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Material Deprivation, Economic Stress and Reference Groups in Europe: An Analysis of EU-SILC 2009

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Introduction

In this paper we take advantage of the recent availability of data from the special module on material deprivation in the 2009 European Union Statistics on Income and Living Conditions (EU-SILC) to develop a more comprehensive understanding of the relationship between material deprivation and economic stress. In particular, we focus on the moderating role played by cross-national differences in levels of income and income inequality such that the consequences of material deprivation for subjective economic stress are conditional on the value of macro-economic attributes.[i] In an analysis focused on households clustered within countries, these questions can be most appropriately addressed by a multilevel analysis that allows us to explore the manner in which material deprivation measured at the household level interacts with national attributes in influencing household levels of economic stress. Evidence for such moderation is provided by a significant statistical interaction between deprivation and country attributes. In this paper we undertake such an analysis and consider the implications of our findings for competing perspectives on the nature of reference groups in Europe.

In recent years a significant body of literature has addressed the issue of the relative importance of national and European reference groups. A related but conceptually distinct body of work has focused on whether poverty should be measured at the national or European level (Brandolini, 2007, Kangas and Ritakallio, 2007). In exploring the relationship between reference group and poverty measurement issues Fahey et al (2005: 7-9) argue that,

in developing his concept of relative deprivation, Townsend (1979) omitted key features of the concept as it was developed in earlier works, particularly the *American Soldier*. While Townsend conceived poverty as relative, the frame of reference against which such relativity was established was an objective standard namely the average living standards of the wider society. For Townsend the frame of reference was fixed in contrast to the multiple and shifting frames of reference that shape relative deprivation in earlier work (Merton. 1957). The implication is that our understanding of poverty and deprivation would benefit from adopting a much broader framework in relation to the role of social comparisons. In sharp contrast Goedemé and Rottiers, 2011;84) argue that, since the choice of reference groups provides no help in understanding how a society comes to develop a notion of a minimum acceptable standard of living, it is unclear what poverty researchers hope to achieve by referring to reference group theory. Following Whelan and Maître (2010), the position taken here is that the choice of a geographical level at which to measure poverty involves a range of considerations that include but also go well beyond the issues covered in the recent reference group debate. Consequently we do not seek to address the issue of poverty measurement in the remainder of this paper. Similarly, we do not attempt to provide a comprehensive coverage of the wider literature on social comparisons (Clark and Senik, 2010).

The particular focus of this paper is on the extent to which application of appropriate forms of analysis to the material deprivation data in the special module on deprivation in EU-SILC 2009 provides an empirical basis for choosing between competing perspectives relating to the Europeanization of reference groups. In pursuing this objective, we will argue for the value of a more formal analysis, than has been the case to date, of the manner in which national context moderates the relationship between deprivation and economic stress. We shall also seek to show the implications of the manner in which micro and macro characteristics interact

for the broader debate on the sociological consequences of cross-national variation in income levels and income inequality (Goldthorpe, 2010, Wilkinson and Pickett, 2009 a & b)

The Europeanization of Reference Groups

Delhey and Kohler (2006: 12) argue that the reference groups to which people are oriented is the litmus test for the appropriateness of a European wide perspective on the distribution of material deprivation. The crucial requirement is that citizen's frames of reference extend beyond the national realm. Whelan and Maître (2009 a & b) provide an assessment of the forms of evidence that would be required to establish different versions of the Europeanization of reference group argument. The weakest form simply requires that a common standard relating to an acceptable level of participation in one's own society emerges as a consequence of knowledge in conditions in other societies. However, such effects could be observed while the reference point for evaluation of an individual's or household's circumstances remained resolutely national with the obligation for creating the appropriate conditions to avoid exclusion continuing to be seen to reside with the national state. The strong version of the hypothesis requires that people perceive themselves as part of a European social stratification system. The perception of being disadvantaged within this system would play a central role in an individual's or household's evaluation of their economic circumstances. This would involve a fundamental shift from national to European frames of reference.[ii]

The Available Evidence

The available evidence relating to the Europeanization of reference groups is rather limited. Fahey (2007) directs attention to correlations at the macro level between absolute levels of material deprivation and corresponding levels of economic stress and to the fact that the least favoured income groups in the most prosperous countries report more advantageous

circumstances than the most favoured in the least prosperous societies. However, at no point does he seek to explicitly quantify the scale of within and between country variation in material deprivation and economic stress. Nor does he explore the relationship between these outcomes at either individual or household level. A focus on correlations at the macro level runs the danger of falling prey to the ecological fallacy. This involves analysing data at the aggregated level and interpreting it at the individual level despite the fact that the processes underlying associations at the micro and macro levels can be strikingly different (Hox, 2010).

Delhey and Kohler (2006, 2007) base their argument on evidence that individuals can evaluate living conditions in their own and other countries and that the latter are related to evaluations of their satisfaction with their own situation. Whelan and Maître (2009 a & b) argue that neither form of evidence succeeds in establishing a clear case even for the weaker version of the Europeanization of reference groups argument. In order to demonstrate the existence of a common European standard against which individuals and households in different countries evaluate their circumstances, it is necessary to provide evidence of a relatively uniform impact of absolute material circumstance across national boundaries. Whelan and Maître (2009 a & b) analysis of the 2005 EU-SILC data leads them to conclude that such evidence does not exist.

Extending the Previous Analysis

Addressing Measurement Issues

One point on which the main participants in the debate concur is the need for improved data. The data relating to material deprivation in the annual EU-SILC releases are significantly inferior to those that were previously available in the European Community Household Panel (ECHP). As a consequence our ability to construct a range of reliable dimensions that permit comparisons across countries to be made without being significantly undermined by

measurement error was limited when relying on EU-SILC data. In addition, the restricted range of deprivations items meant that the key 7-item index of "consumption deprivation" employed by Whelan and Maître (2009 a & b) included items relating to "inability to cope with unanticipated expenses" and "arrears on mortgage, rent utilities etc". The association between this index and a single item indicator of economic stress relating to household "difficulty in making ends meet" was then explored across countries. The inclusion of the items relating to arrears and expenses creates the danger that the observed relationship between the consumption deprivation index and the stress measure is an artefact of the form of measurement. Our preference would clearly be to consider the association between measures of deprivation in relation to goods, activities and facilities and an index capturing household difficulties in coping with economic pressures.

Data limitations thus raise issues of reliability and validity that may undermine our efforts to understand within and between country variation in material deprivation and its relationship to economic stress. Fortunately the availability of a special module on material deprivation in the EU-SILC 2009 wave now allows us to achieve a substantial improvement on the quality of data on which previous analysis was based. Utilising that data, in this paper we will conduct a multilevel analysis of the determinants of material deprivation.

Multilevel Analysis of the Role Income Levels and Inequality

Earlier debate focused on whether the impact of material deprivation should be understood in absolute or relative terms in the sense of involving a national or European frame of reference or some combination of such perspectives. However, the focus was on the material circumstances of individuals and households rather than on the independent or contextual impact of characteristics of countries. In the analysis that follows we use multilevel models in order to explicitly address the manner in which household and national characteristics combine in influencing patterns of economic stress. Such an approach is appropriate to a

population with a hierarchical structure where household observations within countries are not independent.

National income levels could have a direct effect on subjective economic stress with individuals in countries with lower levels of income exhibiting higher levels of economic stress. Such an effect could be mediated by the kinds of material deprivation variables that we incorporate in our analysis. Alternatively the impact could be independent of such variables and reflect the mediating role of other economic stressors associated with living in a low income country. These could include a higher probability of being located in a lower social class or variability in the impact of social class across country that is independent of its association with material deprivation. However, an additional possibility is that the impact of material deprivation is moderated by national income levels. Whelan and Maître (2009b) noted that the impact of material deprivation appeared to be conditional on level of Gross Domestic Product (GDP) but did not formally test this hypothesis using multilevel models.

Income inequality could also be directly related to economic stress. Once again such an effect could be mediated by material deprivation. Alternatively, as Wilkinson and Pickett (2006:1775-1776) observe, as with our discussion of the impact of level of income above, such effects could reflect the manner in which factors such as social class divisions vary across country in ways that are not captured by such deprivation. They note that such an interpretation comes closer to the thinking of those who adopt a "neo-materialist" perspective that emphasises systematic under investment in social infrastructure (Lynch. 2000, Lynch *et al* 2004). Thus, as Wilkinson and Pickett (2006:1775) argue, an emphasis on psycho-social factors could identify additional and important routes by which material influences are mediated. As Wilkinson and Pickett (2006:1775) argue, such an interpretation implies that controlling for factors such as social class when assessing the impact of income inequality is problematic. For our present purposes the important distinction becomes between the impact

of income inequality that is mediated by our measures of material deprivation and that operating through other channels which could include both material circumstances and psycho-social factors. Alternatively, more unequal societies could be associated with higher levels of economic stress not because of the manner in which income inequality serves as a proxy for variability in a range of individual or household circumstances but rather because, following the line of reasoning spelled out by Wilkinson and Pickett (2009 a & b), income inequality raises stress levels for all members of society alike. Status differences can be hypothesized to become of greater significance with increasing inequality and, in turn, status competition can be predicted to erode reciprocity interpersonal trust and cooperation (Kawachi and Berkman, 2000, Wilkinson and Pickett, 2006, 2009b).[iii] From this perspective, the focus is not on the mediation of income inequality but rather the manner in which such inequality moderates the impact of factors such as material deprivation. Being deprived in an unequal country could be more stressful than in a more equal country.[iv]

Key issues

In what follows we seek to provide answers to the following questions.

- How is the variance in economic stress divided within and between countries?
- How is the variance in material deprivation dimensions distributed within and between such countries?
- What are the key dimensions of deprivation associated with economic stress?
- To what extent can variation within and between countries in economic stress be accounted for by household material deprivation profiles?
- What is the relationship between macro-economic indicators of income levels and income inequality and economic stress?

- What is the role of material deprivation in mediating the impact of income levels and income inequality?
- Is the impact of material deprivation uniform across national income levels, as suggested by the Europeanization of reference groups hypothesis, or does income level play a significant role in moderating the impact of material deprivation?
- Is the impact of material deprivation moderated by level of economic inequality?

Data and Measurement

Data

In this paper we make use of the 2009 wave of EU-SILC which includes a special module on material deprivation. The availability of this module allows us to explore the dimensionality of deprivation. Substantial missing value difficulties arise in relation to Sweden in significant part due to the failure to put the questions comprising the special module to that 25% of the sample who entered the survey in 2009. Consequently we have excluded Sweden from our analysis. Since the key variables are measured at the household level, our multilevel analysis relates to 217,041 households clustered within 28 countries comprising 26 European Members together with Norway and Iceland.

Material Deprivation Measures

Our analysis focuses on 17 objective measures of deprivation and 4 measures of subjective economic stress. The choice of deprivation items to be included in our analysis is based on earlier factor analysis of the dimensionality of a wider range of deprivation items available in EU-SILC and exploration of their relationship to the economic stress outcome (Whelan and Maître, 2012). Twelve of the seventeen deprivation items and all four economic stress items were measured at the household level. Information relating to the remaining five deprivation items was collected for all adults in the household. In relation to these items, we have used the value for the Household Reference Person (HRP). The HRP is defined as the individual

responsible for providing the household accommodation. Where such responsibility is shared, the older of the two individuals is chosen. Where there were difficulties in identifying the HRP we made use of information relating to the first adult on the household register providing the necessary information. In the case of Portugal, because of difficulties involved in identifying the HRP, we have adopted the latter procedure for all cases.

Macroeconomic Variables

In the analysis that follows we focus on Gross National Disposable Income per Head (GNDH) as our preferred measure of absolute living standards but given that it is almost perfectly correlated with the GDP measure substituting the latter would have little effect on our conclusions. We also explore the role of income inequality using the Gini measure. Additional analysis employing measures relating to social policy generosity and inequality, contributed little further to our analysis.[v]

Details of the relevant dimensions are set out below. [vi]

The key dimensions are as follows.

Basic Deprivation which comprises household and HRP items relating to enforced absence of a meal, clothes, a leisure activity, a holiday, a meal with meat or a vegetarian alternative, adequate home heating, shoes. This dimension has obvious content validity in relation to the objective of capturing inability to participate in customary standards of living due to inadequate resources. It bears a striking resemblance to the 'basic deprivation' measure employed in Ireland as one part of the national consistent poverty measure (Whelan, 2007).

Consumption Deprivation comprises three items relating to a PC, a car and an internet connection. It is obviously a rather limited measure and idea nlly we would have preferred that the EU-SILC module had included a significant number of additional items likely to load on this dimension. Our expectation is that the association with current resources will be

weaker than in the case of basic deprivation since the items do not necessarily reflect capacity for current expenditure.

Neighbourhood Environment this captures the quality of the neighbourhood/area environment with a set of five items that include litter, damaged public amenities, pollution, crime/violence/vandalism and noise. Given the importance of urban/rural residence and location within urban areas in relation to such deprivations, a much weaker association with resource factors can be expected.

Measuring Economic Stress

This indicator is constructed from a set of items relating to difficulty in making ends meet, inability to cope with unanticipated expenses, structural arrears and housing costs being a burden.

The first item relating to ability to make ends meet is based on the following question.

A household may have different sources of income and more than one household member may contribute to it. Thinking of your household's total income, is your household able to make ends meet, namely, to pay for its usual necessary expenses?

1. with great difficulty
2. with difficulty
3. with some difficulty
4. fairly easily
5. easily
6. very easily.

The first two categories have been given a value of 1 while the remaining categories have been scored as zero.

Household were define as having a problem with arrears where they were unable to avoid arrears relating to mortgage or rent, utility bills or hire purchase instalments. Those households experiencing such problems were given values of 1 while the remainder were scored as 0.[vii]

Those households reporting that they were unable to cope with unexpected expenses were allocated scores of 1 while the remainder were allocated values of 0.

The indicator relating to the financial burden of total housing cost was based on the question set out below.

Please think of your total housing costs including mortgage repayment (instalment and interest) or rent, insurance and service charges (sewage removal, refuse removal, regular maintenance, repairs and other charges). To what extent are these costs a financial burden to you? Would you say they are:

1. A heavy burden
2. A slight burden
3. not burden at all

Those responding a heavy burden or a slight burden were scored as 1 while the remaining two categories were assigned a value of 0.

Reliability Levels for Material Deprivation and Economic Stress Measures

In Figure 1 we plot the reliability levels for the overall sample and each of the 28 countries included in the analysis for each of the three deprivation dimensions identified in an earlier factor analysis that were found to be significantly related to economic stress. The comparable values for economic stress are also provided. Reliability relates to the extent to which

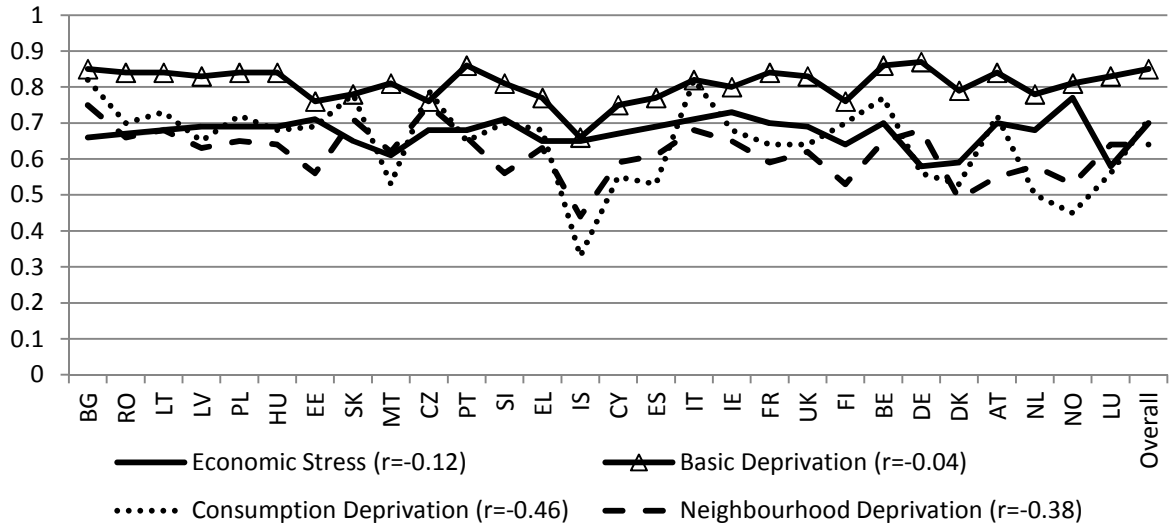
individual items are tapping the same underlying phenomenon. To asses this we make use of Cronbach's coefficient alpha. [viii] For basic deprivation the overall reliability level across countries is 0.85. The corresponding values for consumption and neighbourhood deprivation are 0.71 and 0.64. Earlier analysis of the relationship between deprivation and economic stress relied on the single item relating to "difficulty in making ends meet" to measure the latter. For the index employed in the current paper the overall reliability level reaches 0.70.The observed levels of reliability are a substantial improvement on those associated with comparable analysis using the more restricted set of deprivation items available in earlier waves of EU-SILC (Whelan *et al* 2008).

In Figure 1, anticipating our later analysis, we show the distribution of reliability levels across countries ranked in terms of GNDH. Such variation is relatively modest with alpha ranging from .77 in Norway to .58 in Germany and Luxembourg. For 22 countries the values range between .64 and .71. For basic deprivation the lowest value of .66 is observed for Iceland. For the remaining countries the values range between .75 and .87. For consumption deprivation a wider range of variation a wider range of variation is observed with the lowest value of .33 again observed for Iceland while the highest of .82 if found for Bulgaria and Italy. For 20 countries the value lies between .64 and .82. Finally for neighbourhood environment the reliability level goes from .44 in Iceland to .75 in Bulgaria. For 20 countries the value lies between .61and .75.

Focusing on the relationship between reliability level and GNDH we find that for economic stress and basic deprivation the association is negligible with respective correlation of -.136 and -.035. For consumption and neighbourhood deprivation the level of association is a good deal stronger with respective correlations of -0.463 and -0.385 indicating that reliability levels for these outcomes are somewhat higher in countries with lower levels of GNDH. Overall, however, not only are reliability levels generally higher that than for measures based

on earlier waves of EU-SILC but variability across countries is also more modest (Whelan *et al* 2008). Importantly for our subsequent analysis, conclusions relating to the manner in which variability in the impact of basic deprivation on subjective economic stress is moderated by factors such as GNDH are significantly less likely to be undermined by cross-national variability in reliability than was the case for earlier analyses.

Figure 1: Reliability Levels of Deprivation Dimensions by Country

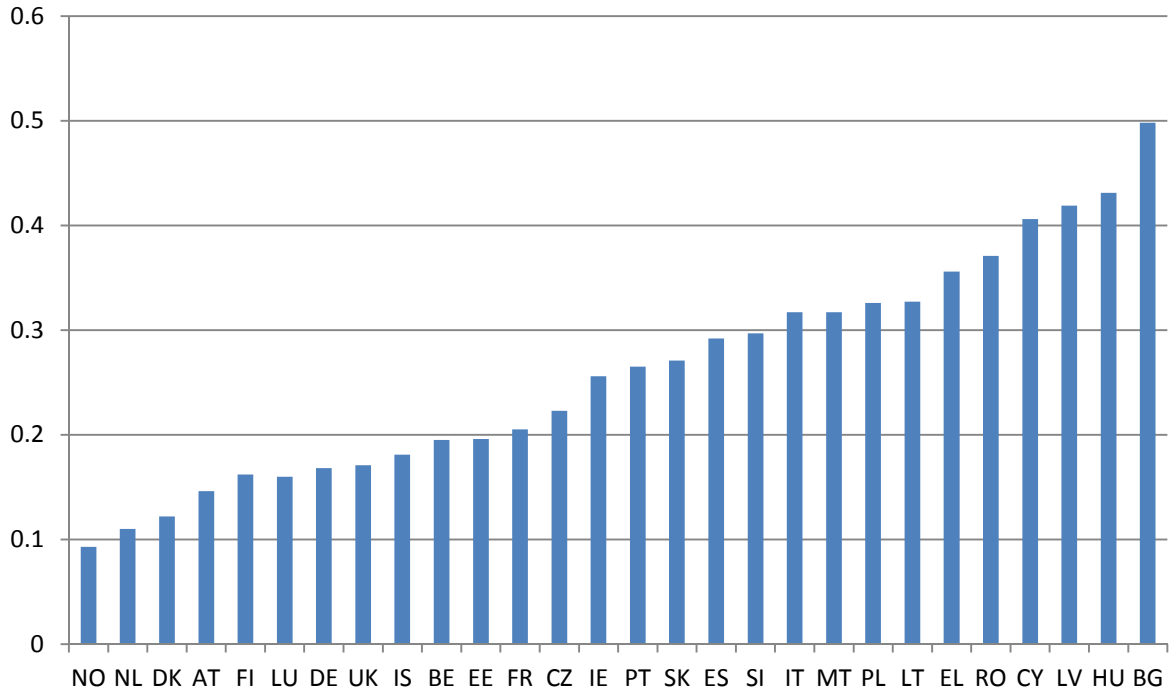


Cross-national Variation in Economic Stress Levels

In Figure 2 we show the breakdown of economic stress index, ordering countries from the lowest levels of stress to the highest. In constructing this measure we have used prevalence weighting across the range of countries included in our analysis. For each of the stress/ deprivation dimensions employed in our subsequent analysis the individual items have been weighted by the proportion of households not experiencing enforced deprivation on that item across the set of countries as a whole weighting by populations size. Less commonly experienced deprivations are therefore given a greater weight. The scores have then been

normalized to run from 0 to 1 where the former indicates that a household is deprived on no items and the latter that it is deprived on all of the items making up the scale. Consistent with the correlation of -0.246 between the variables, the ranking of countries in terms of economic stress is broadly in line with that relating to GNDH. The lowest value of economic stress is observed for Norway which has the second highest level of GNDH. The five highest ranked countries in term of GNDH, comprising Luxembourg, Norway, the Netherlands and Denmark have scores ranging between .093 and .146. The next five countries, comprising Germany, Belgium, Finland, the UK, France have score that range from .162 to .205. For Ireland, Italy and Spain the scores ranges between .256 and .317. Iceland and Cyprus constitute deviant cases with respectively unexpectedly low and high values of .181 and .406. Estonia also has a surprisingly low value of .171. Slovenia, Portugal, Malta, Slovenia and the Czech Republic have values that do not differ substantially from the cluster containing Ireland. The highest values are then observed for Greece and the six countries with the lowest GNDH values comprising Hungary, Poland, Latvia and Lithuania, Romania and Bulgaria with values ranging from .326 to .498. Thus there is a clear but by no means perfect correlation between economic stress and average country levels.

Figure 2: Mean Stress Level by Country (stress scores prevalence weighted and normalized from 0 to 1).



In Table 1 we provide a breakdown of the variation within and between countries for economic stress and the deprivation dimensions. The intra-class correlation coefficient (ICC) for cross-country variation in economic stress is 0.124. The ICC is the proportion of group level variance compared to the total variance. In this case it captures the proportion of the total variance accounted for by between country differences. In this case it can also be interpreted as the expected correlation between two randomly drawn households within a particular country(Hox, 2010:14-15). In the current case between countries variation accounts for 12.9% of the variance in economic stress while within country variation captures 87.6%. For basic deprivation the ICC is 0.239. For consumption deprivation the between countries

variation declines to 8.8% and for neighbourhood deprivation it reduces to 3.8%. Thus in every case within country variation substantially exceeds between countries variation

Table 1: Within and Between Country Variation in Economic Stress and Material Deprivation	
	Intra Class Correlation Coefficient (ICC)
Economic Stress	0.124
Basic Deprivation	0.239
Consumption Deprivation	0.088
Neighbourhood deprivation	0.038

Multilevel Analysis of the Relationship between Material Deprivation and Economic Stress

Outline of Analysis

In the analysis that follows, in order to allow appropriate analysis of a series of nested models we restrict our attention to those households where valid observation are available for the economic stress and deprivation dimensions. Applying this list-wise deletion procedure we are left with 216,984 valid cases on which our subsequent analysis is based.

In conducting a multi-level analysis of economic stress we proceed as follows:

- In Table 2 we take the null model with no independent variables as the reference point we then look at the impact of the basic deprivation dimension on economic stress before proceeding to enter the consumption and neighbourhood deprivation dimensions. We then allow the slope of the basic deprivation term to vary cross-nationally.

- In Table 3 we focus on macro characteristics and consider the separate and joint effects of the log of GNDH and Gini both of which are calculated as deviations from the mean.
- Finally in Table 4 we consider the impact of both micro and macro factors and the manner in which they interact.

The Role of Micro Characteristics

In Table 2 we report on regression analysis of the relationship between material deprivation and economic stress taking into account the multilevel nature of the data. In model (i) we show the results of the "empty" model which includes the intercept only. As we noted earlier, this produces an ICC of 0.124. In model (ii) we enter the basic deprivation index which has a highly significant coefficient of 0.903. Taking the empty model as the benchmark, introducing this variable reduces the within country variance by 39.2%, the between country variance by 67.4% and the total variance by 42.6%. [ix]The measure of goodness of fit is the deviance which is calculated as -2 the log likelihood level. Introducing the basic deprivation variable reduces the deviance by 108,819. Adding consumption and neighbourhood deprivation in model (iii) produces significant effects in both cases. However, the respective coefficients of 0.119 and 0.086 are substantially weaker than for basic deprivation where the net effect of 0.837 involves only a modest reduction in the gross effect. Introducing the additional deprivation variables produces an increase in the proportion of within country variance to 40.8% but is associated with a slight decreases in the between country variance to 66.0%. A modest increase in the proportion of total variance to 43.5% is observed. A further reduction in the log-likelihood level of 4,458 for 2 degrees of freedom is observed. In model (iv) we add a random slope term for basic deprivation to allow for differential effects across countries. This term is highly significant and its introduction leads a further reduction in the log-likelihood ratio of 4,686. Adding random slope terms for consumption and

neighbourhood produces further rather modest reduction in the deviance value of 473. In our subsequent analysis we focus on variation in the basic deprivation dimension. Overall material deprivation proves to be a powerful predictor of economic stress with the key impact being involved by basic deprivation while consumption and neighbourhood deprivation play statistically significant but relatively modest roles. Clearly there is significant variation in the impact of basic deprivation across country that requires further exploration.

Table 2: Multilevel Random Intercept Model for Economic Stress with Deprivation Dimensions

		B	B	B
	(i)	(ii)	(iii)	(iv)
Fixed Effects				
Basic		0.903***	0.837***	0.916***
Consumption			0.119***	0.119***
Neighbourhood			0.086***	0.082***
Intercept	0.259	0.116	0.101	0.100
Random Effects				
variance				
Individual	0.082	0.050	0.049	0.048***
Country	.0.116	0.004	0.004	0.003***
Basic				0.039***
Cov				-0.000 ns
Intra Class Correlation Coefficient	0.124	0.070	0.074	
Reduction in individual variance		0.392	0.408	
Reduction in country variance		0.674	0.660	
Reduction in total variance		0.426	0.435	
Deviance	75,862	-33,057	-37,515	-42,201
Degrees of freedom		1	3	4
N	216,984	216,984	216,984	216,984
*p < .05 ** p< . 01, *** p < .001				

Macroeconomic Influences on Economic Stress

In Table 3 we look at the impact of the log of GNDH and Gini. GNDH is expressed in terms of PPPS (in 1,000) and both variables are calculated as deviations from their respective means. The coefficients for Gini have been multiplied by 10 to facilitate interpretation. Controlling for Gini produces a modest reduction of the GNDH coefficient from -0.228 to -

0.214. On the other hand, controlling for GNDH produces a drop in the Gini coefficient from 0.121 to 0.032 with the latter coefficient failing to reach statistical significance. The inclusion of the Gini variable after taking GNDH into account adds nothing in the way of explanatory variance.[x]

Table 3: Multilevel Random Intercept Model for Economic Stress :with Macroeconomic Variables			
Fixed Effects	-		
Log GNDH PPPS 1,000 (deviation from mean)	-0.228***		-0.214**
GINI (deviation from mean*)*10		0.121*	0.032 ns
Intercept	0.258	0.259	0.258
Random Effects			
Variance			
Individual	0.082	0.882	0.082
Country	0.005	0.010	0.005
Deviance	75,842	75,860	75,846
Degrees of freedom	1	1	2
N	216,984	216,984	216,984
*P < .05 ** P <.0.01, *** P < .001			

Macro and Micro Influences on Economic Stress

In Table 4 we explore the combined impact of micro and macro characteristics. In model (i) we enter the deprivation variables together with the log GNDH and Gini. Controlling for the deprivation variables, both of the macro characteristics become statistically insignificant. Introducing these variables has no effect on the deprivation coefficients reported in model (iii) of Table 3. The combined set of variables accounts for 63.6% of the between country variance 40.4% of the within country variance and 43.3% of the total variance. Clearly, in a purely additive model, the macro variables contribute nothing in the way of explanatory power once the impact of the deprivation dimensions has been taken into account.

In model (ii) we explore the significant random slope effect relating to basic deprivation observed earlier by allowing for interaction between such deprivation and the log GNDH and Gini. Introducing both interaction terms reduces the deviance by 1986. This model produces

Table 4: Multilevel Random Intercept Model for Economic Stress with Household & HRP and Characteristics . Deprivation Dimensions & GNDH

	(i)	(ii)	(iii)
Fixed Effects			
Basic deprivation	0.837***	0.879***	0.918***
Consumption deprivation	0.119***	0.121***	0.119***
Neighbourhood deprivation	0.086***	0.082***	0.082***
Log GNDH (deviation from mean)	0.010 ns	-0.037 ns	-0.039 ns
Log GNDH*Basic Deprivation		0.288***	0.336***
GINI (deviation from mean)	-0.009 ns	0.005 ns	0.007 ns
GINI*Basic Deprivation		-0.041 **8	-0.066 ns
Intercept	0.103	0.106	0.105
Random Effects			
Variance			
Individual	0.049	0.049	0.048***
Country	0.004	0.004	0.003***
Basic Deprivation			0.022 ***
Cov			0.002 ns
Intra Class Correlation Coefficient	0.079	0.069	
Reduction in individual variance	0.404	0.409	
Reduction in country variance	0.636	0.688	
Reduction in total variance	0.433	0.444	
Deviance	-37,505	-39.491	-42,206
Degrees of freedom	5	7	9
N	212,023	212,023	212,023

*P < .05, ** P <.0.01, *** P < .001

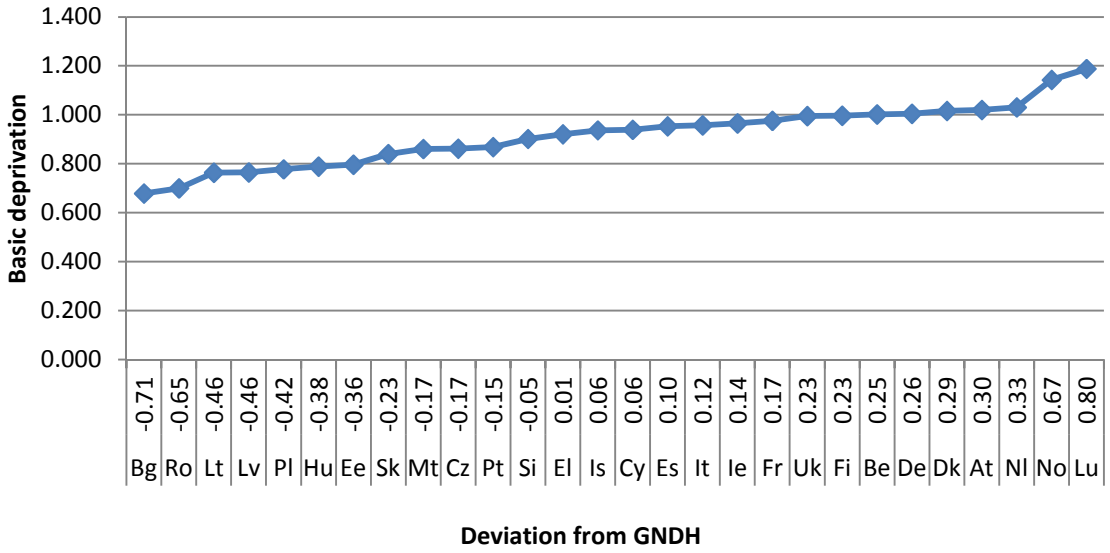
a marginal increase in the individual variance to 40.9% but a more significant increase in the country variance to 68.8%. The total variance accounted for rises to 44.4%.The basic deprivation coefficient is 0.879 where the deviation from the mean of log GNDH is 0. The interaction of basic and GNDH coefficient of 0.288 is highly significant. The impact of basic deprivation increases as the level of GNDH rises. Or put another way, the level of GNDH has a greater effect at lower levels of deprivation. The coefficient for Gini at zero level of basic deprivation is 0.005. The interaction term, which is statistically significant, has a value of -

0.041. In other words, contrary to expectations, inequality has a weaker impact at higher levels of deprivation. Correspondingly the impact of basic deprivation declines as inequality increases. Finally, in model (iv) we introduce a random slope term for basic deprivation which reduces the deviance by 2715. Introducing the random slope term leads to an increase in the basic deprivation coefficient from to 0.918 and the interaction term for GNDH from 0.288 to 0.336 and thus strengthens our conclusions regarding the importance of the role of basic deprivation and the manner in which its impact increases at higher levels of GNDH.

The coefficient for Gini remains unchanged. The Gini interaction term increases in value but becomes statistically insignificant.

Figure 3 graphs the magnitude of the coefficient relating to the relationship between basic deprivation and economic stress by the extent of deviation from the mean of the deviation from the mean of the log of GNDH. It also identifies the country associated with each level of GNDH. The smallest coefficient of 0.679 is associated with Bulgaria which has a deviation from the mean of the log value of -0.712. It gradually increases to 0.921 for Greece which has a deviation value of 0.009 and continues to rise to 1.188 for Luxembourg which has a deviation value of 0.804.

Figure 3: Basic Deprivation Coefficient from Model (iii) Table 3 by Deviation from Mean of Log GMNH



Conclusions

In this paper we have sought to build on previous research regarding the relationship between material deprivation and economic stress in a number of important respects. In the first place we have taken advantage of the availability of a special module in EU-SILC 2009 to develop indicators of economic stress and deprivation that are distinct and display both higher levels of reliability and less cross-national variation in such reliability than was the case with previous work relying on earlier waves of EU-SILC. We also sought to extend previous analysis by applying multilevel models of analysis that allow us to explore the combined impact of micro and macro socio-economic factors and the manner in which they interact.

A number of key findings emerged. While considerable variation in stress levels is observed across countries with stress levels being over 5 times higher in Bulgaria than in Norway, it remains true that close to 90% of such the variation occurred within countries. This immediately suggests that the argument that a focus on within countries relativities seriously distorts our understanding of the manner in which reference group operate is likely to be

seriously overstated. This case is reinforced by the partitioning of variance in relation to key independent variables. Only in the case of basic deprivation did between countries variation exceed 20%.

Basic deprivation was the key dimension associated with economic stress. National levels of income and income inequality provide modest gross explanatory power and have little net effect when we control for deprivation dimensions. These findings clearly point to the need to exercise caution in deducing relationships at the household level from correlations at the national level. Neither national affluence nor income inequality *per se* appear to play an independent role in explaining economic stress, irrespective of the manner in which this might be mediated. Specifically there is no evidence that material deprivation acts as a mediator of such effects. Thus, whether viewed in terms of their direct impact or their influence via material deprivation, we could find no evidence that such macro factors contribute directly to our understanding of economic stress once household deprivation had been taken into account.

However, the key finding in relation to the Europeanization of reference groups relates to the interaction between basic deprivation and macro-characteristics. Even the weakest version of the Europeanization of reference groups argument requires that we can demonstrate that absolute, or perhaps more accurately European benchmarked, deprivation has a uniform effect across countries. This focuses attention on the moderating rather than the mediating role of macro attributes. In relation to absolute levels of income, our finding of a significant interaction between basic deprivation and gross national disposable income per head is entirely consistent with the continuing importance of national standards. Basic deprivation has more substantial impact on economic stress at higher levels of income.

We have also sought to assess the argument that income inequality has an influence on outcomes such as economic stress not through a direct impact, or through its association with other mediating variable, but rather by the manner in which it moderates the impact of influences. One such hypothesis is that inequality is associated with negative outcomes for all members of an unequal society and not just those at the lower end of the income distribution. We did observe a moderating impact of Gini in relation to basic deprivation, although it became insignificant once we included a random slope term for basic deprivation in the model. However, the effect was in the opposite direction to that required by the foregoing hypothesis. Rather than indicating that the stressful consequences of the basic deprivation are exacerbated by higher levels of inequality, it suggests that it has a stronger impact where inequality is lower. This effect is weaker than that relating to income levels and adds little in the way of explanatory power. However, both effects are consistent with the importance of expectations arising from national circumstances in moderating the impact of material deprivation. Experiencing basic deprivation where income levels are high and income inequality low and where one might expect that such deprivation is eminently avoidable appears to exacerbate its impact.

Our interpretation of our findings does not seek to rule out direct or moderating roles for income inequality in generating negative social outcomes. However, the results of our analysis do provide support for the argument of authors such as Torsander and Erikson (2010) and Golthorpe (2010) that the impact of social stratification is unlikely to be adequately grasped by an approach which seeks to conceptualize it in terms of a single status hierarchy.

The focus on the Europeanization of reference groups by author such as Fahey (2007) and Delhey and Kohler (2006) should be situated in the context of a focus on EU- regional policy aimed at promoting economic and social cohesion by promoting convergence in economic

development and living standards. However, recently a number of authors have stressed that to the extent that such objectives are pursued on the basis of "negative" rather than positive "integration" [xi] welfare state closure arrangements that promote "bonding" through "bounding"[xii] are challenged. At a time when issues of European versus national solidarity are central to the debate on the economic crisis and authors such as Ferrera (2009) are increasingly arguing the case for increased protection of national welfare state arrangement from EU law and policies promoting market integration, our findings point to the danger of allowing the scale of between country differences to blind us to the continuing importance of national standards and reference points.

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[i] For a discussion of the distinction between mediator and moderator variables see Baron and Kenny (1986).
[ii] See Beck (2000) & (2002).
[iii] For further discussion of the processes involved see Layte (forthcoming).
[iv] For related arguments sees Pichler and Wallace (2009) and Lancee and van der Werfhorst (2011).
[v] The source for the macroeconomic variables is Eurostat with the exception of the MMDI below the mean which are the authors own calculations
[vi] Further details relating to the dimensionality of deprivation in EU-SILC (2009) can be found in Whelan and Maître (2012).
[vii] Because of data difficulties in the UK this item is restricted to arrears on rent or mortgage.
[viii] Alpha=Np=/[1 + p(N-1)] where N is equal to the number of items and is p is equal to the mean inter-item correlation.
[ix] For a discussion of variance explanation in multi-level models see Rabe-Hesketh and Srkondal (2005: 102-104) and Hox (2010: 69-78)
[x] Using alternative indicators such as GDP and MMDI below the mean does not affect these conclusions
[xi] See Diamond (2006)
[xii] See Ferrera (2009)