Seminar 3: 'Moving beyond tax-benefit and demographic modelling'
Leeds, 2nd July 2009

Happiness
Dimitris Ballas

[EDITED TRANSCRIPT]

Thank you Paul. As you can see my talk is on a rather unconventional variable to measure, especially in a microsimulation context. , I'm going to draw on a part of research ESRC funded research fellowship project aimed at adding a geographical dimension to happiness research in the social sciences. Part of this research aims at building multi level modelling of happiness at different geographical individual households and different geographical levels and one of the components of this project was also to build up a geographical microsimulation model that would estimate small area distribution of happiness.

So I have, so I started to talk assuming that most of the audience are not familiar with happiness variables, in a social science context Of course everyone uses that word very often, we say are you OK, are you happy and there are different linguistic dimensions that affect the way it's measured and compared between countries. It has been an extremely trendy topic in the social sciences over the recent years, but there has been lively debate on whether you can measure it, how you should measure it and so on. So before I describe the microsimulation challenges and the way microsimulation can be used and has been used in this area, I will briefly discuss some of the background, the theory, some theoretical background behind this work and also briefly review evidence on what are the socioeconomic and demographic determinants of happiness, if we have some way we can measure it and discuss the concept of spatial microsimulation. Ben gave a very good introduction of what geographical microsimulation means, but I will briefly talk about that as well. This project is aimed at modelling happiness at the micro level and as I said earlier estimating happiness distributions at small area levels, there are various challenges and problems that I will briefly describe and give you some, I will show you some outputs of happiness at different geographies before concluding on what are the next steps and major challenges, ongoing challenges.

So as I said at the start this topic happiness has been an extremely trendy topic in the social sciences over the last ten, twenty years, there has even been a new journal on happiness launched by Springer in 2000.There are hundreds of papers now on this topic from various perspectives.. But you could argue that the theoretical and philosophical origins of that topic, they go back a long time ago Buddhist philosophers were the first to look at this topic and discuss wellbeing, what is a good life? You could argue however that the origins of western thought in this area date back to the golden age of Greek philosophy when Aristotle suggested for instance that you can't answer the question of whether someone is happy or not in abstraction from society. So there are very different philosophical perspectives that could influence the way you could model happiness I could argue. Buddhist philosophers for instance would say that it's mainly an individual issue of whether you're happy or not, Aristotle would suggest that it is affected by what people around you have from social context. And I would argue in the microsimulation context and the social science context or in a human geography context we are increasingly capable of testing this very important, very profound questions using secondary data and modelling and trying to find out to what extent context matters and so on. And of course despite these efforts there would always be criticism there is this very lively topic, lively debate on happiness definitions and ways in which happiness can or cannot be measured

But despite the difficulties and perhaps because of the difficulties you could argue that microsimulation perhaps is an ideal method to look at happiness because it does vary considerably with an individual, thinks matter in a very different way, context matters, this quote from Amartya Sen highlights the use of if you like marginal, diminishing marginal utility or marginal happiness of, with regards to income, if you gave £10 to a homeless person their happiness would go up quite considerably comparing to giving £10 to Bill Gates, where for Bill Gates it would make no difference.

So these kinds of things you have a microsimulation database, you can simulate happiness if you find the appropriate measure and look at different determinants and simulate every micro unit turn by turn as you would do with more conventional things. And there has been, as I said ongoing work, especially amongst the proponents of research in this

area is Andrew Oswald of the University of Warwick. He and his colleagues have built very impressive statistical models of happiness, looking at different factors. There is also a world database of happiness as some of you may be familiar with

So assuming that we can measure happiness and moving on to how I measured happiness in the context of my project, one of the questions, mostly common, mostly used questions measures of happiness and well being is the GHQ questionnaire asking have you been recently been able to concentrate on whatever you are doing, lost much sleep over worry, found that you are playing a useful part in things, felt capable of making decisions about things, felt constantly under strain, felt you could not overcome your difficulties, have been able to enjoy normal day to day activities, been able to face up to your problems, feeling unhappy or depressed, been losing confidence in yourself, think yourself as a worthless person. And the so called general happiness question, have you been feeling reasonably happy all things considered?

So these kinds of measures, this has been used to screen for depression, a score of the responses to all these 12 questions so that's listed, and increasingly this has been used as a wellbeing measure or ill-being measure and as a general happiness measure. There are a number of more measures of happiness, life satisfaction measures, there are life fulfilment accounts of happiness, looking at Aristotle's definition of whether you fulfil your potential in life. So there is a lot there which makes modelling happiness very complicated but today I will give you an example, a flavour of how this has been attempted, and just to give you a background this is the kind of questions I use systematically in my models.

And just for background this is the responses to this question using the British Household Panel Survey which includes this question, the general happiness question, in 1991 the first year that, the year that the BHPS was launched 13% said more so than usual they were happy, 73% same as usual and about 14% were not very happy in that year. And this is more or less the distribution you get in every year since 91 and you do get similar distributions in other surveys that use that question.

So this is one of the measures, you can see immediately there are various issues there, what does it recently mean? What does reasonably happy mean? And so on. But there is ongoing work looking at correlations between all measures of happiness and other factors that can be perhaps more objectively defined and increasingly there is a debate that also these kinds of measures are correlated with, according to research in neuroscience for instance, there is research validating this kind of measures So that's another very big literature to look at for those who are sceptical. And as I said at the start, there's a number of, hundreds of studies on the factors, demographic, socioeconomic and other factors that affect happiness and wellbeing. There have been hundreds of papers looking at the age and happiness for instance, mostly studies suggest that there is a U shaped relationship between happiness and age. So for instance when you are younger, in your 20s you are at the happiest, people at the 20s, teenagers are very happy, then happiness goes down and it reaches its bottom around 40 I think it's there in most studies, but the good news is that it goes up again and by the time you are in your late 60s it's up to the levels that, on average it's up to the levels that it was when you were a teenager. So again there is a lot of potential theoretical explanation, you may have a lot of aspirations as a teenager, you have a lot of dreams, you think everything will happen and by the time you are 35-40, perhaps you realise that nothing will happen! You are very pessimistic and then you get to used to it, I don't know, there are very many dimensions there for explanatory frameworks. And again microsimulation could be an ideal tool, looking at age was one of the key variables in the previous talk, driving behaviour and age, the same applies to happiness as you can see. There have been also a lot of studies, education, social class, income, mixed evidence there, most of the studies suggest that this things may matter to the degree that they affect self esteem and relationships, personal relationships is one of the most significant variables with regards to happiness and subjective happiness and wellbeing. For instance, people who are married or cohabiting or have a social network are on average consistently happier than people who live on their own. Employment is another significant variable, unemployed people are, in all studies are on average much much less happy. And then as you can see there's lots, hundreds of studies, leisure activities, religion, health another very significant variable, life events and activities. So a lot of variables that have been modelled in microsimulation models affect happiness and there is a lot of work that we can build up on.

Just some background examples again before I move on to the modelling, happiness in different activities, again this could give you ideas on how you could possibly apply perhaps agent based models and happiness in different activities. As you can see according to this research reviewed by Richard Layard in his book "Happiness" the activity that's going to ? happiness to most is having sex, followed by socialising after work, having dinner, relaxing and bottom of the list is morning commute, working, income(?) and childcare. So you can see again this is just a study at the University of Texas

there are several, that's an example, there's an increasing wealth of information that can be used in microsimulation models and agent based models perhaps.

Interaction, again microsimulation and agent based model dimension, the same study looked at people interacting in different activities, interacting with friends contributes most to our happiness according to this study, followed by parents, relatives, spouse and so on, and as you can see most people would rather be alone than interact with their boss on average.

So you can see even for the sceptics of this kind of measures, you could argue that this is plausible, if you get these kinds of results it makes sense, it is objective, it is tricky to measure but it does make sense. So as I said there is hard science evidence as well to support that, Richard Layard's book on happiness has a comprehensive overview of his work, mainly in neuroscience and various experiments. So it is still very controversial but a very exciting area because at the end of the day that's, maximising happiness is what public policy is aimed to do you could argue. So microsimulation models, models of the impacts of public policy at last but at the end of the day it would be useful if we know whether different scenarios make us happy or unhappy and how happiness is distributed amongst population as well as between regions and cities.

So the evidence, happiness, the new science of happiness is that happiness can be measured as a single variable and there is as I say a lot of work, Richard Layard, and so on and in that context you could argue why not use microsimulation to model happiness in order to address a number of areas and questions that have been to some extent addressed by regression models but you could argue that microsimulation is particularly suitable and powerful in addressing these questions, at the start of the talk highlighted that, so again we revisit all the research questions addressed by economists who use regression models, what are the factors and life events that influence different types of individuals' happiness? Is the source of happiness or happiness purely personal or do contextual factors matter? That is perhaps something that could be addressed best with a combination of microsimulation agent based models given that you have a context there. Also I think this question is very important when you build a geographical microsimulation model because if context matters, if we find out that context matters are given a geographical scale then it becomes more difficult to use census data as the basis to re-weight, allow the population at a smaller area level because you assume that individual variables matter. Whereas if there is things happening at a smaller geographical level that you don't have data on, that would affect your microsimulation output. I will give some examples of that in a few moments' time.

And another fundamental question that you can ask as a social scientist and myself as a geographer is can we talk about happy people or happy places? Is it individual characteristics that make us happy, is it household characteristics, is it the neighbourhood, is it the city? What is it? And probably the answer is a bit of both but again using these kind of modelling methods you can try and disentangle these issues and look to what extent happiness can be attributed to individual micro units, household micro units and so on.

There is increasingly a lot of data as I indicated earlier on, the world happiness database, in Britain we have one amongst the surveys that measure the happiness, the BHPS, I did describe the GHQ question. This is what you get in terms of geography from the BHPS in the first year the general happiness measures suggest that London has the highest percentage of people who more than usual happy, on the bottom of this list is Wales, also people in Newcastle tended to be happier in 1991 for some reason. The differences of course are very small but you can see there is some variation, there is data there at a geographical scale that can be used to produce maps of happiness. However that's the smallest geographical area that you get happiness data for and the BHPS has been conducted at a district level, at a regional level Govt office region, it was classed around different districts, so you have information at this level as well but not for all districts in Britain. But even then there's not enough there to analyse, if you were interested in the geographical distribution of happiness, there is not really a lot of information there. And that applies to most countries around the world, it makes sense I guess given the controversy you wouldn't want to have a happiness question in a census if you don't know how, if you haven't reached the conclusion of how you should measure it. So there will be for some time a lack of data out there at a small area level, but there is increasingly because of interest of social scientists and also public interest, media attention in this area, there is increasingly survey data at a national level across the world that give us a lot of insights into how we can measure happiness, and this can be for a start using non geographical microsimulation model and as I would outline in the remainder of this talk and also in the geographical microsimulation model you can combine it with census data in order to try and estimate geographical distributions of happiness.

Just before I do that, Ben Anderson did give a very good definition of geographical microsimulation in the first talk of this session, just very briefly I'd like to revisit what this means with regards to the models I've been building. This is an extract of the BHPS, a microdataset that you have individuals within households, so the first individual is 91 years old, female, retired with limiting health problems, health problems are limiting day to day activities. The second and third roles are individuals living in the same household, one is 28 years old, the other one is 26 years old. So this kind of microdataset is extremely useful as we all know for microsimulation modelling, but we don't have this kind of detail at the small area level. One of the questions there is happiness, the happiness measures I described earlier, life satisfaction and so on, we don't have that information at a small area level. On the other hand we have information from the census or a simplified version of the census, you get information on how many people are married couple households, single person households. Others, In this hypothetical example we have 100 households in area 1, we know that 60 of them are married couple households, 20 are single person, 20 are other. We have a different table from the census that there's something about employed, 80 have a head of household that is employed, 10 are unemployed, 10 are other, and so on and so forth. You can't get in most cases you can't build up a vector of all the information there, even for the variables that are measured by the census you can't get from publicly available data the full array of how many people are married and at the same unemployed and own their house in order to preserve confidentiality. On top of this we don't have information on income, we don't have information on happiness. But we know that relationships are very important for happiness, we know that unemployment is very important for happiness, so in the same way that in the first paper in today's seminar so how income can be estimated, you can argue the same could apply for happiness, of course happiness is something even more tricky to measure even without taking geography into account, but you can make a start by looking at the things that matter according to past work, build on that work and model it using microsimulation at different levels.

In terms of happiness data that we have, in order to address research questions that I listed earlier on, we would ideally want to have information on all these scales. We have the World Happiness Database, we have national datasets, not much in the regions, districts, but ideally we'd like to have happiness data from individual to national level to know, to try and disentangle to what extent place matters and events like life events, getting married, graduating from university and so on affect individual happiness and the happiness around us, but there are national events like England winning the World Cup for instance, that would affect positively the happiness of English people, and it may affect the negatively the happiness of Scottish people and Wales probably would be indifferent! So there are various events that can be modelled at different levels, households, individual, and we have some data so far individual, household data from the BHPS, as I said district level, we have a district level variable on the BHPS and regional level. But ideally in order to explore these very profound questions about context further we'd like to have information on all levels and look at interactions and ideally in the longer term build agent based models driven by microsimulation to build comprehensive models of happiness.

But with what we have at the moment, you could argue that there is a lot of very good work in the geographical microsimulation area that combines data like the samples of anonymised records, the BHPS with small area data, I gave a very simple example earlier on. So the idea behind this work was to perform this kind of modelling to estimate happiness and wellbeing, but before doing that you need to perform some modelling regression, and in this, on this occasion myself and my colleague Mark Tranmer from the University of Manchester also employed multi level models to look at the extent to which happiness can be attributed to different levels for which we have information so individual households, districts and region. And as I said there has been a lot of evidence, a lot of empirical work by economists that we can benefit from when building a microsimulation model, multi level modelling techniques can enhance this evidence and help us make a decision on which kind of variables we use as small area constraints in geographical microsimulation model.

So in the context of this project the first step was to look at, build regression models and also multi level models to look at the things that matter in the BHPS and a lot of this corroborated past research by economists. Health is extremely important so if you build a microsimulation model you have to take that into account. Employment status as I pointed out in nearly all studies suggest that it's extremely significant. And you can see there are a lot of variables there that are typically in service, anything the census, some of them that enable us to combine a national survey with small area data to build estimates of happiness at the small area level.

So that's different models, multi level models and different determinants of happiness that aid the decision on which kinds of census tables you should use as constraints in a geographical microsimulation model.

One of the interesting aspects of this modelling work that was conducted before building a microsimulation model is the importance of context with regards to some variables like unemployment which is something that is going (25.35) to be very tricky to address in a microsimulation model. So in this modelling work that I briefly described here, unemployment status was combined with unemployment rate at a district level and it was, the model suggests that there is a significant impact of this interaction variable, so people who were unemployed are on average much much happier in an area where nearly everyone else is unemployed, compared to someone who is unemployed in an area that everyone else has a job. So this kind of relationship needs to be considered when building a microsimulation model and I'm trying to bear that mind when presenting microsimulation outputs, I'm still a bit sceptical about it and I need to see to what extent these contextual influences may affect the value of geographical microsimulation models.

On the other hand, even though the model suggested that variables like unemployment have, are very much affected by context, overall the model suggested that most of the variation in happiness can be explained by individual and household level variables and geography at a district level was not very important. So again that's something that could be used in favour of building a microsimulation model if we can say that individual characteristics, household characteristics matter, then perhaps using census variables and combining them to infer individual level distributions at a small area level is a valid approach.

So in this context and bearing all that in mind and with a lot of sensitivity analysis still to do on, especially given how tricky it is to measure this kind of variable, a series of microsimulation models, geographical models, have been developed. I would show you here in the next few minutes some of the outputs of geographical microsimulation that build on work presented in the SimBritain project developed a few years ago, that re-weighted, using a deterministically weighting approach, re-weighted the BHPS to fit small area level distributions and then dynamically simulated this population into the future.

Just very briefly this is revisiting the example I gave here, how does this work, you know hypothetical sample of individuals here, five individuals just for simplicity's sake we have gender, sex and age group, just 2 age groups and the weight they get from the survey and this is how you would tabulate this sample of individuals. On the other hand you have hypothetical census data for a small area which you get different numbers, different tables for a number of cross tabulations. So the idea is conceptually very simple, you re-weight the sample of individuals that you have in the BHPS to fit in the census data for a table of your choice by applying the appropriate ways to do that. And then if you do the same thing again for a next table, so you have, in this example you have marital status and age, you could employment, you could have number of cars and so on, tenure status. This process can be repeated, you can re-weight the survey data set several times across different tables and in the end the output would converge, the weights would converge to all the census tables that you have chosen. This can be also described as multi dimensional alternative proportional fitting and it has been used as a relatively new method and again there is ongoing work there are ways of doing this. This is an example of how it has been done and I'll show you an example of what kind of happiness distributions you get if you apply that method.

So this has been implemented on a number of constraints in, using the Census, and it was also projected forward using population projection methods to estimate small area data in 2011 and 2021 and then this re-weighting exercise was carried out to match (30.00) the census distributions.

The rationale for choosing these constraint tables was that they're consistently measured across time since 71, 81, 91 so they can be used to project small area data into the future. And quite a bit of that information is associated with happiness and wellbeing on the basis of the multi level work, we can conclude that on the basis of multi level work that I briefly described, and also empirical evidence presented by economists.

And if you combine these data sets you can simulate the geography of happiness, these are some examples for Scotland, happy more than usual in 91, 2001, 2011 and 2021, this is assuming that Britain is polarising, that the 70s and 80s and 90s repeat in the next 20 years and similar preliminary results have been produced for Wales here and I don't know how, I haven't looked at whether this estimated distribution correlates with other secondary data.

These are just some preliminary results to show what may be possible having the caveat of controversy of how happiness is measured and should be measured and how you can model it at the smaller area level. Here's an example of a parliamentary constituency in London, some of you may be more familiar with that, I don't know if it makes sense as

happy more than usual in 1991 using this model in London, Kensington and Chelsea has the happiest, the highest number of happiest people, followed by the cities of London and Westminster. And these are some maps of constraints that drive the simulation, so affluent households in 91. So you can see there is some geographical pattern. You can perform a lot of sensitivity analysis with a number of the constraint variables that have been used and this is an example of how you can scrutinise this kind of analyse, poor households in 91 and much less unhappy, much less happy than usual in 91.

So these are, if we assume that census variables are very important in explaining happiness and wellbeing, then it is possible to build a geographical microsimulation model that estimates happiness at the smaller area level, at the output area level, ward level, parliamentary constituencies, as this example shows.

However, we have to be careful when we, when considering context. So for instance if we have number of cars, this is one of the variables used in this microsimulation model, if on average having a car is associated with higher happiness, that's not necessarily true in a geographical context, people in the centre of London perhaps are not very happy if they have a car and they can't find parking, if they are affected by congestion. So that's just one example of how this can go horribly wrong. So I'm just being self critical here, this is speculative of how we can use geographical microsimulation to estimate these kind of variables, but I am still sceptical about the validation of this measure, there is a lot of work needed to validate this and also look at the differences within places and see to what extent they are statistically different and whether we can use census variables with ignoring context. This is also something that perhaps can be addressed with the use of agent based modelling in the future.

So this is just a flavour of a topic that is perhaps a new topic in the microsimulation area. Some attempts to build models that enhance the analysis conducted by economists, mainly economists and social scientists in the last few years, and also demonstrating hopefully the potential that geographers may have in this area to offer advice in this area, to offer expertise that could enable the estimation of happiness and wellbeing measures at smaller area levels. Once this is done we can of course look at other factors that may affect, more geographical factors that will affect happiness, living next to the sea and how many pubs there are around, I don't know, there are a number of, there's a huge potential there to enhance this analysis and integrate it with the number of existing microsimulation and geographical microsimulation models that currently exist.

One of the major challenges is the context, the degree to which context and individual place variable interactions may affect the microsimulation results, how do you control for the fact that unemployment has a strong contextual impact as was outlined in the multi level model. And this is ongoing work and I'm hoping to further address these issues and explore them further. And also the longitudinal analysis aspect is something else that I'm currently pursuing as well as the environmental variables, doing at the moment some collaborative work with colleagues in the forestry programme in the national ?? systems analysis who are interested in the climate data and physical geographical features with how does this affect happiness and wellbeing, wilderness and so on.

So I would like to thank you for your attention and stop here and welcome any questions or comments that would help improve this. Thank you.

QUESTIONS

Male question 1 – I'm slightly confused about this because you say you looked at happiness and you found essentially only individual level data apart from this, you know you get loads of loads of coefficients, only one was a non individual level ? and you say it's essentially zero, it's almost exactly zero I think was the phrase you used. You then said that the microsimulation model would be an insight into the process and to, the relationship between happiness as an individual concept and happiness as a place, the ? model, and I just want, the microsimulation model against the ? model, all you do is you put the ? model into the microsimulation model and you don't add anything by it, you can't get any insight into it, you obscure the thing because you overlay it with some other technology which people don't even understand, you cannot, you can't get really out of the model about explanation which you haven't put into the model. You mentioned for example cars and ? well the statistical model which would look at that ??? effect on that ??? model and you would recover, that is a surreal effect because you put in the model and you get what you put into the model back, if you don't something's wrong. So what I'm saying there's absolutely no advantage in trying to get an insight by you just am I supposed to ??, you can only get an insight by a statistical model and anything else is only going to obscure the insight

given by this model. So say why are you therefore, there may be other reasons for microsimulation models but insight is not one of them.

Dimitris Ballas – OK I may be, I may have expressed this in obviously a slightly confusing way. What I was trying to say is that if something like cars, number of cars matters in terms of context, then this perhaps shouldn't be included as a constraint in a microsimulation model. Microsimulation can be very useful in estimating happiness at the small area level if we assume that it is associated with a number of individual variables that, and household variables that are measured by a census. But what I was trying to say is that if context matters with regards to some variables like cars, then we should be careful and not include these variables in the model, or not include them in a city like London, it might not matter that much in another area, but you have to have a, take that, this needs to be taken into account. And the only way that you can find out about the contextual influences as you very correctly say is using statistical models like multi level models. So the idea behind this is that use multi level models and regression models to see what kind of variables have a contextual impact and help decide which variables can be used, if any, in a geographical microsimulation model to estimate happiness at the small area level.

Male question 2 – One variable that you might think of for at least one table for distribution, for validation purposes would be suicides.

Dimitris Ballas – That's yeah a very good point yeah.

Male question 2 – You know at the end there you started talking about environmental variables, I think there's a guy in Birmingham called David Addison who has done some work on things like ? and weather conditions and stuff like that, what effect that has, ?? data issues. Of course what you (40.04) find in an international context is all rather confusing because the people around the Mediterranean are much less happy than the Scandinavians who are miserable. ? many conditions, but ? different say political context which in another set of omitted variables that may be worth …

Dimitris Ballas – Yeah and cultural issues as well, when you look at, between countries, comparisons is one of the quotes that is used in support of this kind of criticism is that when Charles de Gaulle was asked if he were happy back in the 60s he said what do you think I am, stupid? So different cultures, different countries have different tendencies to say whether they're happy or not and that needs to be … I don't know to what extent also that applies within Britain, whether Scottish people are more or less likely to say they're happy due to a cultural influence, something against, or Welsh people or I don't know, or it could be a regional variation as well. So that adds to the complexity.

Male question 3 – You had region in your ? model didn't you?

Dimitris Ballas – Yes region and district.

Male question 3 – And did you, I didn't quite understand how you'd done the modelling, was there interaction between the levels, so as you said was it suggested that people with more cars in London controlling for everything else, were less happy?

Dimitris Ballas – No, cars in this model was not a significant variable in multi level model and even if …

Male question 3 - ???

Dimitris Ballas – The interaction was, the only interaction that was significant was being unemployed in an area of multiple unemployment, ? of unemployment by district level unemployment. Even if we had that kind of evidence as you suggest, it would still be very tricky because it's a district of London, I guess it does matter where you are in London. And the sample is very small to allow you to, so I wouldn't say that this is conclusive, it's just an example of how perhaps it can be done

Male question 3 - ?? panel data that come out, that that should give you a sample size big enough …

Dimitris Ballas – Hopefully yes.

Male question 5 – You know you were talking about the variable categories for happiness, so like happier than 12 months ago or something like that, what, could you dig under the bonnet for the same as usual variable category because same as usual does that mean you're averagely happy and the same as like 12 months before, or the same as usual meaning you're miserable? Because that was about 80% of the counts and I'm just questioning what, hidden under the bonnet of that variable category is quite, well argue in context or whatever, that's quite a big part of your sample. So what does that mean?

Dimitris Ballas – Yeah I guess I don't have the exact answer, this is a very good criticism, the only evidence, I think there is evidence in support of using that measure in that it is correlated with a number of people who are more than usual happy are also the people who say that they have high life satisfaction and they have, they would have good health … And losing, having no confidence in yourself and feeling like a worthless person, I guess that's pretty, it is tricky, this, as usual what does this mean? That's one of the measures, it was the only proper measure in 1991, they have added more measures of well being in the BHPS since then, but this kind of measure has been used quite a lot in this field and it has been suggested that this, as usual, the way the question has been phrased (45.00), does not have a large impact

Male question 5 – You used the Aristotle at the beginning, just to sound a bit poncey, some of the stuff have wrote(?) more 20th century, there's an argument that it's not just contextually based happiness, but it's more along the lines of mood, so you're living in Liverpool in the early 80s, the general mood would be well fairly poor, so I don't know how you'd create a kind of a mood baseline for spatially based mood baseline, but I think that might be more contextually sitting because then you could have levels of happiness within regions. So for example I don't know, if you were living in a socioeconomically deprived area compared to a higher socio group, you know affluent area and you had baselines between the two, I think that might be helpful, but I think that's getting ???

Dimitris Ballas – Yeah I guess that's also context though, I mean if you have information on the mood of the whole city and the mood of different areas you can see … There has been work on social networking and how happy are people on the basis of how happy are their friends and social networks? So this could be utilised in a microsimulation model

Male question 5 – The Times runs like top 100 employers and stuff like that, you could find a kind of league table score for where you were or the types of industry, I suppose that would help.

Dimitris Ballas – Yeah, yeah, definitely, thanks.

Female question 1 – I just wanted to come back on this whether you were more happy than usual, because it worries me that, because none of the variables that you are trying to explain it by measure anything about what's happening in your life that is different from usual which surely is what is going to affect whether you're happier than usual. And related to that, I mean I haven't understood how you projected this into the future, but I'm assuming that you have projections of variables, some of which you know are reasonable, age and gender and you may have reasonable projections by some sort of geographical area. But some of the other ones, it must be very difficult.

Dimitris Ballas – It is, yeah, it's extremely difficult and as I said this assumes that the 80s and the 70s project into, it's not, it's wrong, it's not going to be like that but it's just an imaginative geography of how, no not just happiness but all the variables like how wealth would be polarised. It is, it is not going to be as polarised as that but it is going, the trends are for geographical polarisation across Britain, so the areas that are wealthy were wealthy in 91, they had 50% wealthy in 2001, they have 70% wealthy people

Female question 1 – But you're not ? for example relative ? in most of the literature on happiness it says you know it's a relative position that matters. And if you were capturing some changes in the distribution, the geographical distribution of ?? then that would be …

Dimitris Ballas – Well the wealth is based on the social class …

Female question 1 – And is that, are your projections of social class introducing some variation over time, you know geographic distribution?

Dimitris Ballas – They do because they're driven by 1971, 81, 91 census of population, so these trends are projected into …

Female question 1 – There's a trend?

Dimitris Ballas – Yes there's a trend

Female question 1 – So would you be able to tell whether your model is saying that an area that has, in an area where social, the average social class or whatever has gone up, people are, those people who have got above average level of social class are now not so happy because relatively they're not ???

Dimitris Ballas – No the microsimulation model would not be able to do that

Female question 1 – But that's the sort of thing that might, it's not insight into explanations but is an insight into what might be out there

Male question 6 – Just following up on that, Andrew Oswald has done quite a bit of stuff on dynamics so that if people say are widowed then their, they have a U shape in happiness over the next few years. For your kind of model for work essentially you'd have to say that the proportion of people who are widowed is a relative constant, otherwise …

Dimitris Ballas – Absolutely yeah.

Male question 6 - … the distribution would change by the time you go to your projected years.

Dimitris Ballas – There's an awful lot more complex that I can go in the adaptation of two different things, like unemployment is another thing that has been looked at and it's not something you get used to as quickly as other things, but then on the positive side if you have a car that you maybe had before a month or a year but then your happiness is not back to what it was before. So there's a lot of literature that again can be utilised, this is just a flavour, it's an experiment if you like of what can be done. But all these points are useful in building that.

[END OF RECORDING]