1}$, $Def_{it-1}$ and $Tax_{it-1}$, so as to control for any time delayed effects of fiscal consolidation on suicide mortality. The results of this analysis are presented in Tables A.1 - A.9 in the Appendix.

According to these results, reductions in budget deficits have a significantly positive and instantaneous impact on male suicides in the age group of 65-89, while a significantly positive but with a year lag on female suicides in the same age group in the Eurozone periphery. Based on the fiscal consolidation episodes indicator as used in Afonso (2010), the results are quite similar. In particular, suicide rates of males in the oldest groups (65-89, and 45-64) significantly and contemporaneously increase following a fiscal consolidation episode. These results are in line with our main findings, that fiscal consolidation mostly affects the elderly male population. Moreover, higher tax revenues by governments in the Eurozone periphery significantly increase suicide rates only of the male population between the ages of 25 and 44 within a year.[15] A potential explanation for this effect is that, the 25-44 male age group of the population consists of potential entrepreneurs who are thinking of starting a new (or already run a) business, but are strongly affected by their inability to pay taxes, leading to business closures, income losses, depression and, eventually, suicide. Finally, the coefficients of the remaining socio-economic determinants are in line with our main findings. For instance, higher divorce rates and lower fertility rates significantly increase suicide mortality mostly among both the male and female elderly population in the Eurozone periphery.

### 4.3.2 The Role of Labour Market Institutions

As a final robustness check, we explore whether labour market institutions have an influence on job satisfaction and the quality of life, and ultimately on suicide mortality.[16]

[13] Using the first difference of the primary structural budget balance as a % of GDP, $\Delta b_{it}$, also known as fiscal impulse, it allows us to correct of the effects on budget balance from changes in economic activity such as inflation or real interest rates.

[14] According to Afonso (2010), there is an element of arbitrariness with the choice of $\gamma$. In this particular case, $1.5\sigma$ corresponds to 1.875 percentage points of GDP, thus indicating a more demanding threshold to determine a fiscal episode.

[15] There is also a negative and contemporaneous effect of higher tax revenues on male suicide mortality in the 25–44 age group. However, the overall short–run effect of a one percentage point increase in a Eurozone periphery's taxes is an increase in males suicide rates in the 25–44 age group by $1.09\%(= -2.17\% + 3.26\%)$; see column (6) in Table A.8.

[16] Breuer and Rottmann (2014) examine the effects of labour market institutions, among other socio-economic factors, on suicide mortality in a panel of 25 OECD (advanced) countries, and find that unemployment benefits

Theoretically, this can occur in the following ways: (i) stricter labour market regulations and higher unemployment benefits could mitigate some of the negative effects of income loss of workers in the case of unemployment during period of negative economic activity and (ii) they will be comparable to a social security system for employees in a private market, acting as safety nets in the risk of unemployment.[17]

To conduct this final robustness check, and following Breuer and Rottmann (2014), we collect data for an indicator of employment protection legislation (EPL version EPRC_V1) from OECD database.[18] This indicator is available between 1985 and 2013. There also exists another very closely related indicator of employment protection legislation developed by Allard (2005) over the period 1950-2003.[19] Thus, to increase the amount of observations and consequently predictive power of the results, we obtain the annual growth rate of the Allard (2005) indicator from 1985 to 1968, and apply it backwards to the OECD EPL indicator starting in 1984. Our indicator of unemployment benefit is proxied by the gross replacement rate (GRR), which is defined as gross unemployment benefit level as a percentage of previous gross earnings and obtained from OECD labour market statistics database.[20]

In Tables 9 - 11 we present the results with the aforementioned indicators of labour market institutions. According to these results, substantial employment protection legislation –especially that supporting older aged segments of the population– and higher unemployment benefits have significantly suicide–reducing effects on both sexes and age groups. The latter (former) result is partially in line (contrasts) with those in Breuer and Rottmann (2014). In the presence of improved labour market institutions and unemployment benefits, a one unit increase in a Eurozone periphery country's employment protection legislation indicator and gross replacement ratio (i.e. unemployment benefits) indicator is predicted to decrease male suicide rates in the age group of 65-89 by 5.19% and 0.36%, respectively (see column (10) of Table 10), and thus mitigate some of the negative effects of fiscal consolidation on suicide mortality. In particular, given that the population of males in the age group of 65-89 in 2011 was, on average, 2,064,061 in the Eurozone periphery, 107 and 7 suicides could have been avoided in a Eurozone periphery country on average in 2011, due to more substantial employment protection legislation and improved unemployment benefits, respectively. However, in reality, the indicator of employment protection legislation and unemployment benefits declined by 0.1556 and 1.0101 units, respectively, in 2011 (compared to 2010), thus leading to an increase in male suicides between 65 and 89 years of age by 0.81% and 0.36%, respectively. In other words, 17 and 8 male suicides in the 65-89 age group occurred in 2011 in every Eurozone periphery country on average, or, $85(= 17 \times 5)$ and $40(= 8 \times 5)$ male suicides in the 65-89 age group occurred in the whole Eurozone periphery, due to the deterioration of employment protection legislation and unemployment benefits, respectively.

decrease male suicides, while relatively strict employment protection regulations are positive related with suicide mortality of both genders.

[17]For a detailed discussion on the potential channels, see Breuer and Rottmann (2014).

[18]The EPL (version EPRC_V1) indicator is defined as an indicator of the strictness of employment protection of regular workers against individual and collective dismissals, and can be retrieved from: `http://www.oecd.org/employment/emp/oecdindicatorsofemploymentprotection.htm#data`.

[19]In fact the correlation between the OECD EPL and the Allard (2005) indicators of employment protection legislation for the overlapping periods (1985-2003) in the Eurozone periphery is very high, namely 0.992.

[20]The series can be retrieved from `www.oecd.org/els/soc/GRR_EN.xlsx`. This indicator comes in two versions: (i) GRRAPW from 1961 to 2005 and (ii) GRRAW between 2001 and 2011. The former is calibrated to the average productive worker, while the latter is calibrated to average worker. Both indicators are available in uneven years. We fill missing values for both series by linear interpolation and extend the GRRAPW indicator with the growth rate of GRRAW from 2005 to 2011. Thus we end up with a combined indicator of unemployment benefits between 1968 and 2011.

[Insert Table 9 around here]

[Insert Table 10 around here]

[Insert Table 11 around here]

Summing up, these results suggest that the negative effects of economic downturns and fiscal consolidation could be mitigated by the adoption of redistributive policies and by investing in some specific elements of stronger social protection in the Eurozone periphery; and are in line with Kaplanoglou et al. (2014) who find that, improving the targeting of social transfers and their effectiveness in terms of poverty alleviation, higher public expenditure on training and active labour market policies and programmes like social housing directed to the poor, even decreasing the VAT rate on necessities, improve the success probabilities of consolidation attempts. Overall, these results have also important implications for policy makers in the domain of economics and health across Europe. Economic and financial issues have been dominating policy making in the Eurozone, while health and inequalities in health remaining relatively low key in policy discussion. Given that economic and social policy decisions have profound effects on health and its fair distribution, health equity should be an important measure of the effectiveness of social and economic policy making, in addition to wealth equity (Marmot, 2012).

# 5 Summary and Concluding Remarks

The 2008 global financial crisis that subsequently transformed to a fully-fledged Eurozone sovereign debt in crisis in 2009, has clearly highlighted the health effects experienced by countries, such as the peripheral Eurozone countries, that have been heavily affected by soaring unemployment, financial distress and slumps in economic activity. Unprecedented policy interventions have been experienced in the peripheral debt-stricken Eurozone economies in an an attempt to restore confidence, competitiveness, and macroeconomic stability.

However, the timing, scope, size and necessity of the policy responses, comprising mainly bank bailouts and austerity programmes, in most European countries still remains controversial, and has led to concerns about their economic and health effects. Not only crises, but also economic policy responses can lead to increased suicide mortality, widen inequalities in both wealth and health, and undermine the social fabric of the society. Clearly, the Eurozone debt crisis –especially in the peripheral Eurozone countries that have been heavily affected by the crisis and the policy responses – is not over, and it seems to be transforming into a health crisis. Prospects for economic and health recovery remain quite uncertain and fragile.

In this study, we explore the impact of fiscal consolidation on suicide mortality across all Eurozone peripheral economies, while controlling for various economic and socio-demographic differences. Based on several proxies of fiscal consolidation and robustness checks, the empirical regularities of this study reveal that the impact of fiscal adjustments is gender, age and time specific. In particular, fiscal consolidation has short-, medium- and long-run suicide increasing effects on the male population between 65 and 89 years of age. A one percentage point reduction in a Eurozone periphery country's government spending leads to an increase of 1.39%, 2.35% and 2.64% in the short-, medium- and long-run, respectively, of male suicides rates between 65 and 89 years of age in the Eurozone periphery. In addition, unemployment benefits and strict employment protection legislation can mitigate some of the negative effects of fiscal consolidation on suicide mortality.

These results have important implications for policy makers in the domain of economics and health across Europe. Economic and financial issues have been dominating policy making in

the Eurozone, while health and inequalities in health remained relatively low key. Given that economic and social policy decisions have profound effects for health and its fair distribution, health equity should be an important measure of the effectiveness of social and economic policy making, in addition to wealth equity.

The case is strong for governments, as well as European leaders and policy makers, who arguably need to intervene more boldly to protect the most vulnerable and distressed populations from the effects of the crisis and the subsequent fiscal consolidation/austerity measures. That is, different policy sectors should be encouraged to consider and value all major intersectoral impacts of economic policy to society as a whole, including health. Thus, a reevaluation of the fiscal adjustment programme design in the Eurozone periphery seems to be warranted. For instance, by adopting redistributive policies and by targeted investment in some particular aspects of social protection, governments can promote sustainable health and minimize some of the negative effects of the crisis and fiscal consolidation on health. Targeted social welfare programmes could mitigate the effect of some economic disasters upon suicide mortality. Put differently, we advocate a paradigm shift in political economy to set a new course of policy development where markets and profits are explicitly means to human ends and not the other way around. That is, placing health before wealth.

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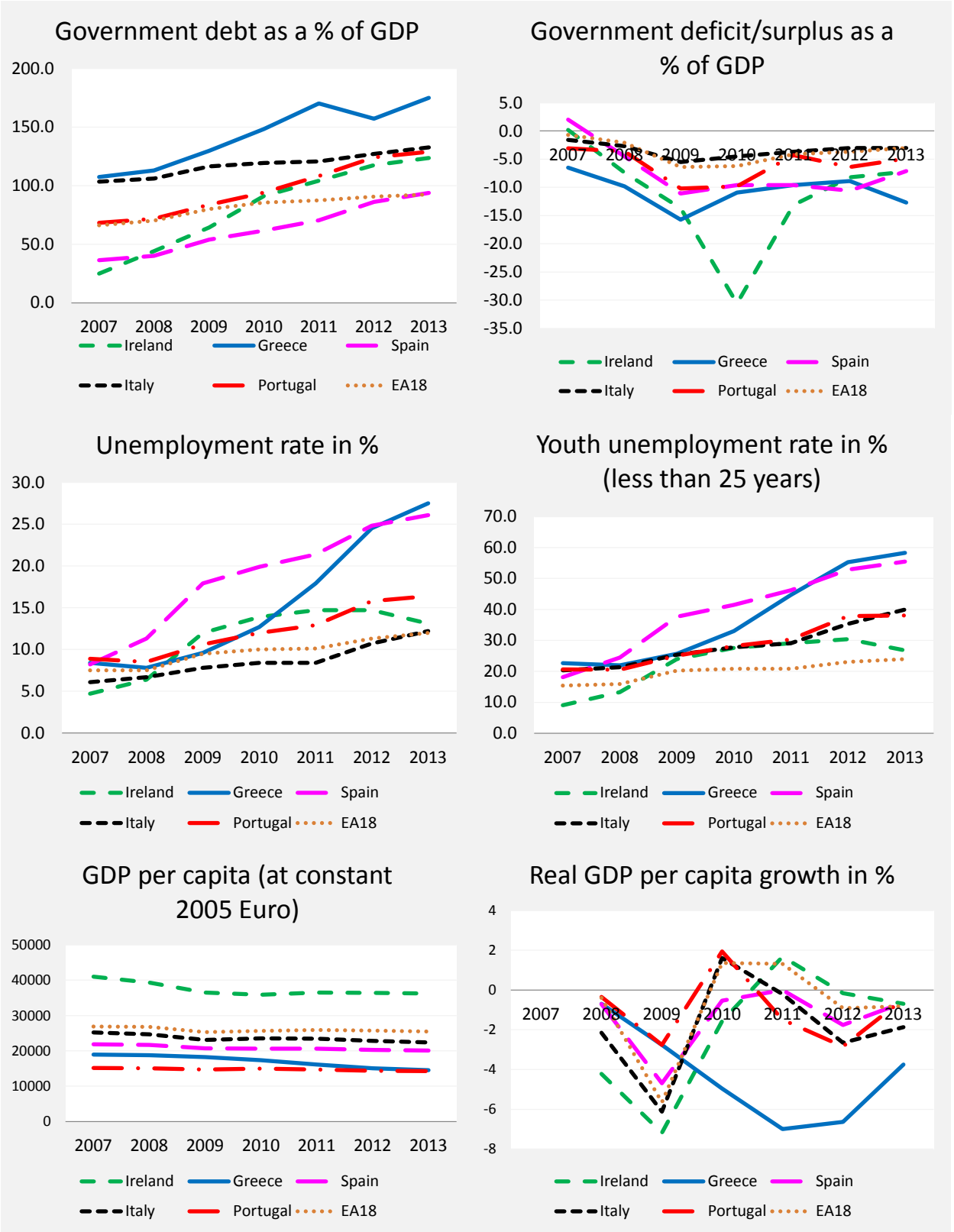
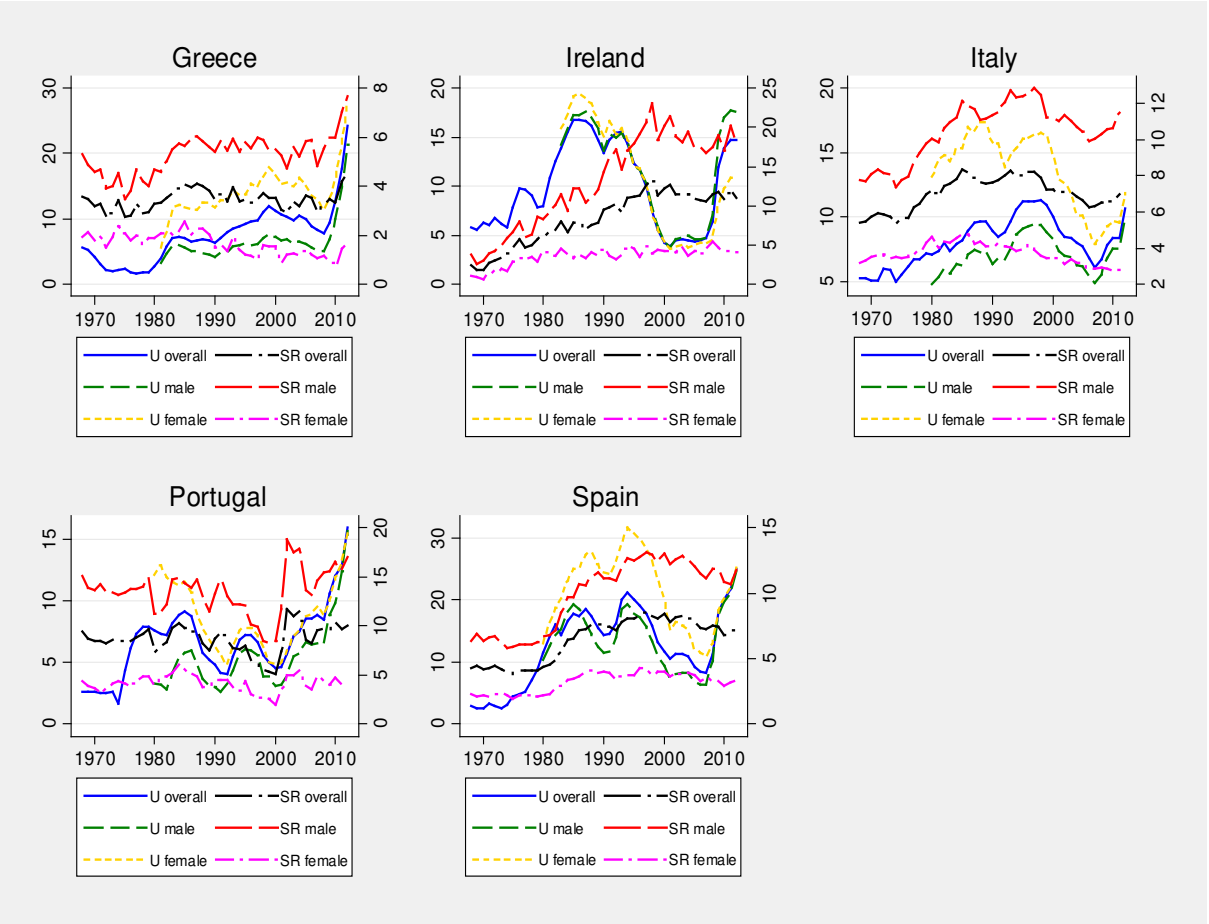
Figure 1: Government debt, deficit, unemployment rate, and real GDP per capita (growth), 2007–2013



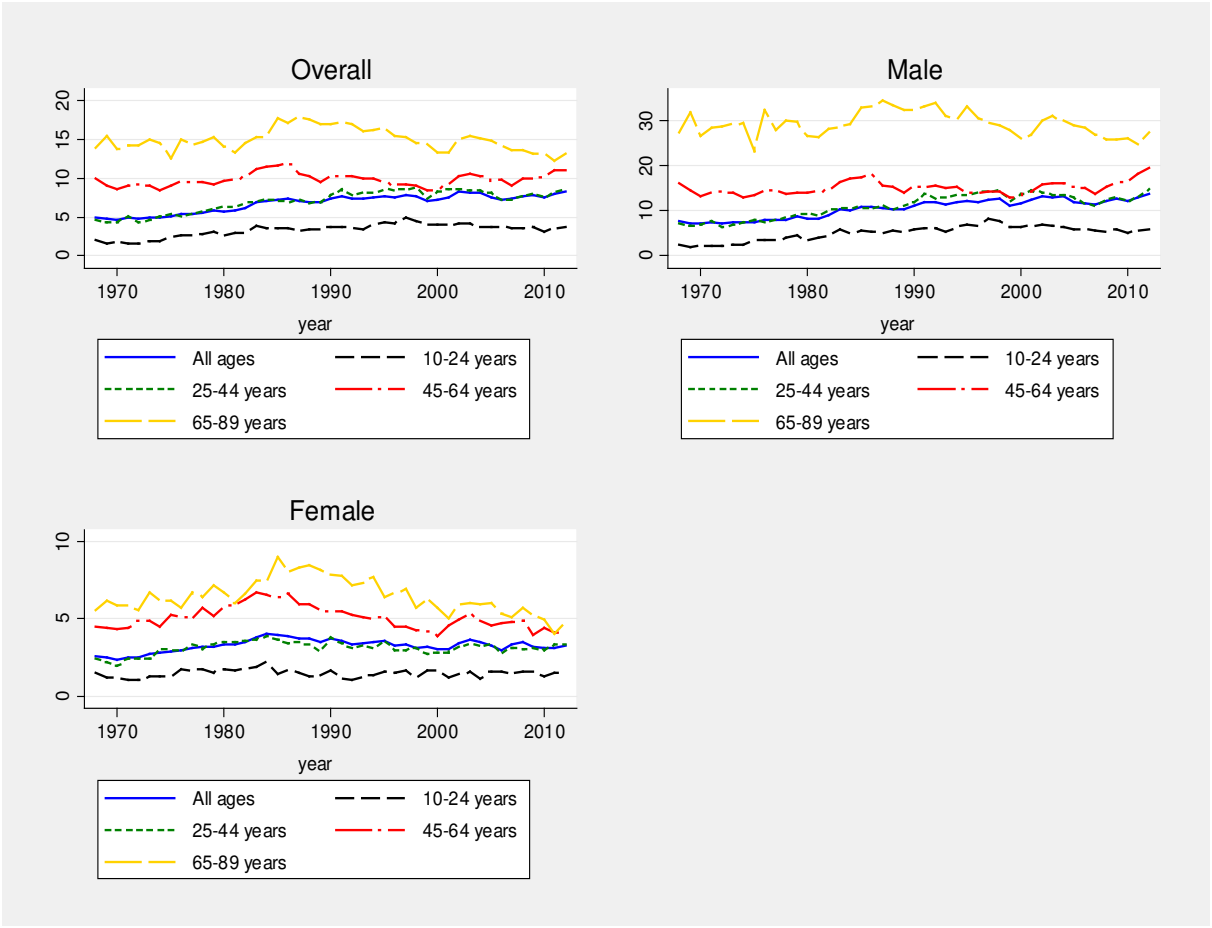

Source: Eurostat.

Figure 2: Suicide rates per 100,000 inhabitants (%) and Unemployment rates (%), by country, 1968–2012



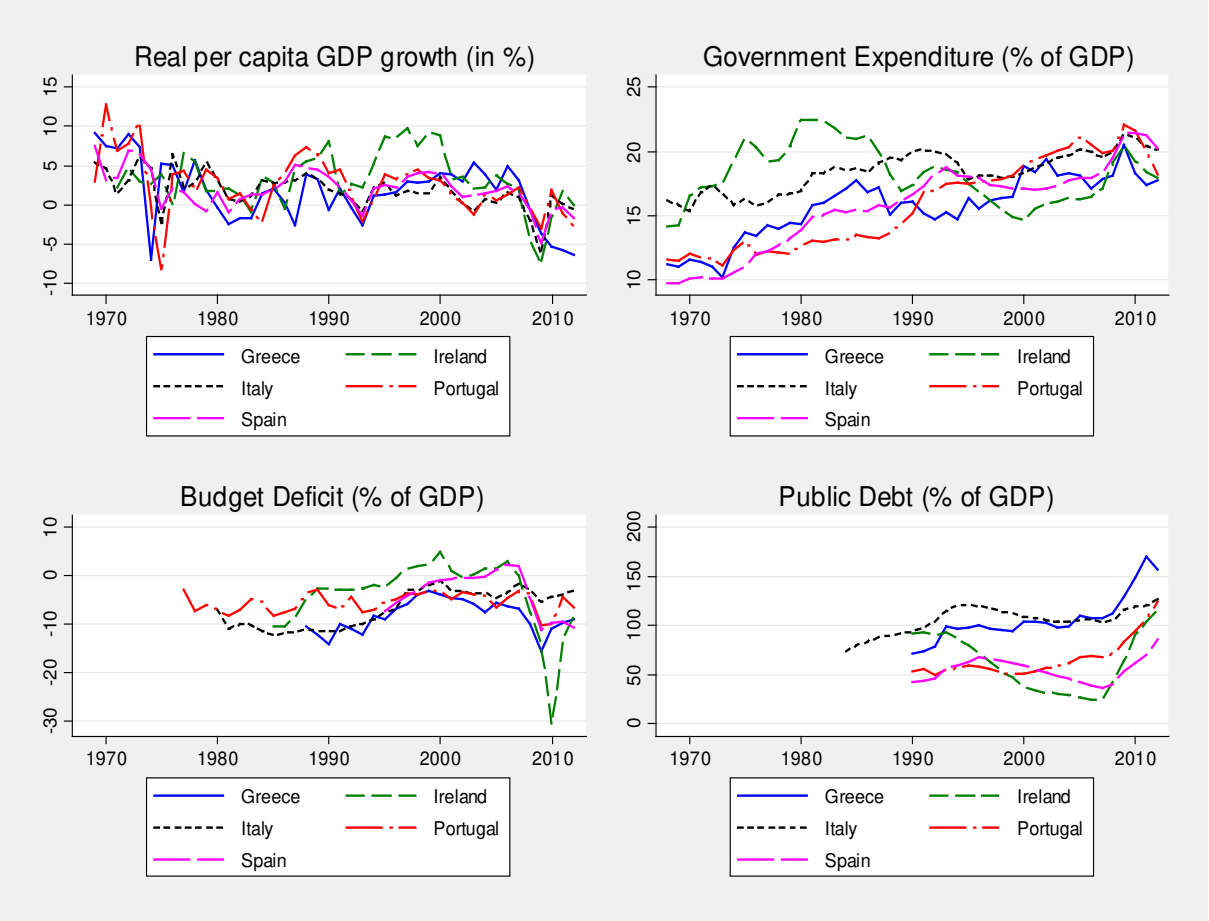

Note: U and SR denote unemployment rate and suicide rate, respectively. The male and female unemployment rates denote male unemployment rates as a % of the male population and female unemployment rates as a % of the female population, respectively. Unemployment rates are measured on the left y-axis, while suicide rates on the right y-axis.
Source: WHO, Ameco, WDI.

Figure 3: Average suicide rates by age group and gender in the Eurozone periphery, 1968–2012



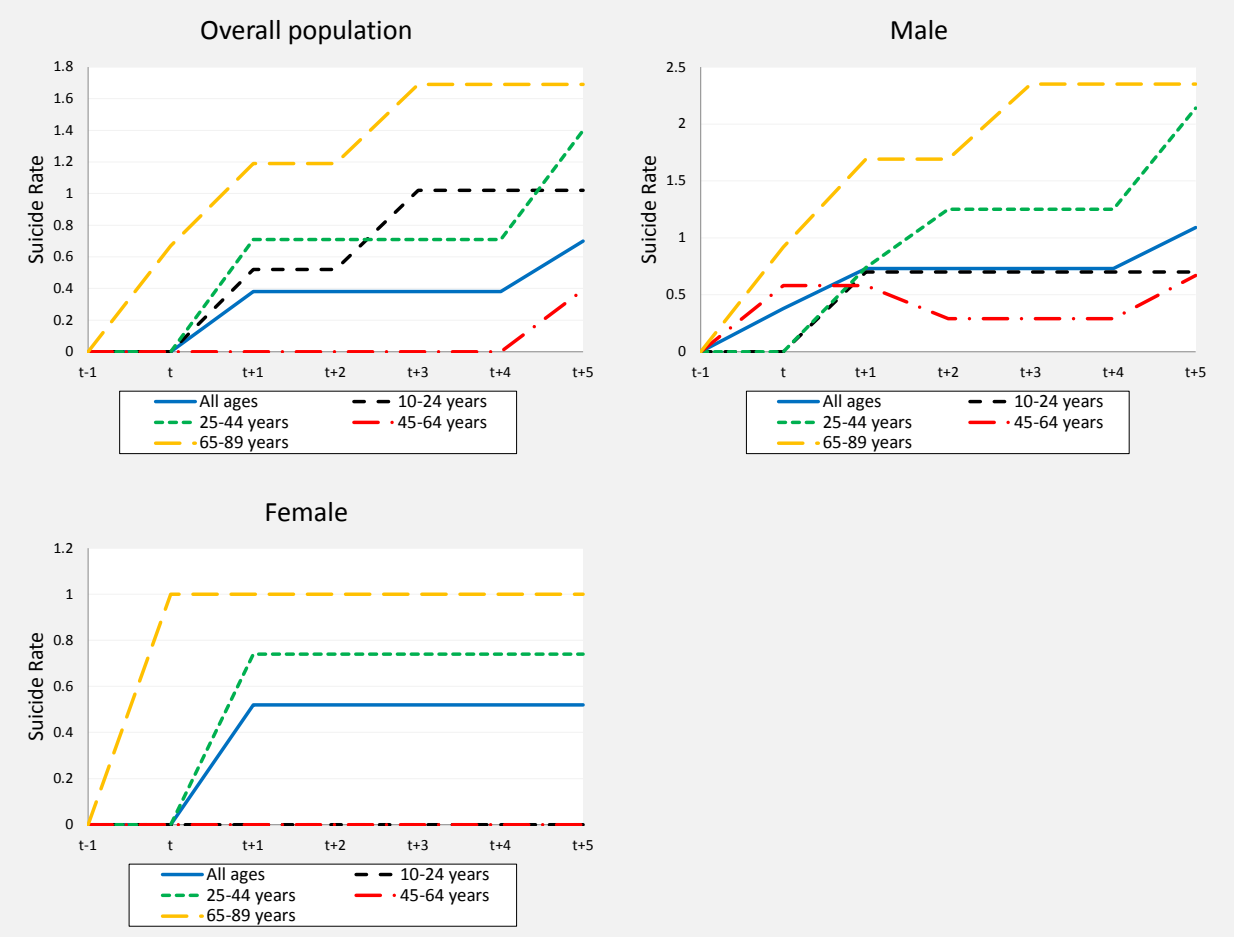

Source: WHO.

Figure 4: Real per capita GDP growth, government expenditure, budget deficit and public debt, 1968–2012




Source: Ameco, WDI.

Figure 5: Cumulative effect of a sustained one percentage point reduction in Eurozone periphery government spending on suicide rates




Note: The cumulative effects of a sustained one percentage point reduction in government spending on suicides is reported only for those coefficients found significant, at least at the 10% level, in the estimation results reported in Table 7. Insignificant values reported in Table 7 receive 0 values.

Table 1: Snapshot of suicide statistics, by country, time, age group and sex in the Eurozone periphery

*Panel A: Number of overall age suicides, by country, time, and sex*

| | Greece | | | Ireland | | | Italy | | | Portugal | | | Spain | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Overall | Male | Female | Overall | Male | Female | Overall | Male | Female | Overall | Male | Female | Overall | Male | Female |
| 1970 | 278 | 197 | 81 | 52 | 44 | 44 | 3085 | 2119 | 966 | 727 | 559 | 168 | 1424 | 1044 | 380 |
| 1980 | 315 | 222 | 93 | 215 | 142 | 73 | 4155 | 2812 | 1343 | 729 | 525 | 204 | 1652 | 1237 | 415 |
| 1990 | 349 | 271 | 78 | 334 | 251 | 83 | 4402 | 3181 | 1221 | 870 | 642 | 228 | 2939 | 2135 | 804 |
| 2000 | 382 | 298 | 84 | 463 | 381 | 82 | 4108 | 3062 | 1046 | 524 | 417 | 107 | 3393 | 2574 | 819 |
| 2001 | 334 | 286 | 48 | 488 | 409 | 79 | 4030 | 3050 | 980 | 761 | 586 | 175 | 3189 | 2430 | 759 |
| 2002 | 323 | 257 | 66 | 449 | 368 | 81 | 4069 | 3145 | 924 | 1212 | 947 | 265 | 3371 | 2554 | 817 |
| 2003 | 375 | 306 | 69 | 454 | 358 | 96 | 4075 | 3078 | 997 | 1155 | 888 | 267 | 3478 | 2650 | 828 |
| 2004 | 353 | 285 | 68 | 464 | 390 | 74 | 3982 | 3019 | 963 | 1205 | 908 | 297 | 3507 | 2651 | 856 |
| 2005 | 400 | 321 | 79 | 451 | 363 | 88 | 3888 | 2960 | 928 | 914 | 696 | 218 | 3399 | 2570 | 829 |
| 2006 | 394 | 326 | 68 | 452 | 372 | 80 | 3701 | 2842 | 859 | 868 | 674 | 194 | 3246 | 2512 | 734 |
| 2007 | 328 | 268 | 60 | 458 | 362 | 96 | 3757 | 2893 | 864 | 1020 | 751 | 269 | 3263 | 2463 | 800 |
| 2008 | 373 | 308 | 65 | 506 | 386 | 120 | 3904 | 2997 | 907 | 1038 | 794 | 244 | 3457 | 2676 | 781 |
| 2009 | 391 | 333 | 58 | 527 | 422 | 105 | 3971 | 3091 | 880 | 1025 | 803 | 222 | 3429 | 2666 | 763 |
| 2010 | 377 | 336 | 41 | 486 | 386 | 100 | 3987 | 3126 | 861 | 1101 | 836 | 265 | 3158 | 2468 | 690 |
| 2011 | 477 | 393 | 84 | 554 | 458 | 96 | 4152 | 3289 | 863 | 1018 | 794 | 224 | 3180 | 2435 | 745 |
| 2012 | 508 | 417 | 91 | 507 | 413 | 94 | – | – | – | 1066 | 851 | 215 | 3539 | 2724 | 815 |
| 1968-2012[a] | 352 | 268 | 84 | 315 | 248 | 67 | 3986 | 2903 | 1083 | 861 | 645 | 216 | 2583 | 1936 | 647 |

*Panel B: Suicide rates per 100,000 inhabitants, by country, time, sex and age group*

| | | Greece | | | Ireland | | | Italy | | | Portugal | | | Spain | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Overall | Male | Female | Overall | Male | Female | Overall | Male | Female | Overall | Male | Female | Overall | Male | Female |
| 1970 | All ages | 3.16 | 4.59 | 1.80 | 1.77 | 2.98 | 0.55 | 5.75 | 8.08 | 3.52 | 8.44 | 13.67 | 3.72 | 4.22 | 6.38 | 2.19 |
| | 10–24 | 1.08 | 1.11 | 1.03 | 1.41 | 2.44 | 0.33 | 2.13 | 2.57 | 1.68 | 3.20 | 3.89 | 2.56 | 1.04 | 1.43 | 0.64 |
| | 25–44 | 3.19 | 5.09 | 1.40 | 2.46 | 3.91 | 0.96 | 4.84 | 6.64 | 3.07 | 7.90 | 13.53 | 2.88 | 3.51 | 5.67 | 1.48 |
| | 45–64 | 6.15 | 8.75 | 3.75 | 3.58 | 6.07 | 1.03 | 10.39 | 15.03 | 6.21 | 14.29 | 23.93 | 5.91 | 8.36 | 12.67 | 4.61 |
| | 65–89 | 7.13 | 11.70 | 3.78 | 2.03 | 3.21 | 0.98 | 16.01 | 29.58 | 7.32 | 29.38 | 60.73 | 11.10 | 14.45 | 27.68 | 6.28 |
| 2000 | All ages | 3.50 | 5.51 | 1.52 | 12.22 | 20.23 | 4.30 | 7.22 | 11.11 | 3.56 | 5.12 | 8.45 | 2.02 | 8.45 | 13.09 | 3.99 |
| | 10–24 | 1.85 | 2.70 | 0.92 | 11.21 | 17.73 | 4.48 | 2.81 | 4.49 | 1.08 | 1.55 | 2.43 | 0.64 | 3.17 | 5.15 | 1.10 |
| | 25–44 | 4.05 | 6.57 | 1.48 | 18.39 | 31.62 | 5.25 | 6.78 | 10.43 | 3.11 | 3.95 | 6.85 | 1.12 | 8.07 | 12.76 | 3.30 |
| | 45–64 | 4.29 | 6.65 | 2.05 | 15.12 | 24.89 | 5.23 | 8.55 | 12.82 | 4.50 | 5.47 | 8.73 | 2.56 | 9.80 | 14.55 | 5.25 |
| | 65–89 | 5.57 | 9.32 | 2.61 | 6.76 | 10.82 | 3.89 | 17.01 | 34.37 | 7.25 | 16.93 | 35.09 | 6.01 | 20.39 | 39.73 | 8.87 |
| 2007 | All ages | 2.93 | 4.83 | 1.06 | 10.56 | 16.67 | 4.43 | 6.33 | 10.03 | 2.83 | 9.62 | 14.63 | 4.91 | 7.27 | 11.11 | 3.52 |
| | 10–24 | 1.30 | 1.99 | 0.56 | 10.23 | 16.87 | 3.45 | 2.34 | 3.72 | 0.90 | 2.04 | 2.63 | 1.43 | 1.99 | 3.00 | 0.95 |
| | 25–44 | 3.55 | 5.77 | 1.22 | 13.67 | 21.50 | 5.63 | 5.61 | 8.63 | 2.53 | 6.30 | 9.52 | 3.10 | 6.92 | 10.42 | 3.23 |
| | 45–64 | 3.57 | 6.08 | 1.16 | 13.13 | 18.75 | 7.44 | 7.71 | 11.97 | 3.61 | 12.27 | 18.48 | 6.55 | 9.02 | 13.10 | 5.08 |
| | 65–89 | 4.06 | 7.34 | 1.51 | 7.01 | 13.10 | 1.83 | 11.14 | 22.09 | 4.28 | 29.49 | 58.36 | 11.82 | 16.56 | 33.02 | 6.15 |
| 2008 | All ages | 3.32 | 5.53 | 1.15 | 11.44 | 17.50 | 5.42 | 6.52 | 10.32 | 2.95 | 9.77 | 15.45 | 4.45 | 7.58 | 11.89 | 3.38 |
| | 10–24 | 0.78 | 1.50 | 0 | 10.51 | 15.40 | 5.61 | 2.21 | 3.47 | 0.88 | 1.96 | 3.09 | 0.78 | 2.20 | 3.47 | 0.87 |
| | 25–44 | 3.72 | 5.93 | 1.37 | 14.88 | 24.07 | 5.53 | 6.15 | 9.64 | 2.61 | 6.97 | 11.28 | 2.66 | 7.36 | 11.39 | 3.11 |
| | 45–64 | 4.51 | 7.34 | 1.79 | 15.90 | 22.89 | 8.83 | 8.27 | 12.68 | 4.04 | 11.95 | 19.04 | 5.43 | 9.73 | 15.15 | 4.48 |
| | 65–89 | 5.28 | 10.53 | 1.30 | 6.96 | 10.46 | 4.25 | 11.01 | 21.27 | 4.41 | 29.53 | 58.79 | 11.84 | 15.27 | 28.26 | 6.60 |
| 2009 | All ages | 3.47 | 5.96 | 1.02 | 11.82 | 19.03 | 4.68 | 6.60 | 10.58 | 2.84 | 9.64 | 15.61 | 4.05 | 7.47 | 11.76 | 3.28 |
| | 10–24 | 1.03 | 1.77 | 0.23 | 10.72 | 16.69 | 4.84 | 2.11 | 3.17 | 0.99 | 2.76 | 4.53 | 0.91 | 2.37 | 3.78 | 0.88 |
| | 25–44 | 3.74 | 6.01 | 1.33 | 17.40 | 28.71 | 6.04 | 5.94 | 9.23 | 2.61 | 6.46 | 10.39 | 2.50 | 6.85 | 10.42 | 3.10 |
| | 45–64 | 5.06 | 9.21 | 1.06 | 13.95 | 22.02 | 5.82 | 8.45 | 13.42 | 3.68 | 12.81 | 21.25 | 5.08 | 9.83 | 15.61 | 4.25 |
| | 65–89 | 4.82 | 9.09 | 1.59 | 6.42 | 9.97 | 3.22 | 11.84 | 23.87 | 4.26 | 27.88 | 56.51 | 10.69 | 15.32 | 29.39 | 6.05 |
| 2010 | All ages | 3.33 | 6.00 | 0.72 | 10.68 | 17.07 | 4.37 | 6.59 | 10.65 | 2.77 | 10.41 | 16.53 | 4.81 | 6.85 | 10.87 | 2.95 |
| | 10–24 | 1.06 | 1.60 | 0.47 | 8.90 | 14.82 | 3.04 | 2.02 | 3.28 | 0.69 | 2.35 | 3.17 | 1.51 | 1.68 | 2.69 | 0.63 |
| | 25–44 | 3.49 | 5.86 | 0.96 | 14.19 | 22.93 | 5.46 | 6.06 | 9.69 | 2.41 | 7.49 | 11.65 | 3.49 | 6.35 | 9.82 | 2.70 |
| | 45–64 | 4.64 | 8.97 | 0.46 | 16.34 | 25.02 | 7.63 | 8.54 | 13.52 | 3.78 | 12.74 | 20.04 | 6.05 | 9.31 | 14.56 | 4.24 |
| | 65–89 | 5.87 | 12.12 | 1.20 | 5.74 | 8.32 | 3.38 | 11.36 | 22.41 | 4.30 | 29.85 | 60.96 | 11.07 | 13.59 | 26.79 | 4.91 |
| 2011 | All ages | 4.22 | 7.02 | 1.47 | 12.12 | 20.18 | 4.17 | 7.00 | 11.47 | 2.82 | 9.64 | 15.75 | 4.06 | 6.89 | 10.73 | 3.18 |
| | 10–24 | 1.77 | 2.19 | 1.31 | 10.54 | 17.47 | 3.61 | 2.43 | 3.77 | 1.03 | 1.51 | 1.95 | 1.06 | 1.64 | 2.59 | 0.65 |
| | 25–44 | 4.52 | 6.91 | 1.96 | 17.01 | 27.63 | 6.54 | 5.95 | 9.62 | 2.30 | 7.16 | 11.31 | 3.20 | 6.48 | 10.00 | 2.81 |
| | 45–64 | 6.23 | 11.25 | 1.39 | 17.21 | 28.91 | 5.51 | 9.13 | 14.71 | 3.81 | 13.59 | 22.33 | 5.65 | 8.85 | 13.59 | 4.28 |
| | 65–89 | 5.79 | 10.91 | 1.89 | 5.87 | 12.38 | 0.70 | 12.23 | 24.44 | 4.29 | 23.28 | 49.06 | 7.38 | 13.95 | 26.20 | 5.72 |
| 2012 | All ages | 4.57 | 7.65 | 1.60 | 4.57 | 18.20 | 4.06 | – | – | – | 10.10 | 17.00 | 3.90 | 7.56 | 11.79 | 3.44 |
| | 10–24 | 1.75 | 2.52 | 0.94 | 9.23 | 14.60 | 3.82 | – | – | – | 1.55 | 2.35 | 0.70 | 2.22 | 4.35 | 1.02 |
| | 25–44 | 5.06 | 8.10 | 1.98 | 15.47 | 25.03 | 6.13 | – | – | – | 6.95 | 12.10 | 2.00 | 7.03 | 13.75 | 3.30 |
| | 45–64 | 6.17 | 10.82 | 1.80 | 15.00 | 25.00 | 5.05 | – | – | – | 12.9 | 22.15 | 4.40 | 9.94 | 20.10 | 4.48 |
| | 65–89 | 6.87 | 13.01 | 2.32 | 8.53 | 17.59 | 1.55 | – | – | – | 22.7 | 42.95 | 9.35 | 14.62 | 36.09 | 5.93 |
| 1968-2012[a] | All ages | 3.45 | 5.30 | 1.65 | 8.34 | 13.16 | 3.58 | 6.99 | 10.47 | 3.71 | 8.67 | 13.55 | 4.18 | 6.48 | 9.89 | 3.20 |
| | 10–24 | 1.64 | 2.38 | 0.85 | 6.92 | 11.37 | 2.32 | 2.49 | 3.73 | 1.20 | 3.10 | 4.17 | 2.02 | 2.40 | 3.76 | 1.02 |
| | 25–44 | 3.59 | 5.64 | 1.55 | 12.14 | 19.36 | 4.90 | 6.22 | 9.28 | 3.15 | 7.41 | 11.66 | 3.44 | 5.85 | 9.15 | 2.57 |
| | 45–64 | 4.80 | 7.39 | 2.37 | 12.40 | 18.06 | 6.72 | 9.73 | 14.28 | 5.51 | 13.08 | 21.18 | 5.98 | 9.29 | 14.23 | 4.79 |
| | 65–89 | 7.56 | 12.96 | 3.53 | 6.76 | 11.75 | 2.99 | 17.28 | 33.55 | 7.71 | 26.40 | 55.35 | 10.28 | 17.06 | 32.68 | 7.76 |

Note: – sign denotes no data availability.
[a] 1968-2011 for Italy.

Table 2: Average suicide rates per 100,000 inhabitants, by time, sex and age group in the Eurozone periphery, selected years

| | 1970 | | | 1980 | | | 1990 | | | 2000 | | | 2009 | | | 2012 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Age group | Overall | Male | Female | Overall | Male | Female | Overall | Male | Female | Overall | Male | Female | Overall | Male | Female | Overall | Male | Female |
| 0–4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5–9 | 0 | 0 | 0 | 0.01 | 0.02 | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0.01 | 0.01 | 0 | 0 | 0 | 0 |
| 10–14 | 0.23 | 0.24 | 0.22 | 0.64 | 0.73 | 0.54 | 0.69 | 1.22 | 0.15 | 0.30 | 0.50 | 0.09 | 0.44 | 0.68 | 0.19 | 0.58 | 0.57 | 0.61 |
| 15–19 | 1.88 | 2.04 | 1.73 | 2.42 | 2.94 | 1.87 | 3.14 | 4.81 | 1.39 | 4.57 | 6.95 | 2.07 | 4.53 | 6.61 | 2.36 | 4.52 | 6.69 | 2.72 |
| 20–24 | 3.20 | 4.59 | 1.80 | 4.76 | 6.64 | 2.84 | 7.56 | 11.40 | 3.54 | 7.49 | 12.06 | 2.77 | 6.41 | 10.68 | 2.15 | 8.11 | 14.20 | 2.45 |
| 25–29 | 3.22 | 4.85 | 1.69 | 5.57 | 8.15 | 2.94 | 9.44 | 14.63 | 4.28 | 8.72 | 14.84 | 2.44 | 7.55 | 12.26 | 2.79 | 7.79 | 12.21 | 4.19 |
| 30–34 | 3.63 | 5.60 | 1.77 | 5.51 | 7.26 | 3.77 | 7.18 | 10.79 | 3.60 | 7.44 | 12.53 | 2.38 | 7.68 | 12.36 | 2.89 | 8.66 | 14.75 | 3.31 |
| 35–39 | 4.02 | 6.30 | 1.90 | 5.88 | 8.76 | 3.15 | 6.73 | 10.17 | 3.29 | 7.97 | 12.75 | 3.25 | 8.24 | 13.46 | 2.91 | 8.94 | 15.00 | 4.09 |
| 40–44 | 6.65 | 11.11 | 2.50 | 8.40 | 12.88 | 4.26 | 8.10 | 12.18 | 4.02 | 8.87 | 14.45 | 3.34 | 8.83 | 13.72 | 3.88 | 11.37 | 20.55 | 3.62 |
| 45–49 | 5.75 | 9.03 | 2.75 | 8.02 | 10.51 | 5.78 | 8.73 | 12.45 | 5.07 | 7.95 | 12.17 | 3.76 | 10.32 | 16.08 | 4.63 | 10.27 | 18.00 | 3.90 |
| 50–54 | 7.47 | 10.94 | 4.34 | 9.84 | 15.61 | 4.55 | 9.58 | 14.21 | 5.07 | 9.26 | 14.04 | 4.52 | 9.70 | 16.23 | 3.34 | 9.98 | 18.38 | 3.58 |
| 55–59 | 10.15 | 15.93 | 4.90 | 10.41 | 14.47 | 6.84 | 11.43 | 17.96 | 5.23 | 6.99 | 10.99 | 3.11 | 9.04 | 14.33 | 3.96 | 10.48 | 18.25 | 4.37 |
| 60–64 | 10.84 | 17.26 | 5.22 | 10.41 | 15.53 | 6.08 | 11.55 | 17.25 | 6.45 | 10.39 | 16.91 | 4.28 | 11.00 | 18.55 | 3.97 | 10.76 | 19.90 | 3.25 |
| 65–69 | 12.24 | 21.43 | 4.83 | 12.10 | 19.24 | 6.25 | 11.97 | 17.38 | 7.52 | 8.75 | 14.14 | 4.05 | 10.84 | 16.52 | 5.73 | 8.65 | 15.65 | 3.79 |
| 70–74 | 11.50 | 21.10 | 4.82 | 11.94 | 20.36 | 5.56 | 13.73 | 23.88 | 5.99 | 11.10 | 18.77 | 5.05 | 10.31 | 17.26 | 4.62 | 8.94 | 17.82 | 3.30 |
| 75–79 | 16.66 | 30.25 | 7.82 | 13.59 | 22.90 | 7.47 | 18.74 | 33.79 | 8.66 | 13.17 | 22.74 | 6.50 | 12.47 | 24.23 | 3.84 | 10.76 | 22.76 | 3.16 |
| 80–84 | 15.93 | 33.19 | 6.18 | 18.45 | 35.95 | 8.61 | 20.97 | 43.40 | 8.01 | 15.44 | 29.34 | 7.27 | 13.81 | 26.56 | 5.92 | 9.82 | 23.47 | 2.60 |
| 85–89 | 12.68 | 26.93 | 5.82 | 14.40 | 33.87 | 5.68 | 19.70 | 42.98 | 9.23 | 18.19 | 44.31 | 5.77 | 18.84 | 44.18 | 5.69 | 11.86 | 31.46 | 3.47 |
| 90–94 | - | - | - | - | - | - | - | - | - | 9.07 | 37.17 | 2.09 | 8.19 | 22.17 | 1.37 | - | - | - |
| 95 and above | - | - | - | - | - | - | - | - | - | 3.34 | 8.71 | 2.99 | 3.70 | 10.92 | 1.54 | - | - | - |
| All ages | 4.67 | 7.14 | 2.35 | 5.73 | 8.20 | 3.38 | 7.37 | 11.13 | 3.77 | 7.30 | 11.68 | 3.08 | 7.80 | 12.59 | 3.17 | 8.32 | 13.67 | 3.25 |

Note: - sign denotes no data availability.

Table 3: Variable definitions and descriptive statistics

| **Variable** | Age/gender | **Definition** | **Expected Signs** | **Obs.** | **Mean** | **Std.** | **Min.** | **Max.** |
|---|---|---|---|---|---|---|---|---|
| Suicides | Overall | Suicides (number of deaths) | | 224 | 1609 | 1509 | 52 | 4759 |
| | 10–24 | -//- | | 223 | 136 | 115 | 1 | 417 |
| | 25–44 | -//- | | 223 | 427 | 399 | 14 | 1283 |
| | 45–64 | -//- | | 223 | 523 | 488 | 21 | 1741 |
| | 65–89 | -//- | | 223 | 520 | 527 | 7 | 1687 |
| | Male | -//- | | 224 | 1192 | 1110 | 38 | 3547 |
| | 10–24 | -//- | | 223 | 105 | 91 | 1 | 335 |
| | 25–44 | -//- | | 223 | 329 | 309 | 11 | 1063 |
| | 45–64 | -//- | | 223 | 380 | 351 | 17 | 1212 |
| | 65–89 | -//- | | 223 | 379 | 382 | 6 | 1224 |
| | Female | -//- | | 224 | 417 | 407 | 8 | 1398 |
| | 10–24 | -//- | | 223 | 31 | 27 | 0 | 110 |
| | 25–44 | -//- | | 223 | 99 | 95 | 3 | 297 |
| | 45–64 | -//- | | 223 | 144 | 143 | 3 | 529 |
| | 65–89 | -//- | | 223 | 142 | 149 | 1 | 526 |
| Suicide rate$_{it}$ | Overall | Suicide rates (deaths per 100,000 inhabitants) | | 224 | 6.7861 | 2.6306 | 1.7661 | 13.4483 |
| | 10–24 | -//- | | 224 | 3.3140 | 2.6232 | 0.1653 | 13.7666 |
| | 25–44 | -//- | | 224 | 7.0434 | 3.7021 | 2.1110 | 19.8353 |
| | 45–64 | -//- | | 224 | 9.8614 | 3.7668 | 3.5735 | 19.1975 |
| | 65–89 | -//- | | 224 | 15.0025 | 7.9573 | 2.0335 | 35.6970 |
| | Male | -//- | | 224 | 10.4665 | 4.3390 | 2.5920 | 23.1122 |
| | 10–24 | -//- | | 224 | 5.0887 | 4.4388 | 0.3236 | 23.5519 |
| | 25–44 | -//- | | 224 | 11.0253 | 6.2423 | 3.1724 | 34.4001 |
| | 45–64 | -//- | | 224 | 15.0314 | 6.1279 | 4.9488 | 34.3512 |
| | 65–89 | -//- | | 224 | 29.2378 | 17.517 | 3.2082 | 80.0432 |
| | Female | -//- | | 224 | 3.2625 | 1.1650 | 0.5459 | 6.0709 |
| | 10–24 | -//- | | 224 | 1.4834 | 1.0086 | 0 | 5.6100 |
| | 25–44 | -//- | | 224 | 3.1198 | 1.4353 | 0.7807 | 7.7762 |
| | 45–64 | -//- | | 224 | 5.0719 | 2.0216 | 0.4635 | 11.8758 |
| | 65–89 | -//- | | 224 | 6.4479 | 3.3153 | 0.3431 | 13.9129 |
| Real GDP per capita growth$_{tit}$ | | Growth rate of per capita real GDP (%) | –/+ | 218 | 2.2219 | 3.2853 | -8.2454 | 12.7645 |
| Government Expenditure$_{it}$ | | General government final consumption expenditure as a % of GDP | – | 225 | 16.7757 | 2.9757 | 9.7591 | 22.4655 |
| Tax revenue$_{it}$ | | Government tax revenue as a % of GDP | + | 140 | 34.2103 | 4.8252 | 21.3163 | 44.2529 |
| Budget Deficit$_{it}$ | | Government budget deficit as a % of GDP | + | 140 | -5.7065 | 4.6672 | -30.6131 | 4.9131 |
| Public Debt$_{it}$ | | Public debt as a % of GDP | +/– | 121 | 80.5003 | 30.3277 | 24.6046 | 170.3053 |
| Unemployment$_{it}$ | Total | Unemployment rate (% of total labour force) | + | 225 | 8.9071 | 4.6752 | 1.7 | 25 |
| | Male | -//- | + | 161 | 8.9081 | 4.9241 | 2.6 | 24.7 |
| | Female | -//- | + | 161 | 13.857 | 6.2508 | 3.6 | 31.6 |
| Fertility$_{it}$ | | Fertility rate (births per woman) | – | 225 | 1.8967 | 0.6627 | 1.16 | 3.93 |
| Alcohol$_{it}$ | | Per capita alcohol consumption (liters, age 15+) | +/- | 212 | 12.4443 | 3.5724 | 6.1 | 20.8 |
| Divorce$_{it}$ | | Divorce rates (per 1,000 people) | +/- | 173 | 0.8671 | 0.6176 | 0 | 2.9 |

Table 4: Fiscal consolidation and overall suicide rates, 1968–2012

| | **All years** | | **10–24 years** | | **25–44 years** | | **45–64 years** | | **65–89 years** | |
|---|---|---|---|---|---|---|---|---|---|---|
| Variable | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| $SR_{it-1}$ | 0.7903*** | 0.7212*** | 0.8152*** | 0.6481*** | 0.6566*** | 0.6136*** | 0.7609*** | 0.6998*** | 0.4996*** | 0.6068*** |
| | (0.0487 | (0.0809 | (0.0485) | (0.0642) | (0.0789) | (0.0878) | (0.0584) | (0.0922) | (0.0832) | (0.0672) |
| $Growth_{it}$ | -0.0067*** | -0.0081*** | -0.0105° | -0.0107° | -0.0059 | -0.0100** | -0.0057 | -0.0068° | -0.0136*** | -0.0096** |
| | (0.0024) | (0.0025) | (0.0054) | (0.0054) | (0.0043) | (0.0044) | (0.0035) | (0.0036) | (0.0044 | (0.0039) |
| $Gov\_Exp_{it}$ | -0.0003 | -0.0023 | 0.0032 | 0.0013 | 0.0034 | 0.0002 | -0.0013 | -0.0036° | -0.0085*** | -0.0067*** |
| | (0.0013) | (0.0016) | (0.0034) | (0.0036) | (0.0023) | (0.0028) | (0.0020) | (0.0020) | (0.0028) | (0.0026) |
| $Gov\_Exp_{it-1}$ | -0.0022 | -0.0035** | -0.0068° | -0.0050 | -0.0034 | -0.0063** | 0.0004 | 0.0015 | -0.0040 | -0.0042° |
| | (0.0014) | (0.0016) | (0.0035) | (0.0033) | (0.0026) | (0.0027) | (0.0020) | (0.0022) | (0.0024) | (0.0022) |
| $Unemp_{it}$ | 0.0011 | 0.0032 | 0.0012 | 0.0112** | 0.0033 | 0.0049 | 0.0022 | 0.0063° | -0.0024 | 0.0001 |
| | (0.0019) | 0.0027) | (0.0041) | (0.0054) | (0.0028) | (0.0043) | (0.0024) | (0.0036) | (0.0031) | (0.0036) |
| $Fert_{it}$ | -0.0692** | -0.0414 | -0.1292° | -0.0511 | -0.1147** | -0.0478 | -0.0143 | 0.0436 | -0.2689*** | -0.1574*** |
| | (0.0342) | (0.0365) | (0.0685) | (0.0706) | (0.0493) | (0.0531) | (0.0372) | (0.0411) | (0.0634) | (0.0498) |
| $Alc_{it}$ | | -0.0015 | | -0.0149 | | -0.0016 | | 0.0028 | | -0.0037 |
| | | (0.0040) | | (0.0094) | | (0.0065) | | (0.0052) | | (0.0069) |
| $Div_{it}$ | | 0.0252 | | -0.0160 | | -0.0003 | | 0.0276 | | 0.0551 |
| | | (0.0386) | | (0.0420) | | (0.0409) | | (0.0472) | | (0.0355) |
| $Trend_t$ | -0.0016° | -0.0033 | -0.0058** | -0.0097** | -0.0019 | -0.0020 | -0.0013 | -0.0023 | -0.0120*** | -0.0121*** |
| | (0.0009) | (0.0021) | (0.0023) | (0.0044) | (0.0013) | (0.0026) | (0.0013) | (0.0034) | (0.0023) | (0.0034) |
| Constant | 0.4220*** | 0.4817** | 0.4536** | 0.5711** | 0.6598*** | 0.6190*** | 0.4174*** | 0.3615 | 1.7773*** | 1.3411*** |
| | (0.1308) | (0.1901) | (0.2026) | (0.2649) | (0.1816) | (0.2081) | (0.1597) | (0.2315) | (0.3125) | (0.2778) |
| Obs. | 213 | 161 | 213 | 161 | 213 | 161 | 213 | 161 | 213 | 161 |
| $R^2$ | 0.9575 | 0.9628 | 0.9077 | 0.9222 | 0.9215 | 0.9205 | 0.9220 | 0.9401 | 0.9318 | 0.9573 |

Note: Robust standard errors are reported in parentheses. °, ** and *** indicate significance at 10%, 5% and 1% level, respectively.

Table 5: Fiscal consolidation and male suicide rates, 1968–2012

| | **All years** | | **10–24 years** | | **25–44 years** | | **45–64 years** | | **65–89 years** | |
|---|---|---|---|---|---|---|---|---|---|---|
| Variable | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| $SR_{it-1}$ | 0.8122*** | 0.7455*** | 0.7401*** | 0.5906*** | 0.6580*** | 0.6024*** | 0.7912*** | 0.7253*** | 0.4123*** | 0.4737*** |
| | (0.0440) | (0.0709) | (0.0553) | (0.0757) | (0.0715) | (0.0814) | (0.0575) | (0.0836) | (0.0945) | (0.0860) |
| $Growth_{it}$ | -0.0072*** | -0.0077*** | -0.0129** | -0.0141** | -0.0073 | -0.0102° | -0.0063° | -0.0072** | -0.0112** | -0.0074 |
| | (0.0024) | (0.0026) | (0.0060) | (0.0059) | (0.0051) | (0.0052) | (0.0036) | (0.0034) | (0.0053) | (0.0050) |
| $Gov\_Exp_{it}$ | -0.0009 | -0.0028 | 0.0028 | -0.0011 | 0.0029 | 0.0001 | -0.0034 | -0.0059*** | -0.0107*** | -0.0082** |
| | (0.0014) | (0.0018) | (0.0039) | (0.0039) | (0.0026) | (0.0034) | (0.0023) | (0.0022) | (0.0041) | (0.0038) |
| $Gov\_Exp_{it-1}$ | -0.0020 | -0.0030 | -0.0068** | -0.0062° | -0.0035 | -0.0060° | 0.0003 | 0.0022 | -0.0056° | -0.0057° |
| | (0.0015) | (0.0019) | (0.0034) | (0.0037) | (0.0028) | (0.0033) | (0.0022) | (0.0024) | (0.0034) | (0.0030) |
| $Unemp_{it}$ | 0.0010 | 0.0036 | 0.0003 | 0.0095 | 0.0034 | 0.0052 | 0.0028 | 0.0074° | -0.0010 | 0.0036 |
| | (0.0021) | (0.0030) | (0.0050) | (0.0061) | (0.0034) | (0.0049) | (0.0029) | (0.0039) | (0.0044) | (0.0056) |
| $Fert_{it}$ | -0.0668** | -0.0267 | -0.2206*** | -0.1233 | -0.1278** | -0.0611 | 0.0071 | 0.0800° | -0.2842*** | -0.1359° |
| | (0.0334) | (0.0364) | (0.0829) | (0.0782) | (0.0577) | (0.0588) | (0.0379) | (0.0411) | (0.0787) | (0.0713) |
| $Alc_{it}$ | | 0.0005 | | -0.0110 | | -0.0019 | | 0.0068 | | -0.0050 |
| | | (0.0041) | | (0.0096) | | (0.0072) | | (0.0051) | | (0.0076) |
| $Div_{it}$ | | 0.0144 | | -0.0510 | | -0.0153 | | 0.0055 | | 0.0556 |
| | | (0.0397) | | (0.0468) | | (0.0450) | | (0.0493) | | (0.0391) |
| $Trend_t$ | -0.0010 | -0.0012 | -0.0076*** | -0.0084** | -0.0014 | -0.0011 | 0.0004 | 0.0013 | -0.0115*** | -0.0119*** |
| | (0.0009) | (0.0021) | (0.0025) | (0.0039) | (0.0016) | (0.0029) | (0.0014) | (0.0031) | (0.0026) | (0.0039) |
| Constant | 0.4621*** | 0.4754** | 0.7968*** | 0.8663*** | 0.8246*** | 0.8259*** | 0.3856** | 0.2698 | 2.2786*** | 1.8407*** |
| | (0.1369) | (0.1880) | (0.2569) | (0.2822) | (0.2211) | (0.2397) | (0.1617) | (0.2246) | (0.4097) | (0.3750) |
| Obs. | 213 | 161 | 213 | 161 | 213 | 161 | 213 | 161 | 213 | 161 |
| $R^2$ | 0.9575 | 0.9631 | 0.8956 | 0.9142 | 0.9122 | 0.9144 | 0.9156 | 0.9423 | 0.9176 | 0.9410 |

Note: Robust standard errors are reported in parentheses. °, ** and *** indicate significance at 10%, 5% and 1% level, respectively.

Table 6: Fiscal consolidation and female suicide rates, 1968–2012

| | **All years** | | **10–24 years** | | **25–44 years** | | **45–64 years** | | **65–89 years** | |
|---|---|---|---|---|---|---|---|---|---|---|
| Variable | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| $SR_{it-1}$ | 0.6149*** | 0.5558*** | 0.5449*** | 0.3611*** | 0.5111*** | 0.4882*** | 0.4806*** | 0.4012*** | 0.2232** | 0.0306 |
| | (0.0705) | (0.0856) | (0.0604) | (0.0942) | (0.0709) | (0.0990) | (0.0780) | (0.1094) | (0.2232) | (0.0306) |
| $Growth_{it}$ | -0.0084° | -0.0132*** | -0.0093 | -0.0097 | -0.0046 | -0.0134** | -0.0082 | -0.0139** | -0.0224*** | -0.0269*** |
| | (0.0045) | (0.0041) | (0.0103) | (0.0102) | (0.0057) | (0.0057) | (0.0075) | (0.0067) | (0.0079) | (0.0075) |
| $Gov\_Exp_{it}$ | 0.0007 | -0.0019 | 0.0026 | 0.0077 | 0.0038 | -0.0007 | 0.0023 | -0.0022 | -0.0056 | -0.0087 |
| | (0.0030) | (0.0024) | (0.0076) | (0.0073) | (0.0039) | (0.0036) | (0.0054) | (0.0040) | (0.0049) | (0.0054) |
| $Gov\_Exp_{it-1}$ | -0.0045 | -0.0052° | -0.0051 | -0.0016 | -0.0047 | -0.0076** | -0.0029 | -0.0010 | -0.0037 | -0.0025 |
| | (0.0032) | (0.0029) | (0.0073) | (0.0065) | (0.0039) | (0.0036) | (0.0048) | (0.0049) | (0.0042) | (0.0047) |
| $Unemp_{it}$ | (0.0004 | 0.0003 | -0.0013 | 0.0175° | 0.0077° | 0.0054 | 0.0000 | -0.0014 | -0.0060 | -0.0141 |
| | (0.0031) | (0.0040) | (0.0090) | (0.0101) | (0.0041) | (0.0061) | (0.0045) | (0.0066) | (0.0061) | (0.0129) |
| $Fert_{it}$ | -0.1477*** | -0.1351*** | -0.0997 | 0.1515 | -0.0810 | 0.0128 | -0.1978*** | -0.1757** | -0.5948*** | -0.6659*** |
| | (0.0458) | (0.0497) | (0.1107) | (0.1165) | (0.0559) | (0.0661) | (0.0708) | (0.0863) | (0.1209) | (0.1517) |
| $Alc_{it}$ | | -0.0127** | | -0.0354** | | -0.0055 | | -0.0127 | | -0.0424*** |
| | | (0.0055) | | (0.0136) | | (0.0094) | | (0.0080) | | (0.0110) |
| $Div_{it}$ | | 0.0684 | | 0.0408 | | 0.0288 | | 0.1314** | | 0.1143° |
| | | (0.0432) | | (0.0593) | | (0.0526) | | (0.0529) | | (0.0595) |
| $Trend_t$ | -0.0068*** | -0.0144*** | -0.0067 | -0.0193** | -0.0046** | -0.0064 | -0.0132*** | -0.0233*** | -0.0304*** | -0.0501*** |
| | (0.0016) | (0.0032) | (0.0043) | (0.0076) | (0.0020) | (0.0040) | (0.0030) | (0.0056) | (0.0050) | (0.0078) |
| Constant | 0.5946*** | 0.8575*** | 0.2269 | 0.1736 | 0.3831** | 0.3471 | 1.0528*** | 1.3681*** | 2.6831*** | 3.8786*** |
| | (0.1532) | (0.2056) | (0.3171) | (0.4211) | (0.1695) | (0.2391) | (0.2500) | (0.3471) | (0.4340) | (0.6440) |
| Obs. | 213 | 161 | 209 | 159 | 213 | 161 | 213 | 161 | 213 | 161 |
| $R^2$ | 0.8864 | 0.9182 | 0.6308 | 0.7600 | 0.8140 | 0.8225 | 0.8251 | 0.8478 | 0.8193 | 0.8489 |

Note: Robust standard errors are reported in parentheses. °, ** and *** indicate significance at 10%, 5% and 1% level, respectively.

Table 7: Medium-run predicted effect of a sustained one percentage point reduction in government spending beginning in year $t$

| Panel A: overall suicide rates | | | | | | |
|---|---|---|---|---|---|---|
| Age | $t$ | $t+1$ | $t+2$ | $t+3$ | $t+4$ | $t+5$ |
| All ages | 0.26% | 0.38%** | 0.01% | -0.01% | 0.02% | 0.32%* |
| 10–24 years | -0.12% | 0.52% | -0.18% | 0.50%° | -0.42% | 0.29% |
| 25–44 years | 0.10% | 0.71%** | 0.39% | -0.16% | 0.26% | 0.69%** |
| 45–64 years | 0.33% | -0.19% | 0.04% | -0.03% | 0.07% | 0.39%° |
| 65–89 years | 0.67%** | 0.52%** | -0.17% | 0.50%° | 0.01% | 0.03% |
| Panel B: male suicide rates | | | | | | |
| Age | $t$ | $t+1$ | $t+2$ | $t+3$ | $t+4$ | $t+5$ |
| All ages | 0.38%° | 0.35%° | -0.05% | 0.05% | 0.16% | 0.36%** |
| 10–24 years | 0.12% | 0.70%° | 0.05% | 0.37% | -0.50% | 0.39% |
| 25–44 years | 0.25% | 0.74%** | 0.51%° | -0.11% | 0.37% | 0.89%*** |
| 45–64 years | 0.58%*** | -0.27% | -0.29%° | 0.09% | 0.36% | 0.38%° |
| 65–89 years | 0.92%** | 0.77%** | 0.01% | 0.66%** | 0.35% | 0.33% |
| Panel C: female suicide rates | | | | | | |
| Age | $t$ | $t+1$ | $t+2$ | $t+3$ | $t+4$ | $t+5$ |
| All ages | 0.08% | 0.52%° | 0.10% | -0.24% | -0.32% | 0.09% |
| 10–24 years | -0.70% | 0.21% | 0.02% | 0.05% | 0.13% | 0.30% |
| 25–44 years | -0.11% | 0.74%° | 0.10% | -0.29% | -0.04% | -0.02% |
| 45–64 years | 0.18% | 0.07% | 0.59% | -0.08% | -0.60% | 0.28% |
| 65–89 years | 1.00%° | 0.31% | -0.35% | 0.79% | -0.07% | -0.23% |

Note: Entries show the predicted effect of a one percentage point decrease in the Eurozone periphery government spending beginning in year $t$ and continuing through year $t+5$. These predictions are made using the results of regressions similar to those in Tables 4, 5 and 6, with the only exception of the inclusion of fiscal austerity variable lagged up to 5 year periods. °, ** and *** indicate significance at 10%, 5% and 1% level, respectively.

Table 8: Long–run multiplier of fiscal consolidation on suicide rates

| | Overall suicide rates | Male suicide rates | Female suicide rates |
|---|---|---|---|
| All ages | - | - | - |
| 10–24 years | - | - | - |
| 25–44 years | - | - | - |
| 45–64 years | - | - | - |
| 65–89 years | -2.77% | -2.64% | - |

Note: The long–run multiplier is computed according to equation 4 only for the cases where all the coefficients $\hat{\beta}_1$, $\hat{\beta}_2$ and $\hat{\beta}_3$ are significant at least at the 10% level in Tables 4, 5 and 6.

Table 9: Fiscal consolidation, labour market conditions and overall suicide rates, 1968–2012

| | **All years** | | **10–24 years** | | **25–44 years** | | **45–64 years** | | **65–89 years** | |
|---|---|---|---|---|---|---|---|---|---|---|
| Variable | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| $SR_{it-1}$ | 0.7363*** | 0.6404*** | 0.8017*** | 0.6314*** | 0.5545*** | 0.5015*** | 0.7147*** | 0.6230*** | 0.4206*** | 0.5527*** |
| | (0.0532) | (0.0892) | (0.0500) | (0.0622) | (0.0822) | (0.0911) | (0.0617) | (0.0957) | (0.0905) | (0.0728) |
| $EPL_{it}$ | -0.0229** | -0.0215 | 0.0082 | 0.0362 | -0.0411** | -0.0329 | -0.0096 | -0.0069 | -0.0723*** | -0.0497** |
| | (0.0112) | (0.0145) | (0.0258) | (0.0292) | (0.0190) | (0.0236) | (0.0153) | (0.0190) | (0.0225) | (0.0238) |
| $GRR_{it}$ | -0.0028*** | -0.0031*** | -0.0034* | -0.0033° | -0.0061*** | -0.0062*** | -0.0038*** | -0.0045*** | -0.0022 | -0.0013 |
| | (0.0009) | (0.0010) | (0.0020) | (0.0019) | (0.0016) | (0.0017) | (0.0012) | (0.0013) | (0.0017) | (0.0015) |
| $Growth_{it}$ | -0.0003 | -0.0023 | 0.0034 | 0.0012 | 0.0034 | 0.0004 | -0.0014 | -0.0036° | -0.0088*** | -0.0067** |
| | (0.0024) | (0.0025) | (0.0054) | (0.0054) | (0.0041) | (0.0043) | (0.0037) | (0.0036) | (0.0044) | (0.0040) |
| $Gov\_Exp_{it}$ | -0.0003 | -0.0023 | 0.0034 | 0.0012 | 0.0034 | 0.0004 | -0.0014 | -0.0036° | -0.0088*** | -0.0067** |
| | (0.0014) | (0.0016) | (0.0035) | (0.0035) | (0.0023) | (0.0028) | (0.0021) | (0.0020) | (0.0028) | (0.0026) |
| $Gov\_Exp_{it-1}$ | -0.0019 | -0.0031** | -0.0068° | -0.0046 | -0.0027 | -0.0051° | 0.0003 | 0.0018 | -0.0035 | -0.0040° |
| | (0.0015) | (0.0015) | (0.0037) | (0.0034) | (0.0025) | (0.0026) | (0.0021) | (0.0022) | (0.0024) | (0.0022) |
| $Unemp_{it}$ | 0.0005 | 0.0046° | 0.0005 | 0.0080 | 0.0035 | 0.0070 | 0.0024 | 0.0074** | -0.0026 | 0.0035 |
| | (0.0022) | (0.0027) | (0.0046) | (0.0053) | (0.0030) | (0.0042) | (0.0027) | (0.0038) | (0.0033) | (0.0037) |
| $Fert_{it}$ | -0.1169*** | -0.0894** | -0.1416° | -0.0403 | -0.1965*** | -0.1244** | -0.0364 | 0.0174 | -0.3769*** | -0.2248*** |
| | (0.0415) | (0.0411) | (0.0748) | (0.0735) | (0.0543) | (0.0538) | (0.0426) | (0.0418) | (0.0748) | (0.0598) |
| $Alc_{it}$ | | -0.0041 | | -0.0217** | | -0.0062 | | -0.0018 | | -0.0023 |
| | | (0.0042) | | (0.0097) | | (0.0066) | | (0.0055) | | (0.0070) |
| $Div_{it}$ | | 0.0249 | | -0.0104 | | -0.0036 | | 0.0325 | | 0.0528 |
| | | (0.0387) | | (0.0418) | | (0.0418) | | (0.0470) | | (0.0335) |
| $Trend_t$ | -0.0005 | -0.0024 | -0.0036 | -0.0083° | 0.0011 | 0.0007 | 0.0008 | -0.0011 | -0.0142*** | -0.0130*** |
| | (0.0013) | (0.0021) | (0.0032) | (0.0047) | (0.0020) | (0.0028) | (0.0020) | (0.0034) | (0.0029) | (0.0035) |
| Constant | 0.6298*** | 0.7420*** | 0.4533° | 0.5597** | 1.0163*** | 1.0033*** | 0.5406** | 0.5945** | 2.3632*** | 1.6817*** |
| | (0.1702) | (0.2168) | (0.2434) | (0.2545) | (0.2254) | (0.2181) | (0.1936) | (0.2402) | (0.3893) | (0.3181) |
| Obs. | 209 | 161 | 209 | 161 | 209 | 161 | 209 | 161 | 209 | 161 |
| $R^2$ | 0.9592 | 0.9648 | 0.9077 | 0.9239 | 0.9277 | 0.9270 | 0.9244 | 0.9434 | 0.9371 | 0.9588 |

Note: Robust standard errors are reported in parentheses. °, ** and *** indicate significance at 10%, 5% and 1% level, respectively.

Table 10: Fiscal consolidation, labour market conditions and male suicide rates, 1968–2012

| | **All years** | | **10–24 years** | | **25–44 years** | | **45–64 years** | | **65–89 years** | |
|---|---|---|---|---|---|---|---|---|---|---|
| Variable | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| $SR_{it-1}$ | 0.7620*** | 0.6655*** | 0.7221*** | 0.5696*** | 0.5671*** | 0.5047*** | 0.7428*** | 0.6359*** | 0.3231*** | 0.4105*** |
| | (0.0469) | (0.0780) | (0.0564) | (0.0728) | (0.0743) | (0.0838) | (0.0635) | (0.0899) | (0.1002) | (0.0920) |
| $EPL_{it}$ | -0.0141 | -0.0178 | 0.0260 | 0.0572° | -0.0316 | -0.0272 | 0.0040 | -0.0010 | -0.0674** | -0.0519° |
| | (0.0117) | (0.0158) | (0.0265) | (0.0300) | (0.0219) | (0.0271) | (0.0168) | (0.0208) | (0.0263) | (0.0310) |
| $GRR_{it}$ | -0.0030*** | -0.0032*** | -0.0042° | -0.0038° | -0.0062*** | -0.0060*** | -0.0045*** | -0.0050*** | -0.0051** | -0.0036° |
| | (0.0010) | (0.0011) | (0.0022) | (0.0022) | (0.0017) | (0.0018) | (0.0013) | (0.0014) | (0.0022) | (0.0020) |
| $Growth_{it}$ | -0.0081*** | -0.0088*** | -0.0125** | -0.0132** | -0.0090° | -0.0119** | -0.0071° | -0.0080** | -0.0148*** | -0.0097° |
| | (0.0024) | (0.0026) | (0.0060) | (0.0059) | (0.0048) | (0.0050) | (0.0037) | (0.0035) | (0.0054) | (0.0052) |
| $Gov\_Exp_{it}$ | -0.0008 | -0.0028 | 0.0033 | -0.0012 | 0.0033 | 0.0002 | -0.0031 | -0.0058*** | -0.0108*** | -0.0080** |
| | (0.0015) | (0.0018) | (0.0040) | (0.0038) | (0.0026) | (0.0034) | (0.0023) | (0.0022) | (0.0039) | (0.0039) |
| $Gov\_Exp_{it-1}$ | -0.0017 | -0.0027 | -0.0063° | -0.0059 | -0.0025 | -0.0049 | 0.0002 | 0.0023) | -0.0052 | -0.0053° |
| | (0.0016) | (0.0019) | (0.0037) | (0.0037) | (0.0028) | (0.0033) | (0.0023) | (0.0024) | (0.0033) | (0.0029) |
| $Unemp_{it}$ | 0.0003 | 0.0048 | -0.0029 | 0.0048 | 0.0020 | 0.0069 | 0.0021 | 0.0089** | -0.0020 | 0.0069 |
| | (0.0024) | (0.0030) | (0.0053) | (0.0056) | (0.0034) | (0.0047) | (0.0030) | (0.0040) | (0.0047) | (0.0057) |
| $Fert_{it}$ | -0.1047*** | -0.0674° | -0.2466*** | -0.1004 | -0.2129*** | -0.1293** | -0.0117 | 0.0669° | -0.4021*** | -0.2160*** |
| | (0.0387) | (0.0379) | (0.0894) | (0.0821) | (0.0606) | (0.0579) | (0.0394) | (0.0394) | (0.0880) | (0.0808) |
| $Alc_{it}$ | | -0.0023 | | -0.0200** | | -0.0068 | | 0.0011 | | -0.0057 |
| | | (0.0045) | | (0.0101) | | (0.0077) | | (0.0060) | | (0.0079) |
| $Div_{it}$ | | 0.0111 | | -0.0443 | | -0.0207 | | 0.0075 | | 0.0522 |
| | | (0.0402) | | (0.0466) | | (0.0466) | | (0.0486) | | (0.0375) |
| $Trend_t$ | 0.0007 | 0.0004 | -0.0051 | -0.0066 | 0.0016 | 0.0020 | 0.0031 | 0.0032 | -0.0118*** | -0.0116*** |
| | (0.0013) | (0.0022) | (0.0033) | (0.0042) | (0.0023) | (0.0032) | (0.0020) | (0.0031) | (0.0030) | (0.0038) |
| Constant | 0.6369*** | 0.7376*** | 0.8017*** | 0.8214*** | 1.1990*** | 1.2055*** | 0.4927** | 0.5196** | 2.9298*** | 2.2784*** |
| | (0.1667) | (0.2089) | (0.2998) | (0.2769) | (0.2584) | (0.2504) | (0.1934) | (0.2382) | (0.4787) | (0.4262) |
| Obs. | 209 | 161 | 209 | 161 | 209 | 161 | 209 | 161 | 209 | 161 |
| $R^2$ | 0.9588 | 0.9649 | 0.8976 | 0.9170 | 0.9183 | 0.9201 | 0.9205 | 0.9459 | 0.9250 | 0.9433 |

Note: Robust standard errors are reported in parentheses. °, ** and *** indicate significance at 10%, 5% and 1% level, respectively.

Table 11: Fiscal consolidation, labour market conditions and female suicide rates, 1968–2012

| | **All years** | | **10–24 years** | | **25–44 years** | | **45–64 years** | | **65–89 years** | |
|---|---|---|---|---|---|---|---|---|---|---|
| Variable | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| $SR_{it-1}$ | 0.5529*** | 0.5091*** | 0.5085*** | 0.3518*** | 0.4181*** | 0.3987*** | 0.4465*** | 0.3655*** | 0.1108 | -0.0387 |
| | (0.0687) | (0.0860) | (0.0620) | (0.0935) | (0.0687) | (0.0984) | (0.0759) | (0.1086) | (0.1046) | (0.1269) |
| $EPL_{it}$ | -0.0746*** | -0.0417** | -0.0686 | 0.0079 | -0.0925*** | -0.0599° | -0.0822*** | -0.0447 | -0.1759*** | -0.1537*** |
| | (0.0186) | (0.0208) | (0.0551) | (0.0628) | (0.0253) | (0.0335) | (0.0257) | (0.0289) | (0.0335) | (0.0456) |
| $GRR_{it}$ | -0.0018 | -0.0025° | -0.0083** | -0.0052 | -0.0069*** | -0.0079*** | -0.0011 | -0.0038 | 0.0042° | 0.0007 |
| | (0.0014) | (0.0013) | (0.0038) | (0.0038) | (0.0021) | (0.0024) | (0.0025) | (0.0024) | (0.0023) | (0.0025) |
| $Growth_{it}$ | -0.0128*** | -0.0159*** | -0.0153 | -0.0106 | -0.0124** | -0.0183*** | -0.0129 | -0.0169** | -0.0302*** | -0.0331*** |
| | (0.0047) | (0.0042) | (0.0107) | (0.0105) | (0.0055) | (0.0059) | (0.0078) | (0.0069) | (0.0075) | (0.0076) |
| $Gov\_Exp_{it}$ | 0.0006 | -0.0019 | 0.0025 | 0.0081 | 0.0030 | -0.0003 | 0.0018 | -0.0022 | -0.0059 | -0.0087 |
| | (0.0031) | (0.0025) | (0.0076) | (0.0073) | (0.0037) | (0.0037) | (0.0054) | (0.0040) | (0.0048) | (0.0054) |
| $Gov\_Exp_{it-1}$ | -0.0038 | -0.0044 | -0.0045 | -0.0006 | -0.0045 | -0.0058 | -0.0023 | -0.0001 | -0.0025 | -0.0019 |
| | (0.0031) | (0.0030) | (0.0074) | (0.0068) | (0.0036) | (0.0039) | (0.0047) | (0.0051) | (0.0040) | (0.0049) |
| $Unemp_{it}$ | 0.0003 | 0.0028 | -0.0010 | 0.0162 | 0.0101** | 0.0088 | -0.0005 | 0.0012 | -0.0061 | -0.0031 |
| | (0.0034) | (0.0042) | (0.0106) | (0.0099) | (0.0043) | (0.0063) | (0.0049) | (0.0067) | (0.0068) | (0.0146) |
| $Fert_{it}$ | -0.2454*** | -0.2000*** | -0.1784 | 0.1382 | -0.1803*** | -0.0896 | -0.2875*** | -0.2452*** | -0.8159*** | -0.8378*** |
| | (0.0554) | (0.0569) | (0.1325) | (0.1176) | (0.0619) | (0.0726) | (0.0813) | (0.0925) | (0.1441) | (0.1571) |
| $Alc_{it}$ | | -0.0131** | | -0.0413*** | | -0.0099 | | -0.0133° | | -0.0319*** |
| | | (0.0056) | | (0.0146) | | (0.0097) | | (0.0077) | | (0.0105) |
| $Div_{it}$ | | 0.0711 | | 0.0458 | | 0.0341 | | 0.1356** | | 0.1058° |
| | | (0.0430) | | (0.0606) | | (0.0513) | | (0.0525) | | (0.0554) |
| $Trend_t$ | -0.0088*** | -0.0146*** | -0.0035 | -0.0167° | -0.0030 | -0.0044 | -0.0157*** | -0.0230*** | -0.0419*** | -0.0544*** |
| | (0.0023) | (0.0033) | (0.0067) | (0.0086) | (0.0028) | (0.0040) | (0.0043) | (0.0060) | (0.0062) | (0.0077) |
| Constant | 1.0326*** | 1.1094*** | 0.5283 | 0.2350 | 0.8319*** | 0.7507*** | 1.4988*** | 1.6398*** | 3.8294*** | 4.5414*** |
| | (0.2026) | (0.2228) | (0.4463) | (0.4257) | (0.2183) | (0.2460) | (0.3011) | (0.3603) | (0.5547 | 0.6690) |
| Obs. | 209 | 161 | 205 | 159 | 209 | 161 | 209 | 161 | 209 | 161 |
| $R^2$ | 0.8926 | 0.9209 | 0.6410 | 0.7627 | 0.8330 | 0.8354 | 0.8300 | 0.8515 | 0.8325 | 0.8584 |

Note: Robust standard errors are reported in parentheses. °, ** and *** indicate significance at 10%, 5% and 1% level, respectively.

# A Appendix

Table A.1: Government deficit and overall suicide rates, 1968–2012

| | **All years** | | **10–24 years** | | **25–44 years** | | **45–64 years** | | **65–89 years** | |
|---|---|---|---|---|---|---|---|---|---|---|
| Variable | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| $SR_{it-1}$ | 0.7300*** | 0.6072*** | 0.7111*** | 0.5198*** | 0.5894*** | 0.4765*** | 0.6829*** | 0.6313*** | 0.5759*** | 0.5830*** |
| | (0.0929) | (0.1309) | (0.0667) | (0.1021) | (0.1062) | (0.1319) | (0.1056) | (0.1260) | (0.0810) | (0.0924) |
| $Growth_{it}$ | -0.0075° | -0.0089° | -0.0093 | -0.0119 | -0.0071 | -0.0088 | -0.0086 | -0.0082 | -0.0133** | -0.0114° |
| | (0.0042) | (0.0045) | (0.0075) | (0.0087) | (0.0058) | (0.0067) | (0.0064) | (0.0071) | (0.0060) | (0.0066) |
| $Def_{it}$ | 0.0030 | 0.0058** | 0.0011 | 0.0093° | 0.0032 | 0.0065 | -0.0002 | 0.0010 | 0.0065** | 0.0043 |
| | (0.0023) | (0.0026) | (0.0055) | (0.0055) | (0.0037) | (0.0047) | (0.0033) | (0.0034) | (0.0032) | (0.0034) |
| $Def_{it-1}$ | -0.0019 | 0.0004 | -0.0001 | 0.0085 | -0.0024 | 0.0018 | -0.0030 | -0.0033 | 0.0050 | -0.0002 |
| | (0.0023) | (0.0044) | (0.0051) | (0.0099) | (0.0028) | (0.0072) | (0.0028) | (0.0057) | (0.0043) | (0.0056) |
| $Unemp_{it}$ | 0.0007 | 0.0067 | -0.0014 | 0.0151° | 0.0017 | 0.0098 | 0.0010 | 0.0070 | 0.0044 | 0.0066 |
| | (0.0025) | (0.0044) | (0.0050) | (0.0083) | (0.0033) | (0.0071) | (0.0032) | (0.0059) | (0.0035) | (0.0059) |
| $Fert_{it}$ | -0.0889 | -0.0564 | -0.0319 | 0.0857 | -0.0207 | 0.0578 | 0.0237 | 0.0582 | -0.2850** | -0.3398*** |
| | (0.0886) | (0.1014) | (0.1552) | (0.1778) | (0.1088) | (0.1267) | (0.0838) | (0.1077) | (0.1110) | (0.1148) |
| $Alc_{it}$ | | 0.0023 | | -0.0222 | | 0.0063 | | -0.0009 | | -0.0015 |
| | | (0.0158) | | (0.0258) | | (0.0228) | | (0.0188) | | (0.0177) |
| $Div_{it}$ | | 0.0578 | | -0.0328 | | 0.0285 | | 0.0874 | | 0.1062** |
| | | (0.0601) | | (0.0587) | | (0.0656) | | (0.0712) | | (0.0497) |
| $Trend_t$ | -0.0015 | -0.0057 | -0.0055° | -0.0127 | -0.0024 | -0.0038 | -0.0017 | -0.0086 | -0.0103*** | -0.0173** |
| | (0.0013) | (0.0058) | (0.0028) | (0.0086) | (0.0016) | (0.0067) | (0.0019) | (0.0077) | (0.0028) | (0.0071) |
| Constant | 0.5104** | 0.6175 | 0.3508 | 0.5695 | 0.6450** | 0.5620 | 0.5126** | 0.6269 | 1.4843*** | 1.6579*** |
| | (0.2381) | (0.4485) | (0.2948) | (0.6393) | (0.2782) | (0.5065) | (0.2583) | (0.5394) | (0.3494) | (0.5720) |
| Obs. | 129 | 105 | 129 | 105 | 129 | 105 | 129 | 105 | 129 | 105 |
| $R^2$ | 0.9459 | 0.9532 | 0.9277 | 0.9402 | 0.9256 | 0.9192 | 0.9155 | 0.9274 | 0.9535 | 0.9646 |

Note: Robust standard errors are reported in parentheses. °, ** and *** indicate significance at 10%, 5% and 1% level, respectively.

Table A.2: Government deficit and male suicide rates, 1968–2012

| | **All years** | | **10–24 years** | | **25–44 years** | | **45–64 years** | | **65–89 years** | |
|---|---|---|---|---|---|---|---|---|---|---|
| Variable | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| $SR_{it-1}$ | 0.7383*** | 0.6150*** | 0.6493*** | 0.4900*** | 0.5797*** | 0.4634*** | 0.6837*** | 0.6431*** | 0.4671*** | 0.4386*** |
| | (0.0862) | (0.1193) | (0.0794) | (0.1069) | (0.0972) | (0.1208) | (0.1031) | (0.1195) | (0.0975) | (0.1228) |
| $Growth_{it}$ | -0.0075° | -0.0085° | -0.0082 | -0.0108 | -0.0082 | -0.0097 | -0.0084 | -0.0088 | -0.0104 | -0.0103 |
| | (0.0041) | (0.0045) | (0.0077) | (0.0088) | (0.0060) | (0.0071) | (0.0060) | (0.0065) | (0.0070) | (0.0077) |
| $Def_{it}$ | 0.0036 | 0.0062** | -0.0020 | 0.0075 | 0.0027 | 0.0061 | 0.0011 | 0.0033 | 0.0130*** | 0.0121*** |
| | (0.0024) | (0.0028) | (0.0060) | (0.0052) | (0.0042) | (0.0052) | (0.0033) | (0.0035) | (0.0040) | (0.0043) |
| $Def_{it-1}$ | -0.0029 | -0.0007 | -0.0006 | 0.0061 | -0.0017 | 0.0031 | -0.0043 | -0.0047 | 0.0028 | -0.0021 |
| | (0.0021) | (0.0046) | (0.0053) | (0.0102) | (0.0031) | (0.0080) | (0.0027) | (0.0057) | (0.0054) | (0.0081) |
| $Unemp_{it}$ | 0.0007 | 0.0059 | -0.0010 | 0.0118 | 0.0029 | 0.0086 | 0.0030 | 0.0086 | 0.0070 | 0.0084 |
| | (0.0026) | (0.0043) | (0.0062) | (0.0086) | (0.0039) | (0.0073) | (0.0045) | (0.0060) | (0.0047) | (0.0070) |
| $Fert_{it}$ | -0.0994 | -0.0614 | -0.0989 | -0.0150 | -0.0720 | -0.0080 | 0.0707 | 0.1045 | -0.2781** | -0.3057** |
| | (0.0918) | (0.1049) | (0.1817) | (0.2080) | (0.1195) | (0.1391) | (0.0806) | (0.0959) | (0.1188) | (0.1304) |
| $Alc_{it}$ | | -0.0012 | | -0.0189 | | -0.0009 | | -0.0028 | | -0.0033 |
| | | (0.0163) | | (0.0258) | | (0.0239) | | (0.0188) | | (0.0213) |
| $Div_{it}$ | | 0.0612 | | -0.0537 | | 0.0293 | | 0.0863 | | 0.1415** |
| | | (0.0608) | | (0.0626) | | (0.0679) | | (0.0722) | | (0.0554) |
| $Trend_t$ | -0.0008 | -0.0055 | -0.0064** | -0.0117 | -0.0023 | -0.0055 | 0.0000 | -0.0075 | -0.0106*** | -0.0204** |
| | (0.0012) | (0.0058) | (0.0030) | (0.0078) | (0.0018) | (0.0069) | (0.0017) | (0.0072) | (0.0029) | (0.0080) |
| Constant | 0.6261** | 0.8369° | 0.6446° | 0.9422 | 0.9154*** | 1.0678° | 0.5340** | 0.7028 | 1.9859*** | 2.2910*** |
| | (0.2585) | (0.4647) | (0.3618) | (0.6317) | (0.3261) | (0.5549) | (0.2405) | (0.5238) | (0.4187) | (0.6911) |
| Obs. | 129 | 105 | 129 | 105 | 129 | 105 | 129 | 105 | 129 | 105 |
| $R^2$ | 0.9430 | 0.9501 | 0.9227 | 0.9353 | 0.9217 | 0.9168 | 0.9021 | 0.9281 | 0.9388 | 0.9480 |

Note: Robust standard errors are reported in parentheses. °, ** and *** indicate significance at 10%, 5% and 1% level, respectively.

Table A.3: Government deficit and female suicide rates, 1968–2012

| | **All years** | | **10–24 years** | | **25–44 years** | | **45–64 years** | | **65–89 years** | |
|---|---|---|---|---|---|---|---|---|---|---|
| Variable | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| $SR_{it-1}$ | 0.4988*** | 0.3703*** | 0.5085*** | 0.2752** | 0.3853*** | 0.4230*** | 0.3976*** | 0.3528** | 0.2251 | 0.0826 |
| | (0.1032) | (0.1262) | (0.0869) | (0.1360) | (0.1148) | (0.1291) | (0.1176) | (0.1342) | (0.1397) | (0.1664) |
| $Growth_{it}$ | -0.0046 | -0.0108 | -0.0151 | -0.0210 | -0.0077 | -0.0094 | -0.0046 | -0.0133 | -0.0009 | -0.0059 |
| | (0.0075) | (0.0068) | (0.0173) | (0.0179) | (0.0085) | (0.0084) | (0.0118) | (0.0112) | (0.0149) | (0.0142) |
| $Def_{it}$ | -0.0011 | 0.0044 | 0.0075 | 0.0069 | 0.0031 | 0.0050 | -0.0097 | -0.0020 | -0.0229° | -0.0156 |
| | (0.0040) | (0.0040) | (0.0089) | (0.0119) | (0.0047) | (0.0053) | (0.0078) | (0.0067) | (0.0119) | (0.0138) |
| $Def_{it-1}$ | 0.0023 | 0.0053 | -0.0013 | 0.0067 | -0.0067 | -0.0095 | 0.0048 | 0.0083 | 0.0165 | 0.0328** |
| | (0.0038) | (0.0063) | (0.0089) | (0.0140) | (0.0060) | (0.0087) | (0.0064) | (0.0089) | (0.0117) | (0.0162) |
| $Unemp_{it}$ | -0.0007 | 0.0123° | -0.0110 | 0.0206 | 0.0044 | 0.0101 | 0.0008 | 0.0098 | 0.0058 | 0.0221 |
| | (0.0044) | (0.0072) | (0.0109) | (0.0129) | (0.0060) | (0.0105) | (0.0056) | (0.0094) | (0.0102) | (0.0170) |
| $Fert_{it}$ | -0.0102 | -0.0078 | -0.0136 | -0.0078 | -0.0074 | -0.0102 | -0.0058 | 0.0005 | -0.0159 | -0.0171 |
| | (0.0073) | (0.0075) | (0.0180) | (0.0159) | (0.0103) | (0.0109) | (0.0094) | (0.0109) | (0.0118) | (0.0122) |
| $Alc_{it}$ | | 0.0124 | | -0.0279 | | 0.0199 | | 0.0102 | | -0.0323 |
| | | (0.0174) | | (0.0397) | | (0.0291) | | (0.0277) | | (0.0381) |
| $Div_{it}$ | | 0.0446 | | -0.0993 | | -0.0128 | | 0.1369 | | 0.1808° |
| | | (0.0658) | | (0.0904) | | (0.0705) | | (0.0834) | | (0.0911) |
| $Trend_t$ | -0.0035 | -0.0083 | -0.0052 | -0.0187 | -0.0062° | -0.0019 | -0.0100*** | -0.0189** | -0.0174*** | -0.0358** |
| | (0.0026) | (0.0069) | (0.0066) | (0.0120) | (0.0035) | (0.0090) | (0.0035) | (0.0095) | (0.0054) | (0.0145) |
| Constant | 0.2462** | 0.1657 | 0.0185 | 0.2843 | 0.3405** | -0.0503 | 0.6106*** | 0.6500 | 1.1477*** | 1.8760** |
| | (0.1204) | (0.3547) | (0.2294) | (0.7065) | (0.1526) | (0.5671) | (0.2102) | (0.5167) | (0.2694) | (0.8463) |
| Obs. | 129 | 105 | 127 | 103 | 129 | 105 | 129 | 105 | 129 | 105 |
| $R^2$ | 0.9024 | 0.9245 | 0.7466 | 0.8184 | 0.8263 | 0.8530 | 0.8447 | 0.8513 | 0.8226 | 0.8485 |

Note: Robust standard errors are reported in parentheses. °, ** and *** indicate significance at 10%, 5% and 1% level, respectively.

Table A.4: Fiscal consolidation episodes and overall suicide rates

| | **All years** | | **10–24 years** | | **25–44 years** | | **45–64 years** | | **65–89 years** | |
|---|---|---|---|---|---|---|---|---|---|---|
| Variable | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| $SR_{it-1}$ | 0.7324*** | 0.5888*** | 0.7291*** | 0.5085*** | 0.6035*** | 0.4579*** | 0.6587*** | 0.6062*** | 0.5888*** | 0.5862*** |
| | (0.0913) | (0.1316) | (0.0662) | (0.1059) | (0.1050) | (0.1302) | (0.1047) | (0.1269) | (0.0798) | (0.0915) |
| $Growth_{it}$ | -0.0048 | -0.0048 | -0.0069 | -0.0049 | -0.0040 | -0.0045 | -0.0085 | -0.0067 | -0.0071 | -0.0079 |
| | (0.0037) | (0.0039) | (0.0065) | (0.0071) | (0.0055) | (0.0057) | (0.0054) | (0.0067) | (0.0051) | (0.0055) |
| $FCE_{it}$ | 0.0305 | 0.0494° | -0.0128 | 0.0336 | 0.0110 | 0.0350 | 0.0399 | 0.0532 | 0.0586° | 0.0513 |
| | (0.0266) | (0.0272) | (0.0465) | (0.0497) | (0.0351) | (0.0387) | (0.0320) | (0.0329) | (0.0343) | (0.0346) |
| $FCE_{it-1}$ | 0.0099 | 0.0075 | 0.0214 | 0.0456 | 0.0383 | 0.0448 | -0.0003 | -0.0115 | -0.0043 | -0.0154 |
| | (0.0220) | (0.0254) | (0.0452) | (0.0535) | (0.0301) | (0.0371) | (0.0322) | (0.0349) | (0.0324) | (0.0329) |
| $Unemp_{it}$ | -0.0000 | 0.0052 | -0.0014 | 0.0091 | -0.0002 | 0.0061 | 0.0003 | 0.0085° | 0.0044 | 0.0061 |
| | (0.0026) | (0.0037) | (0.0055) | (0.0068) | (0.0034) | (0.0061) | (0.0032) | (0.0047) | (0.0037) | (0.0051) |
| $Fert_{it}$ | -0.0443 | -0.0244 | 0.0155 | 0.0920 | 0.0148 | 0.0812 | 0.0428 | 0.0801 | -0.2022° | -0.2518** |
| | (0.0761) | (0.0807) | (0.1359) | (0.1374) | (0.0964) | (0.1050) | (0.0742) | (0.0973) | (0.1172) | (0.1130) |
| $Alc_{it}$ | | -0.0033 | | -0.0381° | | -0.0043 | | 0.0064 | | -0.0129 |
| | | (0.0132) | | (0.0229) | | (0.0187) | | (0.0157) | | (0.0178) |
| $Div_{it}$ | | 0.0534 | | -0.0353 | | 0.0299 | | 0.0727 | | 0.1074** |
| | | (0.0538) | | (0.0527) | | (0.0599) | | (0.0647) | | (0.0483) |
| $Trend_t$ | -0.0006 | -0.0058 | -0.0044 | -0.0154** | -0.0015 | -0.0054 | -0.0013 | -0.0054 | -0.0090*** | -0.0183*** |
| | (0.0013) | (0.0050) | (0.0027) | (0.0077) | (0.0017) | (0.0060) | (0.0018) | (0.0068) | (0.0027) | (0.0068) |
| Constant | 0.4043° | 0.6384 | 0.2385 | 0.8154 | 0.5480** | 0.7103 | 0.4883** | 0.4341 | 1.2721*** | 1.6536*** |
| | (0.2221) | (0.4084) | (0.2632) | (0.5642) | (0.2704) | (0.4803) | (0.2292) | (0.4757) | (0.3493) | (0.5405) |
| Obs. | 133 | 108 | 133 | 108 | 133 | 108 | 133 | 108 | 133 | 108 |
| $R^2$ | 0.9467 | 0.9542 | 0.9269 | 0.9396 | 0.9234 | 0.9186 | 0.9189 | 0.9299 | 0.9528 | 0.9637 |

Note: Robust standard errors are reported in parentheses. °, ** and *** indicate significance at 10%, 5% and 1% level, respectively.

Table A.5: Fiscal consolidation episodes and male suicide rates

| | **All years** | | **10–24 years** | | **25–44 years** | | **45–64 years** | | **65–89 years** | |
|---|---|---|---|---|---|---|---|---|---|---|
| Variable | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| $SR_{it-1}$ | 0.7448*** | 0.5916*** | 0.6740*** | 0.4747*** | 0.6002*** | 0.4366*** | 0.6619*** | 0.6145*** | 0.4963*** | 0.4405*** |
| | (0.0860) | (0.1241) | (0.0818) | (0.1168) | (0.0939) | (0.1208) | (0.1047) | (0.1206) | (0.0973) | (0.1258) |
| $Growth_{it}$ | -0.0047 | -0.0042 | -0.0068 | -0.0051 | -0.0049 | -0.0049 | -0.0076 | -0.0057 | -0.0018 | -0.0033 |
| | (0.0035) | (0.0038) | (0.0072) | (0.0075) | (0.0056) | (0.0058) | (0.0051) | (0.0058) | (0.0060) | (0.0065) |
| $FCE_{it}$ | 0.0356 | 0.0565** | -0.0223 | 0.0355 | 0.0074 | 0.0363 | 0.0518 | 0.0793** | 0.0931** | 0.0973** |
| | (0.0268) | (0.0265) | (0.0501) | (0.0517) | (0.0376) | (0.0405) | (0.0352) | (0.0332) | (0.0381) | (0.0408) |
| $FCE_{it-1}$ | -0.0030 | -0.0011 | 0.0130 | 0.0316 | 0.0402 | 0.0571 | -0.0098 | -0.0249 | -0.0484 | -0.0421 |
| | (0.0214) | (0.0257) | (0.0471) | (0.0536) | (0.0315) | (0.0400) | (0.0353) | (0.0321) | (0.0424) | (0.0504) |
| $Unemp_{it}$ | 0.0001 | 0.0051 | -0.0013 | 0.0072 | 0.0011 | 0.0044 | 0.0024 | 0.0111** | 0.0080° | 0.0080 |
| | (0.0027) | (0.0039) | (0.0069) | (0.0067) | (0.0041) | (0.0062) | (0.0043) | (0.0048) | (0.0048) | (0.0074) |
| $Fert_{it}$ | -0.0567 | -0.0261 | -0.0379 | 0.0242 | -0.0414 | 0.0187 | 0.0905 | 0.1394 | -0.1787 | -0.2121° |
| | (0.0778) | (0.0807) | (0.1633) | (0.1581) | (0.1019) | (0.1090) | (0.0792) | (0.0878) | (0.1229) | (0.1268) |
| $Alc_{it}$ | | -0.0053 | | -0.0356 | | -0.0117 | | 0.0092 | | -0.0168 |
| | | (0.0136) | | (0.0222) | | (0.0199) | | (0.0155) | | (0.0217) |
| $Div_{it}$ | | 0.0550 | | -0.0530 | | 0.0286 | | 0.0635 | | 0.1370** |
| | | (0.0540) | | (0.0555) | | (0.0617) | | (0.0654) | | (0.0546) |
| $Trend_t$ | 0.0000 | -0.0050 | -0.0051° | -0.0146** | -0.0012 | -0.0068 | 0.0008 | -0.0026 | -0.0090*** | -0.0213*** |
| | (0.0012) | (0.0049) | (0.0028) | (0.0068) | (0.0018) | (0.0061) | (0.0017) | (0.0064) | (0.0028) | (0.0080) |
| Constant | 0.5155** | 0.8341° | 0.5068 | 1.1603** | 0.8003*** | 1.2181** | 0.4973** | 0.3919 | 1.6825*** | 2.2864*** |
| | (0.2386) | (0.4287) | (0.3318) | (0.5695) | (0.3010) | (0.5258) | (0.2167) | (0.4571) | (0.4215) | (0.7167) |
| Obs. | 133 | 108 | 133 | 108 | 133 | 108 | 133 | 108 | 133 | 108 |
| $R^2$ | 0.9436 | 0.9517 | 0.9203 | 0.9344 | 0.9198 | 0.9183 | 0.9060 | 0.9310 | 0.9390 | 0.9476 |

Note: Robust standard errors are reported in parentheses. °, ** and *** indicate significance at 10%, 5% and 1% level, respectively.

Table A.6: Fiscal consolidation episodes and female suicide rates

| | **All years** | | **10–24 years** | | **25–44 years** | | **45–64 years** | | **65–89 years** | |
|---|---|---|---|---|---|---|---|---|---|---|
| Variable | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| $SR_{it-1}$ | 0.4753*** | 0.3840*** | 0.4204*** | 0.1340 | 0.3646*** | 0.3773*** | 0.3680*** | 0.3432** | 0.0595 | -0.1517 |
| | (0.1044) | (0.1253) | (0.0793) | (0.1366) | (0.1174) | (0.1378) | (0.1179) | (0.1342) | (0.1398) | (0.1503) |
| $Growth_{it}$ | -0.0088 | -0.0106 | -0.0049 | -0.0000 | -0.0028 | -0.0044 | -0.0149 | -0.0167 | -0.0302** | -0.0424*** |
| | (0.0066) | (0.0065) | (0.0136) | (0.0129) | (0.0076) | (0.0072) | (0.0104) | (0.0123) | (0.0136) | (0.0140) |
| $FCE_{it}$ | 0.0088 | 0.0210 | -0.0071 | 0.0020 | 0.0146 | 0.0386 | -0.0195 | -0.0076 | -0.0664 | -0.1056 |
| | (0.0389) | (0.0442) | (0.0946) | (0.0981) | (0.0527) | (0.0581) | (0.0581) | (0.0581) | (0.0702) | (0.0766) |
| $FCE_{it-1}$ | 0.0654* | 0.0384 | 0.1314 | 0.1707° | 0.0232 | 0.0043 | 0.0603 | 0.0479 | 0.1032° | 0.0744 |
| | (0.0370) | (0.0413) | (0.0884) | (0.0895) | (0.0529) | (0.0555) | (0.0622) | (0.0695) | (0.0591) | (0.0614) |
| $Unemp_{it}$ | -0.0003 | 0.0088 | -0.0087 | 0.0234 | 0.0050 | 0.0165° | -0.0007 | 0.0028 | 0.0043 | 0.0105 |
| | (0.0040) | (0.0062) | (0.0103) | (0.0144) | (0.0054) | (0.0090) | (0.0054) | (0.0091) | (0.0089) | (0.0184) |
| $Fert_{it}$ | -0.0854 | -0.0828 | 0.6015*** | 0.7838*** | 0.2771** | 0.3446** | -0.2245 | -0.1817 | -0.9081*** | -1.2886*** |
| | (0.0884) | (0.0973) | (0.1866) | (0.2439) | (0.1282) | (0.1505) | (0.1441) | (0.1906) | (0.2548) | (0.2693) |
| $Alc_{it}$ | | -0.0017 | | -0.0216 | | 0.0177 | | -0.0047 | | -0.0937*** |
| | | (0.0153) | | (0.0387) | | (0.0239) | | (0.0237) | | (0.0323) |
| $Div_{it}$ | | 0.0558 | | -0.1306 | | 0.0128 | | 0.1412° | | 0.2749*** |
| | | (0.0575) | | (0.0959) | | (0.0687) | | (0.0757) | | (0.0860) |
| $Trend_t$ | -0.0067*** | -0.0138** | -0.0011 | -0.0087 | -0.0042 | -0.0022 | -0.0150*** | -0.0245** | -0.0362*** | -0.0799*** |
| | (0.0023) | (0.0061) | (0.0052) | (0.0128) | (0.0029) | (0.0082) | (0.0039) | (0.0099) | (0.0073) | (0.0157) |
| Constant | 0.4479** | 0.5866 | -1.0575** | -1.3385 | -0.1016 | -0.5604 | 1.1162*** | 1.2833* | 3.1889*** | 5.9403*** |
| | (0.2187) | (0.4208) | (0.4225) | (1.0272) | (0.2669) | (0.6193) | (0.3536) | (0.7038) | (0.6848) | (1.2706) |
| Obs. | 133 | 108 | 131 | 106 | 133 | 108 | 133 | 108 | 133 | 108 |
| $R^2$ | 0.9043 | 0.9238 | 0.7620 | 0.8407 | 0.8240 | 0.8473 | 0.8485 | 0.8537 | 0.8394 | 0.8808 |

Note: Robust standard errors are reported in parentheses. °, ** and *** indicate significance at 10%, 5% and 1% level, respectively.

Table A.7: Tax revenues and overall suicide rates

| | **All years** | | **10–24 years** | | **25–44 years** | | **45–64 years** | | **65–89 years** | |
|---|---|---|---|---|---|---|---|---|---|---|
| Variable | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| $SR_{it-1}$ | 0.7181*** | 0.6142*** | 0.6955*** | 0.5402*** | 0.5998*** | 0.4972*** | 0.6445*** | 0.6161*** | 0.6044*** | 0.6008*** |
| | (0.0961) | (0.1269) | (0.0701) | (0.0981) | (0.1003) | (0.1240) | (0.1069) | (0.1239) | (0.0764) | (0.0910) |
| $Growth_{it}$ | -0.0053 | -0.0077° | -0.0049 | -0.0092 | -0.0043 | -0.0087 | -0.0083 | -0.0085 | -0.0088 | -0.0101° |
| | (0.0037) | (0.0040) | (0.0066) | (0.0074) | (0.0053) | (0.0058) | (0.0055) | (0.0067) | (0.0055) | (0.0056) |
| $Tax_{it}$ | -0.0102 | -0.0042 | -0.0171 | 0.0013 | -0.0257*** | -0.0184 | 0.0050 | 0.0105 | 0.0021 | 0.0060 |
| | (0.0063) | (0.0069) | (0.0146) | (0.0167) | (0.0093) | (0.0121) | (0.0094) | (0.0108) | (0.0093) | (0.0110) |
| $Tax_{it-1}$ | 0.0062 | 0.0112 | 0.0055 | 0.0115 | 0.0191** | 0.0282*** | -0.0103 | -0.0066 | 0.0001 | 0.0017 |
| | (0.0059) | (0.0080) | (0.0147) | (0.0159) | (0.0085) | (0.0107) | (0.0088) | (0.0104) | (0.0100) | (0.0113) |
| $Unemp_{it}$ | 0.0021 | 0.0065 | 0.0011 | 0.0107 | 0.0029 | 0.0064 | 0.0029 | 0.0110** | 0.0051 | 0.0070 |
| | (0.0022) | (0.0039) | (0.0047) | (0.0068) | (0.0031) | (0.0061) | (0.0027) | (0.0046) | (0.0033) | (0.0047) |
| $Fert_{it}$ | -0.1019 | -0.0272 | -0.0782 | 0.1089 | -0.0772 | 0.0516 | -0.0096 | 0.0857 | -0.1984° | -0.2067 |
| | (0.0805) | (0.0926) | (0.1453) | (0.1705) | (0.0905) | (0.1202) | (0.0802) | (0.1082) | (0.1134) | (0.1421) |
| $Alc_{it}$ | | -0.0028 | | -0.0327 | | -0.0035 | | 0.0066 | | -0.0103 |
| | | (0.0142) | | (0.0240) | | (0.0196) | | (0.0173) | | (0.0181) |
| $Div_{it}$ | | 0.0523 | | -0.0371 | | 0.0223 | | 0.0771 | | 0.1072** |
| | | (0.0615) | | (0.0588) | | (0.0655) | | (0.0741) | | (0.0531) |
| $Trend_t$ | -0.0006 | -0.0088 | -0.0033 | -0.0188** | -0.0015 | -0.0099 | -0.0006 | -0.0069 | -0.0093*** | -0.0200*** |
| | (0.0015) | (0.0054) | (0.0031) | (0.0073) | (0.0019) | (0.0063) | (0.0019) | (0.0070) | (0.0031) | (0.0071) |
| Constant | 0.6293** | 0.4942 | 0.6988 | 0.4535 | 0.8969*** | 0.5657 | 0.7201** | 0.3232 | 1.1976*** | 1.3543° |
| | (0.2921) | (0.4999) | (0.4222) | (0.8400) | (0.3042) | (0.6048) | (0.3240) | (0.6312) | (0.3696) | (0.7148) |
| Obs. | 134 | 109 | 134 | 109 | 134 | 109 | 134 | 109 | 134 | 109 |
| $R^2$ | 0.9464 | 0.9531 | 0.9281 | 0.9393 | 0.9256 | 0.9203 | 0.9186 | 0.9285 | 0.9515 | 0.9629 |

Note: Robust standard errors are reported in parentheses. °, ** and *** indicate significance at 10%, 5% and 1% level, respectively.

Table A.8: Tax revenues and male suicide rates

| | **All years** | | **10–24 years** | | **25–44 years** | | **45–64 years** | | **65–89 years** | |
|---|---|---|---|---|---|---|---|---|---|---|
| Variable | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| $SR_{it-1}$ | 0.7342*** | 0.6166*** | 0.6206*** | 0.5072*** | 0.5922*** | 0.4876*** | 0.6271*** | 0.6201*** | 0.5010*** | 0.4453*** |
| | (0.0860) | (0.1155) | (0.0828) | (0.1040) | (0.0872) | (0.1111) | (0.1045) | (0.1173) | (0.0927) | (0.1164) |
| $Growth_{it}$ | -0.0052 | -0.0071° | -0.0038 | -0.0090 | -0.0049 | -0.0095 | -0.0070 | -0.0082 | -0.0027 | -0.0048 |
| | (0.0037) | (0.0039) | (0.0074) | (0.0081) | (0.0055) | (0.0059) | (0.0053) | (0.0058) | (0.0066) | (0.0069) |
| $Tax_{it}$ | -0.0132** | -0.0074 | -0.0249 | -0.0052 | -0.0292*** | -0.0217* | -0.0008 | 0.0075 | 0.0061 | 0.0102 |
| | (0.0063) | (0.0072) | (0.0166) | (0.0178) | (0.0096) | (0.0115) | (0.0099) | (0.0114) | (0.0126) | (0.0137) |
| $Tax_{it-1}$ | 0.0096* | 0.0139° | 0.0089 | 0.0173 | 0.0210** | 0.0326*** | -0.0086 | -0.0024 | -0.0077 | -0.0095 |
| | (0.0056) | (0.0079) | (0.0165) | (0.0175) | (0.0081) | (0.0105) | (0.0096) | (0.0101) | (0.0133) | (0.0154) |
| $Unemp_{it}$ | 0.0019 | 0.0059 | 0.0011 | 0.0081 | 0.0043 | 0.0042 | 0.0063 | 0.0139*** | 0.0094** | 0.0102 |
| | (0.0023) | (0.0043) | (0.0057) | (0.0069) | (0.0036) | (0.0062) | (0.0040) | (0.0050) | (0.0046) | (0.0079) |
| $Fert_{it}$ | -0.1058 | -0.0337 | -0.1579 | 0.0461 | -0.1397 | -0.0121 | 0.0165 | 0.1398 | -0.1894 | -0.2192 |
| | (0.0790) | (0.0931) | (0.1708) | (0.1828) | (0.0949) | (0.1215) | (0.0752) | (0.1140) | (0.1281) | (0.1593) |
| $Alc_{it}$ | | -0.0054 | | -0.0309 | | -0.0092 | | 0.0085 | | -0.0179 |
| | | (0.0147) | | (0.0230) | | (0.0202) | | (0.0184) | | (0.0207) |
| $Div_{it}$ | | 0.0559 | | -0.0538 | | 0.0197 | | 0.0714 | | 0.1530*** |
| | | (0.0619) | | (0.0616) | | (0.0671) | | (0.0764) | | (0.0568) |
| $Trend_t$ | 0.0001 | -0.0082 | -0.0034 | -0.0181*** | -0.0009 | -0.0114° | 0.0021 | -0.0052 | -0.0085** | -0.0224** |
| | (0.0016) | (0.0055) | (0.0036) | (0.0065) | (0.0022) | (0.0065) | (0.0020) | (0.0067) | (0.0033) | (0.0090) |
| Constant | 0.7199** | 0.7165 | 1.1515** | 0.8090 | 1.2055*** | 1.0059 | 0.9085*** | 0.2971 | 1.7285*** | 2.2986*** |
| | (0.2946) | (0.5117) | (0.4948) | (0.8177) | (0.3368) | (0.6098) | (0.3193) | (0.6929) | (0.4662) | (0.7963) |
| Obs. | 134 | 109 | 134 | 109 | 134 | 109 | 134 | 109 | 134 | 109 |
| $R^2$ | 0.9437 | 0.9503 | 0.9228 | 0.9347 | 0.9232 | 0.9201 | 0.9060 | 0.9267 | 0.9358 | 0.9445 |

Note: Robust standard errors are reported in parentheses. °, ** and *** indicate significance at 10%, 5% and 1% level, respectively.

Table A.9: Tax revenues and female suicide rates

| | **All years** | | **10–24 years** | | **25–44 years** | | **45–64 years** | | **65–89 years** | |
|---|---|---|---|---|---|---|---|---|---|---|
| Variable | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| $SR_{it-1}$ | 0.4165*** | 0.3893*** | 0.3688*** | 0.1284 | 0.3303*** | 0.3745*** | 0.3617*** | 0.3317** | 0.0506 | -0.1330 |
| | (0.1134) | (0.1274) | (0.0914) | (0.1455) | (0.1155) | (0.1342) | (0.1185) | (0.1384) | (0.1353) | (0.1465) |
| $Growth_{it}$ | -0.0083 | -0.0124° | 0.0001 | -0.0089 | -0.0012 | -0.0069 | -0.0133 | -0.0160 | -0.0330** | -0.0401*** |
| | (0.0065) | (0.0064) | (0.0142) | (0.0132) | (0.0072) | (0.0070) | (0.0107) | (0.0124) | (0.0144) | (0.0143) |
| $Tax_{it}$ | -0.0073 | 0.0055 | -0.0111 | 0.0332 | -0.0149 | -0.0043 | 0.0134 | 0.0190 | -0.0132 | -0.0206 |
| | (0.0101) | (0.0119) | (0.0266) | (0.0292) | (0.0175) | (0.0232) | (0.0166) | (0.0195) | (0.0229) | (0.0224) |
| $Tax_{it-1}$ | -0.0056 | -0.0019 | -0.0216 | -0.0015 | -0.0005 | 0.0093 | -0.0203 | -0.0258 | 0.0247 | 0.0199 |
| | (0.0107) | (0.0143) | (0.0269) | (0.0292) | (0.0178) | (0.0167) | (0.0157) | (0.0199) | (0.0240) | (0.0330) |
| $Unemp_{it}$ | 0.0045 | 0.0109° | 0.0022 | 0.0309** | 0.0103° | 0.0192° | 0.0015 | 0.0054 | 0.0021 | 0.0032 |
| | (0.0037) | (0.0058) | (0.0085) | (0.0127) | (0.0055) | (0.0098) | (0.0050) | (0.0088) | (0.0089) | (0.0205) |
| $Fert_{it}$ | -0.2358** | -0.0977 | 0.3113° | 0.9076*** | 0.1410 | 0.3228 | -0.2855° | -0.2256 | -0.8692*** | -1.2548*** |
| | (0.0954) | (0.1213) | (0.1763) | (0.2891) | (0.1259) | (0.1972) | (0.1605) | (0.1989) | (0.2132) | (0.2407) |
| $Alc_{it}$ | | 0.0002 | | -0.0026 | | 0.0163 | | -0.0027 | | -0.0873*** |
| | | (0.0159) | | (0.0383) | | (0.0277) | | (0.0246) | | (0.0300) |
| $Div_{it}$ | | 0.0539 | | -0.1719° | | 0.0120 | | 0.1472° | | 0.2542*** |
| | | (0.0625) | | (0.0934) | | (0.0743) | | (0.0778) | | (0.0833) |
| $Trend_t$ | -0.0060*** | -0.0151** | 0.0027 | -0.0141 | -0.0027 | -0.0053 | -0.0137*** | -0.0222** | -0.0393*** | -0.0765*** |
| | (0.0023) | (0.0060) | (0.0061) | (0.0123) | (0.0030) | (0.0076) | (0.0040) | (0.0101) | (0.0086) | (0.0169) |
| Constant | 1.0523*** | 0.5199 | 0.1733 | -2.4836° | 0.5095 | -0.5802 | 1.3704*** | 1.4566 | 2.9157*** | 5.8043*** |
| | (0.3187) | (0.6109) | (0.5719) | (1.3441) | (0.3581) | (1.0630) | (0.4671) | (0.8904) | (0.6103) | (1.1690) |
| Obs. | 134 | 109 | 132 | 107 | 134 | 109 | 134 | 109 | 134 | 109 |
| $R^2$ | 0.9046 | 0.9230 | 0.7638 | 0.8370 | 0.8271 | 0.8466 | 0.8489 | 0.8552 | 0.8383 | 0.8764 |

Note: Robust standard errors are reported in parentheses. °, ** and *** indicate significance at 10%, 5% and 1% level, respectively.