



The impact of economic, political and social globalization on overweight and obesity in the 56 low and middle income countries



Yevgeniy Goryakin ^{a, b, *}, Tim Lobstein ^c, W. Philip T. James ^d, Marc Suhrcke ^{b, e}

^a Health Economics Group, Norwich Medical School, University of East Anglia, Norwich NR4 7TJ, UK

^b UKCRC Centre for Diet and Activity Research (CEDAR), Institute of Public Health, Cambridge, UK

^c World Obesity Federation, London, UK

^d London School of Hygiene and Tropical Medicine, London, UK

^e Centre for Health Economics, University of York, York, UK

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ABSTRACT

Anecdotal and descriptive evidence has led to the claim that globalization plays a major role in inducing overweight and obesity in developing countries, but robust quantitative evidence is scarce. We undertook extensive econometric analyses of several datasets, using a series of new proxies for different dimensions of globalization potentially affecting overweight in up to 887,000 women aged 15–49 living in 56 countries between 1991 and 2009. After controlling for relevant individual and country level factors, globalization as a whole is substantially and significantly associated with an increase in the individual propensity to be overweight among women. Surprisingly, political and social globalization dominate the influence of the economic dimension. Hence, more consideration needs to be given to the forms of governance required to shape a more health-oriented globalization process.

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1. Introduction

Globalization has often been blamed for the rapid rise in obesity in much of the developing world (Hawkes, 2006; Popkin, 2006; Zimmet, 2000). The existing evidence for this claim does, however, rest primarily on case studies and simple ecological comparisons of national conditions. A notable exception is a recent study by De Vogli et al. (2013) who explored the influence of economic globalization (e.g. foreign direct investment or trade) on obesity worldwide. Arguably, the scarcity of quantitative data amenable to statistical analysis relates to the difficulty in quantifying the complex, multi-faceted nature of globalization. Economists were among the first to try to quantify the different components of globalization in their attempt to assess its impact on economic growth (Dollar and Kraay, 2004; Dreher, 2006). Indeed, the measures of globalization commonly employed have been exclusively economic, commonly proxied by e.g. total imports and exports or foreign direct investment, expressed as a share in GDP. Yet, globalization is not solely an

economic process, and even if it were, there is more to economic globalization than the mere flow of goods and capital.

More recent efforts at measuring globalization were built on the conceptualisation by Keohane and Nye (2000) of three different relevant dimensions of globalization: (1) economic: long distance flows of goods, capital and services as well as information and perceptions that accompany market exchanges, (2) political: the diffusion of government policies internationally, and (3) social: the spread of ideas, information, images, and people (Dreher, 2006). Dreher et al. (2008a) have developed the so-called KOF index of globalization to capture each of these dimensions (as well as additional sub-dimensions). For all dimensions, this index was created using comprehensive data collected annually, from 1970 to 2013. In this paper we make use of this new measure and its various components, to arrive at a more detailed and nuanced assessment of the impact of different dimensions of globalization on overweight in low- and middle-income countries.

All three of these components of globalization might have contributed to obesity in low- and middle-income countries, and because they capture different dimensions and – as will be shown further below – are at best imperfectly correlated with each other, it is important to examine the influence of each sub-dimension separately. Taken together, globalization may be contributing to

* Corresponding author. Health Economics Group, Norwich Medical School, University of East Anglia, Norwich NR4 7TJ, UK.

E-mail address: y.goryakin@uea.ac.uk (Y. Goryakin).

obesity by stimulating increased calorie consumption, and/or smaller energy expenditure. While there exists a considerable literature which considers the role of technological change in affecting energy expenditure and consumption (e.g. (Finkelstein et al., 2005; Huffman and Rizov, 2007; Lakdawalla and Philipson, 2009; Tomas Philipson, 2001; TJ Philipson and Posner, 2003b; Swinburn et al., 2011)), the literature that considers the potential globalization & overweight/obesity nexus from the point of view of how globalization affects energy imbalance is quite limited. Nevertheless, as globalization may be both a product and a driver of technological change, they may have similar causal links with overweight through a set of factors collectively known as the “nutritional transition” (Popkin, 2001; Popkin et al., 2012). Specifically, both globalization and technological change may be associated with urbanisation (with living in the cities offering a greater choice of food at lower prices), increasing use of cars and of mechanical aids (resulting in a decline in physical activity), and with a general increase in fat and sugar intake both of which, probably through their effects on energy density, contribute to weight gain (Amine et al., 2002; Hooper et al., 2012; Te Morenga et al., 2013). Thus both technological change and globalization may lead to a lower cost of calorie intake, as well as to the higher opportunity cost of expending calories, resulting in the higher probability of obesity/overweight (TJ Philipson and Posner, 2003a). In the case of globalization, the nutritional transition may also be facilitated by the importation of cheaper, higher energy density foods from the industrialized world, rather than from the countries' internal production.

The most readily recognized manifestation of economic globalization is the opening of markets to foreign trade and investment in the second half of the last century, which entailed a substantial increase in agribusiness-related foreign direct investment (FDI) (Hawkes, 2006). Much of this investment went into food processing (Popkin et al., 2012; Thow, 2009), thus potentially accelerating the nutritional transition and leading to a greater obesity burden (Popkin, 2001, 2006; Popkin et al., 2012).

Political factors relating to the formation of regional trade blocks, or participation in various international treaties, may also have played a role, by acting as a precursor to greater economic integration via the opening of food markets to free trade and consequent nutritional change associated with overweight. On the one hand, greater political integration on a regional level is likely to lead to deeper regional cooperation (e.g. in the form of trade blocks), while on the other hand it may also create mechanisms, for instance, trade barriers, designed to protect participating countries from outside economic competition (Dreher, 2006). While the precise impact of such manifestations of political integration on overweight in developing countries is hard to predict, it may at least be conceivable that political globalization acts independently of (or as a facilitator of) purely economic forces. Differential effects of political vs. economic globalization have, for instance, been found in recent research examining the impact of globalization on economic growth (Dreher, 2006).

Social and cultural globalization, involving cross-border movement of cultures and openness of media, may also have increased a population's perception of the supposed benefits of foreign lifestyles (e.g. in the form of greater car use, decreasing calorie expenditures) as well as of foreign diets (e.g. which may lead to greater calorie consumption through intake of fast food rich in fats and sugars). The effect of social globalization on overweight may therefore be akin to the effect of urbanization on various technologies potentially associated either with the reduction in energy expenditure over time (Monda et al., 2007; Popkin, 1999; Rivera et al., 2002; Swinburn et al., 2011), or with more abundant supply and consumption of cheaper, higher calorie foods (Drewnowski

and Popkin, 1997, 1999; Popkin and Gordon-Larsen, 2004).

In addition to examining the importance of these different components of globalization, a further unique feature of our analysis consists of the integration of the various indicators of globalization into a world-wide dataset containing individual-level information up to 887,000 individuals. This allows us to a) utilise information on the (objectively measured) overweight status of each individual and b) to control for relevant individual-level covariates (e.g. education, age, residence, household size) – a feature that should increase analytical precision, compared to the analysis of country-level data alone (which was used by De Vogli et al. (2013)). To better isolate the effect of the various manifestations of globalization, it is important to control for a range of country-level factors that may simultaneously affect individual overweight risk and the country-level indicators of globalization, including the total GDP as a proxy of the size of the market, the Human Development Index, as well as the Index of Economic Freedom from the Heritage Foundation, which measures the quality of economic and legal institutions. Through this analysis we aim to find out whether overall globalization indeed increases the individual likelihood of overweight, and whether the different dimensions of globalization – economic, political and social – play a greater or lesser part in raising the risk of overweight.

2. Methods and their rationale

2.1. Definition and measurement of the component variables of globalization

Globalization is our independent variable of primary interest. We seek to capture both the influence of globalization as a whole as well as its relevant sub-components: economic, social and political globalization dimensions.

- 1) Total globalization is measured using the KOF total globalization indicator (Dreher, 2006), which is an aggregation of three sub-components, described below.
- 2) Economic globalization: Our primary measure of economic globalization is the relevant KOF sub-index, which is a composite measure comprising the following variables: trade (in percent of GDP); foreign direct investment (FDI) stocks (in percent of GDP), portfolio investment (in percent of GDP), income payments to foreign nationals (in percent of GDP), hidden import barriers, mean tariff rate, taxes on international trade (in percent of current revenue) and capital account restrictions.
- 3) Political globalization: We take advantage of the political KOF index mentioned above, which is a composite measure including information on the following four components: number of foreign embassies in a given country; membership in International Organizations; participation in U.N. Security Council missions; number of signed international treaties (Dreher et al., 2008a). This component is designed to measure the degree of a country's international political engagement (Dreher, 2006). It was used, for instance, in studies examining the influence of globalization on partisan politics (Potrafke, 2009) and government expenditure patterns (Dreher et al., 2008b).
- 4) Social globalization: Our main measure of this type of globalization is the social KOF globalization index, which is based on the following variables: telephone traffic transfers (percent of GDP); international tourism foreign population (in percent of total population); international letters (per capita); internet users (per 1000 people); TVs (per 1000 people); trade in newspapers (percent of GDP); number of McDonald's

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