The University Of Sheffield.

Department Of Economics.

Sheffield Economic Research Paper Series.

Life Satisfaction and Austerity: Expectations and the Macroeconomy

Authors: Sarah Brown, Alexandros Kontonikas, Alberto Montagnoli, Mirko Moro, Luisanna Onnis

ISSN 1749-8368

SERPS no. 2019011

May 2019

Life Satisfaction and Austerity:

Expectations and the Macroeconomy

Sarah Brown* Alexandros Kontonikas† Alberto Montagnoli‡

Mirko Moro§ Luisanna Onnis¶

Abstract

This paper examines the linkages between fiscal austerity and life satisfaction across thirteen European countries using a sample of repeated cross-sections of individuals from 1999 to 2009. Austerity policies may trigger several responses at both the macro and micro-level, which in turn may affect life satisfaction directly or indirectly. We employ a structural equation modelling approach to account for these complex relationships linking austerity to life satisfaction, the macroeconomic environment, an individual's expectations, and the probability of becoming unemployed. We find that austerity is inversely associated with life satisfaction, with a substantial effect operating through an increase in the unemployment rate. In all of the specifications there is also strong evidence of austerity dampening optimism about the future.

Keywords: Expectations; Fiscal Austerity; Life Satisfaction; Macroeconomic Environment

*Department of Economics, University of Sheffield, sarah.brown@sheffield.ac.uk

†Essex Business School, University of Essex, a.kontonikas@essex.ac.uk

‡Department of Economics, University of Sheffield, a.montagnoli@sheffield.ac.uk

§Stirling Management School, University of Stirling, mirko.moro@stir.ac.uk

¶Huddersfield Business School, University of Huddersfield, l.onnis@hud.ac.uk

We thank the Leverhulme Trust for financial support, Research Project Grant ref. RPG-2015-238. The paper was previously circulated with the title "Austerity, Life Satisfaction and Expectations". We are grateful to Raslan Alzuabi for research assistance, Dan Gray, Jennifer Roberts and Karl Taylor for their comments and helpful suggestions. Any remaining errors are the sole responsibility of the authors.

1 Introduction and Background

This paper provides new empirical evidence on the economic implications of austerity by conducting empirical analysis of the relationship between austerity and life satisfaction. We apply structural equation modelling (SEM) techniques which allow us to comprehensively identify and explore the relative importance of the potential mechanisms underlying the relationship between life satisfaction and austerity measures. Specifically, we analyse information from repeated cross-sections of individuals in Europe between 1999 and 2009, sourced by the Eurobarometer, to explore whether a direct effect of austerity policies on life satisfaction exists (such as via reduced public services) as well as whether austerity affects life satisfaction indirectly via channels operating at the macro-level (i.e., changes in the unemployment rate and economic growth), and at the micro-level. At the micro-level, we investigate whether austerity is linked to individuals' expectations and the probability of becoming unemployed (which in turn may be shaped by the unemployment rate and economic growth). Although a SEM approach has been previously used to model life satisfaction (see e.g. Powdthavee and Wooden, 2015), to date it has not been used to shed light on the complex channels via which macroeconomic fundamentals and policy influence life satisfaction.

An extensive economics literature exists exploring the relationship between fiscal austerity and the macroeconomic environment, whilst, in stark contrast, there is sparse evidence on the impact of austerity on individual level outcomes such as life satisfaction.[1] Austerity is defined as a set of fiscal policies aimed at reducing the deficit of a country via a combination of tax increases and reductions in government spending. Such policies were at the centre of the debate in the aftermath of the Great Recession of 2007 and 2008. The crisis severely weakened European economies, and austerity measures were implemented to consolidate fiscal imbalances.

Economists typically agree that austerity is unavoidable when a country has lost the confidence of its creditors (Gros, 2013). However, there is less agreement about whether

[1] See, for example, Alesina and Ardagna (2010); Cloyne (2013); Guajardo et al. (2014); Romer and Romer (2010).

austerity is an adequate response at the time of a recession. The conventional wisdom, based upon Keynesian models, is that a cut in government spending or an increase in taxation has contractionary effects in the short-run, i.e. declining output and higher unemployment (Cloyne, 2013; Guajardo et al., 2014; Romer and Romer, 2010, for empirical evidence). Contrary to the standard prediction of Keynesian models, Blanchard (1990), among others, shows that, theoretically, fiscal consolidation can stimulate consumption. Several empirical studies provide support for the notion of expansionary fiscal consolidations (Alesina et al., 2002; Alesina and Ardagna, 2010; Giavazzi and Pagano, 1990).[2] Essentially, this strand of the economics literature states that fiscal consolidation today may help to avoid a larger adjustment in the future (Blanchard, 1990), thereby improving the confidence of consumers and investors.[3]

Previous studies have shown that the consequences of recessions for communities and households are far-reaching, as economic slowdowns can have substantial impacts on the psychological wellbeing of individuals (De Neve et al., 2018), especially if they are preceded by banking crises (Montagnoli and Moro, 2018). Recent evidence suggests that the economic crisis in Europe and the implementation of austerity policies had a significant positive impact on suicide rates (Antonakakis and Collins, 2014, 2015), has worsened self-reported health status, (Kentikelenis et al., 2011), and has increased the incidence of mental disorders and alcohol abuse (Gili et al., 2012; Roca et al., 2013).

Our paper also relates to existing studies exploring the macroeconomic determinants of life satisfaction. This literature has mainly focused on variables such as unemployment and output growth. A seminal contribution by Di Tella et al. (2001) shows that both higher inflation and unemployment decrease life satisfaction, but the impact of unemployment is stronger; for a more recent analysis, see Blanchflower et al. (2014).[4] However, the relationship between austerity and life satisfaction is ambiguous as it may operate directly and/or indirectly via changes to the macroeconomic environment, in addition, as

[2]According to this strand of the literature, expansionary, or at least non-contractionary, fiscal consolidations are more likely when the consolidation is implemented mainly through cutting government spending, as opposed to raising taxes (Alesina et al., 2015; Alesina and Ardagna, 2013, 1998).

[3]This generates a reduction in long-term interest rates and thus compensates the Keynesian effect of tax increases and spending cuts (Alesina and Ardagna, 2013).

[4]Earlier work in this area can be traced back to Easterlin (1974).

indicated above the effect of austerity policies on the macroeconomic environment is not clear-cut. Besides, with respect to the direct effects, the existing literature is ambiguous regarding the effect of government spending on life satisfaction.[5] On the one hand, Di Tella et al. (2006) find that higher unemployment benefits are positively related to wellbeing, thereby suggesting that the welfare state can help to mitigate the costs of business cycle fluctuations.[6] On the other hand, Bjørnskov et al. (2007) find that wellbeing is negatively associated with higher government spending, while the results of Di Tella and MacCulloch (2005), Ram (2009) and Oishi et al. (2012) suggest no relationship. As Bjørnskov et al. (2007) and Hessami (2010) argue, the absence of a relationship between government size and life satisfaction is consistent with the traditional welfare economics view. Moreover, Hessami (2010) shows that the effect of government size on wellbeing displays an inverse U-shape. Hence, our SEM approach serves to disentangle such direct and indirect effects of austerity on life satisfaction and sheds further light on the channels via which the macroeconomic environment influences life satisfaction.

To further our understanding of the relationship between austerity and life satisfaction, we explore the effect of individuals' expectations. It is apparent that expectations are likely to be influenced by the macroeconomy, which in turn is influenced by austerity measures. For example, the role of expectations about the future is crucial in the context of non-Keynesian effects of fiscal policy. As Giavazzi and Pagano (1990) argue, if austerity is perceived by the private sector as a signal that the share of government spending in GDP is being permanently reduced, households may upwardly revise their permanent income expectations, leading to higher current and planned spending.

Hence, on the basis of these arguments, fiscal consolidation may in fact increase individuals' feelings of wellbeing. In a related study, Alesina et al. (2015) find that following the initiation of an expenditure-based adjustment, business confidence (unlike consumer confidence) picks up immediately.[7]

[5]The literature on the effects of taxation on life satisfaction is not as extensive. For example, Flavin et al. (2011) find that higher tax revenue (as proportion of GDP) is associated with higher life satisfaction.

[6]Other studies that provide evidence consistent with the idea that the welfare state contributes to wellbeing include: Pacek and Radcliff (2008); Haller and Hadler (2006) and Kotakorpi and Laamanen (2010).

[7]In accordance with Alesina et al. (2015), Beetsma et al. (2015) use data on fiscal plans and examine

In our paper expectations enter the model because of their link with the macroeconomy and austerity. However, we also recognise that expectations may affect life satisfaction directly. In this sense, our work makes also a contribution to the empirical literature on the impact of expectations on SWB, which is somewhat limited. Existing studies tend to identify a positive effect on current wellbeing from optimistic income expectations (Senik (2004); Senik (2008); Frijters et al. (2012)). As Frijters et al. (2012) point out, the effect of expectations on individuals' happiness has only recently started to receive attention in the empirical literature, despite the presence of long-standing theories that highlight the importance of income expectations for happiness.[8] Our SEM approach allows us to explore how expectations affect life satisfaction directly as well as allowing for a further indirect effect of austerity operating via the macroeconomy and/or expectations.

In order to explore the relationship between the austerity, expectations and life satisfaction, we create a dataset by merging the Eurobarometer surveys, which include information on individuals' life satisfaction, expectations, employment status, with macroeconomic information on the unemployment rates and the GDP growth across a sample of OECD countries. Moreover, we adopt the measure of austerity introduced by Guajardo et al. (2014). They propose a so-called "narrative approach" to obtain austerity shocks that are uncorrelated with other macroeconomic changes. The so called "narrative approach" involves the examination of contemporaneous policy documents to identify fiscal policy shifts that aim to reduce the budget deficit, as opposed to responding to prospective economic conditions.

Summarising our results, we find that austerity is inversely associated with life satisfaction, with the effect operating through an economic channel. Our findings are in line

the response of confidence to fiscal consolidation. They show that consumer confidence declines around announcements of consolidation measures, with the effect being stronger for revenue-based adjustments.

[8] In line with the "tunnel effect" theory, originally developed by Hirschman and Rothschild (1973), Senik (2004) argues that even poor individuals may derive utility from rising income inequality, if they interpret it as a positive signal for possible future outcomes. Hence, if austerity increases income inequality, as suggested by Ball et al. (2013) and Woo et al. (2013), the "tunnel effect" may lead to higher SWB. However, several recent papers surveyed in Ferrer-i Carbonell et al. (2013) suggest that individuals dislike inequality. For example, Alesina et al. (2004) find that individuals have a lower tendency to report themselves happy when inequality is high. Furthermore, the distributional effects of fiscal consolidation constitute a question that is still not fully settled in the existing literature due to data availability and timing issues, among other reasons (Perotti (1996); Joumard et al. (2012)). Therefore, the role of expectations in the relationship between austerity and life satisfaction is an area ripe for exploration.

with the macroeconomic literature, which argues that austerity changes the underlying macroeconomic conditions, specifically in our analysis, the unemployment rate. This in turn affects life satisfaction at the individual level, with the effects operating via this aspect of the macroeconomic environment being substantial in magnitude.

With respect to policy implications, evaluating whether austerity measures negatively or positively affect life satisfaction can inform policymakers on the context of both economic and social policy and, ultimately, on the voting intentions of the individuals. Furthermore, if austerity measures cause a deterioration in wellbeing and life satisfaction, it may be the case that this leads to further economic effects such as reductions in worker productivity (e.g. Bryson et al., 2014). When evaluating the effects of austerity measures, it is thus important to take such effects on individual wellbeing into consideration rather than purely concentrating on macroeconomic and financial issues. Consideration of the wider effects of austerity measures could potentially enhance the effectiveness of social and economic policy serving to narrow social inequalities and enhance health outcomes.

The paper is organised as follows. The next section presents the conceptual framework, Section 3 documents the data and the econometric setting. Section 4 discusses the results and Section 5 concludes.

2 The Conceptual Framework

The discussion of the existing literature on austerity, life satisfaction and expectations presented in the previous section serves to highlight the complex nature of the potential direct and indirect effects at play. Mediation analysis is ideally suited to help disentangle these relationships. Our modelling approach is summarised in Figure 1, which illustrates the potential channels via which austerity affects life satisfaction. Our analysis starts from the premise of a link between life satisfaction and the macroeconomic environment as established in the existing literature. We introduce two novel features into this modelling framework. Firstly, we explore the effect of austerity on life satisfaction and, secondly, we investigate the role that expectations have in shaping life satisfaction in part by transmitting the effects of shocks (in this case fiscal shocks).

Key to our framework is the impact of austerity policies. Our first hypothesis states that austerity shocks, defined as an unexpected change (tightening) in public finances, has a direct effect on individuals' life satisfaction, expectations and employment status. Our prior is that these policies have a negative effect on all three outcomes, lowering life satisfaction, leading to less optimistic expectations and increasing the probability of being unemployed.

Furthermore, following the macroeconomic literature that has established that the economic environment is directly affected by policy shocks (see e.g. Guajardo et al., 2014), we allow for this in our conceptual framework. Specifically, we predict that austerity shocks directly affect the unemployment rate (positively) and GDP growth (negatively).

We allow employment status to directly influence the individual's life satisfaction and expectations. Here, there is consensus in the existing literature that the individual's employment status is a key determinant of their life satisfaction (see e.g. Clark and Oswald, 1996). In contrast, there is less empirical evidence relating to the effect on individuals' expectations.

Our modelling framework allows the macroeconomic environment to have a direct effect on life satisfaction, employment status and expectations. The first two links are quite intuitive, with extensive support in the existing literature. For example, the link between the macroeconomic environment and life satisfaction has been investigated by, among others, Blanchflower et al. (2014) and Di Tella et al. (2006). Using both European and US data, they show how a deterioration in the macroeconomic fundamentals and, in particular, an increase in unemployment has a strong direct impact on the life satisfaction of individuals.

The existing empirical literature on the relationship between the macroeconomic environment and individuals' expectations is relatively sparse. To the best of our knowledge, this link has never been formally tested within the framework depicted in Figure 1. Our hypothesis is that the macroeconomic environment in which an individual lives serves to shape their expectations about the future. For instance, a prevailing macroeconomic environment with a high level of unemployment and/or declining output may serve to

dampen an individual's expectations about job opportunities and personal finances. In addition, the existing literature has largely ignored the link between expectations and life satisfaction. Our system allows us to test whether a direct relationship exists.

Finally, following previous evidence, we allow individual characteristics such as age and marital status to influence life satisfaction, expectations and employment status. We treat such individual characteristics as purely exogenous.[9]

The analysis presented in Figure 1 and the various direct effects discussed above lead to a series of indirect connections within the various nodes of our system. Key to this is the indirect effect that austerity shocks potentially have on life satisfaction. There are various possible indirect channels through which the individual's life satisfaction is affected by austerity policies. Firstly, fiscal retrenchment may increase the probability of being unemployed, which in turn lowers life satisfaction directly and indirectly via less optimistic expectations. Secondly, as established in the existing literature, austerity shocks impact positively on the unemployment rate and negatively on GDP growth, this in turn may affect life satisfaction. A further indirect impact that austerity could have on life satisfaction, operates via expectations. Specifically, austerity may directly and indirectly (via the macroeconomic environment) affect expectations, which in turn affect life satisfaction. In addition, austerity may affect the macroeconomic fundamentals, which, influence expectations, which, in turn, influence life satisfaction.

To summarize, we allow an individual's life satisfaction to be affected by: austerity shocks, the individual's expectations, the individual's personal characteristics, the probability of unemployment and the macroeconomic environment. Our framework allows an individual's expectations to be affected by austerity policies, the macroeconomic environment, unemployment and personal characteristics. The unemployment rate and GDP growth are affected by fiscal shocks. Finally, an individual's probability of being unemployed is linked to the fiscal shock and the macroeconomic environment, as well as individual characteristics.

[9]Das et al. (2019) show how socio-economic status impacts the macroeconomic expectations of individuals.

3 Data and the Empirical Strategy

We create a dataset linking individual-level data with country-level observations by merging individual life satisfaction, expectations, unemployment status (and other personal characteristics) collected by the Eurobarometer surveys with (a) the "narrative" austerity measure constructed by Guajardo et al. (2014), and (b) the unemployment rate and GDP growth collected by the OECD Economic Outlook N.90. Our final dataset covers the period 1999-2009 and 13 European countries (France, Belgium, the Netherlands, Germany, Italy, Denmark, Ireland, UK, Spain, Portugal, Finland, Sweden, Austria) yielding a sample of 207,830 individual-level observations.[10] Table 1 presents the descriptive statistics for all the variables used in our empirical analysis.

3.1 Measuring life satisfaction

The Eurobarometer surveys include information on life satisfaction and other individual-specific characteristics. Each survey consists of approximately 1000 face-to-face interviews per country each year and reports are published twice yearly. All respondents must be resident in the respective country and aged 15 and over. The Eurobarometer surveys are ideally suited to our study as they include a measure of life satisfaction, which has been analysed extensively in the literature. For example, Di Tella et al. (2001) use Eurobarometer data to explore the relationship between unemployment, inflation and life satisfaction. Blanchflower et al. (2014) adopt the Eurobarometer's life satisfaction measure to examine the microeconomic determinants of subjective wellbeing in Europe and Alesina et al. (2004) study the relationship between inequality in Europe and individual wellbeing using data drawn from the Eurobarometer for 1999 to 2007. Hence, this data source, as well as this measure of subjective wellbeing, has been used in some of the seminal papers in this area, which facilitates comparison between our findings and the existing literature and serves to highlight the contributions that we make to existing knowledge in this field.

The variable measuring life satisfaction is a categorical variable derived from the ques-

[10]The start date is determined by the availability of the expectations questions in the Eurobarometer survey, while the end date is determined by the availability of the austerity measure.

tion "on the whole, are you very satisfied, fairly satisfied, not very satisfied or not at all satisfied with the life you lead?" and the related answers 1="Not at all satisfied" (2.85%), 2="Not very satisfied" (11.58%), 3="Fairly satisfied" (56.80%), 4="Very satisfied" (28.77%). Hence, this measure is increasing in the level of life satisfaction.[11] As commonly accepted in the literature, the life satisfaction variable has been treated as cardinal, following, for example, Ferrer-i Carbonell and Frijters (2004). Note that this variable has been standardised with a mean of 0 and a standard deviation of 1, a minimum of -2.978 and a maximum of 1.246.

3.2 Measuring austerity and the macroeconomic environment

The literature has proposed various approaches to measure the level of austerity. Traditionally the change in the cyclically adjusted primary balance (CAPB) has been used as a proxy for fiscal consolidation (Alesina and Perotti, 1995; Alesina and Ardagna, 2010, 2013; Guajardo et al., 2014; Yang et al., 2015). The application of cyclical adjustment is crucial since an increase in the primary balance may not simply be the result of tightening of the fiscal stance, but the consequence of automatic stabilisers over the business cycle. As Yang et al. (2015) point out, the CAPB captures discretionary fiscal policy and other non-cyclical factors by removing the effects of business cycle fluctuations via taxes, transfers and interest payments.

CAPB-based measures of fiscal consolidation have been strongly criticised by Guajardo et al. (2014), who point out that changes in the CAPB may not be fully exogenous to output fluctuations; hence creating an identification issue in the empirical analysis. Guajardo et al. (2014) propose a narrative approach to obtain austerity shocks that are uncorrelated with other macroeconomic changes. This narrative approach involves the examination of contemporaneous policy documents to identify fiscal policy shifts that aim to reduce the budget deficit, as opposed to responding to prospective economic conditions. Essentially, the narrative approach aims to make policy changes observable. Given the above discussion, we use the variable constructed by Guajardo et al. (2014) to measure

[11] This is generally accepted as an evaluative measure rather than a measure of emotional wellbeing, or affect, and hence it is well suited for our application, see e.g. Dolan and Metcalfe (2012).

our austerity shocks. This variable has been used to identify UK fiscal consolidations by Cloyne (2013), government spending shocks (Ramey, 2011), tax shocks (Romer and Romer, 2010), and monetary policy shocks (Romer and Romer, 2004).[12]

Finally, to account for the macroeconomic environment we use the annual rates of GDP growth and unemployment. The source for these data is the OECD Economic Outlook N.90.

3.3 Measuring expectations

To measure expectations, we make use of the Eurobarometer survey, which includes a set of variables that capture views about the future, including: life as a whole; the national economic situation; the household financial situation; the national employment situation; and their job in general. Specifically, individuals were asked the following: "What are your expectations for the next twelve months: will the next twelve months be better, worse or the same, when it comes to: Your life in general? The economic situation in our country? The financial situation of your household? The employment situation in our country? Your personal job situation?". The possible responses were "Better", "Same", and "Worse". From these responses, we construct five indices that are increasing in positive expectations, where 0 denotes "worse", 1 denotes "same", and 2 denotes a "better" expected situation.

Table 2 presents the correlation matrix of the expectation variables. The correlation between the various expectations variables is 0.43 on average, thereby suggesting that distinct dimensions of expectations are captured. However, the correlation coefficients are positive and statistically significant indicating that the expectation variables should be considered independently due to potential issues of multicollinearity.

[12]The database is available via available at https://www.imf.org/en/Publications/WP/Issues/2016/12/31/A-New-Action-Based-Dataset-of-Fiscal-Consolidation-24892

3.4 Other individual level determinants

It is well known in the literature that life satisfaction and expectations are influenced by individual characteristics (see e.g. Clark and Oswald, 1996). Hence, we complement our analysis with a standard set of variables X capturing these characteristics. They include employment and labour market status (employed/self-employed, unemployed, retired, at school, at home), educational attainment (i.e., indicators for whether individuals left school before age 15, between ages 16 to 18, or aged 19 and over), gender, age (and age-squared) and marital status (single, married, widowed, divorced/separated). With the exception of being unemployed, we treat all these variables as purely exogenous.[13]

3.5 Empirical strategy

To study the direct and indirect effects of austerity on life satisfaction using the framework detailed in Section 2, we estimate the following structural equation model:

$$
\begin{aligned}
LS_{ijt} &= \alpha_0 + \alpha_1 A_{jt} + \alpha_2 E_{ijt} + \alpha_3^Y Y_{jt} + \alpha_3^U U_{jt} + \alpha_4 Un_{ijt} + X'_{ijt}\alpha_5 + \epsilon_{ijt} && (1)\\
E_{ijt} &= \beta_0 + \beta_1 A_{jt} + \beta_2^Y Y_{jt} + \beta_2^U U_{jt} + \beta_3 Un_{ijt} + X'_{ijt}\beta_4 + \xi_{ijt} && (2)\\
Un_{ijt} &= \theta_0 + \theta_1 A_{jt} + \theta_2^Y Y_{jt} + \theta_2^U U_{jt} + X'_{ijt}\theta_3 + \tau_{ijt} && (3)\\
Y_{jt} &= \gamma_0^Y + \gamma_1^Y A_{jt} + \zeta_{jt}^Y && (4)\\
U_{jt} &= \gamma_0^U + \gamma_1^U A_{jt} + \zeta_{jt}^U && (5)
\end{aligned}
$$

where LS_{ijt} and E_{ijt} denote the life satisfaction and expectations of individual i in country j at time t, respectively. Similarly, Un_{ijt} denotes the probability of individual i in country j being unemployed at time t. Y_{jt} and U_{jt} represent the level of GDP growth and the unemployment rate, respectively, in country j at time t. A_{jt} is the measure of austerity derived from Guajardo et al. (2014), as described in Section 3.2, which is country and time specific. In contrast, X_{ijt} is defined at the individual level and represents a vector of personal characteristics as in Section 3.4. Finally ϵ_{ijt}, ξ_{ijt}, τ_{ijt}, ζ_{jt}^Y and ζ_{jt}^U are the error terms associated with each equation.

[13] Unfortunately personal and household income are not available in this dataset.

The direct effects of austerity on individual life satisfaction, and individual expectations and the probability of being unemployed at the individual level are captured by path coefficients α_1, β_1 and θ_1. With respect to the macroeconomic effect of austerity on the macroeconomic environment, the direct effects on GDP growth and the national unemployment rate are given by γ_1^Y and γ_1^U, respectively.

In contrast, the computation of the indirect effects of austerity are more complex. Following Baron and Kenny (1986), we use a multiple mediation method, the key feature of which is that it allows many different paths through which austerity affects life satisfaction. Given the focus of this paper, we now detail the indirect effects of austerity (A_{jt}) on life satisfaction (LS_{ijt}). For instance, the effect of austerity operating via individual expectations is given by $\beta_1 \times \alpha_2$. Similarly, the effects of A_{jt} operating via the probability of being unemployed is given by $(\theta_1 \times \alpha_4) + (\theta_1 \times \beta_3 \times \alpha_2)$. Austerity also influences life satisfaction via the macroeconomic environment; specifically, the effects of A_{jt} operating via GDP growth and unemployment are given by γ_1^Y and γ_1^U, respectively. Furthermore, these macroeconomic variables are allowed to change LS_{ijt} via the individual's expectations (β_2^Y and β_2^U) and via the probability of currently being unemployed (α_4).

The structural equation model has been estimated using maximum likelihood. For simplicity, the third equation relating to the probability of being unemployed is estimated as a linear probability model. Finally standard errors have been clustered at the country-level.

4 Results

We estimate the structural model given by equations (1) to (5) for each measure of expectations. Specifically, Tables 3 to 7 present the results for expectations regarding a better personal financial situation, for a better job situation, for a better national employment situation, for a better life expectation and for a better national economic situation, respectively. Hence, the only difference across the models relates to the variable used to capture views about the future.

Each table is divided into in five panels (labelled Life satisfaction, Exp, GDP growth, Unemployment rate and Unemployed) corresponding to equations 1 to 5. Column 1 reports the direct effects, column 2 reports the indirect effects and the last column reports the total effects.

Focusing on Table 3, it is reassuring to note that the sign and statistical significance of the personal characteristics in the life satisfaction equation are in line with the existing literature (see Panel A). Specifically, life satisfaction is found to be increasing in education and decreasing in being unemployed, age has a U-shaped relationship with life satisfaction, and married people have higher life satisfaction.

With respect to the focus of our contribution, there is no direct effect of austerity on life satisfaction rather the effect is indirect and operates through changes in expectations and the unemployment rate. Specifically, the path between austerity and life satisfaction that is mediated via the expectations has an effect equal to -0.018; the effect that runs via the unemployment rate and the individual's expectations is equal to -0.041.[14] Interestingly, all the other paths are economically insignificant, thereby highlighting the important role that expectations at the individual level play in shaping life satisfaction. Furthermore, austerity has statistically significant negative direct and total effects on being optimistic about the future personal financial situation (see Panel B).

The findings in Panel C accord with the existing literature in that GDP growth and the aggregate unemployment rate are inversely and positively, respectively, associated with the probability of being unemployed at the individual level. In addition, it is apparent that austerity is positively associated with the probability of being unemployed in accordance with intuition. In addition, in accordance with the existing macroeconomic literature, austerity has a large positive statistically significant direct effect on the unemployment rate as captured in Panel E. Specifically, on average, austerity is associated with an increase in the unemployment rate of 0.1 percentage points, the average of the austerity measure being 0.18. In contrast, austerity has a large negative but statistically

[14]The estimate of -0.018 is obtained by multiplying the direct effect of expectations on life satisfaction, 0.268, in Panel A by the effect of austerity on expectations, -0.07 in Panel B. The estimate of 0.041 is obtained by multiplying the effect of austerity on the unemployment rate, 0.804, in Panel D, and the effect of the unemployment rate on life satisfaction, -0.503, in Panel A.

insignificant effect on GDP growth, see Panel D. In addition to the effect of personal characteristics such as age, gender and education, individuals' expectations are also affected by the macroeconomic environment, specifically GDP growth.

Turning to Table 4, which presents the results related to expectations regarding a better job situation, the results follow an identical pattern to that presented in Table 3, with austerity having an indirect effect on life satisfaction. The negative effect of austerity on expectations about the future job situation remains, although it is slightly smaller in magnitude. Table 5 presents the results relating to expectations about the national employment situation. The negative effect of austerity on expectations about the national employment situation remains, although it is diminished in statistical significance, being significant at the 10% level. The pattern of results is robust to using expectations regarding a 'better life' in the future (see Table 6). Finally, in Table 7, the effect of austerity on expectations regarding the national economy is somewhat surprisingly positive. However, the effect is small in magnitude and, hence, does not influence the overall pattern of results. In particular, the negative indirect effect of austerity on life satisfaction prevails.

In summary, our findings are in line with the macroeconomic literature, which argues that austerity essentially changes the underlying macroeconomic conditions, specifically in our analysis, the unemployment rate. This in turn has effects on life satisfaction at the individual level, with the effects operating via this aspect of the macroeconomic environment, being substantial in magnitude and serving to dominate the effects of other influences such as the effect of austerity on individuals' expectations.

5 Conclusions

In this paper, we have explored the relationship between fiscal consolidation and life satisfaction using a large repeated cross-section dataset drawn from the Eurobarometer from 1999 to 2009, covering 13 countries and comprising 207,830 observations. It is apparent that the interaction between austerity, life satisfaction, expectations and the macroeconomic environment is highly complex. Hence, in order to disentangle the direct and indirect effects at play, we have employed structural equation modelling. Our modelling

approach makes two important contributions to existing work in this field. Firstly, we have explored the role of austerity in influencing life satisfaction and, secondly, we have explored the effects of expectations at the individual level on life satisfaction.

Our findings, which are robust across a range of measures of individual expectations covering individual and national economic prospects, support an inverse association between austerity, as measured by an unexpected change in the country's fiscal stance, and life satisfaction, operating through an economic channel. Our findings suggest that austerity changes the underlying macroeconomic conditions, specifically the unemployment rate. This in turn influences life satisfaction at the individual level, with the effects operating via the prevailing unemployment rate being substantial in magnitude and dominating the effects of other influences including the effect of austerity on individuals' expectations.

Our findings have important implications from a policy perspective. When a government is considering embarking upon a plan of austerity measures, our findings suggest that the potential adverse effects on individual wellbeing and life satisfaction should be taken into account. Hence, social and health policies need to be appropriately designed in conjunction with macroeconomic policy. If austerity policies lead to lower individual wellbeing and poorer health then this may in turn lead to lower productivity and work effort amongst the employed and/or may jeopardise the return to work amongst the unemployed.

An important avenue for further research relates to furthering our understanding of how expectations are formed at the individual level as well as exploring the extent of understanding of the nature and implications of macroeconomic policy amongst the wider public.

References

Alesina, A. and S. Ardagna (1998). Tales of fiscal adjustment. *Economic Policy 13*(27), 488–545.

Alesina, A. and S. Ardagna (2010). Large changes in fiscal policy: taxes versus spending. In *Tax Policy and the Economy, Volume 24*, NBER Chapters, pp. 35–68. National Bureau of Economic Research, Inc.

Alesina, A. and S. Ardagna (2013). The design of fiscal adjustments. *Tax Policy and the Economy 27*(1), 19–68.

Alesina, A., S. Ardagna, R. Perotti, and F. Schiantarelli (2002, June). Fiscal policy, profits, and investment. *American Economic Review 92*(3), 571–589.

Alesina, A., R. Di Tella, and R. MacCulloch (2004). Inequality and happiness: are Europeans and Americans different? *Journal of Public Economics 88*(9), 2009–2042.

Alesina, A., C. Favero, and F. Giavazzi (2015). The output effect of fiscal consolidation plans. *Journal of International Economics 96*, S19–S42.

Alesina, A. and R. Perotti (1995). Fiscal expansions and adjustments in OECD countries. *Economic policy 10*(21), 205–248.

Antonakakis, N. and A. Collins (2014). The impact of fiscal austerity on suicide: On the empirics of a modern Greek tragedy. *Social Science & Medicine 112*, 39–50.

Antonakakis, N. and A. Collins (2015). The impact of fiscal austerity on suicide mortality: 'Evidence across the 'Eurozone piphery'. *Social Science & Medicine 145*, 63–78.

Ball, L. M., D. Furceri, M. D. Leigh, and M. P. Loungani (2013). *The distributional effects of fiscal consolidation*. Number 13-151. International Monetary Fund.

Beetsma, R., J. Cimadomo, O. Furtuna, and M. Giuliodori (2015). The confidence effects of fiscal consolidations. *Economic Policy 30*(83), 439–489.

Bjørnskov, C., A. Dreher, and J. A. Fischer (2007). The bigger the better? Evidence of the effect of government size on life satisfaction around the world. *Public Choice 130*(3), 267–292.

Blanchard, O. J. (1990). Can severe fiscal contractions be expansionary? Tales of two small european countries: Comment. *NBER Macroeconomics Annual 5*, 111–116.

Blanchflower, D. G., D. N. Bell, A. Montagnoli, and M. Moro (2014). The happiness trade-off between unemployment and inflation. *Journal of Money, Credit and Banking 46*(S2), 117–141.

Bryson, A., J. Forth, and L. Stokes (2014). *Does worker wellbeing affect workplace performance?* Department for Business, Innovation & Skills, UK Government.

Clark, A. E. and A. J. Oswald (1996). Satisfaction and comparison income. *Journal of Public Economics 61*(3), 359–381.

Cloyne, J. (2013). Discretionary tax changes and the macroeconomy: New narrative evidence from the united kingdom. *American Economic Review 103*(4), 1507–1528.

Das, S., C. M. Kuhnen, and S. Nagel (2019). Socioeconomic status and macroeconomic expectations. *The Review of Financial Studies Forthcoming*.

De Neve, J.-E., G. Ward, F. De Keulenaer, B. Van Landeghem, G. Kavetsos, and M. I. Norton (2018). The asymmetric experience of positive and negative economic growth: Global evidence using subjective well-being data. *Review of Economics and Statistics 100*(2), 362–375.

Di Tella, R. and R. J. MacCulloch (2005). Partisan social happiness. *The Review of Economic Studies 72*(2), 367–393.

Di Tella, R., R. J. MacCulloch, and A. J. Oswald (2001). Preferences over inflation and unemployment: Evidence from surveys of happiness. *American Economic Review 91*(1), 335–341.

Di Tella, R., R. J. MacCulloch, and A. J. Oswald (2006). The macroeconomics of happiness. *The Review of Economics and Statistics 85*(4).

Dolan, P. and R. Metcalfe (2012). Measuring subjective wellbeing: Recommendations on measures for use by national governments. *Journal of Social Policy 41*(2), 409–427.

Easterlin, R. A. (1974). Does economic growth improve the human lot? Some empirical evidence. *Nations and Households in Economic Growth 89*, 89–125.

Ferrer-i Carbonell, A. and P. Frijters (2004). How important is methodology for the estimates of the determinants of happiness? *The Economic Journal 114*(497), 641–659.

Ferrer-i Carbonell, A., X. Ramos, and M. Oviedo (2013). Growing inequalities and their impacts in spain gini country report spain.

Flavin, P., A. C. Pacek, and B. Radcliff (2011). State intervention and subjective well-being in advanced industrial democracies. *Politics & Policy 39*(2), 251–269.

Frijters, P., A. Y. Liu, and X. Meng (2012). Are optimistic expectations keeping the Chinese happy? *Journal of Economic Behavior and Organization 81*(1), 159–171.

Giavazzi, F. and M. Pagano (1990). Can severe fiscal contractions be expansionary? Tales of two small European countries. *NBER Macroeconomics Annual 5*, 75–111.

Gili, M., M. Roca, S. Basu, M. McKee, and D. Stuckler (2012). The mental health risks of economic crisis in Spain: Evidence from primary care centres, 2006 and 2010. *The European Journal of Public Health 23*(1), 103–108.

Gros, D. (2013). Has austerity failed in Europe? CEPS commentary, 16 august 2013.

Guajardo, J., D. Leigh, and A. Pescatori (2014). Expansionary austerity? International evidence. *Journal of the European Economic Association 12*(4), 949–968.

Haller, M. and M. Hadler (2006). How social relations and structures can produce happiness and unhappiness: An international comparative analysis. *Social Indicators Research 75*(2), 169–216.

Hessami, Z. (2010). The size and composition of government spending in Europe and its impact on well-being. *Kyklos 63*(3), 346–382.

Hirschman, A. O. and M. Rothschild (1973). The changing tolerance for income inequality in the course of economic development: With a mathematical appendix. *The Quarterly Journal of Economics 87*(4), 544–566.

Joumard, I., M. Pisu, and D. Bloch (2012). Less income inequality and more growth–are they compatible? part 3. income redistribution via taxes and transfers across oecd countries.

Kentikelenis, A., M. Karanikolos, I. Papanicolas, S. Basu, M. McKee, and D. Stuckler (2011). Health effects of financial crisis: Omens of a Greek tragedy. *The Lancet 378*(9801), 1457–1458.

Kotakorpi, K. and J.-P. Laamanen (2010). Welfare state and life satisfaction: Evidence from public health care. *Economica 77*(307), 565–583.

Montagnoli, A. and M. Moro (2018). The cost of banking crises: new evidence from life satisfaction data. *Kyklos 71*(2), 279–309.

Oishi, S., U. Schimmack, and E. Diener (2012). Progressive taxation and the subjective well-being of nations. *Psychological Science 23*(1), 86–92.

Pacek, A. C. and B. Radcliff (2008). Welfare policy and subjective well-being across nations: An individual-level assessment. *Social Indicators Research 89*(1), 179–191.

Perotti, R. (1996). Growth, income distribution, and democracy: What the data say. *Journal of Economic growth 1*(2), 149–187.

Powdthavee, N. and M. Wooden (2015). Life satisfaction and sexual minorities: Evidence from Australia and the United Kingdom. *Journal of Economic Behavior & Organization 116*(C), 107–126.

Ram, R. (2009). Government spending and happiness of the population: Additional evidence from large cross-country samples. *Public Choice 138*(3-4), 483–490.

Ramey, V. A. (2011). Identifying government spending shocks: It's all in the timing. *The Quarterly Journal of Economics 126*(1), 1–50.

Roca, M., M. Gili, J. Garcia-Campayo, and M. García-Toro (2013). Economic crisis and mental health in Spain. *The Lancet 382*(9909), 1977–1978.

Romer, C. D. and D. H. Romer (2004). A new measure of monetary shocks: Derivation and implications. *American Economic Review 94*(4), 1055–1084.

Romer, C. D. and D. H. Romer (2010). The Macroeconomic Effects of Tax Changes: Estimates Based on a New Measure of Fiscal Shocks. *American Economic Review 100*(3), 763–801.

Senik, C. (2004). When information dominates comparison: Learning from Russian subjective panel data. *Journal of Public Economics 88*(9), 2099–2123.

Senik, C. (2008). Ambition and jealousy: Income interactions in the 'old' Europe versus the 'new' Europe and the United States. *Economica 75*(299), 495–513.

Woo, J., M. E. Bova, M. T. Kinda, and M. Y. S. Zhang (2013). *Distributional consequences of fiscal consolidation and the role of fiscal policy: What do the data say?* Number 13-195. International Monetary Fund.

Yang, W., J. Fidrmuc, and S. Ghosh (2015). Macroeconomic effects of fiscal adjustment: A tale of two approaches. *Journal of International Money and Finance 57*, 31–60.

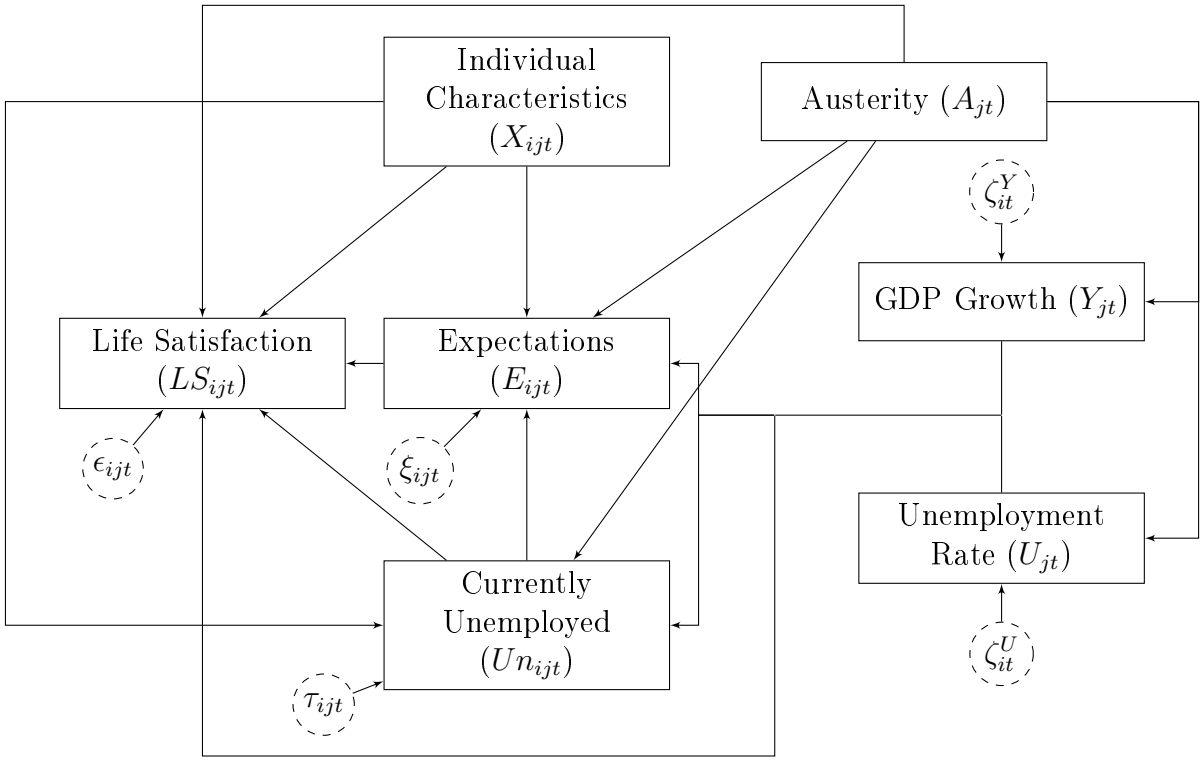

Figure 1: Path diagram

Table 1: Descriptive statistics

Panel A

	N. Obs	Mean	Std. Dev
Individuals variables			
Life satisfaction	207,830	0.000	1
Age	207,830	46.767	17.425
Employed/Self-employed (omitted category)	207,830	0.547	
Unemployed	207,830	0.061	
Retired	207,830	0.231	
In School	207,830	0.074	
At home	207,830	0.087	
Male	207,830	0.480	
Single (omitted category)	207,830	0.207	
Married	207,830	0.631	
Separeted/Divorced	207,830	0.084	
Widowed	207,830	0.078	
Education <15 (omitted category)	207,830	0.243	
Education 15-18	207,830	0.379	
Education 19+	207,830	0.378	

Panel B

	N. Obs	Mean	St. Dev.	Min.	Max
Macroeconomics variables					
GDP growth	207,830	0.887	3.432	-8.269	10.732
Unemployment rate	207,830	7.234	2.467	2.971	17.857
Austerity	207,830	0.186	0.654	-0.750	4.740
Expectations variables					
Better Life	207,830	1.199	0.626	0	2
Better National Economic Situation	207,830	1.159	0.755	0	2
Better Personal Financial Situation	207,830	1.073	0.634	0	2
Better National Employment Situation	207,830	0.807	0.778	0	2
Better Job Situation	207,830	1.124	0.537	0	2

Notes: Data from Eurobarometer Surveys for the years 1999-2009.

Table 2: Correlation matrix of expectations variables

	Better Life	Better National Economic Situation	Better Personal Financial Situation	Better National Employment	Better Job Situation
Better Life	1				
Better National Economic Situation	0.363*	1			
Better Personal Financial Situation	0.553*	0.424*	1		
Better National Employment Situation	0.320*	0.614*	0.381*	1	
Better Job Situation	0.483*	0.311*	0.518*	0.329*	1

Notes: Data from Eurobarometer Surveys 1999-2009. $*$ denotes significance at the 0.05.

Table 3: Life satisfaction, better personal financial situation and austerity

	Direct Effect		Indirect Effect		Total Effect	
	Coef.	**Std. Err.**	**Coef.**	**Std. Err.**	**Coef.**	**Std. Err.**
Panel A. Life Satisfaction						
Exp: Financial Situation	0.268***	(0.41)	(no path)		0.268***	(0.041)
GDP growth	-0.007	(0.008)	0.005***	(0.001)	-0.003	(0.009)
Unemployment rate	-0.052**	(0.024)	-0.004	(0.003)	-0.056**	(0.025)
Male	-0.024	(0.017)	0.012***	(0.003)	-0.011	(0.019)
Age	-0.016***	(0.004)	-0.003***	(0.001)	-0.019***	(0.003)
Age^2	0.000***	(0.000)	0.000*	(0.000)	0.000***	(0.000)
Education 15-18	0.307**	(0.145)	0.023	(0.017)	0.330**	(0.161)
Education 19+	0.542***	(0.148)	0.067***	(0.022)	0.689***	(0.167)
Married	0.219***	(0.028)	0.027***	(0.006)	0.246***	(0.028)
Divorced	-0.155***	(0.033)	0.002	(0.004)	-0.154***	(0.036)
Widowed	-0.097***	(0.033)	0.026***	(0.005)	-0.071*	(0.038)
Unemployed	-0.503***	(0.077)	-0.010	(0.010)	-0.513***	(0.084)
Self-employed	(no path)		0.054***	(0.012)	0.054***	(0.012)
Retired	-0.083***	(0.021)	0.044***	(0.016)	-0.040	(0.029)
In education	0.628***	(0.151)	0.112***	(0.022)	0.740***	(0.165)
At home	-0.074	(0.059)	0.056***	(0.017)	-0.017	(0.069)
Austerity	0.003	(0.084)	-0.061**	(0.026)	-0.059	(0.077)
Panel B. Exp: Financial Situation						
GDP growth	0.014***	(0.004)	0.000	(0.000)	0.015***	(0.004)
Unemployment rate	-0.002	(0.010)	-0.000	(0.000)	-0.003	(0.010)
Male	0.031***	(0.007)	0.000	(0.000)	0.031***	(0.007)
Age	-0.018***	(0.002)	0.000	(0.000)	-0.018***	(0.002)
Age^2	0.000***	(0.000)	-0.000	(0.000)	0.000***	(0.000)
Education 15-18	0.067	(0.048)	0.000	(0.000)	0.068	(0.048)
Education 19+	0.157***	(0.049)	0.002	(0.002)	0.159***	(0.049)
Married	0.006	(0.009)	0.002	(0.002)	0.008	(0.009)
Divorced	0.007	(0.011)	-0.000	(0.000)	0.007	(0.011)
Widowed	0.004	(0.014)	0.002	(0.002)	0.006	(0.013)
Unemployed	-0.036	(0.032)	(no path)		-0.036	(0.032)
Self-employed	(no path)		0.004	(0.004)	0.004	(0.004)
Retired	-0.060***	(0.014)	0.004	(0.004)	-0.055***	(0.016)
In education	0.047	(0.056)	0.007	(0.006)	0.054	(0.058)
At home	-0.018	(0.021)	0.004	(0.004)	-0.014	(0.023)
Austerity	-0.070***	(0.023)	-0.013	(0.012)	-0.083***	(0.014)
Panel C. Unemployed						
GDP growth	-0.001**	(0.001)	(no path)		-0.001**	(0.001)
Unemployment rate	0.007***	(0.001)	(no path)		0.007***	(0.001)
Male	-0.008*	(0.004)	(no path)		-0.008*	(0.004)
Age	-0.004***	(0.001)	(no path)		-0.004***	(0.001)
Age^2	0.000***	(0.000)	(no path)		0.000***	(0.000)
Education 15-18	-0.010*	(0.006)	(no path)		-0.010*	(0.006)
Education 19+	-0.049***	(0.007)	(no path)		-0.049***	(0.007)
Married	-0.050***	(0.006)	(no path)		-0.050***	(0.006)
Divorced	0.000	(0.006)	(no path)		0.000	(0.006)
Widowed	-0.048***	(0.005)	(no path)		-0.048***	(0.005)
Self-employed	-0.106***	(0.011)	(no path)		-0.106***	(0.011)
Retired	-0.115***	(0.013)	(no path)		-0.116***	(0.013)
In education	-0.194***	(0.017)	(no path)		-0.194***	(0.017)
At home	-0.119***	(0.013)	(no path)		-0.119***	(0.013)
Austerity	-0.000	(0.002)	0.006**	(0.003)	0.006*	(0.003)
Panel D. GDP growth						
Austerity	-0.775	(0.661)	(no path)		-0.775	(0.661)
Panel E. Unemployment rate						
Austerity	0.804	(0.332)	(no path)		0.804**	(0.332)
Observations	207,830		207,830		207,830	

Notes: This table reports estimates from our five-equation SEM. We present direct, indirect and total effects estimated using maximum likelihood methods. Life satisfaction and the intermediate outcome variables are denoted in bold. The omitted categories for the sets of dummy variables are as follows: employed/self-employed, education <15 years, and single. Life satisfaction is standardised with a mean of 0 and a standard deviation of 1. The probability of being unemployed is estimated as a linear probability model. Standard errors are clustered at the country-level. All equations include a constant, not reported. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4: Life satisfaction, better job situation and austerity

	Direct Effect		Indirect Effect		Total Effect	
	Coef.	**Std. Err.**	**Coef.**	**Std. Err.**	**Coef.**	**Std. Err.**
Panel A. Life Satisfaction						
Exp: Job Situation	0.239***	(0.043)	(no path)		0.239***	(0.043)
GDP growth	-0.006	(0.009)	0.003***	(0.001)	-0.003	(0.009)
Unemployment rate	-0.052**	(0.024)	-0.004*	(00002)	-0.056**	(0.025)
Male	-0.019	(0.017)	0.008***	(0.003)	-0.011	(0.019)
Age	-0.016***	(0.003)	-0.003**	(0.001)	-0.019***	(0.003)
Age^2	0.000***	(0.000)	0.000*	(0.000)	0.000***	(0.000)
Education 15-18	0.312**	(0.149)	0.018	(0.012)	0.330**	(0.161)
Education 19+	0.555***	(0.153)	0.054***	(0.017)	0.609***	(0.167)
Married	0.227***	(0.027)	0.018***	(0.007)	0.246***	(0.028)
Divorced	-0.149***	(0.034)	-0.005	(0.004)	-0.154***	(0.036)
Widowed	-0.090**	(0.038)	0.019***	(0.005)	-0.071*	(0.038)
Unemployed	-0.523***	(0.075)	0.010	(0.011)	-0.513***	(0.083)
Self-employed	(no path)		0.054***	(0.012)	0.054***	(0.012)
Retired	-0.092***	(0.021)	0.052***	(0.016)	-0.040	(0.029)
In education	0.621***	(0.155)	0.119***	(0.021)	0.740***	(0.165)
At home	-0.072	(0.060)	0.054***	(0.015)	-0.017	(0.069)
Austerity	-0.005	(0.087)	-0.053*	(0.027)	-0.059	(0.077)
Panel B. Exp: Job Situation						
GDP growth	0.011***	(0.003)	-0.000	(0.000)	0.011***	(0.003)
Unemployment rate	-0.000	(0.005)	0.000	(0.000)	-0.000	(0.005)
Male	0.017***	(0.004)	-0.000	(0.000)	0.017***	(0.004)
Age	-0.018***	(0.002)	-0.000	(0.000)	-0.019***	(0.002)
Age^2	0.000***	(0.000)	-0.000	(0.000)	0.000***	(0.000)
Education 15-18	0.052	(0.035)	-0.000	(0.001)	0.051	(0.035)
Education 19+	0.122***	(0.038)	-0.000	(0.002)	0.120***	(0.039)
Married	-0.030***	(0.009)	-0.002	(0.002)	-0.032***	(0.009)
Divorced	-0.019*	(0.010)	0.000	(0.000)	-0.019*	(0.010)
Widowed	-0.022***	(0.007)	-0.002	(0.002)	-0.024***	(0.007)
Unemployed	0.040	(0.049)	(no path)		0.040	(0.049)
Self-employed	(no path)		-0.004	(0.005)	-0.004	(0.005)
Retired	-0.031**	(0.014)	-0.005	(0.005)	-0.036**	(0.016)
In education	0.081*	(0.043)	-0.008	(0.009)	0.073	(0.018)
At home	-0.030*	(0.016)	-0.005	(0.006)	-0.035*	(0.008)
Austerity	-0.045***	(0.013)	-0.009	(0.005)	-0.055***	(0.005)
Panel C. Unemployed						
GDP growth	-0.001**	(0.001)	(no path)		-0.001**	(0.001)
Unemployment rate	0.007***	(0.001)	(no path)		0.007***	(0.001)
Male	-0.008*	(0.004)	(no path)		-0.008*	(0.004)
Age	-0.004***	(0.001)	(no path)		-0.004***	(0.001)
Age^2	0.000***	(0.000)	(no path)		0.000***	(0.000)
Education 15-18	-0.010*	(0.056)	(no path)		-0.010*	(0.056)
Education 19+	-0.049***	(0.007)	(no path)		-0.049***	(0.007)
Married	-0.050***	(0.006)	(no path)		-0.050***	(0.006)
Divorced	0.000	(0.006)	(no path)		0.000	(0.006)
Widowed	-0.048***	(0.005)	(no path)		-0.048***	(0.005)
Self-employed	-0.106***	(0.011)	(no path)		-0.106***	(0.011)
Retired	-0.116***	(0.013)	(no path)		-0.116***	(0.013)
In education	-0.194***	(0.017)	(no path)		-0.194***	(0.017)
At home	-0.119***	(0.013)	(no path)		-0.119***	(0.013)
Austerity	-0.000	(0.002)	0.006**	(0.003)	0.006**	(0.003)
Panel D. GDP growth						
Austerity	-0.775	(0.661)	(no path)		-0.775	(0.661)
Panel E. Unemployment rate						
Austerity	0.804**	(0.332)	(no path)		0.804**	(0.332)
Observations	207,830		207,830		207,830	

Notes: This table reports estimates from our five-equation SEM. We present direct, indirect and total effects estimated using maximum likelihood methods. Life satisfaction and the intermediate outcome variables are denoted in bold. The omitted categories for the sets of dummy variables are as follows: employed/self-employed, education <15 years, and single. Life satisfaction is standardised with a mean of 0 and a standard deviation of 1. The probability of being unemployed is estimated as a linear probability model. Standard errors are clustered at the country-level. All equations include a constant, not reported. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 5: Life satisfaction, better national employment situation and austerity

	Direct Effect		Indirect Effect		Total Effect	
	Coef.	**Std. Err.**	**Coef.**	**Std. Err.**	**Coef.**	**Std. Err.**
Panel A. Life Satisfaction						
Exp: Better employment	0.148***	(0.025)	(no path)		0.148***	(0.025)
GDP growth	-0.009	(0.009)	0.007***	(0.001)	-0.003	(0.009)
Unemployment rate	-0.052**	(0.024)	-0.004	(0.002)	-0.056**	(0.025)
Male	-0.017	(0.017)	0.006**	(0.003)	-0.011	(0.019)
Age	-0.019***	(0.003)	-0.000	(0.001)	-0.019***	(0.003)
Age^2	0.000***	(0.000)	-0.000	(0.000)	0.000***	(0.000)
Education 15-18	0.316**	(0.152)	0.014	(0.010)	0.330**	(0.161)
Education 19+	0.562***	(0.156)	0.047***	(0.014)	0.609***	(0.167)
Married	0.221***	(0.029)	0.025***	(0.006)	0.246***	(0.028)
Divorced	-0.151***	(0.034)	-0.002	(0.003)	-0.154***	(0.036)
Widowed	-0.093**	(0.038)	0.022***	(0.004)	-0.071*	(0.038)
Unemployed	-0.509***	(0.079)	-0.004	(0.005)	-0.513***	(0.084)
Self-employed	(no path)		0.054***	(0.012)	0.054***	(0.012)
Retired	-0.099***	(0.022)	0.059***	(0.014)	-0.040	(0.029)
In education	0.620***	(0.157)	0.062***	(0.015)	0.740***	(0.165)
At home	-0.080	(0.060)	0.062***	(0.015)	-0.017	(0.069)
Austerity	-0.008	(0.086)	-0.050*	(0.027)	-0.059	(0.077)
Panel B. Exp: Better employment						
GDP growth	0.040***	(0.005)	0.000	(0.000)	0.040***	(0.005)
Unemployment rate	-0.001	(0.011)	-0.000	(0.000)	-0.001	(0.011)
Male	0.014*	(0.008)	0.000	(0.000)	0.014*	(0.008)
Age	-0.013***	(0.002)	0.000	(0.000)	-0.013***	(0.002)
Age^2	0.000***	(0.000)	-0.000	(0.000)	0.000***	(0.000)
Education 15-18	0.059	(0.047)	(0.000)	(0.000)	0.059	(0.047)
Education 19+	0.150***	(0.049)	0.001	(0.002)	0.151***	(0.049)
Married	-0.006	(0.009)	0.001	(0.002)	-0.005	(0.009)
Divorced	-0.015*	(0.009)	-0.000	(0.000)	-0.015*	(0.009)
Widowed	-0.017	(0.012)	0.001	(0.001)	-0.15	(0.011)
Unemployed	-0.029	(0.031)	(no path)		-0.029	(0.031)
Self-employed	(no path)		0.003	(0.003)	0.03	(0.003)
Retired	-0.004	(0.011)	0.003	(0.004)	-0.000	(0.009)
In education	0.139**	(0.054)	0.006	(0.006)	0.145**	(0.054)
At home	0.008	(0.020)	0.003	(0.004)	0.011	(0.021)
Austerity	-0.052*	(0.027)	-0.031	(0.027)	-0.083***	(0.015)
Panel C. Unemployed						
GDP growth	-0.001**	(0.001)	(no path)		-0.001**	(0.001)
Unemployment rate	0.007***	(0.001)	(no path)		0.007***	(0.001)
Male	-0.008*	(0.004)	(no path)		-0.008*	(0.004)
Age	-0.004***	(0.001)	(no path)		-0.004***	(0.001)
Age^2	0.000***	(0.000)	(no path)		0.000***	(0.000)
Education 15-18	-0.010*	(0.006)	(no path)		-0.010*	(0.006)
Education 19+	-0.049***	(0.007)	(no path)		-0.049***	(0.007)
Married	-0.050***	(0.006)	(no path)		-0.050***	(0.006)
Divorced	0.000	(0.006)	(no path)		0.000	(0.006)
Widowed	-0.048***	(0.005)	(no path)		-0.048***	(0.005)
Self-employed	-0.106***	(0.011)	(no path)		-0.106***	(0.011)
Retired	-0.116***	(0.013)	(no path)		-0.116***	(0.013)
In education	-0.194***	(0.017)	(no path)		-0.194***	(0.017)
At home	-0.119***	(0.013)	(no path)		-0.119***	(0.013)
Austerity	-0.000	(0.002)	0.006**	(0.003)	0.006*	(0.003)
Panel D. GDP growth						
Austerity	-0.775	(0.661)	(no path)		-0.775	(0.661)
Panel E. Unemployment rate						
Austerity	0.804**	(0.332)	(no path)		0.804**	(0.332)
Observations	207,830		207,830		207,830	

Notes: This table reports estimates from our five-equation SEM. We present direct, indirect and total effects estimated using maximum likelihood methods. Life satisfaction and the intermediate outcome variables are denoted in bold. The omitted categories for the sets of dummy variables are as follows: employed/self-employed, education <15 years, and single. Life satisfaction is standardised with a mean of 0 and a standard deviation of 1. The probability of being unemployed is estimated as a linear probability model. Standard errors are clustered at the country-level. All equations include a constant, not reported. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 6: Life satisfaction, better life expectations and austerity

	Direct Effect		Indirect Effect		Total Effect	
	Coef.	**Std. Err.**	**Coef.**	**Std. Err.**	**Coef.**	**Std. Err.**
Panel A. Life Satisfaction						
Exp: Better life	0.271***	(0.049)	(no path)		0.271***	(0.049)
GDP growth	-0.008	(0.008)	0.006***	(0.002)	-0.003	(0.009)
Unemployment rate	-0.053**	(0.024)	-0.003	(0.003)	-0.056**	(0.025)
Male	-0.014	(0.017)	0.003	(0.003)	0.011	(0.019)
Age	-0.016***	(0.004)	-0.003**	(0.001)	-0.019***	(0.003)
Age^2	0.000***	(0.000)	0.000	(0.000)	0.000***	(0.000)
Education 15-18	0.300**	(0.141)	0.030	(0.021)	0.330**	(0.161)
Education 19+	0.533***	(0.143)	0.076***	(0.027)	0.609***	(0.167)
Married	0.228***	(0.028)	0.018**	(0.007)	0.246***	(0.028)
Divorced	-0.158***	(0.033)	0.005	(0.005)	-0.154***	(0.036)
Widowed	-0.087**	(0.036)	0.016**	(0.007)	-0.071*	(0.038)
Unemployed	-0.511***	(0.077)	-0.002	(0.009)	-0.513***	(0.084)
Self-employed	(no path)		0.054***	(0.012)	0.054***	(0.012)
Retired	-0.088***	(0.021)	0.048***	(0.015)	-0.040	(0.029)
In education	0.608***	(0.146)	0.131***	(0.028)	0.740***	(0.165)
At home	-0.074	(0.058)	0.057***	(0.017)	-0.017	(0.069)
Austerity	0.000	(0.083)	-0.059**	(0.026)	-0.059	(0.077)
Panel B. Exp: Better life						
GDP growth	0.018***	(0.003)	0.000	(0.000)	0.018***	(0.004)
Unemployment rate	0.001	(0.009)	-0.000	(0.000)	0.001	(0.009)
Male	-0.003	(0.007)	0.000	(0.000)	-0.003	(0.007)
Age	-0.016***	(0.002)	0.000	(0.000)	-0.016***	(0.002)
Age^2	0.000***	(0.000)	-0.000	(0.000)	0.000***	(0.000)
Education 15-18	0.091	(0.057)	0.000	(0.000)	0.091	(0.057)
Education 19+	0.189***	(0.060)	0.000	(0.002)	0.189***	(0.060)
Married	-0.030***	(0.009)	0.000	(0.002)	-0.029***	(0.001)
Divorced	0.019	(0.014)	-0.000	(0.000)	0.019	(0.014)
Widowed	-0.032**	(0.015)	0.000	(0.002)	-0.032**	(0.015)
Unemployed	-0.006	(0.032)	(no path)		-0.006	(0.032)
Self-employed	(no path)		0.000	(0.003)	0.000	(0.003)
Retired	-0.041***	(0.013)	0.000	(0.004)	-0.040***	(0.013)
In education	0.119*	(0.065)	0.000	(0.006)	0.119*	(0.066)
At home	-0.016	(0.022)	0.000	(0.004)	-0.016	(0.024)
Austerity	-0.060**	(0.025)	-0.013	(0.014)	-0.073***	(0.016)
Panel C. Unemployed						
GDP growth	-0.001**	(0.001)	(no path)		-0.001**	(0.001)
Unemployment rate	0.007***	(0.001)	(no path)		0.007***	(0.001)
Male	-0.008*	(0.004)	(no path)		-0.008*	(0.004)
Age	-0.004***	(0.001)	(no path)		-0.004***	(0.001)
Age^2	0.000***	(0.000)	(no path)		0.000***	(0.000)
Education 15-18	-0.010*	(0.006)	(no path)		-0.010*	(0.006)
Education 19+	-0.049***	(0.007)	(no path)		-0.049***	(0.007)
Married	-0.050***	(0.006)	(no path)		-0.050***	(0.006)
Divorced	0.000	(0.006)	(no path)		0.000	(0.006)
Widowed	-0.048***	(0.005)	(no path)		-0.048***	(0.005)
Self-employed	-0.106***	(0.011)	(no path)		-0.106***	(0.011)
Retired	-0.116***	(0.013)	(no path)		-0.116***	(0.013)
In education	-0.194***	(0.017)	(no path)		-0.194***	(0.017)
At home	-0.119***	(0.012)	(no path)		-0.119***	(0.012)
Austerity	-0.000	(0.002)	0.006**	(0.003)	0.006*	(0.003)
Panel D. GDP growth						
Austerity	-0.775	(0.661)	(no path)		-0.775	(0.661)
Panel E. Unemployment rate						
Austerity	0.804**	(0.332)	(no path)		0.804**	(0.332)
Observations	207,830		207,830		207,830	

Notes: This table reports estimates from our five-equation SEM. We present direct, indirect and total effects estimated using maximum likelihood methods. Life satisfaction and the intermediate outcome variables are denoted in bold. The omitted categories for the sets of dummy variables are as follows: employed/self-employed, education <15 years, and single. Life satisfaction is standardised with a mean of 0 and a standard deviation of 1. The probability of being unemployed is estimated as a linear probability model. Standard errors are clustered at the country-level. All equations include a constant, not reported. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 7: Life satisfaction, better national economic situation and austerity

	Direct Effect		Indirect Effect		Total Effect	
	Coef.	**Std. Err.**	**Coef.**	**Std. Err.**	**Coef.**	**Std. Err.**
Panel A. Life Satisfaction						
Exp: Economic situation	-0.158***	(0.026)	(no path)		-0.158***	(0.026)
GDP growth	-0.006	(0.009)	0.004***	(0.001)	-0.003	(0.009)
Unemployment rate	-0.052**	(0.024)	-0.003	(0.002)	-0.056**	(0.026)
Male	-0.021	(0.017)	0.010***	(0.003)	-0.011	(0.019)
Age	-0.019***	(0.003)	-0.000	(0.000)	-0.019***	(0.003)
Age^2	0.000***	(0.000)	-0.000	(0.000)	0.000***	(0.000)
Education 15-18	0.314**	(0.151)	0.016	(0.011)	0.330**	(0.161)
Education 19+	0.560***	(0.155)	0.049***	(0.015)	0.609***	(0.167)
Married	0.222***	(0.028)	0.024***	(0.006)	0.246***	(0.028)
Divorced	-0.149***	(0.034)	-0.004	(0.003)	-0.154***	(0.036)
Widowed	-0.093**	(0.038)	0.021***	(0.005)	-0.071*	(0.038)
Unemployed	-0.508***	(0.080)	-0.005	(0.005)	-0.513***	(0.084)
Self-employed	(no path)		0.054***	(0.012)	0.054***	(0.012)
Retired	-0.096***	(0.022)	0.056***	(0.014)	-0.040	(0.029)
In education	0.616***	(0.155)	0.124***	(0.021)	0.740***	(0.165)
At home	-0.081	(0.060)	0.063***	(0.014)	-0.017	(0.069)
Austerity	-0.007	(0.087)	-0.052*	(0.027)	-0.059	(0.077)
Panel B. Exp: Economic situation						
GDP growth	-0.020***	(0.005)	-0.000	(0.000)	-0.020***	(0.005)
Unemployment rate	-0.002	(0.009)	0.000	(0.000)	-0.001	(0.009)
Male	-0.038***	(0.009)	-0.000	(0.000)	-0.038***	(0.009)
Age	0.012***	(0.001)	-0.000	(0.000)	0.012***	(0.001)
Age^2	-0.000***	(0.000)	0.000	(0.000)	-0.000***	(0.000)
Education 15-18	-0.066	(0.044)	-0.000	(0.000)	-0.066	(0.044)
Education 19+	-0.154***	(0.047)	-0.002	(0.001)	-0.156***	(0.048)
Married	0.011	(0.009)	-0.002	(0.001)	0.010	(0.010)
Divorced	0.028***	(0.008)	0.000	(0.000)	0.028***	(0.008)
Widowed	0.018	(0.012)	-0.002	(0.001)	0.017	(0.012)
Unemployed	0.033	(0.028)	(no path)		0.033	(0.028)
Self-employed	(no path)		-0.003	(0.003)	-0.003	(0.003)
Retired	0.021*	(0.012)	-0.004	(0.003)	0.017*	(0.010)
In education	-0.153***	(0.053)	-0.006	(0.005)	-0.159***	(0.053)
At home	-0.013	(0.017)	-0.004	(0.003)	-0.017	(0.018)
Austerity	0.058***	(0.020)	0.014	(0.016)	0.072***	(0.014)
Panel C. Unemployed						
GDP growth	-0.001**	(0.001)	(no path)		-0.001**	(0.001)
Unemployment rate	0.007***	(0.001)	(no path)		0.007***	(0.001)
Male	-0.008*	(0.004)	(no path)		-0.008*	(0.004)
Age	-0.004***	(0.001)	(no path)		-0.004***	(0.001)
Age^2	0.000***	(0.000)	(no path)		0.000***	(0.000)
Education 15-18	-0.010*	(0.006)	(no path)		-0.010*	(0.006)
Education 19+	-0.049***	(0.007)	(no path)		-0.049***	(0.007)
Married	-0.050***	(0.006)	(no path)		-0.050***	(0.006)
Divorced	0.000	(0.006)	(no path)		0.000	(0.006)
Widowed	-0.048***	(0.005)	(no path)		-0.048***	(0.005)
Self-employed	-0.106***	(0.011)	(no path)		-0.106***	(0.011)
Retired	-0.116***	(0.013)	(no path)		-0.116***	(0.013)
In education	-0.194***	(0.017)	(no path)		-0.194***	(0.017)
At home	-0.119***	(0.013)	(no path)		-0.119***	(0.013)
Austerity	-0.000	(0.002)	0.006**	(0.003)	0.006*	(0.003)
Panel D. GDP growth						
Austerity	-0.775	(0.661)	(no path)		-0.775	(0.661)
Panel E. Unemployment rate						
Austerity	0.804**	(0.332)	(no path)		0.804**	(0.332)
Observations	207,830		207,830		207,830	

Notes: This table reports estimates from our five-equation SEM. We present direct, indirect and total effects estimated using maximum likelihood methods. Life satisfaction and the intermediate outcome variables are denoted in bold. The omitted categories for the sets of dummy variables are as follows: employed/self-employed, education <15 years, and single. Life satisfaction is standardised with a mean of 0 and a standard deviation of 1. The probability of being unemployed is estimated as a linear probability model. Standard errors are clustered at the country-level. All equations include a constant, not reported. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.