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## Socio-economic stratification of life satisfaction during an economic recession: a repeated cross-sectional study using European Social Survey

Life satisfaction is an understudied topic in literature on socio-economic stratification. Using the European Social Survey data, this study concentrates on the recent economic recession in Ireland, and the socio-economic stratification of life satisfaction before and during economic crisis. We measure stratification multi-dimensionally using education, occupational social class and income. The results show that the effects of the crisis, which peaked in 2010 in terms of both GDP and life satisfaction, are not experienced equally within the population. Lower strata (lowest income quartile, manual workers and those with basic education at most) are more affected. In the pre-crisis period life satisfaction appeared to be stratified mostly by income, which was due to the experience of economic hardship. During the crisis stratification of life satisfaction took a more complex and deeper form and also basic education and manual labour then began to explain lower life satisfaction. During the crisis the effects of the economic mechanisms contributing to life satisfaction (unemployment and economic hardship) diminished, whereas the importance of social mechanisms (interpersonal and institutional trust) strengthened.

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## Introduction

Subjective wellbeing (SWB) has gained increasing attention in the social sciences, and there is now a rich literature on life satisfaction and happiness<sup>1</sup>. One field of SWB research is based on country-level analyses on the relationship between life satisfaction and macroeconomic indicators, such as Gross Domestic Product (Easterlin, 1974; Easterlin et al., 2010; Frank, 2009; Helliwell, Layard, & Sachs, 2012; Stevenson & Wolfers, 2008). A related and growing research perspective has focused on studying the effects of short-term macroeconomic changes, such as impact of economic recession on a level of subjective wellbeing (Bell & Blanchflower, 2010; Bjørnskov, 2014; Blanchflower & Oswald, 2004; Deaton, 2011; Guardiola, Picazo-Tadeo, & Rojas, 2015; Gudmundsdottir, 2013; Helliwell, Huang, & Wang, 2014; Mertens & Beblo, 2016; OECD, 2013). Both of these lines of enquiry have focused upon aggregates of populations as a whole, while sub-group differences, including socio-economic stratification, have received less attention. The few analyses which have explicitly studied the stratification of life satisfaction within a country have focused on demographic categories such as race and marital status (Davis, 1984) or certain age-group and cohorts (Yang, 2008) and have found only modest effects for macroeconomic conditions affecting the stratification of life satisfaction (Yang 2008: 222).

At the same time, studies on SWB have increasingly started to examine inequality (for a review see Schneider, 2016). However, in those cases where inequality has featured in SWB research (Alesina, Di Tella, & MacCulloch, 2004; Delhey and Dragolov, 2014; Haller and Hadler, 2006; Oishi and Kesebir, 2015; Rözer and Kraaykamp, 2013; Schröder, 2016; Verme, 2011), it has typically been operationalized as income inequality, e.g. GINI-index, and approached as a contextual measure, in line with the framework of Wilkinson and Pickett (2010). A sociological response and critique to this line of research was made by Goldthorpe (2010) who criticized one-dimensional conceptualization of social inequality as failing to recognize structural disadvantages associated with the categorical social position (i.e. occupational class) of individuals. Here we depart from studies focusing on macro-level contextual effects of income inequality by focusing on individual level socio-economic variables and stratification over time within a single society.

This in-depth examination of socio-economic stratification of life satisfaction, and its temporal development in a society fills an important gap in the current literature. It is also a step towards building a bridge between sociology and SWB studies which have remained relatively distinct (see e.g. Delhey and Dragolov, 2014: 151, and Wolbring et al. 2013: 86). Furthermore, recent analysis studying the complex relationship between inequality and life satisfaction suggest that it is in fact short-run increases in inequality which influences level of life satisfaction in a country rather than long-run levels of inequality (Schröder, 2016). This suggests that stronger focus should be placed on short-term changes within a country (e.g. a period of economic crisis) instead of relying mostly on cross-sectional analyses comparing countries with different levels of income inequality.

This analysis takes the recent economic recession in Ireland as a frame, one which allows us to address many issues. In this analysis, socio-economic stratification is approached from three perspectives: education, occupational class and income. Stratification of life satisfaction is tracked during the period of the economic crisis, including controls for demographic composition. As far as the authors are aware, this study is the first to be built on such a framework. By focusing on a period of economic crisis within a single country and monitoring changes in life satisfaction in different layers of society over time, we aim to contribute to both sociological research on inequality and also to the literature studying the relationship between macro-economic indicators and subjective well-being.

The repeated cross-sectional data used in this analysis is derived from the biannual European Social Survey (ESS). Ireland is one of the few countries taking part of the ESS from the beginning of that survey and the latest 7<sup>th</sup> round data from 2014 was released in October 2015, giving us a ten-year time frame of 2004 to 2014. Ireland serves as a good case for this study because it is one of the countries where the effects of economic crisis were felt hardest in terms of economic indicators (OECD, 2013) and in decreases in subjective well-being (Helliwell et al., 2014). Furthermore, in Ireland a variety of so-called “austerity measures” were applied in order to tackle the effects of the crisis which provides a reason to expect significant short-term increase in inequality in both economic and subjective terms.

The research questions are as follows:

- 1) Are all three dimensions of stratification (education, occupational class, and income) of equal importance for life satisfaction?
- 2) How is the structure of stratification affected by the economic crisis?
- 3) What is the role of economic indicators (unemployment and economic hardship) and social capital (interpersonal and institutional trust) in the stratification of life satisfaction?

## **Subjective well-being, inequality and stratification: conceptual and empirical perspectives**

Socio-economic inequalities in various aspects of well-being, including psycho-social measures (Wilkinson and Pickett, 2010), self-rated health (Präg, Mills, & Wittek, 2014), and objective health indicators (McLaren, 2007) have gained abundant attention in the literature on social inequalities. However, this perspective has received significantly less attention in studies on subjective well-being, or SWB. It is possible that the limited number of contributions from sociology (Delhey and Dragolov 2014: 151 and Wolbring et al. 2013: 86) could explain why subgroup-specific perspective to life satisfaction, including socio-economic stratification, has remained under-studied. Overall, searching for studies on life satisfaction, happiness or subjective well-being in five of the most important international sociological journals, Wolbring et al. (2013), found only eight articles published during the last decade (2000– 2010)<sup>2</sup>.

While the literature on subjective well-being has remained relatively distinct from studies on social stratification, it is true that inequality has been examined in SWB research. However, as earlier remarked, most interest has been placed on a contextual effect that economic inequality, usually operationalized with the GINI-index, has to the level of subjective well-being in a country. A majority of these analyses have been conducted as country comparisons with a cross-sectional data where inequality has been treated as a one-dimensional contextual variable (Alesina et al., 2004; Delhey and Dragolov, 2014; Haller & Hadler, 2006; Rözer and Kraaykamp, 2013; Verme, 2011). Theoretical foundations in these studies, inspired by Richard Wilkinson and Kate Pickett (2010), have assumed that people have a natural distaste for inequality and all individuals would react similarly (negatively) to the prevailing level of income inequality in society (for a critical review see e.g. Schröder,

2016). Empirical analysis following this framework and applying a method of multilevel modelling have found rather mixed results (Rözer and Kraaykamp, 2013) as well as unexplained geographical variation (Haller & Hadler, 2006). In addition, one study has found that high levels of self-delusion is typical in very unequal societies where health is poor but is reported as good (Barford et al, 2010). Thereby, Verme (2011) and Schneider (2016) conclude that empirical research has found evidence of a positive, negative, or non-significant relationship between a level of income inequality and subjective well-being.

As earlier remarked, Goldthorpe (2010) has criticized the framework and conceptualization of inequality in this line of research and argued that focusing only on a level of income inequality is too one-dimensional. Goldthorpe (2010: 733) claims that conceptualization of inequality into *social stratification* is able to reveal inequality which is inherent in prevailing forms of social relationships that have in some degree an institutional basis. As an example, Goldthorpe (2010: 734) refers to a large body of evidence showing that individuals' risk of unemployment and other economic disadvantages is strongly associated with their class positions.

Extending this perspective, we direct our attention not only to occupational social class, but also education and income in order to examine the social structure of life satisfaction, and its temporal dynamics in relation to acute economic crisis. With the framework we have presented we contribute to the discussion on how social inequalities should be operationalized (Grusky, 2007) and ask does inequality indeed take a class form as Goldthorpe (2010) and other class researchers claim. Instead of engaging in normative debate on inequality, we aim to provide a multidimensional empirical description of its temporal development during economic crisis (see Savage 2016).

One further issue is whether to approach stratification from a categorical or a continuous perspective. In the categorical approach, mechanisms allocating resources to different socio-economic groups are of key importance. This type of framework assumes that there are bundled disadvantages associated with certain institutionalized groups (i.e. classes), based on, for example, the level of education or type of occupation. Also, different dimensions of socio-economic stratification (income, education and occupation) may imply to different mechanisms. For example, having only basic education could limit individual possibilities to enter labor markets, resulting as lower life satisfaction. Additionally, there might be

different psychological pay-offs associated with manual or non-manual work leading to different level of life satisfaction. Regarding the income and life satisfaction relationship, the possible mechanisms could work through fulfilling basic needs or the effect of relative income and social comparison. It is the relationship between these different dimensions of stratification this study aims to disentangle.

Applying this quintessentially sociological and structuralist approach to conceptualize inequality into socio-economic stratification and following its development over time is what separates this analysis from the already mounting literature on inequality and life satisfaction (Alesina et al., 2004; Delhey and Dragolov, 2014; Oishi et al. 2011; Oishi and Kesebir, 2015; Rözer & Kraaykamp, 2013; Schneider, 2016; Schröder, 2016; Verme, 2011).

In what follows, we consider the variables and mechanisms which can be assumed to affect individual level life satisfaction and changes of life satisfaction during economic crisis. We also present results from the existing literature and then draw assumptions to inform the present study.

## **Mechanisms affecting life satisfaction**

### **Macro-economic indicators**

Macro-economic studies of aggregate life satisfaction have documented that countries with higher GDP tend to score higher on aggregate life satisfaction (Easterlin, 1974; Easterlin et al., 2010; Easterlin, 2011; Frank, 2009; Stevenson & Wolfers, 2013). However, the possible mechanisms and the direction of causality in this relationship are less clear. Further questions include whether this relationship is similar at all levels of modernization and societal affluence (Welzel & Inglehart, 2010) and is the relationship linear or log-linear (Stevenson & Wolfers, 2013)? Furthermore, is economic productivity the most important indicator for national life satisfaction and what is the role of social trust (Helliwell, 2008; Kouvo & Räsänen, 2015) or the quality of institutions and governance (Rodríguez-Pose & Maslauskaitė, 2012)?

Studies examining the implications of short-term economic changes have found that the aggregate life satisfaction tend to decrease during economic crisis (e.g. Helliwell, Huang, & Wang, 2014; Mertens & Beblo, 2016; OECD, 2013). Moreover, there is evidence that this

effects runs mainly through economic mechanisms such as increases in the level of unemployment (Bell & Blanchflower, 2010; Di Tella, MacCulloch, & Oswald, 2003; Mertens & Beblo, 2016) and increases in subjective economic hardship (Gudmundsdottir, 2013).

## **Micro-economic indicators**

### **Unemployment**

Unemployment is one of the strongest negative predictors of life satisfaction at the individual level, but the impact is not completely explained by the lower income level (Clark & Oswald, 1994; Di Tella et al., 2003). Studies have also examined a level of unemployment as a contextual measure. It has been suggested that the national unemployment rate has a negative contextual effect on wellbeing as it reflects general uncertainty and the level of social tensions in a society (Mertens & Beblo, 2016). Empirical analyses have found diverse results for this claim such as Alesina et al. (2004) who found negative effects for the United States but not for a set of European countries. Accepting a higher level of unemployment has also been considered to have a positive effect to life satisfaction. This would work through social norms as high level of unemployment would make being unemployed less stigmatizing (see e.g. Stutzer & Lalive, 2004). Empirical analyses have found mixed evidence for the effect of social norms of unemployment (Chadi, 2014; Clark, 2003; Mertens & Beblo, 2016). Also, the question of determining the reference group for these social norms is unresolved.

### **Income and economic hardship**

There is abundant evidence on the relationship between life satisfaction and individual or household income (Boyce, Brown, & Moore, 2010; Deaton, 2008; Hou, 2014; Oswald & Wu, 2010; Stevenson & Wolfers, 2013; Wolbring et al., 2013). The discussion has concentrated on whether this association is due to absolute, relative or rank income, which each refer to different hypotheses and mechanisms (Boyce et al., 2010). First, the absolute income hypothesis understands well-being mainly through access to material goods and consumption (Bruni & Porta, 2007), and assumes that income and life satisfaction are directly and causally linked as higher incomes increase the possibility to purchase goods and services according to one's personal preferences leading to higher satisfaction. Second, the relative income hypothesis acknowledges the role of social comparisons (Hou, 2014;



Luttmer, 2005). It suggests that, in addition to possibilities for material consumption, individuals are sensitive to how their income relates to the reference income of a socially constructed comparison group. Third, income rank hypothesis assumes that it is the number of people (or households) who rank higher or lower compared to oneself which matters most for life satisfaction (Boyce et al., 2010; Powdthatee, 2009).

A comprehensive study by Boyce et al. (2010) addressing all of these hypotheses found that ranked income best predicts general life satisfaction, whereas absolute and reference income have no effect. They also noted that individuals weight upwards comparisons (ranks) more heavily than downward comparisons. To conclude, the individual level relationship between income and life satisfaction has proven to be complex and recent studies have shown that income loss has a significantly greater effect on life satisfaction than an equivalent income gains (Boyce, Wood, & Ferguson, 2016). At the individual level also personality interacts strongly with increases in income to determine life satisfaction (Boyce and Wood, 2011).

Those studies which have analyzed the income and life satisfaction from the perspective of experienced deprivation have shown that the experience of subjective economic hardship is negatively associated with life satisfaction even after taking account the income of respondents (Gudmundsdottir, 2013; Reeskens and Vandecasteele, 2016). Furthermore, studies have shown that good social networks and higher institutional trust cushion the negative effects of economic hardship on a level of SWB during an economic crisis (Reeskens and Vandecasteele, 2016).

### **Social indicators**

The positive relationship between the levels of social capital and life satisfaction at country level is well documented (Helliwell et al., 2014; Helliwell, 2008). Moreover, cross-sectional analyses in modern affluent societies have found that interpersonal trust is strongly stratified (Hamamura, 2012). A study by Oishi et al. (2011) added a temporal perspective to this thesis and found out that the long-term changes in life satisfaction experienced by lower income groups was not explained by changes in household income, but by decreased perceived unfairness and decreased interpersonal trust. In addition, Delhey and Dragolov (2014) found that interpersonal trust cushions the relationship between inequality as measured by GINI and life satisfaction.

Furthermore, some studies have focused on a period of economic crisis and documented a decrease in interpersonal and institutional trust (Bjørnskov, 2014; Habibov & Afandi, 2015; Helliwell et al., 2014). Helliwell et al. (2014) and Gudmundsdottir (2013) have showed that interpersonal trust moderates the loss of life satisfaction during a period of economic crisis. Habibov & Afandi (2015) added more detail to this thesis and analyzed pre- and post-crisis life-satisfaction in transitional countries, and found that institutional trust decreased after crisis, while interpersonal trust increased.

To conclude, the results on the changes of social capital during economic crisis appear rather diverse and there is no consensus over whether interpersonal and institutional trust both decrease during economic crisis. Furthermore, the sub-group specific effects of these changes remain mainly unexplored.

## **Present study**

In this study, we contribute to the fairly distinct research strands on subjective well-being and socio-economic stratification by examining the stratification of life satisfaction from the perspectives of education, occupational class and income, a topic on which there is scarcity of evidence. Moreover, we examine the temporal development of stratification before and during an economic crisis. We also address economic and social mechanisms that might contribute to social stratification of life satisfaction. First, studying subjective economic hardship can shed light on the complex relationship between income and life satisfaction. A certain level of income is essential for covering basic needs such as shelter, food and clothing. Thereby, accounting for subjective economic hardship can be assumed to control for lack of material deprivation, which could explain at least part of the stratification. Second, unemployment has been found to be a strong determinant of life satisfaction. Thereby, those strata where unemployment is more common may have lower level of life satisfaction. Moreover, during the crisis unemployment becomes more common in general, which may change the way it impacts on life satisfaction, as outlined above. Third, concerning the social mechanisms, the central question is how the changes in interpersonal and institutional trust are reflected in the socio-economic stratification of life satisfaction during the crisis.

## Data, indicators and methods

### Data

Repeated cross-sectional data on Ireland from the European Social Survey (2014) was used in the study. All rounds from two (2004) to seven (2014) were utilised, providing a timespan of ten years. The cumulative dataset was produced on November 26<sup>th</sup>, 2014. An advantage of the data is that it provides not only sampling weights, but also adjusted post-stratification weights (European Social Survey, 2014) tackling non-response.

### Indicators

The outcome variable on life satisfaction was measured with the question "*All things considered, how satisfied are you with your life as a whole nowadays*", with a numeric response scale ranging from zero ("*Extremely dissatisfied*") to ten ("*Extremely satisfied*"). The three variables on social stratification were constructed with the aim of finding an optimal balance between details and parsimony, with the following solutions. Our tripartite classification of education level was based on the International Standard Classification of Education (ISCED): tertiary (ISCED levels 5 and 6), secondary (3 and 4) and basic (0 to 2). Occupational social class was constructed using the Eriksson-Goldthorpe-Portocarero scheme (Ganzeboom & Treiman, 2001) and a three-class categorisation was constructed, yielding manual, non-manual and farming occupational classes (Erikson & Goldthorpe, 1992). The total net household income was categorised into three classes using the lower and upper quartiles as boundaries, separately for each data round; the cut-off points were chosen as close to the mentioned quartiles as possible, depending on the shape of the distribution for the given year. The mediator variables included unemployment, subjective economic hardship, interpersonal trust, and institutional trust. Variables indicating trust were calculated from the relevant items in the ESS core module (Cronbach's  $\alpha$  for 2008 and 2010 data: interpersonal trust 0.70/0.80 and institutional trust 0.86/0.86). Socio-demographic control variables were gender, age, age squared.

### Methods and analytical strategy

This study is based on design-based linear regression models. Weights accounting for the sampling design and the impact of non-response were used in all analyses, with the Complex Samples module in SPSS (version 22).

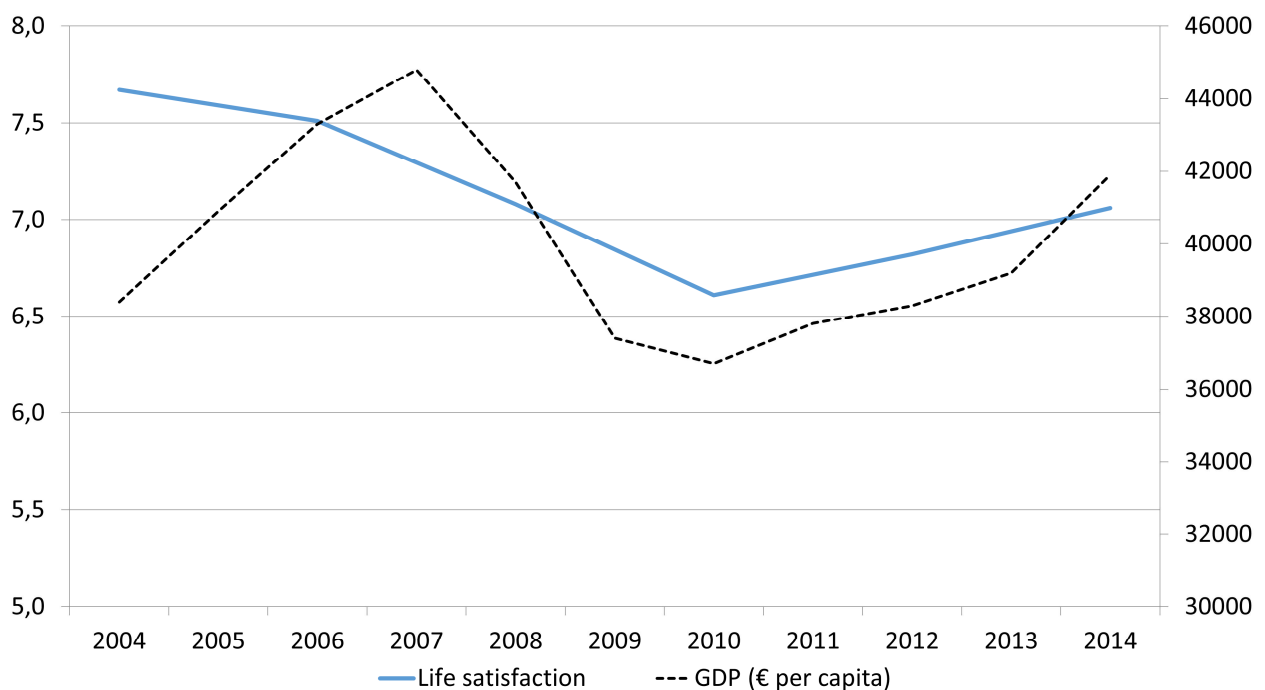
Our analytical strategy was as follows. First, the means in life satisfaction were estimated yearly along the three stratification dimensions, using the available weights, and the results were visualised. Based on an inspection of the trends and on prior knowledge of the macro-economic changes, years 2008 and 2010 were chosen for further regression examination. First, all stratification variables were included in the same model with age and gender. Next, the role of subjective economic hardship, unemployment as well as interpersonal and institutional trust was studied by adding them individually to the model. Finally, a full model was estimated.

## Results

### Life satisfaction, GDP and stratification: a temporal description

The initial step in the empirical part of this analysis is to see how the economic crisis in Ireland was reflected in terms of life satisfaction. Thereby, mean life satisfaction and level of GDP during a period of 2004 to 2014 are presented in the Figure 1 below.

Figure 1. Life satisfaction and GDP per capita in Ireland between 2004 and 2014



Note: Data from European Social Survey (life satisfaction) and Eurostat (GDP), post-stratification weights included.

Even though the relationship of life satisfaction and GDP is rather inconsistent before the onset of crisis in 2008, we see that the trough of the economic crisis was reached in 2010 in both measures. After this point both life satisfaction and GDP started to recover. The next step is to ask how these changes are reflected in the socio-economic stratification of life satisfaction. Descriptive results are presented in Figure 2 below.

Figure 2. Socio-economic stratification of life satisfaction in Ireland between 2004 and 2014 based on education (2a), occupation (2b), and income (2c).



Note: Data from European Social Survey, post-stratification weights included.

Our main conclusions drawn from Figure 2 are as follows. First, the decrease in life satisfaction was not of equal magnitude in all classes but lower classes were more affected. Second, income based stratification (Figure 2c) showed the most significant divergence between classes. Moreover, life satisfaction appeared to be stratified rather inconsistently before the crisis. For example, "basic or less" educated in Figure 2a had the highest life satisfaction in 2006 and 2008 but during the crisis in 2010 the order between the classes is more as one would expect (6.96, 6.58 and 6.37 for basic, middle and tertiary educated). In Figures 2b and 2c life satisfaction is stratified expectedly. The upper strata have the highest

life satisfaction during the whole period, but the divergence between the classes increased during the crisis. An anomaly to this trend is the exceptionally high life satisfaction of farmers during the whole period<sup>3</sup>.

To conclude, Figure 2 suggests the time frame between 2008 and 2010 as most relevant for investigating the stratification of life satisfaction. Before this the differences in life satisfaction were significantly smaller and showed inconsistent patterns. Hence, this period from 2008 (pre-crisis) to 2010 (during crisis) serves as a temporal frame for the remaining analysis. Year 2010 was also the year when GDP was at its lowest and furthermore, the GINI index, as an indicator of "objective" economic inequality increased between 2008 and 2010 from 29.90 to 30.70 (data from Worldbank) which was the largest change within the time frame of 2004 and 2014.

### **Social and economic indicators in 2008 and 2010: a description of stratification**

We will next present the descriptive statistics for our key indicators of economic (unemployment and economic hardship) and social (interpersonal and institutional trust) mechanisms according to the three stratification schemes, both in 2008 and 2010. This allows us to see how these categories are stratified in other terms and also how this stratification changed during the crisis. These descriptives are presented in Table 1 below.

Table 1.

Table 1. Means and (standard deviations) of main variables in 2008 and 2010 in different stratification schemes

Variable	Stratification scheme							
	Income		Occupation				Education	
	2008	2010	2008	2010	2008	2010		
<i>Unemployment</i>								
Lower quartile	0.21 (0.41)	0.33 (0.47)	Manual	0.20 (0.40)	0.23 (0.42)	Basic	0.12 (0.32)	0.17 (0.38)
Middle quartiles	0.12 (0.32)	0.17 (0.37)	Farm	0.06 (0.24)	0.10 (0.31)	Secondary	0.13 (0.34)	0.14 (0.35)
Upper quartile	0.04 (0.19)	0.07 (0.26)	Non manual	0.07 (0.26)	0.10 (0.29)	Tertiary	0.11 (0.31)	0.10 (0.30)
Total	0.11 (0.32)	0.16 (0.37)	Total	0.12 (0.32)	0.14 (0.35)	Total	0.12 (0.32)	0.14 (0.35)
<i>Economic hardship</i>								
Lower quartile	2.40 (0.86)	2.68 (0.87)	Manual	2.14 (0.83)	2.38 (0.91)	Basic	2.05 (0.81)	2.35 (0.89)
Middle quartiles	2.04 (0.79)	2.37 (0.88)	Farm	2.02 (0.78)	1.82 (0.79)	Secondary	1.98 (0.80)	2.22 (0.86)
Upper quartile	1.53 (0.63)	1.87 (0.75)	Non manual	1.86 (0.80)	2.09 (0.85)	Tertiary	1.87 (0.82)	1.97 (0.86)
Total	1.96 (0.82)	2.23 (0.89)	Total	1.97 (0.82)	2.17 (0.88)	Total	1.95 (0.82)	2.19 (0.88)
<i>Interpersonal trust</i>								
Lower quartile	5.71 (1.67)	4.74 (1.88)	Manual	5.66 (1.67)	5.39 (1.82)	Basic	5.78 (1.73)	5.27 (1.93)
Middle quartiles	5.76 (1.60)	5.28 (1.77)	Farm	6.15 (1.61)	6.06 (1.82)	Secondary	5.79 (1.53)	5.68 (1.78)
Upper quartile	6.07 (1.45)	5.87 (1.71)	Non manual	5.90 (1.50)	5.81 (1.75)	Tertiary	5.90 (1.48)	6.02 (1.63)
Total	5.84 (1.58)	5.41 (1.82)	Total	5.83 (1.57)	5.68 (1.79)	Total	5.83 (1.58)	5.64 (1.82)
<i>Institutional trust</i>								
Lower quartile	4.40 (1.72)	4.05 (1.57)	Manual	4.45 (1.78)	4.11 (1.78)	Basic	4.49 (1.82)	4.16 (1.72)
Middle quartiles	4.55 (1.67)	4.20 (1.75)	Farm	4.85 (1.73)	5.31 (2.07)	Secondary	4.62 (1.70)	4.49 (1.78)
Upper quartile	4.94 (1.57)	4.80 (1.71)	Non manual	4.58 (1.60)	4.52 (1.67)	Tertiary	4.69 (1.59)	4.76 (1.67)
Total	4.634 (1.66)	4.42 (1.73)	Total	4.55 (1.68)	4.43 (1.76)	Total	4.61 (1.70)	4.45 (1.74)

First, concerning the income-based stratification (column on the left) in Table 1, it appears that unemployment increased in all classes but the lower quartile was most affected (change from 0.21 in 2008 to 0.33 in 2010). Second, and in contrast, economic hardship increased in all quartiles rather similarly. Third, the single most significant change in Table 1 as a whole took place in interpersonal trust in the lowest income quartile where it dropped from 5.71 in 2008 to 4.74 in 2010. Fourth, on institutional trust the lower quartile appears to be more negative affected than other quartiles, although the decrease is not as dramatic as in interpersonal trust.

In the occupation-based stratification all classes showed similar increase in unemployment. Economic hardship increased among both manual and non-manual workers, but in the case of farmers it, interestingly, decreased from 2008 to 2010. Both interpersonal and institutional trust decreased most among manual workers. Again, farmers showed a curiously inconsistent development.

In the education-based stratification the highest increase in unemployment was among those with lowest education, whereas tertiary educated showed a modest decrease (0.11 in 2008 to 0.10 2010). Economic hardship increased in all classes, but individuals with basic or less education were slightly more affected. Finally, both interpersonal and institutional trust showed a rather dramatic pattern, with a marked decrease among the least educated, but a slight increase among those with tertiary education.

Overall, the descriptive statistics presented in Table 1 confirm that the effects of economic crisis are not experienced equally but the lower classes are more affected. This is most apparent in changes in interpersonal and institutional trust.

### **Regression analyses**

The final part of the empirical analysis is to study how life satisfaction is associated with the three variables of socio-economic stratification (income, education, occupation) before and during the crisis, following the analytical strategy outlined above.

First, while including all stratification variables to the model (Model I in Table 2), it appears that in 2008 life satisfaction is stratified only along the income dimension.



**Table 2.** Regression models for life satisfaction, year 2008 (n = 1439).

	<b>I: Stratification</b>		<b>Ila: I + unemployment</b>		<b>Ilb: I + hardship</b>		<b>Ilc: I + inter-personal trust</b>		<b>Ild: I + institutional trust</b>		<b>III: full</b>	
	B	Sig.	B	Sig.	B	Sig.	B	Sig.	B	Sig.	B	Sig.
<b>Education</b>												
Basic	-0.10		-0.10		0.04		-0.03		-0.03		0.11	
Secondary	0.07		0.06		0.13		0.11		0.10		0.16	
Tertiary	ref		ref		ref		ref		ref		ref	
<b>Occupational class</b>												
Non manual	0.00		-0.06		-0.07		0.00		0.03		-0.10	
Farmer	0.26		0.13		0.33		0.15		0.22		0.12	
Manual	ref		ref		ref		ref		ref		ref	
<b>Income</b>												
Lower quartile	-1.08 ***		-0.84 ***		-0.29		-0.95 ***		-0.95 ***		-0.10	
Middle quartiles	-0.56 ***		-0.46 ***		-0.13		-0.46 ***		-0.47 ***		-0.01	
Upper quartile	ref		ref		ref		ref		ref		ref	
<b>Economic mechanisms</b>												
Unemployment			-1.22 ***								-0.86 ***	
Subjective deprivation					-0.85 ***						-0.70 ***	
<b>Social mechanisms</b>												
Inter-personal trust							0.29 ***				0.23 ***	
Institutional trust									0.22 ***		0.12 **	
Intercept	8.87 ***		9.07 ***		9.69 ***		7.25 ***		7.41 ***		7.64 ***	
R squared	0.06		0.09		0.15		0.11		0.09		0.20	

Note 1: +  $p \leq 0.10$ , \*  $p \leq 0.05$ , \*\*  $p \leq 0.01$ , \*\*\*  $p \leq 0.001$ .

Note 2: in all models, we controlled for gender, age and age squared.

Moreover, education is not significant even in a bivariate model (not included in these tables). Examining the contributions of different mediators shows that both economic (unemployment and subjective economic hardship) and social mechanisms (inter-personal and institutional trust) are at play (full model III). However, the subjective economic hardship seems to be the key factor that explains the income stratification of life satisfaction (model IIb). Once this variable is included to the model (IIb), belonging to the lowest income quartile does not have a negative impact on life satisfaction.

Next, Table 3 shows that in 2010 (during the crisis period) the stratification of life satisfaction deepened and took a more multidimensional nature.

**Table 3.** Regression models for life satisfaction, year 2010 (n = 1501).

	<b>I: Stratification</b>		<b>Ila: I + unemployment</b>		<b>Ilb: I + hardship</b>		<b>Ilc: I + inter-personal trust</b>		<b>IId: I + institutional trust</b>		<b>III: full</b>	
	B	Sig.	B	Sig.	B	Sig.	B	Sig.	B	Sig.	B	Sig.
<b>Education</b>												
Basic	-0.57	**	-0.59	**	-0.54	**	-0.32		-0.40	*	-0.26	
Secondary	-0.19		-0.22		-0.15		-0.15		-0.15		-0.13	
Tertiary	ref		ref		ref		ref		ref		ref	
<b>Occupational class</b>												
Non manual	0.36	*	0.29	+	0.30	+	0.32	*	0.26		0.19	
Farmer	0.74	*	0.70	*	0.53	+	0.65	*	0.38		0.30	
Manual	ref		ref		ref		ref		ref		ref	
<b>Income</b>												
Lower quartile	-1.50	***	-1.27	***	-1.11	***	-1.16	***	-1.31	***	-0.71	***
Middle quartiles	-0.68	***	-0.60	***	-0.44	**	-0.52	***	-0.53	***	-0.26	
Upper quartile	ref		ref		ref		ref		ref		ref	
<b>Economic mechanisms</b>												
Unemployment			-0.76	***							-0.59	**
Subjective deprivation					-0.46	***					-0.28	**
<b>Social mechanisms</b>												
Inter-personal trust							0.36	***			0.29	***
Institutional trust									0.31	***	0.18	**
Intercept	8.73		8.85		9.38		6.64		6.85		6.48	
R squared	0.13		0.14		0.15		0.20		0.18		0.24	

Note 1: +  $p \leq 0.10$ , \*  $p \leq 0.05$ , \*\*  $p \leq 0.01$ , \*\*\*  $p \leq 0.001$ .

Note 2: in all models, we controlled for gender, age and age squared.

For example, the difference between the lowest and highest income quartiles increases from 1.08 units in 2008 to 1.50 units in 2010. Moreover, income is no longer the sole stratification dimension, as now also education and occupational class matter (Model I in Table 3).

However, the economic dimension is the most important of all, as seen when comparing the effects of the three stratification variables in model III: Wald's F values are 4.6 ( $p=0.010$ ) for education, 3.9 ( $p=0.020$ ) for social class and 33.1 ( $p < 0.0005$ ) for income (not in tables).

Overall, in 2010, the picture is more diverse regarding the role of mechanisms, all of which remain significant predictors in the full model (Model III in Table 3). In terms educational stratification, inter-personal trust is the strongest mediating factor (Model IId), while institutional trust mediates most of the impact of occupational class (Model IId). The case of

income is more fine-grained, with subjective economic hardship being the strongest individual mediator. However, the differences in the coefficients compared to the full model are relatively large, which means that the other mediators matter as well. Also, subjective economic hardship no longer completely explains the negative impact of lowest income quartile as it did in 2008 (Table 2). Additionally, the economic mechanisms (unemployment and subjective economic hardship) somewhat weaken as predictors in 2010, while the opposite happens with the social mechanisms (inter-personal and institutional trust).

## **Robustness testing**

During the crisis, item non-response increased considerably in the variable on household income. In 2008, there were only 100 refusals, whereas in 2010 the number was 541. We wanted to examine the implications of this and constructed an imputation model for household income, using education, subjective hardship, occupational status, gender and age as predictors. We estimated this model for those respondents who had provided information on their household income ( $R^2: 0.37$ ), and used it to predict values for those who had refused to answer. Thus, we obtained considerable larger data to be used for robustness check ( $n=1949$  with vs.  $1501$  without imputation). The results of the full models with the original data and the imputed data were consistent, and lead to same substantial conclusions.

## **Conclusions and discussion**

Coming back to the research questions of the study, our main findings are as follows:

- 1) The different dimensions of socio-economic stratification are not of equal importance for life satisfaction. Income is the most important stratifying factor.
- 2) The structure of stratification is significantly affected by a period of economic crisis. Our results show that the structure of stratification of life satisfaction is not constant over time. The period of economic crisis has a strong impact on it. Before a crisis, income is the only significant dimension of socio-economic stratification, while during a crisis, education and occupational class also come to have independent impacts on life satisfaction.
- 3) The role of different social and economic mechanisms in stratification are not constant in time. Before a crisis, the income stratification of life satisfaction is completely mediated by

subjective economic hardship, while during the crisis the mediation structure becomes more complex. Also, economic factors (unemployment, subjective hardship) lose some of their predictive power during the crisis, while the social ones (interpersonal and institutional trust) gain more strength.

The novel contribution of this study has been to examine the stratification of life satisfaction within the temporal frame of an economic crisis. The results show that the structure of stratification is not constant over time but instead it is strongly moderated modified by short-term changes in macro-economic conditions. Hence, this study has demonstrated that it is not enough to approach inequality as a one-dimensional contextual measure in the studies on SWB (see also Delhey and Dragolov, 2014: 161)

Our results are in line with studies showing that economic crisis is associated with a decrease not only in life satisfaction but also in social capital (Gudmundsdottir, 2013; Helliwell et al., 2014; Reeskens & Vandecasteele, 2016). Furthermore, our results converge with the findings of Oishi et al. (2011), who found that the long term decrease of interpersonal trust is concentrated in lower income classes and is associated also with lower life satisfaction. Moreover, concerning the contextual effect of unemployment our results support the “social norm” of unemployed thesis (e.g. Stutzer & Lalive, 2004). In this study the negative impact of unemployment to life satisfaction was smaller in 2010 when the crisis peaked and when the unemployment level was higher. This may imply that unemployment becomes a less detrimental experience when it is more prevalent. However, these results may also reflect the entrance of new individuals into unemployment: the group of unemployed may thus become less selected and less different from those who have work.

Our results are in contrast with the analysis by Habibov & Afandi (2015), who found that during an economic crisis, institutional trust decreased but interpersonal trust increased. Our study shows that both of these decreased. Moreover, we add sub-group specific detail to this thesis as we find that this decrease is most drastic in the lower socio-economic strata, whereas the tertiary-educated showed an increase in both interpersonal and institutional trust during crisis.

The results from 2010 on the role of income merit further discussion. In the final model, belonging to the lowest income quartile still had a significant negative impact on life

satisfaction. This is in marked contrast to 2008, where the income stratification of life satisfaction was completely due to subjective economic hardship. This means that certain important omitted variables and mechanism are at play. These may include the effects of relative and rank income (Boyce et al., 2010), for which we had no empirical measures. Future studies might be able to elucidate this topic.

Finally, our study is subject to some limitations that could be considered as paths for future studies. First, as it applies a repeated cross-sectional data analysis so it cannot disentangle the precise causal mechanisms affecting life satisfaction. Also, future studies could elaborate on the policy dimensions related to the stratification of SWB. This study did not address the question on how much of the effects documented in Ireland were due to specific policy implications embedded to the so-called “austerity measures”. A study focusing on this question could be constructed on a comparison between countries that have applied different socio-political and economic reforms tackling the economic crisis.

Another perspective that future studies could examine is the stratification of other forms of SWB than evaluative life satisfaction. An interesting option would be to focus on a so-called “flourishing” account within SWB, emphasizing the active functioning of an individual instead of simply an evaluative and reflective life satisfaction account (Huppert, 2013; Ryan & Deci, 2001). As these measures are considered to be less sensitive to social comparison than life satisfaction, their analysis could shed further light on the stratification of SWB.

## Notes

<sup>1</sup> The interdisciplinary field of subjective well-being research has been noted to suffer from overlapping concepts and measures (Jayawickreme, Forgeard, and Seligman 2012; Kristjansson 2010). In this paper Subjective Well-Being (SWB) research is treated as an umbrella term which covers all empirical analyses operating with sample survey data and treating any SWB measure as the dependent variable. An introduction to different measures of SWB and their theoretical foundations can be found for example in Ryan & Deci (2001) and (OECD, 2013)

<sup>2</sup> Our follow-up analysis between 2011 and 2016 in these same five leading sociological journals defined by Wolbring et al. (2013) (*American Journal of Sociology*, *American Sociological Review*, *European Journal of Sociology*, *European Sociological Review*, and *British Journal of Sociology*) yielded only 11 papers with “life satisfaction”, “happiness” or “subjective

well-being" included in a title or as a keyword. Interestingly, 8 out of these 11 papers were published in *European Sociological Review*.

<sup>3</sup> This may suggest that farming is not easily positioned within the hierarchy of modern labour markets but it could be also linked to the finding that individuals in countryside report systemically higher life satisfaction than those dwelling in large urban centers (e.g. Sørensen, 2014). Furthermore, farms may operate as a safe haven in times of economic hardship.

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