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## THE ECONOMIC CONSEQUENCES OF THE OBESE

by

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The private and social costs of obesity have many causes, but their consequences can be grimly predicted with rough accuracy. Among the most devastating is the increased incidence of diabetes, of which 60 percent can be directly attributed to weight gain. There are now about a billion people worldwide who are overweight or obese, compared to 850 million who are chronically underweight. It is estimated that the number of people worldwide with diabetes will increase from 175 million in 2000 to 353 million in 2030, with India and China together accounting for 24 percent of the 2050 total. Obesity and its economic costs are borne on three levels. At an individual level, obesity imposes costs by limiting personal opportunity in many ways, some of which can be quantified and some of which cannot. In the workplace (assuming the obese are employed, which they may not be, due in part to their condition), costs are borne by employers due to lost productivity, absences, underperformance, and higher insurance premia which in the aggregate are quite large. Finally, obesity affects expenditures by local, state and national governments, where programs compensate for or cover some of the private and workforce costs of illness and unemployment.

In 1919 John Maynard Keynes published his famous attack on the Carthaginian terms imposed on the Axis powers by the Treaty of Versailles at the end of World War I. *The Economic Consequences of the Peace* argued that punitive reparations would further bankrupt the vanquished, deepen their economic misery and sow seeds of resentment to be exploited by political extremists. Sadly, Keynes was right, showing that economists can accurately forecast the costs if not the full effect of social disfunction resulting from bad choices and lost opportunities.

The obesity epidemic also represents social disfunction, although it is unlikely to lead to depression and war. Still, obesity is pernicious and destructive: the result of bad choices and lost opportunities on many levels. The private and social costs of obesity have many causes but their consequences can be grimly predicted with rough accuracy. Among the most devastating is the increased incidence of diabetes, of which 60 percent can be directly attributed to weight gain. (1) As a recent commentary noted, “Overweight and obesity have become to diabetes what tobacco is to lung cancer.” (2 – pg. 62)

The objective of this review is to offer an economic perspective on the economic consequences of obesity. Where data is available, these consequences are quantified, although lack of data in many areas suggests that the estimates reported are probably lower bound. In addition to exploring various economic issues related to obesity, emphasis is given to the links from poverty to the obesity epidemic.

There are now about a billion people worldwide who are overweight or obese, compared to 850 million who are chronically underweight. It is estimated that the number of people worldwide with diabetes will increase from 175 million in 2000 to 353 million in 2030, with India

and China together accounting for 24 percent of the 2050 total. (2) In offering a perspective on the economic consequences of the obese, I shall steer clear of causes, some of which are economic, but which also have biological, cultural, and political explanations that we do not fully understand.<sup>1</sup>

Obesity and its economic costs are borne on three levels, each related to the next. At an individual level, obesity imposes costs by limiting personal opportunity in many ways, some of which can be quantified and some of which cannot. Next, in the workplace (assuming the obese are employed, which they may not be, due in part to their condition), costs are borne by employers due to lost productivity, absences, underperformance, and higher insurance premia which in the aggregate are quite large. Finally, obesity affects expenditures by local, state and national governments, where programs compensate for or cover some of the private and workforce costs of illness and unemployment. These costs are shifted to programs such as Medical Assistance, unemployment insurance, state-run health insurance, Veterans hospitals, Medicare and Medicaid, in effect pushing them onto present and future taxpayers.

The United States leads the world in rates of overweight and obese individuals per capita, estimated in 2004 at 64.5 percent of the population. Mexico is not far behind at 62.3 percent and the United Kingdom and Australia rank third and fourth with 61 percent and 58.4 percent respectively. Japan has the lowest rate (25.8 percent) and Korea the second lowest (30.6 percent). (3) Low rates of obesity constitute an important competitive advantage because they impose less drag on national productivity than where obesity is widespread. Of particular concern is that these rates accelerated markedly in the 1990s after a period of stability in the

1980s, especially among children. According to the American Obesity Association (4), the percentage of obese children in the U.S. grew from 7 percent in 1976-1980 to 15.3 percent in 1999-2000. In some countries, type 2 diabetes accounts for 80 percent of all diabetes cases reported in the pediatric population. (5)(6)

Some economists have described obesity as a choice in which individuals trade off risks for convenience, similar to driving a car. (7) Some economists have argued that obesity results from addictive eating behavior, composed of two factors: “reinforcement” and “tolerance.” Reinforcement results when past consumption increases the desire for present consumption. Tolerance implies that high levels of past consumption mean that present consumption produces lower marginal benefits, such as negative health effects. When reinforcement overcomes tolerance, and people weigh present pleasure more than future harm, addiction to food can be “rational”. (8 – pg. 362) These “rational addiction” models are based on the claim that current consumption increases future demand for unhealthy foods largely through force of habit. (9)(10) If consumers value current consumption of these foods more than the future harm they will do to their health, they may consistently choose to eat in ways that are harmful in the long run.

However, to call this choice “rational” is the sort of reasoning only a Chicago School economist could love. (11) Indeed, a study of Native American nutrient intake testing this model found little support for it in a sample of Native Americans compared to non-Natives. The authors noted that “the thought that an entire class of individuals can make decisions without regard to future consequences is not only untenable, but contradicts the basic tenets of economic reasoning”. (12 - pg. 544)

To say that individuals are often myopic about the future consequences of current behavior is to state the obvious. But it does not seem rational to invite discomfort, discrimination, or lower wages and incomes. If driving a car is risky but convenient, what convenience, ease and benefit can be equated at the margin with social ostracization, job loss, lower wages, earlier death and chronic disease? Obesity has manifold individual implications, but nearly all of them are bad, denying people physical, social and economic opportunities. To defend this process as a freely chosen tradeoff is to deny social responsibility in the name of individual responsibility, and ignores the many failures of markets to provide for public health. Whatever individuals get in return for being obese cannot be worth the tradeoff unless they are largely indifferent to their physical, social and economic welfare.

At a personal level, the negative impacts of obesity on physical health and attendant costs of morbidity and mortality are clear. Overall, health care costs for overweight and obese individuals are 37 percent higher than for people of normal weight, adding an extra \$732 to the health care bill of each and every American. (3)(13) These added costs are almost equal to the health spending associated with smoking. One analyst finds that obesity has roughly the same association with chronic health conditions as twenty years of aging and is associated with a 36 percent increase in inpatient and outpatient spending and a 77 percent increase in medication costs. This compares with only a 21 percent and 28 percent increase in these costs for current smokers and even smaller effects for problem drinkers, despite the attention given to these other disorders. (14) But apart from negative impacts on health, obesity also reduces the capacity of

people to function effectively in finding and keeping jobs and truncates the earnings and wages they are likely to receive, especially for women. (15)

In the workplace, employers of the overweight and obese confront these costs if they offer health insurance, but they also face costs of absenteeism, reduced productivity and other complications. Obesity and obesity-related conditions, including heart disease, osteoarthritis, gallbladder disease, hypertension and type 2 diabetes result in \$62.7 billion in doctors' visits and \$39.3 billion in lost workdays each year. (16) Of these costs, by far the highest contributor is type 2 diabetes, which is estimated to add \$98 billion per year in health care costs.

At the local, state and federal level, where programs are responsible for health and welfare, numerous categories of insurance costs can be disaggregated. Based on the 1998 Medical Expenditure Panel Survey (MEPS), the 1996 and 1997 National Health Interview Surveys (NHIS), and the National Health Accounts (NHA), these include out-of-pocket expenses, private insurance, Medicaid and Medicare. (13) These data are summarized in Table 1. Differences in the MEPS and NHA estimates are largely attributable to the inclusion of nursing home costs in the NHA estimates.

At the state level, the same researchers analyzed data from 1998-2000 using the Behavioral Risk Factor Surveillance System (BRFSS) to predict state medical spending attributable to obesity measured by a BMI greater than 30. (17) These measures included only direct medical costs for Medicare and Medicaid, not indirect costs from absenteeism and decreased productivity. Data by state are shown in Table 2. The average state share of total medical expenses directly attributable to obesity was 5.7 percent, totaling 75 billion dollars in

1998. Obesity accounted for an average of 6.8 percent of Medicare costs, totaling 17 billion dollars and 10.6 percent of Medicaid costs, totaling 21.3 billion dollars.

There is strong cross-sectional and case study evidence showing that these indirect costs may be far more important than direct medical care costs. In a recent review, (18), estimated, based on their work in China, that in 2000 the direct and indirect costs of overweight and obese adults was nearly 50 billion U.S. dollars, of which 12 percent was direct and 88 percent indirect. By 2025, they projected these costs would rise to 112 billion dollars, of which 5 percent will be direct and 95 percent indirect.

One of the most difficult aspects of obesity's economic consequences is the two-way connection from obesity to income levels and poverty. While obesity denies individuals economic opportunity, it is abundantly clear that a lack of economic opportunity increases the likelihood of becoming obese. In many countries in the developing world, reductions in calories as a response to economic privation is a last resort, afflicting mainly those at the edge of subsistence, living on a dollar or two a day. (19) For the rest, and for nearly everyone in the OECD countries, household spending on food is such that budget constraints are not likely to reduce total calories consumed: in fact, quite the opposite.

In a series of empirical studies, Drewnowski and his coauthors (20)(21)(22) show that a budget constraint on possible food spending causes households to alter the composition of foods in the direction of more calorie-dense sugars, fats, and carbohydrates and away from lean meat, fish, cheese, vegetables and fruit. Noting "a persistent belief that low-income consumers have made wrong or inappropriate food choices and need to be educated, taught, or motivated to

behave otherwise,” they noted that this paternalistic view ignores the real choices and trade-offs the poor must make. (20 – p. 4) In fact, food choices by poor consumers may simply reflect the most cost-effective way to purchase calories. But instead of purchasing an amount appropriate to healthy weight, the basket of foods chosen can easily overshoot calorically if composed of these dense, often highly palatable foods.

In Latin America and the Caribbean, the World Health Organization estimated the combined annual direct and indirect costs of diabetes, much of it obesity-related, at \$65.2 billion in 2000. In Mexico, 138 deaths per 100,000 from diabetes in adults aged 20 to 84 in 2000 made it the leading cause of mortality, compared with 82 deaths per 100,000 from diabetes in the United States, according to the National Institute of Geographic and Statistical Information. Diabetes prevalence in Mexico is among the highest in the world at 10.7 percent of adults aged 20 to 69. Poor families in Latin America, according to the International Diabetes Federation, are further impoverished because 40-60 percent of their care is paid out of household income, and most poor families are uninsured. (23 – pg. F6)

It is also clear, based on large panel surveys, that obesity is more prevalent in the United States among groups with lower levels of education and income. (24)(25) At the state level, or as measured by congressional districts, the highest rates of obesity are found in the lowest income areas. (26)(27) Aggregate census data also supports the finding that the proportion of families living in poverty is strongly correlated with higher neighborhood rates of obesity and type 2 diabetes. (28) Both domestically and internationally, the cruel causation of poverty and obesity thus runs both ways: to be poor is often to be obese, and vice-versa.

Although obesity is costly for both individuals and society, government action alone is likely to be insufficient in reversing current trends without substantial changes in private behavior.

We may retrace the three levels at which obesity imposes costs in order to see how actions at each level may reduce them. At an individual level, a variety of incentives may be needed to encourage healthier behavior (some of which are economic), such as insurance premium adjustments for those maintaining ideal body weights and a return in schools and workplaces to diet and exercise as key parts of the school and work day.

In the workplace itself, there is increasing recognition by employers and their insurers that both exercise and diet should be internalized as “part of the job.” In Minnesota, Blue Cross/Blue Shield has announced a program to be subsidized largely out of funds received in its tobacco settlement for workplace wellness and fitness programs integrated with diet and the redesign of the built workplace environment to encourage physical motion. (29) In one study of a large international company, Goetzel, et al. (30) calculated that if such programs could achieve reductions in health risks of only 0.17 percent a year for 10 years, the investment would break even. If insurance companies were prepared to reward such investments at modest levels with reduced premia, the break-even result could occur almost immediately and positive returns would quickly flow to the bottom line. The Oxford Health Alliance (31) estimates an average return of \$3.00 for every \$1.00 invested in such programs, which can rise as they are more optimally targeted and designed.

As individual and workplace decisions change, the costs cascading into the public health and welfare system will also lessen, resulting in lower burdens to taxpayers from Medical

Assistance, unemployment insurance, state-run health insurance programs, Medicare and Medicaid. However, since these programs disproportionately involve the poor and unemployed, who are more likely to be obese and diabetic, the burden to society is unlikely to be reduced as a direct pass-through. Hence, public policies are especially important in breaking the obesity-poverty link, not just by lecturing the poor on their miscreance, but bringing them out of poverty and into the active workforce, where they are more likely to be able and willing to respond to private and workplace incentives to improve their health and productivity. Working at obesity and diabetes from the poverty end of the connection, especially among groups heavily burdened by these afflictions such as Native Americans, is thus rewarding in multifaceted ways often unappreciated by the medical establishment.

Finally, the argument for recognizing and responding to the economic consequences of the obese relates in important ways to international competitiveness. By dragging down rates of productivity and siphoning off resources that could otherwise be invested in education, technology, social improvements and private capital formation, obesity and diabetes hobble even robust economies, such as the U.S. and China. In poorer developing countries their impact is even more manifestly immiserising. Every nation thus has a competitive incentive to respond to these challenges in the interest of economic growth and the welfare of future generations.

In conclusion, the economic consequences of obesity are serious and growing, like the incidence of obesity itself. These consequences are no longer the province of wealthy industrialized countries (some of which, like Japan, have very low rates) and increasingly burden lower-income countries with added health care costs and lost productivity. Unless a major effort

is undertaken to confront the complex factors that have contributed to these trends, valuable resources will be drawn away from more productive economic activities, with particularly negative consequences for the poor.

**Table 1. Aggregate Medical Spending, in Billions of Dollars, Attributable to Overweight and Obesity, by Insurance Status and Data Source, 1996-1998**

<b>Insurance Category</b>	<b>Overweight and Obesity</b>		<b>Obesity</b>	
	<b>MEPS (1998)</b>	<b>NHA (1998)</b>	<b>MEPS (1998)</b>	<b>NHA (1998)</b>
Out-of-pocket	\$7.1	\$12.8	\$3.8	\$6.9
Private	\$19.8	\$28.1	\$9.5	\$16.1
Medicaid	\$3.7	\$14.1	\$2.7	\$10.7
Medicare	\$20.9	\$23.5	\$10.8	\$13.8
<b>Total</b>	<b>\$51.5</b>	<b>\$78.5</b>	<b>\$26.8</b>	<b>\$47.5</b>

Note: Calculations based on data from the 1998 Medical Expenditure Panel Survey merged with the 1996 and 1997 National Health Interview Surveys, and health care expenditures data from National Health Accounts (NHA). MEPS estimates do not include spending for institutionalized populations, including nursing home residents.

Source: (13)

Table 2. Estimated Percentage of Total Medical Expenses, Medicare and Medicaid Costs Attributable to Obesity, by State (BRFSS 1998-2000).

State	Total population (%)	(Millions \$)	Medicare population (%)	(Millions \$)	Medicaid population (%)	(Millions \$)
Alabama	6.3	\$1320	7.7	\$341	9.9	\$269
Alaska	6.7	\$195	7.7	\$17	8.2	\$29
Arizona	4.0	\$752	3.9	\$154	13.5*	\$242
Arkansas	6.0	\$663	7.0	\$171	11.5	\$180
California	5.5	\$7675	6.1	\$1738	10.0	\$1713
Colorado	5.1	\$874	5.1	\$139	8.7	\$158
Connecticut	4.3	\$856	6.5	\$246	11.0	\$419
Delaware	5.1	\$207	9.8	\$57	13.8	\$66
District of Columbia	6.7	\$372	6.5	\$64	12.5	\$114
Florida	5.1	\$3987	6.1	\$1290	11.6	\$900
Georgia	6.0	\$2133	7.1	\$405	10.1	\$385
Hawaii	4.9	\$290	4.8	\$30	11.2	\$90
Idaho	5.3	\$227	5.6	\$40	12.0	\$69
Illinois	6.1	\$3439	7.8	\$805	12.3	\$1045
Indiana	6.0	\$1637	7.2	\$379	15.7	\$522
Iowa	6.0	\$783	7.5	\$165	9.4	\$198
Kansas	5.5	\$657	6.4	\$138	10.2*	\$143
Kentucky	6.2	\$1163	7.5	\$270	11.4	\$340
Louisiana	6.4	\$1373	7.4	\$402	12.9	\$525
Maine	5.6	\$357	5.7	\$66	10.7	\$137
Maryland	6.0	\$1533	7.7	\$368	12.9	\$391
Massachusetts	4.7	\$1822	5.6	\$446	7.8	\$618
Michigan	6.5	\$2931	7.8	\$748	13.2	\$882
Minnesota	5.0	\$1307	6.6	\$227	8.6	\$325
Mississippi	6.5	\$757	8.1	\$223	11.6	\$221
Missouri	6.1	\$1636	7.1	\$413	11.9	\$454
Montana	4.9	\$175	6.2	\$41	9.8	\$48
Nebraska	5.8	\$454	7.0	\$94	10.3	\$114
Nevada	4.8	\$337	5.0	\$74	10.1*	\$56
New Hampshire	5.0	\$302	5.4	\$46	8.6*	\$79
New Jersey	5.5	\$2342	7.1	\$591	9.8	\$630
New Mexico	4.8	\$324	4.6	\$51	8.5	\$84
New York	5.5	\$6080	6.7	\$1391	9.5	\$3539
North Carolina	6.0	\$2138	7.0	\$448	11.5	\$662
North Dakota	6.1	\$209	7.7	\$45	11.7	\$55
Oklahoma	6.0	\$854	7.0	\$227	9.9	\$163
Ohio	6.1	\$3304	7.7	\$839	10.3	\$914

Oregon	5.7	\$781	6.0	\$145	8.8	\$180
Pennsylvania	6.2	\$4138	7.4	\$1187	11.6	\$1219
Puerto Rico	7.4		8.1		10.1	
Rhode Island	5.2	\$305	6.5	\$83	7.7	\$89
South Carolina	6.2	\$1060	7.7	\$242	10.6	\$285
South Dakota	5.3	\$195	5.9	\$36	9.9	\$45
Tennessee	6.4	\$1840	7.6	\$433	10.5	\$488
Texas	6.1	\$5340	6.8	\$1209	11.8	\$1177
Utah	5.2	\$393	5.8	\$62	9.0	\$71
Vermont	5.3	\$141	6.9	\$29	8.6	\$40
Virginia	5.7	\$1641	6.7	\$320	13.1	\$374
Washington	5.4	\$1330	6.0	\$236	9.9	\$365
West Virginia	6.4	\$588	7.3	\$140	11.4	\$187
Wisconsin	5.8	\$1486	7.7	\$306	9.1	\$320
Wyoming	4.9	\$87	5.9	\$15	8.5	\$23
<b>Total</b>	<b>5.7</b>	<b>\$75,051</b>	<b>6.8</b>	<b>\$17,701</b>	<b>10.6</b>	<b>\$21,329</b>

\* Estimates based on fewer than 20 observations.

Source: (17)

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## Endnote

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<sup>1</sup> Yach, et al. (2006, p. 63) summarize five developments that have led to rising obesity: (1) expanding labor market opportunities for women; (2) increased consumption of food away from home; (3) rising costs of healthy foods relative to unhealthy foods; (4) growing caloric intake with declining overall food prices; (5) decreased occupational and environmental physical activity.