

# Obesity: The Welfare Regime Hypothesis

*A conference held in Oxford in November 2009, with financial support from the British Academy, considered the hypothesis that obesity rates are influenced by social welfare regimes, and have risen more in market-liberal than in social-democratic societies. Professor Avner Offer FBA, Dr Rachel Pechey and Professor Stanley Ulijaszek explain the hypothesis, and report some provisional findings from research conducted since the conference.*

Body weights have risen substantially in affluent societies in the last three decades. The internationally agreed measure for weight is the Body Mass Index (BMI = weight kg/height m<sup>2</sup>). By this measure, nearly two-thirds of the United States population are 'overweight' (BMI>25) and almost one-third are 'obese' (BMI>30). Obesity is bad for health, is seen as unattractive, and is known to be stigmatising. The research literature on obesity is enormous and covers many disciplines, but there is little agreement about its causes. A recent British government project (*Foresight: Tackling Obesities, Future Choices*) has produced causal diagrams of staggering complexity, but no single factor has much explanatory power. The volume of publication is inversely related to its efficacy: if rising weight is a problem, there is no reliable knowledge on how to reverse it.

## The hypothesis

A new and quite simple hypothesis is beginning to emerge. The rise in body weight is associated with the attributes of welfare regimes. Since the 1980s, there has been an uneven movement in many countries away from social-democratic (or in the USA, 'New Deal') policy norms, towards more market-liberal policies. This matches the timing of the emergence of obesity as a mass social phenomenon. In its simplest form, the hypothesis is that more uncertain prospects and unequal outcomes have led to increasing stress, and that stress is conducive to weight gain. At the same time, food availability has also risen as its provision is increasingly marketised; and both the transition from manufacturing occupations to services and the increased motorisation of everyday life have reduced the opportunities for physical activity. Preliminary data analysis suggests that the most meaningful distinction in weight levels is between English-speaking market-liberal societies, and the rest.

The 'welfare regime hypothesis' is consistent with several different sets of observations. The stylised facts are that the poor suffer more from overweight than the better off, that weight has risen over time, and that obesity is about 50 per cent higher in market-liberal countries. The average of seven

market-liberal countries (extended to include Israel) c. 2000 was 23 per cent of the adult population obese, while thirteen European countries averaged an adult obesity level of only 15 per cent.

We are currently undertaking a study of the welfare regime hypothesis, funded by the BUPA Foundation. The initial step was to ascertain the current state of knowledge, for which the British Academy supported an international conference at Oxford on 27–28 November 2009. The conference brought together a dozen expert speakers, and attracted more than 80 participants from Britain and overseas, many of them renowned experts in their own right.

## Possible mechanisms linking obesity with welfare regimes

Three mechanisms are proposed for the link between obesity and welfare regimes. One is the 'food shock' interpretation. The cost of food has fallen sharply as a percentage of income. Supermarkets and fast food outlets have made precooked food more easily available. Producers have incorporated appetising ingredients of high energy density into processed foods, particularly sugar and fat, seasoned by salt. That still does not explain why overeaters fail to stop.



Figure 1. Pedestrians and cyclists in Trollhaettan, Sweden. What is it about Scandinavian societies that cause their citizens to feature so low in obesity rankings? Photo: Sven Nackstrand/AFP/Getty Images.

The second mechanism, first proposed by Trent Smith (Washington State University), proceeds from the observation that animals facing food uncertainty in captivity and in the wild tend to gain weight. The hypothesis is that market societies create more uncertain environments, especially for people of lower socio-economic status.

The third mechanism – associated with Professors Richard Wilkinson and Kate Pickett (Nottingham and York) – is that the stress arises from inequality. The mechanism is the stress of subordination.

**November 2009 conference**

A range of perspectives were presented at the conference. Professor John Komlos (Munich) outlined the rise of obesity, and introduced a rich American dataset. He showed that the onset of recent obesity was first foreshadowed in the 1920s. Professor Thorkild Sorensen (Copenhagen) described uniquely rich individual cross-referenced health records in Denmark, and was also able to detect early anticipations of the obesity increase. He stressed the role of the maternal environment. Professor Peter Whybrow (UCLA) pointed to a link between the sleep deficits incurred in consumer societies due to competitive time pressure, and the rise in body weight. Professor Adam Drewnowski (University of Washington, Seattle), showed a strong link between socio-economic status

and body weight at the level of individual households, using incomes, rentals, and property values in the Seattle area. Professor Robin Dunbar FBA (Oxford) demonstrated the link between the larger brain and the efficient gut required to keep it fed. Prehistoric fertility figurines suggested a long history for obesity. Dr James Stubbs described links between appetite, stress and energy balance, while Georgina Cairns discussed relationships between obesity and food marketing.

In a keynote lecture, Professor Trent Smith elaborated on the stress mechanisms that underlie the welfare regime hypothesis. ‘Time inconsistency’ describes how an inferior choice (overeating) is preferred over one that is objectively better (stable body weight), but it does not explain why overeating is so attractive in the first place. Professor Smith’s approach provided the missing link: overeating appears to be driven by stress. His approach links it to a ‘wired’ response to uncertainty, which is widely observed in animal behaviour.

The welfare regime hypothesis itself was presented by the authors of this paper. They also suggested that (following the trajectories of previous harmful innovations) the growth of obesity might moderate of its own accord, due to social and personal learning. Such moderation is already being observed. Professors Wilkinson (Nottingham) and

Pickett (York) provided compelling statistics on the link between inequality and obesity, and Professor Sir Michael Marmot FBA (University College London) spoke about the stresses of inequality.

It is our intention to bring the contributions together in a book to be published by the British Academy in 2011.

**Further research**

Insecurity stress and inequality stress mechanisms are not mutually exclusive, and indeed they are complementary to the ‘food shock’ hypothesis. In the conference presentations, the evidence seemed to tilt towards inequality as the main mechanism. Most of the work presented at the conference represented research already completed. For the welfare regime study, however, the conference was only the initial step. Our research design proceeds in two stages. The first is a pooling of the results of surveys, at country and region level, in different countries within a single decade. In the second stage, we intend to investigate individual-level data from a smaller number of countries over a longer period of time.

**Initial testing using country-level survey evidence**

In the time since the conference, we have had the opportunity to analyse some of the stock of obesity surveys. We studied 75 such surveys, all of them dating from the period between 1994 and 2004, in 11 different countries, including the four largest western English-speaking ones. Some outline results are presented in Figures 2 and 3.

The statistic to be explained is the percentage level of obesity in the surveyed population, which ranged from 6 per cent (self-reported) in one Norwegian survey, to 32 per cent (measured) in an American one. The analysis tests for the impact of levels of security and equality. These levels were derived from indices compiled by Lars Osberg (Dalhousie University, Canada), based on the Luxemburg individual-level household surveys. They are scaled 1 to 100 (the same as obesity percentage), and their amplitudes from top to bottom are similar to each other. Other

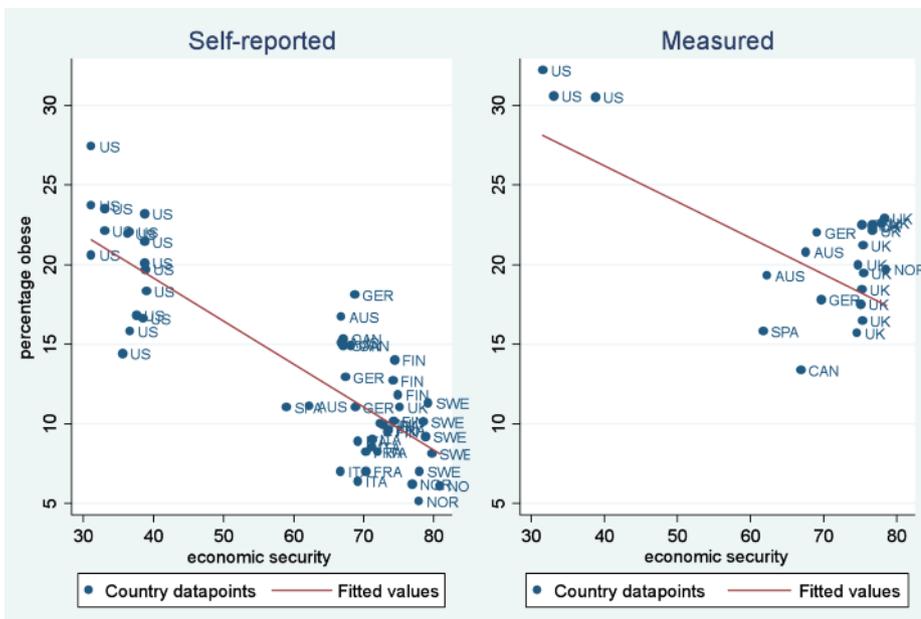


Figure 2. Obesity and economic security.

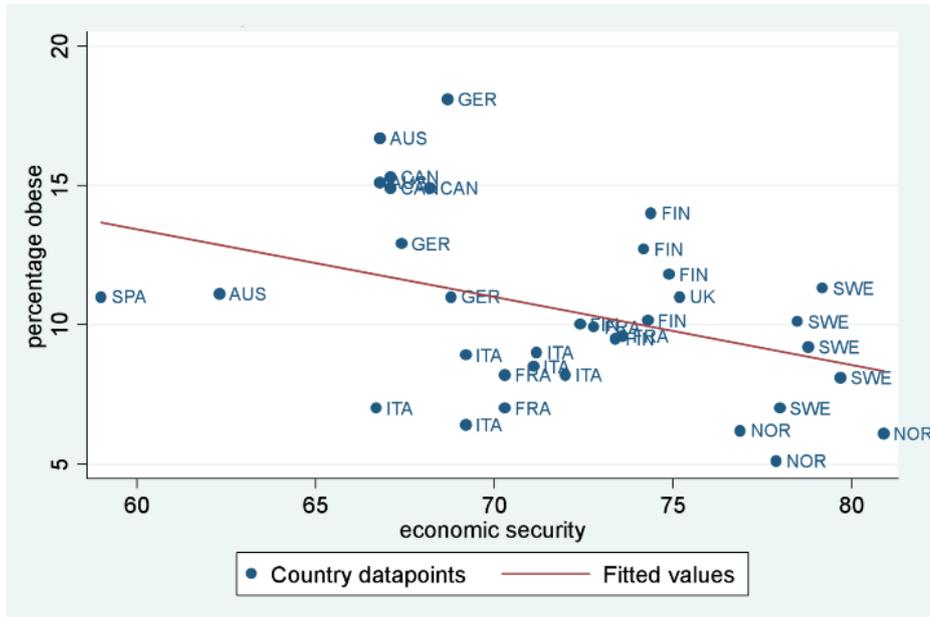


Figure 3. Self-reported obesity and economic security, excluding USA.

variables control for 'market-liberal society' (USA, UK, Canada, Australia), for 'time', and for 'self-reporting'. The other countries are Finland, France, Germany, Italy, Norway, Spain, and Sweden. We ran the analysis separately for total obesity; for men; for women; and without the United States, which is an outlier. A food price variable (based on the Economist's 'Big Mac' price index) was found to be interchangeable with time in large measure.

### Preliminary results

Economic insecurity and 'market-liberal' welfare regime are the two strongest determinants of the level of obesity. The gap between the survey with the lowest level of security and the one with the highest level is 26 percentage points of obesity prevalence. Of this, economic insecurity would explain about 12 percentage points, and market liberalism another 5, i.e. together about two-thirds. Economic equality, on the other hand, has only one-third of the effect of security on total obesity, and the coefficient is positive (i.e. the wrong sign for a determinant of obesity). With a maximum of obesity prevalence at 32 percent, and keeping other things constant, self-reporting reduced obesity levels by 7 percentage points. Time might be thought of as the impact of the food supply shock, and each year added about 0.5 percentage points, or about 5 percentage points over 10 years.

When the analysis is run separately for men and women, economic equality becomes statistically insignificant, and the effect of market liberalism is greatly reduced, but economic security remains robust and strong. On the face of it therefore, insecurity has a powerful effect on obesity. Combined with independent effects of market-liberal regimes, it lends support to the insecurity version of the welfare regime hypothesis. The effect is strong, with about 75 per cent of the total variance being explained in the analysis.

These results are preliminary, and other specifications need to be tested. Figure 2 gives some sense of the distribution. It plots economic security against obesity levels. The United States is a strong outlier. Indeed, when it is removed from the sample, security and equality drop out as significant variables, but the 'market-liberal' variable remains strong and significant. However, when the non-US sample is restricted to self-reported data, the relation between economic insecurity, market liberalism, and obesity is restored (Figure 3).

Another test for the hypothesis is whether not only levels of obesity are higher in competitive market-liberal societies, but rates of increase are higher as well. We have just seen new data which appear to confirm this possibility.

The next stage is to move from country-level surveys, to individual-level ones. This will

bring much more data into play, and cover longer periods of time. To begin with, our intention is to investigate US, UK and Danish individual-level weight data starting in the mid-1970s. This will provide a more powerful, though still not decisive, test. We have identified several other countries for which cross-sectional individual-level data exist over long periods of time. We are now working to gain access to this information and plan to add it to our dataset.

### Implications

The study is still in its early days. The implications, however, are large. If the hypothesis is confirmed, then it has a bearing on larger policy norms, and especially on the benefits of free markets versus more regulated ones. It suggests that the economic benefits of flexible and open markets, such as they are, may be offset by costs to personal and public health which are rarely taken into account. The controlled market economies in the sample all support affluent societies. They also appear to perform better on this important measure of public health.

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The conference, held on 27–28 November 2009 and organised by the Unit for Biocultural Variation and Obesity at the University of Oxford, was assisted financially through the British Academy's Conference Support scheme.

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