



ELSEVIER

Contents lists available at ScienceDirect

Economics and Human Biology

journal homepage: <http://www.elsevier.com/locate/ehb>

The income body weight gradients in the developing economy of China



Darjusch Tafreschi

Erasmus School of Economics, Erasmus University, Rotterdam, The Netherlands

ARTICLE INFO

Article history:

Received 3 September 2012

Received in revised form 12 February 2014

Accepted 13 February 2014

Available online 6 March 2014

JEL codes:

I14

I15

Keywords:

BMI

Overweight

Income gradient

Economic development

China

CHNS

ABSTRACT

Existing theories predict the income gradient of individual body weight to change sign from positive to negative in process of economic development. However, there are only few empirical studies which test this hypothesis. This paper adds to the literature on that topic by investigating the case of China. Using individual and community data from 1991 to 2009 waves of the China Health and Nutrition Survey regression analyses suggest that after controlling for important confounding factors (1) higher income is positively related to future growth of individuals' BMI in less developed areas (i.e. BMI growth is 0.7–1.5 percentage points higher when comparing the richest with the poorest individuals), but negatively related to BMI growth in more developed areas (i.e. BMI growth is 0.8–1.6 percentage points lower for the richest individuals), and (2) that concentrations of overweight are “trickling down” to lower income ranks as regions become more developed. Moreover, the reversal of the income gradient appears to happen at earlier stages of development for females.

© 2014 Elsevier B.V. All rights reserved.

1. Introduction

Overweight induced by excess body fat poses a serious threat to individual health as it increases the risk of non-communicable diseases such as cardiovascular disease, diabetes, hypertension, musculoskeletal disorders (especially osteoarthritis) and various cancers (endometrial, breast and colon). On this account, it is not surprising that the rise of overweight in OECD countries throughout the last decades and its effects on public health are intensively studied subjects in the recent health economics literature (see e.g. Cutler et al. (2003), Rosin (2008), Philipson and Posner (2008), Bleich et al. (2008)). Determinants identified are technological progress (and directly related more sedentary lifestyles) (Lakdawalla et al. (2005)), changes in food prices (Schroeter et al. (2008)), increased fast-food availability and cigarette taxation (Chou et al.

(2004), Currie et al. (2010)), sugar sweetened beverages (Pereira (2006)) and bounded individual knowledge about the potential health consequences (Kamhon and Tsai (2004)) of overweight. On the contrary, rising weight levels in developing countries have long been neglected by economists. The World Health Organization (WHO) projects that by 2015 approximately 2.3 billion adults worldwide will be overweight and more than 700 million will be obese – a significant share is contributed by individuals from developing countries. Sahn (2009) strengthens this point by showing that there are few developing countries which were not affected by rising weight levels over the last decades.

While epidemiologists like Popkin (1994, 1998, 1999) have clearly spotted the ongoing “nutritional transition” in the developing world already some time ago, economic research (traditionally more concerned about the consequences of under-nutrition) investigating the phenomenon of growing weight levels in low-income countries is rather recent. Piecewise evidence on the main determinants has

E-mail address: tafreschi@ese.eur.nl.

been delivered by some early studies (Galal (2002), Fernald (2007), Case and Menendez (2009), Du et al. (2004)). In a nutshell, these papers commonly find rising levels of overweight for the majority of developing countries, especially affected are females and more wealthy household. Somewhat surprising, papers by Doak and Popkin (2008) and Sahn and Younger (2009) show that there is a growing number of households in which underweight and overweight individuals coexist. The sneaky nature of the epidemic has prompted policy makers to shelve the issue for a long time. However, recently there has been a notable increase in the awareness for the urgent need of counter measures (see Gortmaker et al. (2011)).

A striking difference between the general patterns of overweight in developed and developing societies has first been pointed out in the seminal meta-study by Sobal and Stunkard (1989) – and has later been updated and reconfirmed by Monteiro et al. (2004b): while overweight is mainly concentrated among poorer individuals in developed countries (i.e. there is a negative correlation between income level body-weight) (see Ball and Crawford (2005)), the opposite is true for developing countries where overweight is relatively more widespread among more wealthy individuals (i.e. there is a positive correlation between income level and body-weight). Empirical evidence for the latter can be found for the country specific cases of Mexico (Fernald (2007)), Egypt (Asfaw (2007)) and China (Popkin (1999)). It follows that a shift of overweight concentration from the rich to the poor should only be observed if there is a non-monotonic relationship between economic development, income and body weight.

Philipson and Posner (2003) and Lakdawalla and Philipson (2009) modeled the implied inverted U-shape in a dynamic framework of weight management – which is used as the workhorse model in a large part of the obesity literature until present. Explicitly accentuating the reversal hypothesis, one of its major implications is that *in poor or early societies the more obese are relatively wealthier, but in wealthy, more modern societies the more obese are relatively poorer*. The underlying dynamics are simply described. Starting from a situation where overweight is mainly a problem of higher income classes, with economic development it trickles down to lower income classes. Individual body-weight is determined by the ratio of energy intake to energy expenditure and an increase (decrease) of this ratio, ceteris paribus, will lead to an increase (decrease) in weight. Economic development decreases caloric cost through a reduction in food prices and increases the cost of caloric expenditure through the more sedentary nature of jobs. The role of additional income, is, however, ambiguous. In less developed societies, where most individuals work in physically demanding occupations, food is scarce and body weight is typically low, one would expect individuals to use additional income to increase the amount of calories consumed (among other things) – and thereby gain weight, ceteris paribus. Here, overweight is only “affordable” to relatively richer individuals who have wider access to food and are more likely to work in physically less demanding jobs, respectively. There are, however, situations where one might expect additional income to be associated with a reduction in weight. For example, Schroeter et al. (2008)

argues that a reduction should be observed for heavier individuals who use additional income to substitute a high-caloric diet by a low-caloric one. In this case, calories (e.g. from staple foods) would be a quasi-inferior good and more income would lead to lower (or negative) weight growth (Jensen and Miller (2008)). A similar argument holds with respect to energy expenditure where one might imagine a latent demand for thinness that leads to increasing levels of voluntary and, at times, costly activities (e.g. sports) once a certain income level is achieved. Such behaviours are more likely observed in developed societies where the combination of abundant food availability and mostly sedentary jobs gives rise to concerns of weight control in large parts of the population, in particular among the wealthier parts. Considerations like these have led economists to believe that the growth of overweight and obesity at the population level may be self-limiting

While piecewise evidence supports the hypothesis of an income-body-weight gradient that changes from positive to negative with economic development, there are only few studies (i.e. Pampel et al. (2012), Hruschka and Brewis (2013) and Cabus et al. (forthcoming)) which investigate this transition comprehensively. In particular, all using cross-sectional data from various (mostly) developing countries, these studies provide important evidence in favour of the reversal hypothesis. This paper aims to contribute to that literature by testing the predicted patterns of the reversal hypothesis, i.e. providing empirical insights of how the relationship between income and body-weight changes with economic development. The analysis is carried out using the illustrative example of China and, in particular multiple waves of the China Health and Nutrition Survey (CHNS). In simplified terms, differences in the association between income and changes in body weight are investigated and compared across regions with varying levels of economic development. Thereby, the level of development is measured by a one-dimensional index which accounts for several dimensions such as regional infrastructure, available services, labour market structure, etc.. Contrary to a framework where different countries are compared, the within country has the advantage that it can neglect cross-border differences in institutional settings. Moreover, the use of longitudinal information allows a more dynamic analysis – and is in that sense more in the spirit of existing theoretical models of weight management.

The Chinese case provides a good example to investigate the linkages between economic development, income and body weight for several reasons. Following significant economic reforms in 1979, China's GDP grew at an unprecedented average rate of 10% per annum. At the same time, this growth was rather skewed towards coastal provinces while provinces in inner China were “left behind” (Yang (1999)), thus creating significant heterogeneity in development levels across provinces. At the same time China has experienced a continuous increase in weight levels – especially due to the rise of overweight in urban areas (see Popkin et al. (2006) and Zhu and Jones (2010)) – which translates into more than 20% of the Chinese being overweight and another 3% being obese at present (Wu (2006), Levine (2008)). The duality of both,

Download English Version:

<https://daneshyari.com/en/article/5056922>

Download Persian Version:

<https://daneshyari.com/article/5056922>

[Daneshyari.com](https://daneshyari.com)