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THE 'EUROPEANISATION' OF REFERENCE GROUPS

A reconsideration using EU-SILC

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ABSTRACT: In this paper we address the question of the relative importance of within and between country differences in income and material deprivation in the European Union in the context of recent suggestions that insufficient attention has been paid to the latter. In particular, we respond to the argument that the 'state bounded' relative income approach obscures the significance of EU-wide reference groups. Making use of EU-SILC 2004, we have sought to quantify the magnitude of relevant within and between country differences and their relative impact. Overall, our analysis supports the view that the predominant frame of reference is a national one. The limited impact of European reference groups observed in our analysis does not require explanation in terms of the emergence of a European social stratification system. Furthermore, the significance of such comparisons depends not only on the expectations of those affected by European inequalities but on the degree of legitimacy afforded to ensuing demands. While an EU-wide income-threshold can provide information regarding progress of the Union towards greater social cohesion, its usage for this purpose does not require a strong sense of European identity. Given the current status of the European Social Model, it would seem unwise to attribute an undue degree of policy relevance to the relatively modest impact of EU-wide reference groups revealed in our analysis.
Key words: reference groups; income poverty; material deprivation; economic stress

1. Introduction

In this paper we address the question of the relative importance of within and between country differences in income and material deprivation in Europe for households' experience of subjective economic stress. We do so in the context of recent suggestions by Fahey (2007) that insufficient

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attention has been paid to the latter. Fahey (2007: 35–6) argues that Townsend's (1979) conceptualisation of relative deprivation has deflected attention away from wide differences in absolute standards of living between countries and the manner in which they are experienced. Fahey (2007: 45), in an analysis based on the European Quality of Life Survey (EQLS), suggests that, given the evidence relating to the consequences of cross-national differences for individuals' evaluations of the adequacy of their own situations, the use of both Member State-level and EU-level poverty indicators would be preferable to the current focus on the former. In contrast Whelan and Maître (2007), using the same data set, argue that the limitations of nationally based relative income measures of poverty have little to do with the process of enlargement and widening reference groups. In this paper they take advantage of the recent availability of the first wave of European Union Statistics on Income and Living Conditions (EU-SILC) to reconsider the key issues.

The reservations expressed in this paper regarding the argument developed by Fahey (2007) do not involve any absolute rejection of the development of EU-wide measures. In general, we endorse the utility of exploring the adoption of different units of analysis in analysing inequalities within the EU. Our position is that the choice of spatial unit must be justified on the basis of the issue under consideration.[1] However, central to Fahey's (2007) argument is the claim that a particular sociological approach to understanding relative deprivation has led to a distortion of our understanding of the significance of European wide reference groups.

Starting from the observation that middle income households in poorer European states have incomes that are lower than the relative income poverty threshold in richer countries, and the associated paradox that a larger share of the population in a country such as Ireland is considered poor than in Poland, Fahey (2007: 36–7) suggests that the 'state bounded approach' can be challenged on two grounds. The first involves a consideration of cross-national differences in absolute deprivation and the second involves an assessment of how people feel about their material living standards. The latter raises the issue of the importance of an individual's perception of their relative position in their own country, as against their sense of how the overall level of living of their own country compares with that of others, in determining their subjective sense of deprivation.

1. See Brandolini (2007) for treatment of the measurement of income distribution in supranational entities, Berthoud (2002) and Mogstad *et al.* (2006) for a discussion of the regional approach, and Kangas and Ritakallio (2007) for a detailed comparison of national and regional levels.

It is on the issues associated with the Europeanisation of reference groups that our analysis will focus rather than the arguments relating to the appropriate spatial unit of analysis for the measurement of poverty of deprivation as such.

2. Evaluating the 'Europeanisation' of reference groups argument

2.1. Townsend's conception of relative deprivation

As Fahey (2007: 36) acknowledges, Townsend (1979) was pursuing a very different agenda to that motivating those coming from the *American Soldier* reference group tradition.[2] He understood the term 'relative deprivation' in an objective rather than a subjective sense. His concern was with the socially relative nature of needs and wants rather than the relationship between objective circumstances and feelings of satisfaction and injustice. Townsend's primary focus was on poverty as exclusion from 'ordinary living patterns, customs and activities' as a consequence of inadequate resources. The defining characteristic of poverty for him was the ability to participate in the society to which one belongs. The critical issue involved in evaluating the validity of his position is the relationship between income and the form of rather basic material deprivation with which he was concerned; rather than the correspondence between income and subjective responses. His own efforts at validation were focused on attempting to establish an income threshold beyond which deprivation escalated disproportionately.[3]

Townsend's emphasis on the objective nature of relative deprivation, however, is consistent with Sen's (1983) argument that it is the notion of shame that is the core of poverty; in that the absence of resources puts people in a situation where they cannot live with dignity in their society. His approach implies subjective reactions to such exclusion from both the excluded and the wider population. Focusing on the former, it is with stress arising from exclusion that he is concerned, rather than with satisfaction with material livings standards or with issues of justice evaluation (Jasso 2002). This is not necessarily a weakness. Failure to take into account the full range of comparisons that people make will undermine the relative income approach only if it obscures the fact that such comparisons may lead individuals to define 'acceptable' levels of participation in a different fashion or to construe 'society' in a wider fashion.

2. See Merton and Kitt (1950), Merton (1960).
3. See the contributions to the debate by Piachaud (1981, 1987) and Desai (1986). More recently see Gordon *et al.* (2000).

2.2. Weaker and stronger cases for an EU-wide perspective

For Delhey and Kohler (2006: 126) the reference groups to which people relate themselves is the litmus test for the appropriateness of an EU-wide approach. The crucial condition would be that citizens' frames of reference would have to extend beyond the national realm. Here we suggest that it is possible to think in terms of weak and strong versions of this argument. The former would simply allow for the fact that notions of appropriate national thresholds, and of what constitutes an acceptable level of participation in ones own society, come to be influenced by ones knowledge of conditions in other societies. Such an impact would be consistent with claims, to which Delhey and Kohler (2006) direct attention, regarding the spread of consumer culture (Ger and Belk 1996) and the emergence of a standard package of goods that people feel is necessary in order not to feel deprived (Keyfitz 1992). Such effects could be observed while the normative framework remained resolutely national; with the obligation for creating the conditions in which appropriate participation could take place continuing to be seen to reside with the nation state.

From this perspective adopting a nationally based relative approach is consistent with an acceptance that cross-national inequalities are accurately perceived and that individuals' evaluations of their material situation may be affected by cross country comparisons (Fahey and Smyth 2004: 24). Thus, for example, the case for measuring poverty by means of a within nation relative income approach is not necessarily undermined by an acknowledgement that migration may derive from a perception that opportunities are better elsewhere (Delhey and Kohler 2006: 128).

The stronger version of the EU-wide framework requires, as Delhey and Kohler (2006: 126) argue, that people perceive

> themselves, or their countries, as part of a larger European or even international stratification system. Furthermore, the perception whether false or correct, of being advantaged or disadvantaged within this system would have to play an important role in individuals' evaluations of their own life circumstances.

The stronger case, as Delhey and Kohler (2006: 125) note, is linked to the claim by authors such as Beck (2002) that concentration on national societies has led to distortion of our perceptions of inequalities that will be corrected as a result of Europeanisation and the emergence of European wide distribution conflicts. From this perspective, norms and aspiration

shift from the national to the transnational level; as does the responsibility for meeting the associated claims.

What would constitute evidence for the fact that the relative income approach is undermined by the failure to take into account the impact of European reference groups whether in their weaker or stronger form? Fahey (2007: 41) rests his argument on a comparison of absolute material deprivation levels and how people feel about such deprivation. In relation to the former, he notes that economic clusters display a similar ranking in terms of absolute levels of income, material deprivation and subjective economic stress. He also places particular emphasis on the fact that those at the upper end of the income distribution in the poorer clusters are worse off than those at the lower end of the distribution in the most affluent cluster. However, at no point does he seek to explicitly quantify the scale of within and between cluster variations in material deprivation. Nor does he test the extent to which income allows us to account for such variation. Here we argue that both of these questions must be explicitly addressed before reaching conclusions about the relative value of a national versus an EU-wide frame of reference.

The second strand of Fahey's argument revolves around the claim that the frames of reference people use to evaluate their situation include European-wide as well as national elements. However, as in the case of material deprivation, Fahey (2007: 8) does not seek to quantify the extent of within and between cluster variations relating to outcomes such as subjective economic stress. Furthermore, his analysis does not extend to an examination of the *relationships* between income and material and such variation. Consequently, as Delhey and Kohler (2006: 126) observe, his conclusions regarding the importance of cross-national reference groups lack an empirical underpinning and remain speculative.

Delhey and Kohler (2006: 128) do demonstrate that individuals can evaluate living conditions in their own and other countries and that the latter are related to their reported levels of satisfaction. This evidence provides support for the weaker version of the European reference group argument.[4] However, we are not persuaded that it is sufficient to establish the stronger version, which would require the adoption of a more comprehensive justice evaluation methodology involving comparisons of the actual situation with what is considered to be just or fair.[5] Our analysis, which proceeds on the basis of the assumption that individuals accurately perceive both within and between country differences in income and

4. Given our focus on measures of poverty the argument would be strengthened if the dependent variable was focused more on economic stress rather than general life satisfaction.

5. For examples of such analyses see Jasso (1999, 2000).

material deprivation, shares this limitation but does allow us to directly assess the question raised by Fahey of how much is lost by failing to incorporate the latter differences into our measures of poverty and exclusion.

In what follows we will take advantage of the recent availability of the first wave of EU-SILC to explore these issues. In particular, we wish to assess whether the operation of European wide reference groups undermines the ability of the within nation relative income approach to identify those households exposed to subjective economic stress. More specifically, we wish to establish the extent to which the limitations of relative income approaches are a consequence of a restricted understanding of the impact of cross-national reference groups, rather than an inability to capture those households who are relatively deprived in the objective sense of being 'excluded from ordinary living patterns'. Consequently, our analysis will focus initially on the relation between income and material deprivation.[6] We will then extend our analysis to a consideration of the impact of income and material deprivation on subjective 'economic stress'. In each case we explicitly address the issue of the relative magnitude of within and between country differences and the consequences of such variation.

3. The European Union statistics on income and living conditions: data and key measures

3.1. Data

EU-SILC is now the reference source for statistics on income and living conditions, and common indicators for social inclusion in the EU. It was launched in 2004 in 13 Member States (Belgium, Denmark, Spain, Greece, Spain, France, Ireland, Italy, Luxembourg, Austria, Portugal, Finland and Sweden) and in Norway and Iceland. It was only in 2005 that the EU-SILC reached its full scale with the 25 Member States plus Norway and Iceland.

For the purpose of this analysis we use the User Database (UDB) of the EU-SILC 2004 wave and our analysis is conducted at the household level. The sample sizes range from 3,993 cases (Estonia) to 24,204 cases (Italy) constituting a total sample size of 113,771 households across 14 countries. For consistency of comparison we restrict our analysis to those cases where the key measures involved in our analysis relating to household income,

6. Or in the terminology that Eurostat has recently adopted 'economic strain' (Guio 2005).

material deprivation and economic stress are available giving us a total sample of 109,192 cases.

Throughout our analysis we adopt what might be described as a 'fixed effects approach'. Thus, we do not seek to treat the 14 countries available to as a sample from a wider population. In statistical terms, our conclusions can be generalised only to the units included in our analysis, as in a fixed effects analysis of variance, rather than being generalised to a wider population as it would be with a random effects procedure. The issues that must addressed are whether the range of countries available to us is adequate to allow us to satisfactorily address the substantive issues of concern and whether an extension of the range of units considered would be likely to undermine our conclusions.

While this data covers fourteen countries it includes only one of the new Member States. However, our interest is in the general argument underlying the Europeanisation of reference groups thesis rather than a descriptive account of cross-national differences. If the case for the importance of cross-national reference groups cannot be established in relation to this set of countries, it is difficult to see what formulation of the underlying social psychological processes would lead to a reversal of that conclusion when New Member States (NMS) other than Estonia are included in the analysis. The range of objective differences in income and deprivation between the countries included in our analysis is sufficient that if the inclusion of additional NMS countries in our analysis were to lead us to modify our conclusions it would seem that is more likely to arise from the distinctive features of those societies rather than simply greater variance in relation to income or material deprivation.[7]

It is not our intention to provide descriptive estimates for any aggregation of our countries. Neither do we seek to provide estimates of average effects relating to relationships between variables included in our analysis. For that reason it is not necessary for us to adjust for varying population size by appropriate weighting. Given that we are not attempting to provide EU estimates, we have retained the Norwegian data in our analysis rather than dispensing with information that can contribute to allowing us to address the substantive issues of concern. Where we conduct analysis that merges the data from the individual countries it is necessary to take into account the possibility that ignoring cross-national differences may undermine our conclusions. We address this issue by including dummy variables capturing cross-national differences in means in all of our analyses and by systematically testing for country interactions and including terms that capture such effects where appropriate. In effect, in each case we consider the range of option

7. Later waves of EU-SILC will allow us to deal empirically with this issue.

running from a separate analysis for each country to a fully merged analysis.

3.2. Income

While the EU-SILC 2004 survey was conducted in 2004, the income period refers to 2003. The income measure we use is the total annual disposable household income. This is defined as the sum for all household members of net personal income components plus all net income components at household level. In order to adjust the level of household income to the different sizes and compositions of households we use the 'modified OECD scale'.

As household incomes are expressed in national currencies, in order to control for the differing price levels across EU Member States, we convert household incomes into standard units of measurement as expressed by Purchasing Power Standards (PPS).

Finally, in all regression analyses income is entered into the relevant equations in its log form to allow for a diminishing impact at higher levels of income.

3.3. Material deprivation

Our analysis requires the development of an index of rather basic material deprivation that is reliable across the range of European countries that we include in our analysis. The items we have employed are set out in Table 1. These items, apart from that PC item, combine items that Eurostat have shown to load on dimensions that they have labelled 'economic strain' and 'durables' (Guio 2005). However, given the importance of achieving a satisfactory level of reliability we have chosen to focus on the combined 10-item set. The index achieves a reasonably

TABLE 1. Items used to measure material deprivation

Cannot afford meal with meat, chicken, fish (or vegetarian) every second day
Inability to keep home adequately warm
Cannot afford to have a car
Cannot afford a telephone
Cannot afford a PC
Cannot afford a colour TV
Cannot afford a washing machine
Cannot afford a weeks holiday away from home
Cannot afford to pay unexpected required expenses
Experiencing arrears on rent, mortgage, utility bills or hire purchase payments

satisfactory level of reliability across the 14-country sample with an overall Cronbach alpha of 0.69, ranging from 0.62 in Spain and Denmark to a high of 0.73 in Ireland. Thus, our conclusions regarding cross-national variations will not be affected by differential reliability. In our view the 10-item measures comes closer to tapping what we would refer to as 'basic deprivation' rather than more general consumption deprivation and we refer to it throughout as material deprivation.

For our present purposes, we use a version of this measure in which each individual item is weighted by the proportion of households possessing that item across the full range of countries included in our analysis. Enforced lack of a widely available item is considered of greater consequence than comparable deprivation in the case of an item whose possession is more strongly concentrated. Since we have taken European levels of possession as the reference point, deprivation of an item such as a PC will be counted equally across all countries included in our analysis. This approach contrasts with the more usual approach that takes national reference points.[8] Since our concern is to evaluate the importance of within and between country differences we wish to avoid an approach that necessarily restricts deprivation differences across countries. The material deprivation measure is then simply constructed as the sum of the weighted deficits on all 10 items divided by the total proportion of items possessed in the full range of countries. Such standardisation produces scores ranging from 0 (if an individual lacks no items) to 1 (all items are lacked).

3.4. Economic stress

The measure of subjective economic stress we employ is based on the following question asked to the household reference person:

> Thinking now of your household's total income, from all sources and from all household members, would you say that your household is able to make ends meet?

Respondents were offered six response categories ranging from 'with great difficulty' to 'very easily'. In the analysis that follows we treat this variable as a continuous one with scores ranging from '1' corresponding to 'very easily' to '6' corresponding to great difficulty and we employ an OLS regression. Although theoretically preferable approaches such as logistic or probit regression are available, with six ordered categories the attainable improvement is modest and ordered logit analysis shows the categories to

8. See Muffels and Fouarge (2004).

be fairly equally spaced and produces conclusions that do not differ from those arising from OLS regression.[9]

4. The cross-national distribution of household income, material deprivation and economic stress

In Table 2 we set out the cross-national distribution of household income adjusted for purchasing power parity, material deprivation as captured by our 10-item index and economic stress as indexed by our six-category measure of the household's level of difficulty in making ends meet. In considering the extent of variation across country we report two summary indices. The first is Eta^2 which is equivalent to the R^2 from the OLS regression with the set of dummy variables for countries. The second, Rho or the intra class correlation coefficient, measures the relative homogeneity within groups in ratio to the total variation. It can also be interpreted as the correlation between the observed values on the dependent variable of two randomly chosen individuals in the same group.

In this case both indices display similar values; between country difference account for 10 percent of the total variance in income, 6.5 percent of the variance in material deprivation and 19 percent of the

TABLE 2. Means by country for household equivalent income, material deprivation and economic stress

	Household equivalent income in PPS	*Material deprivation (standardised score with range 0–1)*	*Economic stress (range 0–6)*
Denmark	15,827.3	0.059	2.423
Norway	18,951.5	0.059	2.852
Luxembourg	30,080.0	0.032	2.539
Sweden	15,086.6	0.052	2.966
Austria	17,870.0	0.072	3.139
France	16,707.4	0.052	3.173
Belgium	16,089.5	0.093	3.305
Ireland	15,826.8	0.079	3.666
Finland	14,281.3	0.088	2.971
Italy	14,714.7	0.097	4.148
Spain	13,588.0	0.104	3.850
Greece	12,065.5	0.168	4.170
Portugal	9,869.8	0.163	4.172
Estonia	4,953.0	0.197	3.581
Eta^2	0.100	0.065	0.189
Rho	0.111	0.072	0.207
N	109,192	109,192	109,192

9. Even in the case of a binary dependent variable, standard OLS is often considered.

variance in economic stress. The corresponding intra class correlation coefficients are 0.111, 0.072 and 0.207. Thus, within country variation is in every case substantially greater than between country variation, with the ratio varying from between 13:1 for material deprivation to 4:1 for economic stress with income occupying an intermediate position with a ratio of 9:1. Expressed in terms of the intra class correlation coefficient, in no case does the similarity between randomly chosen individuals within country produce a correlation higher than 0.2. Clearly, if we wish to explain variation in material deprivation and economic stress our primary focus must be on within rather than between country differences.

Excluding Luxembourg, which has an exceptionally high level, mean household equivalent income ranges from almost 19,000 PPS in Norway to less than 5,000 in Estonia. The lowest mean level of material deprivation of 0.032 is found in Luxembourg followed by one of 0.052 for Sweden and France, Norway and Denmark while the highest level of 0.197 is found in Estonia followed closely by Portugal and Greece. The minimum mean level of subjective economic stress of 2.4 is observed in Denmark followed by Luxembourg, Norway and Sweden. The highest level of 4.17 is observed in Portugal and Greece followed by Italy and Spain.

Overall, the ranking of countries is broadly similar across dimensions but by no means identical. In comparing our results with those reported by Fahey (2007) based on the EQLS, it is necessary to keep in mind that the relative advantages and disadvantages associated with each data set. Since the EQLS encompasses 28 European countries and includes a larger number of the less affluent ones, it will display substantially greater variation between countries. However, since sample sizes are quite modest, it is generally necessary to present results in relation to clusters of countries rather than individual nations. In addition, both the sample sizes and measurement procedures mean that estimates of both income and material deprivation are likely to be considerably less precise than in the case of EU-SILC. Thus, in important respects the data available to us involves a significant advance on that available to early authors. However, certain broad conclusions are supported by both sets of analysis. On average, countries with low levels of income display high levels of material deprivation and economic stress and those with high incomes correspondingly low levels. As Fahey (2007) notes, at the aggregate level low income is associated with both higher deprivation and with feeling under economic stress. He extends this analysis to show that the top income quartiles in the poorest cluster of countries compare unfavourably, across the range of dimensions, with the bottom income quartile in the richest cluster. While such findings will not be as striking for the more limited range of countries included in our analysis, we have no wish to dispute the general point being made that those at relatively high points in the income

distribution in the poorer countries will tend to exhibit higher levels of material deprivation and economic stress than their counterparts at substantially lower levels of the distribution in countries towards the more affluent end of the spectrum.

Such findings are consistent with the notion that, in judging their own personal situations, individuals have a reasonably accurate grasp of where their own societies stand in the international hierarchy of material living standards. However, while the above findings provide descriptively interesting information, in order to reach conclusions regarding the relative importance of within and between country differences it is necessary to take two further factors into account. The first relates to the scale of the within and between country difference relating to the outcomes of interest. The second, on which we now focus, involves establishing the strength of the associations between such differences and the outcomes with which we are concerned.

5. The relationship between income and material deprivation

A substantial literature exists that shows that the relationship between household income and measures of household deprivation are a good deal more modest than is sometimes assumed.[10] Here our focus is not on the overall impact of income but on its ability to explain within and between country variation in material deprivation and the implications this has for reliance on relative income lines.

As Snijders and Bosker (1999: 26) note, within group relationships can, in principle, derive from completely different principles to those underlying between group associations. In the current case our sample involves households within countries. In analysing this multi-level structure, we have opted not to employ a random effects model because we are interested in specific country effects and do not wish to consider our fourteen observations as randomly selected from a wider population. Methodologically, given the relatively small number of second level units and the large sample size within such units, overall estimates of the effect of a variable such as income using fixed effects and random effects procedures will produce pretty well identical overall estimates of the income effect.[11]

10. See Kangas and Ritakallio (1998), Tsakloglou and Papadopoulous (1998) and Whelan *et al.* (2001, 2004), Berthoud *et al.* (2004).
11. For a general discussion of the conditions under which random effects models are appropriate see Halaby (2004).

In Table 3 we set out the results for three regressions with material deprivation as the dependent variable. They focus, respectively, on the impact of country difference, the impact of income and the combined influence of both variables. The first equation (i) simply reproduces the differences already shown in Table 1. The set of country dummies, with Sweden as the reference category, accounts for 6.5 percent of the variance with the lowest levels of deprivation being observed in Sweden, Norway, Denmark and Luxembourg and the highest in Greece, Portugal and Estonia. Income has been entered in its log form to allow for a diminishing impact at higher levels. Doing so increases the R^2 from 0.065 to 0.180 and gives a coefficient of -0.088. In equation (iii) we simultaneously enter the country dummies and income. This increases the R^2 to 0.202. The major change in the pattern of country coefficients, in comparison with equation (i), is the reduction in the coefficients for the seven least affluent countries.

The scale of the reduction gradually rises from a modest level of 0.002 for Ireland to 0.108 for Estonia. Country differences are reduced but remain highly significant. Controlling for country differences, which provides us with a fixed effects estimate, has little influence on the impact of income involving a reduction from -0.088 to -0.085.[12] Allowing for interaction

TABLE 3. OLS regressions of material deprivation by log of equivalent household income

	(i)		*(ii)*		*(iii)*	
	Coeff	*s.e*	*Coeff*	*s.e*	*Coeff*	*s.e*
Denmark	0.009	0.003			0.013	0.002
Norway	0.009	0.003			0.027	0.002
Luxembourg	−0.019	0.003			0.040	0.003
Austria	0.022	0.003			0.032	0.003
France	0.069	0.002			0.075	0.002
Belgium	0.043	0.003			0.046	0.002
Ireland	0.029	0.003			0.027	0.002
Finland	0.037	0.002			0.032	0.002
Italy	0.047	0.002			0.038	0.002
Spain	0.054	0.002			0.039	0.002
Greece	0.118	0.003			0.093	0.002
Portugal	0.113	0.003			0.063	0.003
Estonia	0.147	0.003			0.039	0.003
Log of household equivalent income			−0.088	0.001	−0.085	0.001
Constant	0.050		0.929		0.862	
R^2	0.065		0.180		0.202	
N	109,192		109,192		109,192	

12. The between country coefficient for income is −0.100.

between income and country increases the R^2 from 0.202 to 0.210 but with no discernable substantively meaningful pattern of variation.

In Table 4 we address the importance of within and between country variance by partitioning the variance explanation between income and country. Country effects uniquely account for 2.2 percent of the variance (0.202−0.180); income 13.7 percent (0.202−0.065) and 4.3 percent (20.2 −2.2−13.7) is shared between them. From this we can calculate that income accounts for 14.6 percent of the variation within country (0.137 /0.935) and 66.2 percent of between country variation (0.043/0.065). Thus, income is significantly more strongly associated with material deprivation between rather than within countries. However, as a consequence of the fact that the vast bulk of the variation in material deprivation is within country, income variation within countries accounts for more that three times the variance of between country variation — 13.7 vs. 4.3 percent. Overall, taking into account between country differences in income does improve our ability to measure material deprivation but the major limitation on our ability to do so is the weakness of the within country income-deprivation relationships.

6. The relationship between income, material deprivation and economic stress

6.1. Income and economic stress

In Table 5 we look at the relationship between subjective economic stress and household equivalent income; using a log specification for the latter. In equation (i) we enter the country dummies which reproduce the pattern set out in Table 1 with the lowest level of economic stress being observed in Denmark and the highest in Greece and Portugal. The main deviation from expectation is the relatively low level in Estonia; between country differences explain 18.9 percent of the variance. In equation (ii) we enter the log of income which has a coefficient of −0.762 and accounts for 15.1 percent of the variance. Implicit in our use of the log specification is the

TABLE 4. Partitioning of variance explanation of material deprivation between country and log of equivalent household income

	%
Unique to country	2.2
Unique to income	13.7
Shared	4.3
Percent of within country variance accounted for by income	14.6
Percent of between country variance accounted for by income	66.2

TABLE 5. OLS regressions of economic stress by country and log of equivalent household income

	(i)		*(ii)*		*(iii)*	
	Coeff	*s.e*	*Coeff*	*s.e*	*Coeff*	*s.e*
Denmark	−0.543	0.023			−0.511	0.021
Norway	−0.114	0.023			0.032	0.021
Luxembourg	−0.428	0.027			0.064	0.025
Austria	0.173	0.025			0.261	0.023
France	0.208	0.021			0.254	0.019
Belgium	0.339	0.024			0.366	0.022
Ireland	0.700	0.024			0.684	0.022
Finland	0.005	0.021			−0.043	0.019
Italy	1.182	0.019			1.109	0.017
Spain	0.883	0.020			0.764	0.019
Greece	1.204	0.023			0.994	0.021
Portugal	1.206	0.024			0.792	0.023
Estonia	0.615	0.027			−0.283	0.026
Log of household equivalent income			−0.762	0.005	−0.712	0.006
Constant	2.966		10.689		9.736	
R^2	0.189		0.151		0.296	
N	109,192		109,192		109,192	

assumption that respondents experience income differences in a manner that mirrors the observed relationship between income and material deprivation, i.e., in a proportionate rather than an absolute fashion.[13]

In equation (iii) we simultaneously enter income and the country dummies and observe an R^2 of 0.296. The major consequence for the country dummies is the reduction of the coefficients for Greece, Portugal and Estonia with the value becoming negative in the final case. At the other extreme, we also observe a reduction in the values for Norway and Luxembourg. However, the reduction in the range of country differences declines modestly from 1.75 to 1.62.[14] Controlling for country effects reduces the income coefficient to −0.712.

In Table 6 we evaluate the relative importance of between and within country differences in income in accounting for subjective economic stress by partitioning the variance. Country effects uniquely account for 14.5 percent of the variance (0.296–0.151) and income 10.7 percent

13. Using a linear specification produces an lower R^2 of 0.110 but leaves our conclusions regarding the relative importance of within and between country income differences largely unaffected.

14. Once again our analysis assumes no interaction between income and country. The addition of the full set of interaction term leads to an increase in the R^2 from 0.296 to 0.302 but with no meaningful pattern of variation.

TABLE 6. Partitioning of variance explanation for economic stress between country and log of equivalent household income

	%
Unique to country	14.5
Unique to income	10.7
Shared	4.4
Percent of within country variance accounted for by income	13.2
Percent of between country variance accounted for by income	23.2

(0.296–0.189). The shared component accounts for 4.4 percent of the variance (29.6–14.5–10.7). Thus, income accounts for just less than a quarter of between country variation in economic stress (4.4/18.9). It is therefore a good deal less effective in accounting for such variance than was the case for material deprivation. Within country, income differences account for 13.2 percent of corresponding variation in economic stress. As with material deprivation, taking income differences between countries into account improves our predictive ability. However, it is also true that within country differences account for a good deal more of the variation — 10.7 vs. 4.4 percent. The limited predictive power of income within countries is the major factor accounting for the overall weakness of the association between income and economic stress.

6.2. Material deprivation and economic stress

In Table 7 we look at the impact of material deprivation and country on economic stress. In equation (ii) we enter material deprivation which has a coefficient of 5.271 and accounts for 31.2 percent of the variance. Controlling for country effects reduces the coefficient to 4.983.[15] In equation (i) we simultaneously enter income and the country dummies. These results can be compared to those relating to the country effects alone reported in equation (i) in Table 5. The addition of material deprivation increases the R^2 from 0.189 to 0.450. It also leads to a substantial reduction in the coefficients for Greece, Portugal and Estonia ranging from 0.73 to 0.59. More modest reductions are observed for a range of other countries. The overall range of country differences is reduced from 1.75 to 1.54. However, excluding Italy the latter figure becomes 1.23. It remains true that a substantial component of cross-country difference in levels of economic stress cannot be accounted for by

15. The between country material deprivation coefficient is 9.414.

TABLE 7. OLS regressions of economic stress by country and material deprivation

	(i)		*(ii)*		*(iii)*		*(iv)*	
	Coeff	*s.e*	*Coeff*	*s.e*	*Coeff*	*s.e*	*Coeff*	*s.e*
Denmark	− 0.588	0.019					0.018	0.018
Norway	− 0.160	0.019					− 0.086	0.019
Luxembourg	− 0.334	0.022					− 0.113	0.022
Austria	0.064	0.020					0.118	0.020
France	− 0.138	0.017					− 0.076	0.017
Belgium	0.124	0.020					0.162	0.019
Ireland	0.554	0.019					0.564	0.019
Finland	− 0.181	0.017					− 0.182	0.017
Italy	0.949	0.015					0.942	0.015
Spain	0.616	0.016					0.591	0.016
Greece	0.617	0.019					0.586	0.019
Portugal	0.643	0.020					0.513	0.020
Estonia	− 0.118	0.022					− 0.457	0.022
Material deprivation (ES)	4.983	0.022	5.271	0.024	4.529	0.026	4.407	0.023
Log of household equivalent income					− 0.363	0.005	− 0.336	0.005
Constant	2.71		2.986		6.483		5.939	0.052
R^2	0.450		0.312		0.340		0.470	
N	109,192		109,192		109,192		109,192	

either corresponding differences in household income or material deprivation.

In equation (iii) we enter income and economic stress simultaneously. Both are highly significant and they account for 34 percent of the variance. Controlling for country effects in equation (iv) increases the level of variance explained to 47.0 percent but has little effect on the income or material deprivation coefficients. Controlling for the latter reduces the range of country coefficients from 1.75 to 1.40.

In Table 8 we examine the partitioning of variance between material deprivation and country effects. The latter account for 13.8 percent of the variance (0.45–0.312) while the figure for the former is 26.1 percent (0.45–0.189) and that for the shared variance is 5.1 percent (45–13.8–26.1). Material deprivation thus accounts for 27.0 percent of the between country variance (5.1/18.9) and 32.2 percent of the within country variance (26.1/81.1). The contribution of between country variation in material deprivation is very similar to that of income; which is not surprising given that the level of correlation between the variables is 0.8. In contrast, the within countries explanatory power of material deprivation is almost two and a half times greater than for income. As a consequence, while between countries variation in material deprivation contributes to our ability to account for subjective economic stress, the ratio of within to between country explanatory power for material deprivation exceeds five to one (26.1/5.1).

6.3. The combined effect of income and material deprivation

In Table 9 we look at the partitioning of the variance between income and material deprivation taking jointly and country. The latter uniquely accounts for 13 percent of the variance (0.47–0.34) and the latter 28.1 percent (0.47–0.189); while 5.9 percent (0.47–0.281–0.13) is shared. Income and material deprivation account for approximately one-third of both the within and between country variance. However, a crucial

TABLE 8. Partitioning of variance explanation for economic stress between country and material deprivation

	%
Unique to country	13.8
Unique to material deprivation	26.1
Shared	5.1
Percent of within country variance accounted for by Material Deprivation	32.2
Percent of between country variance accounted for by Material Deprivation	27.0

TABLE 9. Partitioning of variance explanation for economic stress between country and income and material deprivation

	%
Unique to country	13.0
Unique to income and material deprivation	28.1
Shared	5.9
Percent of within country variance accounted for by income and material deprivation	34.6
Percent of between country variance accounted for by income and material deprivation	31.2
Percent of within country variance accounted for uniquely by income	2.4
Percent of within country variance accounted uniquely by material deprivation	21.4
Percent of within country variance accounted shared between income and material deprivation	10.8
Percent of between country variance accounted for uniquely by income	4.2
Percent of between country variance accounted uniquely by material deprivation	8.0
Percent of between country variance accounted shared between income and material deprivation	19.0

difference emerges between the two cases. Focusing on within country differences, it is clear that material deprivation is the crucial variable. Adding income to it increases the absolute level of variance explanation by 2.4 percent (34.6–32.2); while reversing the order of entry we see an increase of 21.4 percent (34.6–13.2). The variance shared between variables is just less than 11 percent (34.6–(2.4 + 21.4)). In contrast, in the case of between country differences 60 percent (19/31.2) of the variance is accounted for by income and material deprivation is shared between them. Income explains a total of 4.2 percent (31.2 – 27.0) of the variance compared to 8 percent (31.2–23.2) by material deprivation and 19 percent jointly (31.2–4.2–8.0). The degree of multicollinearity at country level makes it difficult to distinguish between the role of income and material deprivation and to rule out the possible role of unmeasured variables that may display a similar level of correlation at this level of aggregation. Obviously the extent to which this matters depends on the degree to which we wish to attribute causal significance to the associations we have observed.

7. Cross-country variation in the impact of material deprivation

Our analysis to this point confirms that taking between country differences, in either income or material deprivation, into account, contributes to our ability to account for subjective economic stress.

However, the predominant role in explaining subjective economic stress must be attributed to within country influences. Despite the unambiguous nature of the evidence pointing to this conclusion, our analysis to date has underestimated the relative importance of within country differences. Up to this point we have assumed that levels of material deprivation have identical outcomes across countries. In fact, as is clear from Table 10 where we display the coefficients relating to the interaction between the material deprivation variable and the country dummies, there is a clearly interpretable pattern of interaction. The impact of material deprivation declines as one moves from the richer to the poorest countries. The largest coefficient of 7.8 is observed for Luxembourg followed by coefficients of approximately 6.5 for Sweden, Denmark and Norway. Austria, France, Belgium and Spain, which constitutes something of an exception, are found in the range running from 5.7 to 5.4. The values for Finland,

TABLE 10. OLS regressions of economic stress by country and material deprivation

	B	*SE*
Denmark	− 0.594	0.021
Norway	− 0.173	0.021
Luxembourg	− 0.344	0.024
Austria	0.108	0.023
France	− 0.129	0.020
Belgium	0.136	0.022
Ireland	0.655	0.022
Finland	− 0.098	0.019
Italy	1.074	0.017
Spain	0.621	0.019
Greece	0.837	0.023
Portugal	0.845	0.025
Estonia	0.336	0.029
Material deprivation (ES)	6.533	0.133
Denmark*ES	− 0.032	0.177
Norway*ES	− 0.141	0.176
Luxembourg*ES	1.250	0.243
Austria*ES	− 1.084	0.179
France*ES	− 0.978	0.149
Belgium*ES	− 0.838	0.164
Ireland*ES	− 1.834	0.165
Finland*ES	− 1.614	0.150
Italy*ES	− 2.033	0.140
Spain*ES	− 0.844	0.149
Greece*ES	− 2.395	0.151
Portugal*ES	− 2.310	0.160
Estonia*ES	− 3.455	0.162
Constant	2.638	0.015
R^2	0.458	
N	109,192	

Ireland and Italy range from 4.9 to 4.7. They decline to 4.1 and 4.2, respectively, in Greece and Portugal. Finally, the lowest value of 3.1 is observed for Estonia. These findings provide clear support for the operation of restricted reference groups. The same absolute level of material deprivation in Luxembourg or the wealthier Scandinavian countries is associated with a significantly lower level of economic stress than in Estonia or the poorer Mediterranean countries. Consequently, differences in levels of economic stress between countries decline as the level of material deprivation increases. Such differences are entirely consistent with the reference group assumptions implicit the use of national relative income poverty lines. The fundamental problem with such lines, as we have argued, derives not from such assumptions but from the fact that income proves to be such a poor predictor of material deprivation within countries.

In Figure 1 we illustrate the consequences of the interactions for a selected range of countries in order to provide appropriate contrasts between countries at the upper and lower end of the affluence spectrum for a realistic range of values. When the material deprivation score is zero the lowest level of economic stress of 2.0 is observed in Denmark this rises to 2.6 for Sweden, 3.0 for Estonia, 3.3 for Ireland and 3.5 for Portugal. Thus, at this level substantial differences in levels of economic stress exist between countries, although the level for Estonia is slower than we might have expected on an *a priori* basis. The largest difference of 1.5 points is observed between Denmark and Portugal, followed by one of 0.9 between the latter one and Sweden. As the material deprivation score increases the economic stress score narrows between Denmark and poorest countries

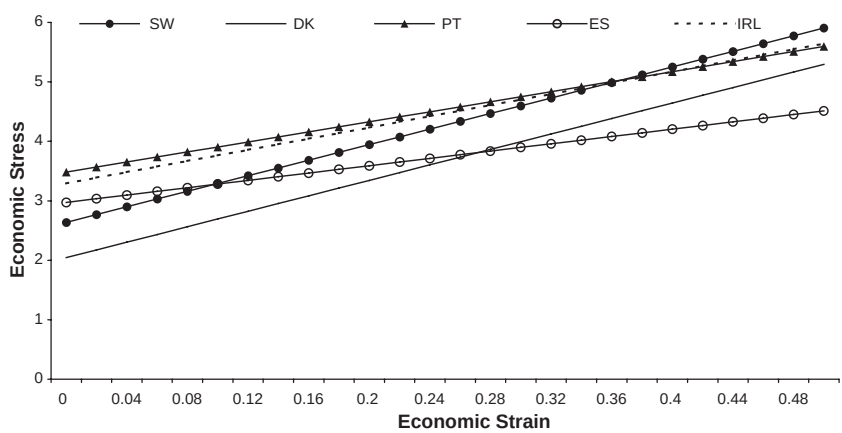

Figure 1. The predicted relationship between economic stress and material deprivation for a selected set of countries as set out in Table 10.

such as Portugal. At the point at which material deprivation values are equal to 0.5, the gap between Denmark and Portugal has narrowed to 0.3. For the comparisons involving Sweden we see a reversal of positions with the economic stress score reaching a level that is 0.3 points higher than that for Portugal. Of course the numbers involved at this level of material deprivation are substantially higher in Portugal than in Sweden. In the Estonian case, starting from a point in the middle of the range for this set of countries, as material deprivation levels rise economic stress increases more slowly than in the case of any other country. At the point at which the value of the former reaches 0.5 the economic stress level for Estonia is the lowest for the set of countries included in Figure 1 and indeed for the fourteen countries included in our overall analysis. The economic stress score for Sweden at this stage is 1.4 points higher and for Denmark the corresponding gap is 0.8.

8. Conclusions

In this paper we have argued that a failure to take into account that comparisons extend beyond national boundaries will undermine the relative income approach only if they impact on what people come to think of as an acceptable manner of participation in society or lead them to construe society in a wider geographical fashion.

Our analysis shows that variation in each of the key measures relating to household income, material deprivation and economic stress is predominantly within country. Furthermore, while taking into account between countries differences in income and material deprivation can contribute to our understanding of subjective economic stress, within country differences have a great deal more explanatory power. This conclusion relating to restricted reference groups holds true even if one assumes a uniform impact of material deprivation across countries. However, it is strengthened by the fact that the material deprivation interacts with country in a manner that leads to it having more substantial consequence for subjective economic stress in richer rather than poorer countries.

Overall, our conclusions are consistent with those of Delhey and Kohler (2006) that the predominant frame of reference is a national one. The evidence suggests that European reference groups are of significantly less consequence than their national counterparts but that they do influence the manner in which people experience their economic situation. What are the consequences of our findings for the questions relating to the level at which we should construct indicators of poverty and social exclusion and the relative importance of national and EU-level policy responses?

Focusing first on the possibility of having an EU-wide relative income measure in addition to national variants, we are entirely in agreement with Brandolini (2007) that given that EU member countries are engaged in a process of economic and political unification EU wide indices have a significance that goes beyond intellectual curiosity. Thus, in the context of EU-regional policy aimed at promoting economic and social cohesion by bringing convergence in economic development and living standards,[16] they provide basic information relating to the progress of the Union towards greater cohesion. Crucially, as Brandolini (2007) notes, while an EU-wide perspective can be seen as a significant step towards viewing the EU as a social entity, it does not necessarily require a strong sense of European identity. Indeed, Marlier *et al*. (2007: 154) suggest that the use of an EU-wide median income poverty line could be justified not on the basis of the existence of European wide reference groups but precisely as a means of *promoting* the adoption of such standards. It is precisely on these issues of European identification and standards that we have focused.

Marlier *et al*. (2007: 155), in proposing that an EU-wide income threshold could be used to *complement* their set of social inclusion indicators, emphasise that its value would lie in addressing the key issue of social cohesion/convergence across the EU rather than capturing 'absolute poverty'. Given the substantially greater role of within country income variation in accounting for economic stress, substituting an EU-wide line for the national versions would lead us to be substantially less successful in identifying those exposed to economic stress. Our findings in relation to the variable impact of material deprivation across countries provides further support for the conclusion of Marlier *et al*. (2007: 154–5) that an EU-wide approach by failing to take into account differences in 'the significance of goods in social functioning' would miss people in richer countries who are experiencing genuine exclusion from their own society while counting substantial numbers in the poorer societies who are not experiencing such exclusion. A shift from a focus on income to one on material deprivation, or an approach that combines information on both indicators, would do a great deal more to improve our understanding of subjective economic stress than a change in the geographical unit of analysis.

Even though the impact of between country differences is modest, they do contribute to our ability to account for the distribution of subjective economic stress. It is possible that the effects we have observed reflect the fact that notions of appropriate national norms have come to be influenced by perceptions of standards elsewhere. In that

16. See European Commission (2004).

case a successful EU regional policy, by reducing between country differences in living standards, would also contribute to reductions in corresponding differences in levels of subjective economic stress and contribute to increased social cohesion. However, it is possible to justify a European perspective on such grounds without assuming anything about the manner in which people evaluate the justice of cross-national differences or the degree to which they hold national or supranational agencies responsible for their relative deprivation. The fact that people compare themselves with those in other countries and are affected by such comparisons does not require us to posit the existence of a larger European Social Stratification System within which, as Delhey and Kohler (2007: 137) put it, the feeling of being deprived compared to the EU average could lead to increasing demands for redistribution at the EU level.

The available evidence is consistent with the weaker version of the EU-wide reference group hypothesis. In any event, the significance of such effects depends not only on the expectations of those affected by such inequalities, and the demands that they feel justified in making, but also on the extent to which the national and supranational agencies to which such claims are addressed deem them to be legitimate. In the context of EU enlargement, at-risk-of-poverty indices based on national relative income poverty lines are likely to seem increasingly counter intuitive and the demand is likely to increase for social indicators that capture cross-national differences that can serve as a basis for monitoring the success of EU-regional policy in fostering increased social and economic integration. However, at the same time, the distinction between EU regional and social policy is likely to continue to be of particular significance.

As O'Connor (2005: 347) notes, the European Social Model is not a reality in the sense in which we think of the national welfares state since the social dimension relates not to direct provision of services but is designed to alleviate the consequences of economic development. For O'Connor (2005: 346) the ESM 'reflects a tension between aspirations and values expressed at the EU level and subsidiarity' and for Jespen and Serrano Pascual (2006: 5) 'a political project under construction'. In this context, despite the danger of leaving oneself open to being castigated as a 'methodological nationalist'[17] it would seem extremely unwise to attribute an undue degree of policy significance to the relatively modest impact of EU-wide reference groups that our analysis reveal.

17. See Yeates and Irving (2005: 43).

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