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Article

Who pays for obesity?

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neglected important subject in economics. I will of course continue to teach at Harvard, as I have throughout my years as NBER president.

The NBER is a unique and a great

organization. It provides a way to develop first class research that can contribute to the public policy process, research that can make this country and the world a better place. It's important

that we never lose sight of this purpose, this challenge, and this responsibility. I'm pleased that I will continue to be a part of this outstanding organization.

Thank you.

Research Summaries

Who Pays for Obesity?

Jay Bhattacharya*

The rapid increase in the prevalence of obesity over the past few decades has attracted much interest by economists about its cause, but far less interest in its economic consequences. Of particular importance is the question: who pays for obesity? In this report, I review the contribution that my colleagues and I have made toward answering that question.

Many people have argued that the rising prevalence of obesity over the past decades is socially expensive because the obese consume more medical resources than thinner people. While it is certainly true that obesity is the cause of, and is associated with, many conditions that are expensive to treat, it does not logically follow that obesity is socially expensive. The true social costs of obesity depend upon the extent to which obese individuals impose costs on others, costs that they do not take into account when they do things that affect their body weight. Yet despite the vast literature on the medical costs of obesity, there is nothing available to answer the question of who pays these costs—the obese themselves, or someone else?

One important mechanism by which the obese might impose costs on others is through pooled health insurance. In pooled insurance, high medical expenditures for one member of the pool are paid in part by every member of the pool. Thus, the high costs of treating an obese individual are shared by members of the pool—that is, the costs of obesity are paid for, in part, by other people. In a recent paper, Neeraj Sood and I consider this possibility.¹

Two key necessary conditions must be met for obesity to cause social loss in a pooled health insurance setting: 1) being obese must increase health expenditures over being thinner; and 2) being in a health insurance pool must cause individuals to change their eating and exercising. The latter condition is not obvious, but is nevertheless crucial for obesity to cause loss through the health insurance mechanism; without it, the implicit transfer of funds from the thin to the obese that pooled health insurance induces is socially costless. Obese individuals in the pool are made better off by exactly the amount that thin individuals are made worse off. While pooled insurance induces redistribution from thin individuals to overweight ones, there is no net cost to society.

In addition to developing a formal model, Sood and I use nationally repre-

sentative data to estimate the social costs of obesity through the health insurance mechanism. Because we account for the second necessary condition in our empirical work, our estimate of social cost is an order of magnitude lower than estimates of the cost of obesity reported in the literature that ignore this condition. This makes sense because it is unlikely that people gain much weight in response to the incentives induced by being part of a pooled health insurance plan.

My paper with Sood is premised on the idea that under some circumstances, obesity might induce a social loss if there is pooled health insurance. However, whether health insurance actually pools medical expenditure risk associated with obesity is an empirical issue. In the case of obesity, there is good reason to think that there may be considerably less pooling than is traditionally thought for some types of health insurance. If, in a given insurance plan, there is no effective pooling between the obese and thin, then the obese pay for their higher expected medical expenditures.

In another paper, Kate Bundorf and I consider whether wage penalties associated with being obese undo pooling in employer provided health insurance.² Legal and other constraints make charging obese workers higher premiums for health

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insurance problematic. However, these constraints do not imply that employer provided insurance will pool this risk.

Labor economists have documented that obese workers earn less per hour than thinner workers. This is true even after adjusting for differences in age, education, industry, and occupational choice, although wage differences between obese and thin are most pronounced for female workers. However, these wage differences are not uniform over every work environment. Using nationally representative data on workers between 28 and 41 years old, Bundorf and I find that wage differences associated with obesity occur only in jobs where employers provide health insurance; in jobs without health insurance, obese workers and thinner workers earn the same wage, on average. Furthermore, the obesity wage difference is substantially higher for female workers in jobs that provide health insurance than it is for their male counterparts.

The simplest interpretation of these facts is that the incremental health care costs associated with obesity are passed on to obese workers with employer-sponsored health insurance in the form of lower cash wages; at jobs without health insurance, there is need to undo pooling and hence no wage penalty. But other explanations may be possible. It is certainly true, for instance, that jobs with health insurance differ from jobs without health insurance in many ways that have nothing directly to do with health insurance provision. It is possible that these differences, many of which we do not observe, lead to wage penalties for the obese workers only at jobs that provide health insurance.

To rule out this explanation, we divide the data on the basis of other benefits provided by employers, the value of which (unlike health insurance) does not vary with body weight. If this alternative explanation is right, then by analogy we should expect to see an obesity wage penalty in jobs that provide pension benefits but not in jobs that do not. In fact, we observe an obesity wage penalty in jobs both with and without pensions. The same is true for every benefit we observe in our data,

except health insurance. A more complicated story still might be consistent with the facts we develop, but Occam's razor would favor our simple interpretation: obese workers pay for their higher expected health care costs through lower wages.

So why is the obesity wage penalty so large for female workers? In part, the answer is almost certainly that obese women face more discrimination in the workplace than obese men. It is also attributable, though, to differences in health care expenditures. Using nationally representative data on medical expenditures, Bundorf and I find that obese men and thinner men in this 28–41 age range have the same medical expenditures, on average, while obese women have higher medical expenditures than thinner women in this age range. There is no obesity wage penalty for men in this age range because there are no extra health care costs to pay.

This reasoning works for employer health insurance but not for government provided health insurance, which is also common in the United States. In 2004, for instance, there were 174.2 million Americans covered by employer health insurance, 39.7 million covered by Medicare (provided by the federal government to elderly and disabled people), and 37.5 million covered by Medicaid (provided by states to poor people). Like employer health insurance, Medicare and Medicaid may induce a link between body weight decisions by enrollees and taxpayers. In both of these government programs, enrollees are charged premiums that do not depend on body weight and are always much less than expected medical bills. In many cases, enrollees are not charged premiums at all. Unlike employer-provided health insurance, there is no wage pass-through mechanism that can undo pooling between obese enrollees, who spend on medical care, and taxpayers, who pay for it. While the literature on the size of the subsidy to obese enrollees induced by government health insurance is far from definitive, it seems likely that the subsidy is substantial.

For government provided health insurance, to understand whether there is

a social loss from obesity and its attendant increase in health expenditures, we must consider the question posed by the second necessary condition: does the subsidy to the obese induced by insurance change the body weight decisions of enrollees? NBER researchers Inas Rashad and Sara Markowitz conclude that being covered by insurance does not induce a measurable change in body weight.³ Three of my colleagues (Bundorf, Sood, and Noemi Pace) are currently working on a project to test that result in randomized data from the RAND health insurance experiment; our preliminary results confirm the Rashad and Markowitz result. The upshot of this result is that public health insurance, including Medicare and Medicaid, induces a socially costless transfer from the thin to the obese. The thin are made worse off by exactly the same amount as the obese are made better off, but the transfer does not otherwise change behavior.

Surprisingly, while the evidence suggests that obesity induces no social loss through costs imposed by others via pooled health insurance, there is other evidence to suggest that obesity may *benefit* others through another mechanism. Mikko Packalen and I measure the extent to which the rise in obesity prevalence has induced research by biomedical researchers on diseases that are associated with that rise.⁴ By studying obesity and other conditions, we find that biomedical researchers are indeed quite responsive to changes in disease prevalence in the population. Private markets reward this responsiveness with profits for pharmaceutical firms, for instance, and the National Institute of Health rewards this responsiveness with grant funding to universities and medical schools.

In a companion piece, Packalen and I work through the implications of this induced innovation effect for the debate over the costs of the obesity.⁵ We argue that to the extent that people do not account for this induced innovation effect when they make decisions such as eating and exercising that determine their body weight, their private decisions will benefit third parties who are not obese; after

all, even thin people get heart attacks, just at lower rates than obese people. In economic jargon, there is a positive externality from becoming obese, because the benefit from the induced research on heart attacks and diabetes will not accrue solely to obese individuals. We estimate that this positive externality, which benefits thin people, is at least as large as the transfer induced by Medicare from thin to obese people.

The conclusions of this research agenda cast doubt on the conventional wisdom about the costs of obesity, which fails to distinguish between private and public costs. There is no doubt that becoming obese imposes substantial medical costs on the obese individual, who is more likely to develop Type II diabetes, heart disease, strokes, and a number of other unpleasant chronic dis-

eases. Furthermore, becoming obese often imposes financial costs, such as a reduction in wages in some cases. My research suggests that the vast preponderance of these costs is private and paid for by obese individuals themselves. Moreover, some of the costs that are traditionally identified as public costs may actually be benefits. Rising obesity rates, for example, may bring forth greater innovative activity and ultimately treatments that benefit thin people as well. In this setting, policies such as taxes on junk food may lower social welfare rather than raising it while placing substantial burdens on obese individuals who already pay a substantial cost for their girth.

¹ J. Bhattacharya and N. Sood, "Health Insurance and the Obesity Externality,"

NBER Working Paper No. 11529, August 2005, and *Advances In Health Economics And Health Services Research*, 17 (2007), pp.279–318.

² J. Bhattacharya and M.K. Bundorf, "The Incidence of the Healthcare Costs of Obesity," NBER Working Paper No. 11303, May 2005.

³ I. Rashad and S. Markowitz, "Incentives in Obesity and Health Insurance," NBER Working Paper No. 13113, May 2007.

⁴ J. Bhattacharya and M. Packalen, "Is Medicine an Ivory Tower?" NBER Working Paper No. 13862, March 2008.

⁵ J. Bhattacharya and M. Packalen, "The Other Ex-Ante Moral Hazard in Health" NBER Working Paper No. 13863, March 2008.

Capital Flows, Taxation, and Institutional Variation

Mihir A. Desai*

Tariff reductions, falling transport costs, and reduced barriers to international capital flows have created extensive opportunities for multinational firms and investors in increasingly integrated global markets. For example, the outbound foreign direct investment (FDI) position of American firms grew at an average annual rate of 11 percent to \$2.4 trillion from 1982 to 2006 while inbound FDI to the United States grew to \$1.8 trillion. Foreign portfolio investment (FPI) has grown similarly. By 2005, 16 percent of all U.S. long-term securities (equity and debt) were

held by foreigners. Foreign holdings of American stocks increased from \$400 billion to \$2.3 trillion over the last decade, while American holdings of foreign stocks increased from \$600 billion to \$3 trillion.

In the midst of this rapid integration, investors and firms still face tax systems and investor protections that differ across countries, and these differences have the potential to affect major investment and financing decisions. Governments anxious to attract FDI often consider the use of tax incentives to lure multinational firms, and governments of FDI source countries—including the United States—often wonder whether their tax treatment of foreign income is appropriate. Similarly, investor protections and the broader institutional environment remain distinctive around the world and may influence investors' port-

folio decisions and firms' operational and financing decisions.

Recent research has advanced our understanding of the role of taxation and investor protections on capital flows and patterns of FPI. We also have considered the causes and consequences of tax avoidance activity; we have established how foreign and domestic activity interact in order to inform new welfare measures; and we have elaborated on how investment and financing decisions by multinational firms reflect the effects of taxes and varying institutional regimes.

Portfolio Flows

Empirical efforts to isolate how taxation influences portfolio choice have produced mixed results. Investigating the

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