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An Economic Analysis of Adult Obesity

Not all that long ago obesity was a fairly rare phenomenon among Americans. By now, however, it's well-established that the number of obese adults in the United States has grown by more than 50 percent over the last generation. Less well known is that obesity and its attendant sedentary lifestyle result in 300,000 premature deaths annually, a toll second only to the early mortality figure attributed to smoking. In addition, the annual costs of medical treatment for obesity have been estimated at nearly \$100 billion. And the prevalence of obesity continues to increase.

For these reasons, authors **Shin-Yi Chou**, **Henry Saffer**, and **Michael Grossman** attempt to determine the root economic causes of the obesity epidemic in **An Economic Analysis of Adult Obesity: Results from the Behavioral Risk Factor Surveillance System** (NBER Working Paper No. 9247). The researchers confirm some conventional thinking on the subject, for example that the increase in the incidence of obesity and the doubling of the per capita number of fast-food restaurants between 1972 and 1997 are related phenomena. (In addition, the per capita number of full-service restaurants rose by 35 percent in the same period.) But Chou, Saffer, and Grossman also address why the reliance on convenience meals and restaurants has grown so markedly.

They find a large part of the answer in labor market developments since 1970 and in attendant matters of incomes and costs, in the proliferation of women in the workforce, and in the value of time in regard to both work and leisure.

The authors rely on comprehensive data collected in recent years in the Behavioral Risk Factor Surveil-

lance System telephone surveys conducted by state health departments in conjunction with the Centers for Disease Control. These surveys clearly document the growth of obesity and also identify which segments of the population (by age, gender, race, marital status, educational background, and the like) are experiencing such growth. The researchers combine this information with data on the decline in real income since 1970 — most notably among single-earner households and for unmarried men and women — and the increase in real income for married-couple households which is largely attributable to the entry of women into the workforce.

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Their analysis shows that more time devoted to work and less time devoted to the labor-intensive activ-

ity of food preparation in the home favors the low cost and convenience of fast food and prepared food. These foods have extremely high caloric density, are satisfying and habit forming, and they almost certainly contribute to the obesity epidemic. For this reason, the incidence of obesity is most prevalent among those sectors of the workforce

(chiefly low-end wage earners, women, non-whites) whose real income has fallen even as more hours are devoted to work. The researchers acknowledge that food prepared in the home is nominally cheaper than purchasing food in restaurants. But in view of the value of time that must be devoted to shopping and cooking, as compared to the high-calorie, low-cost, mass-production meals available at ever-increasingly convenient locations (with ever diminishing travel and waiting time), the fast-food option appears to make good economic, if not health, sense.

Chou, Saffer, and Grossman find similar revealing results in their analysis of another consumer trend of the same period, the dramatic reduction in smoking. Cigarette

smokers have higher metabolic rates than non-smokers and on average consume fewer calories than non-smokers. The cost of cigarettes, because of higher taxation, has risen 164 percent between 1980 and 2001 and is believed to have helped reduce smoking rates. Clean indoor air regulations (the restricting of smoking in restaurants, bars, public buildings, and the like) meanwhile have taken effect in areas that now include 42 percent of the population and likewise are believed to contribute to the decline of smoking. But ex-smokers typically gain weight. The evidence does not yet support a direct correlation between restrictions on smoking and weight gain, but it strongly suggests that the upward trend in obesity is at least partly attributable to the anti-

smoking campaign.

The NBER study concludes with a cautionary note. It is easy, the researchers suggest, to identify fast-food outlets as the culprits in the obesity epidemic; indeed, the mere increase in the number of restaurants in a given area seems to cause a parallel increase in the incidence of obesity. But to end there is to ignore the demand for the restaurant option. In other words, fast-food or convenience meals should rightly be considered as much an effect as a cause in American eating patterns. With more household time going to market work, correspondingly less time and energy are available for home activities such as food preparation. The increases in hours worked and in rates of labor force participation, the reductions

in wage rates, and the declines or at best the modest increases in real income experienced by some sectors appear to have stimulated the demand for inexpensive and convenient prepared meals, which has increased caloric intake. Concurrently, reduced time available for active leisure has reduced the burning of calories.

Expanded work opportunities for women, like the successful campaign to reduce smoking, appear to have the unintended consequences of increasing the incidence of obesity. Chou, Saffer, and Grossman conclude by urging that further study be done to determine the feasibility of promoting public policies that might offset these undesirable consequences.

— Matt Nesvisky

The Social and Economic Impact of Native American Casinos

Indian tribes are sovereign nations under federal law, and states may not enforce their civil codes on reservations within a state's borders. After the federal government gave tribes more control over their economic development, some began operating gaming places that conflicted with state and local laws. A number of states challenged these operations, but a series of Supreme Court cases were decided in the tribes favor. To clarify the law, the Indian Gaming Regulatory Act was passed in 1988. Tribes could operate full-scale casino gambling on reservations in any state that allowed such gambling anywhere within its borders, provided the details of the operation were set forth under a tribal-state compact. In **The Social and Economic Impact of Native American Casinos** (NBER Working Paper No. 9198), authors **William Evans** and **Julie Topoleski** summarize the history of Indian casinos over the last 20 years and

examine their effect on employment, poverty, and crime.

As the authors point out, the "speed with which Indian-owned gaming operations have developed is staggering," suggesting that there was "an incredible pent-up demand

1991, the tribe expanded its bingo hall into a casino. It now runs Foxwoods, the largest casino in the world. In 1992 the Pequots offered the state either \$100 million a year or 25 percent of its slot machine take, whichever was greater, provid-

"Examining the effects of casinos after at least four years of operation, the authors find that positive changes include: young adults moving back to reservations, fueling an 11.5 percent population increase; adult employment increasing by 26 percent; and a 14 percent decline in the number of working poor. In counties with or near a casino, the employment-to-population ratio has increased and mortality has declined."

for casino-style gaming" in the United States. In Connecticut for example, a federal court ruled that because the state allowed nonprofit organizations to have casino nights as fundraisers, it had to allow the Mashantucket Pequots to add table games to its bingo operations. In

ed the state would allow it, but not any other group, to install slot machines. The agreement was modified to allow the Mohegan tribe to operate slot machines after it received federal recognition. According to the authors, payments from the tribes were estimated to be

in excess of \$350 million in 2002, and “effectively prevented the state from granting a license for a proposed non-Indian casino in the Bridgeport area.”

Nationwide, “half of the Indians on or near reservations now belong to tribes that have opened Las Vegas-style casinos.” Many of these are in rural areas and draw from clientele who drive an hour or so to get to the casino. The casinos have changed the economic climate in and around the reservations. Examining the effects of casinos after at least four years of operation, the authors

find that positive changes include: young adults moving back to reservations, fueling an 11.5 percent population increase; adult employment increasing by 26 percent; and a 14 percent decline in the number of working poor. In counties with or near a casino, the employment-to-population ratio has increased and mortality has declined.

The negative changes include about a 10 percent increase in auto thefts, larceny, violent crime, and bankruptcy in counties four years after a casino has opened, and an increase in bankruptcies within 50

miles of a new casino. The authors caution against applying their results too generally. Job generation “does not necessarily mean that granting reservations a monopoly in a particular industry is also a desirable policy,” and because casino profits are not taxable, “their presence in many states possibly diverts funds from a taxable activity.” Finally, little is known about the distribution of benefits. “In many cases,” the authors point out, “most of the people employed by casinos are not Native Americans.”

— Linda Gorman

Multinationals’ Sensitivity to Tax Rules

Changes in the way multinational firms structure their operations abroad have made low tax rates increasingly important to a country’s ability to attract foreign capital. This trend is particularly significant for European countries, where 10 percent higher tax rates are associated with 7.7 percent less foreign direct investment (FDI). In **Chains of Ownership, Regional Tax Competition, and Foreign Direct Investment** (NBER Working Paper No. 9224), authors **Mihir Desai, C. Fritz Foley, and James Hines Jr.** explore this phenomenon by analyzing how investment decisions by U.S.-based multinational firms are influenced by the growing tendency to employ “chains of ownership.” This form of indirect ownership allows firms to defer paying American taxes on income earned by their foreign affiliates.

The authors note that in the past, U.S. firms were less sensitive to tax rates in countries where they operated. That’s because whatever they paid out in foreign taxes could be used as credits to offset their U.S. tax liabilities. For example, the U.S. corporate tax rate is 35 percent. So

if an American corporation earned \$100 in a country with a 10 percent tax rate, it would pay \$10 to the foreign government and then use that as a credit to reduce what would be a \$35 U.S. tax liability to \$25. Unless foreign tax rates exceed 35 percent,

abroad and, consequently, the foreign or “host” country’s tax assessment becomes a more important factor in attracting investment. It is no longer simply used as a credit to offset what is now a less-important American tax liability. Instead, it

“As investors from foreign tax credit countries are able to mitigate or avoid repatriation taxes, the floor on tax competition is lowered or removed.”

or firms can defer triggering U.S. taxes, the existence of the credit made the host country tax rate less pivotal for investment decisions.

What if a U.S. company could defer paying domestic taxes on its foreign earnings? Desai, Foley, and Hines assert that U.S.-based multinational firms are increasingly adept at doing just that, a feat they accomplish by structuring complex business relationships in which foreign affiliates are “owned indirectly through other affiliates rather than directly” by the U.S. parent company. Through these arrangements American firms defer paying “repatriation taxes” on their earnings

stands out as something that directly affects a firm’s bottom line much as is the case under so-called exemption regimes of taxing international income.

“As investors from foreign tax credit countries are able to mitigate or avoid repatriation taxes, the floor on tax competition is lowered or removed,” the authors state. They assert that “if the recent trend of rising indirect ownership continues” — both among American firms and among multinationals from countries with similar tax laws — “then capital-importing countries are likely to feel growing pressure to reduce any source-based taxes they impose

on foreign investment. Lower tax rates will in turn encourage American firms (and others) to accelerate their use of indirect ownership structures for their foreign investments,” they add. Additionally, the results shed light on the sensitivity of investment from countries that employ exemption systems as U.S. firms are effectively able to mimic the position of exemption countries.

Desai, Foley, and Hines believe the effect could be particularly pronounced in Europe, where they find

that European affiliates of American companies are more likely than others to be indirectly held and foreign investments seem to be much more sensitive to taxes than elsewhere. For example, as was noted previously, a 10 percent difference in tax rates among European Countries was associated with a 7.7 percent reduction in investment, while outside of Europe, a 10 percent difference was associated with only a 2.3 percent reduction in investments.

One reason for the disparity,

according to these economists, is that “the effects of integration brought about by the European Union have intensified competitive pressures within Europe” to reduce taxes incurred by foreign companies. Desai, Foley, and Hines caution that “partial European economic integration, without coordination of tax policies” may intensify the tendency of European countries to compete for foreign investment via lowered tax rates.

— Matthew Davis

Why Companies Pay for College

Why do so many companies provide tuition assistance for their employees who pursue post-secondary education? College courses give employees new “general skills” that raise the ability of these workers to qualify for higher pay — their market wage — and may enable them to more easily jump to another job in another firm. General skills, such as communications and analytic ability, are not necessarily aimed at the specific tasks of employees. But even occupationally specialized post-secondary programs, such as nursing or computer programming, are valuable to a great many employers. The employer costs of such education are not trivial and are often quite generous. Yet they enable employees to obtain degrees or other readily identifiable credentials that make them more marketable to other firms.

“It is something of a surprise that any employers should offer such support, let alone that most employers do,” notes **Peter Cappelli** in **Why Do Employers Pay for College?** (NBER Working Paper No. 9225). Attempting to solve the mystery, Cappelli finds that tuition assistance programs appear to allow firms to hire better quality, more educated, more productive, employees. That extra productivity makes it

economically feasible to pay a large portion of employees’ tuition bills.

Further, tuition assistance tempts employees to stay longer with the company as they make use of the benefit, spending their evenings and weekends working through a schedule of college courses towards a degree — a part-time process that could last many years. Lower turnover saves employers on the substantial costs of searching for and hiring new employees to replace those leav-

ees themselves decide whether and when to use the benefits. If employers were to mandate training, legislation would require them to pay the full cost of that training, provide it during working hours, and pay non-exempt workers their full wage while receiving the training.

Tuition assistance stands as an important element in the financing of higher education. The American Council of Education estimates that roughly 20 percent of graduate stu-

“Tuition assistance programs appear to allow firms to hire better quality, more educated, more productive, employees.”

ing. Tuition assistance also may give employers a hint as to which of their workers possess superior ability.

Cappelli’s findings suggest that employers are not providing tuition assistance just out of the goodness of their hearts. Nor, the evidence indicates, are they artificially holding down pay levels to cover the costs of tuition assistance. Employers are not subjecting their employees to training or apprenticeship-type arrangements with lower pay while they build up necessary skills, the author finds. Indeed, most employers prohibit access to tuition benefits for new hires, and the employ-

dents and 6 percent of the much larger number of undergraduates receive some financial assistance from their employers to attend school. As many as a third of undergraduates in fields like business and engineering receive tuition assistance from their employers. Tuition assistance is the most common source of financial aid for college students, and on average it covers about one-third of the average annual cost paid by post-secondary students.

Various surveys show that most big companies provide tuition assistance. A 1993 Hewett Associates

survey of 858 firms found 99 percent of them offering tuition assistance with about 6.5 percent of all employees in these firms making use of the programs at any one time. A 2002 survey by the Society for Human Resource Management

of 510 employers found 79 percent offering educational assistance of various kinds.

Cappelli uses data from National Employer Survey II by the Census Bureau that in 1997 surveyed a representative sample of establishments

in the United States. The survey found that 88 percent of employers provided tuition assistance. The survey also asked employers about the average education levels in their workforce and of their new hires.

— David R. Francis

Pollution Abatement in the Pulp and Paper Industry

One of the most environmentally regulated sectors in the United States is the pulp and paper industry, a polluter of both air and water. Individual plants within the industry face very different regulatory pressures, though. Firms that do the pulping — processing raw wood or chips into fibers that are then used to produce paper — are heavier polluters. Separating the fibers is energy intensive, requiring large power boilers that emit significant air pollution. Chemicals used to separate and bleach the fibers can cause water pollution. However, newer plants tend to have better pollution controls, using secondary wastewater treatment, electrostatic precipitators, and scrubbers.

In **“Optimal” Pollution Abatement — Whose Benefits Matter, and How Much?** (NBER Working Paper No. 9125), authors **Wayne Gray** and **Ronald Shadbegian** ask what is the optimal level of regulatory inspections and enforcement in pulp and paper firms. In theory, regulation should be increased to the point where the additional benefit equals the additional cost. The costs of pollution abatement depend on the plant’s age, size, and technology, while the benefits depend on the extent of pollution and the number of people being affected. The focus of this study is on the benefits side.

Using sophisticated environmental models, Gray and Shadbegian calculate the benefits from reduced pollution as seen from the regulators’ perspective. The SLIM-3 Air

Dispersion Model calculates the total health effects of air pollution on the surrounding population at each plant. The EPA’s National Water Pollution Control Assessment Model calculates the transport of pollutants downstream and the resulting effects on water quality on a mile-by-mile basis. This model provides a measure of the impact of each plant’s water pollution on the surrounding population.

The authors’ database includes 300 pulp and paper mills from 1985 to 1997. Detailed data on the char-

overall population emit less air and water pollution. Those plants with more sensitive populations (children and elderly) living nearby emit less air pollution. Plants located in poor neighborhoods attract less regulatory attention and emit more pollution. Plants in areas with politically active populations that are also environmentally conscious emit less pollution.

Not every result fits the authors’ predictions, though. For example, assuming that nonwhites have less political influence, one would antic-

“Plants with more sensitive populations (children and elderly) living nearby emit less air pollution.”

acteristics of the population within a 50-mile radius of each plant, including age distribution and racial composition, is based on the 1990 Census of Population.

The authors note that most plants comply with air and water regulations: 84 and 70 percent compliance rates, respectively. Larger plants generally generate more pollution and face more regulatory activity. Plants in urban areas generate less pollution, but also face somewhat less regulatory activity. Plants in areas with high unemployment rates generate more air pollution and less water pollution and they face more enforcement actions.

As expected, the authors find that plants where pollution reductions provide larger benefits to the

ipate reduced regulatory attention at plants near nonwhite populations. But the results show that plants with more nonwhites nearby receive more regulatory activity and emit less pollution.

In sum, the authors believe their study provides “substantial evidence for both benefits and population characteristics affecting environmental outcomes.” But they also suggest that further research is warranted because “there is a pattern of unexpected signs for regulatory activity.” Finally, Gray and Shadbegian hope to study other industries to see whether the results for the paper industry hold up in other settings.

— Marie Bussing-Burks

Government Internet Subsidies and Student Achievement

Claims that the Internet would revolutionize education and that students attending schools without Internet access would be left behind led to the creation of the E-Rate program in 1996. Operational in 1998, E-Rate provides up to \$2.25 billion a year in subsidies to promote affordable Internet connections for schools and libraries. Subsidy rates range from 20 to 90 percent. Schools with more poor students get higher subsidies. To appreciate the size of the Internet subsidy program, note that estimated U.S. public school spending on computer hardware, software, and training was \$3.3 billion in 1999.

In **The Impact of Internet Subsidies in Public Schools** (NBER Working Paper No. 9090), **Austan Goolsbee** and **Jonathan Guryan** use data from California schools to examine whether Internet access has affected student achievement, and to determine

whether the E-Rate subsidy program did in fact achieve its announced goal of equalizing Internet access in public schools.

The authors find that urban schools with relatively more black and Hispanic students were most responsive to the subsidy, and that elementary schools were more

responsive than high schools. Before the E-Rate program, the richest schools had almost 50 percent more Internet-linked classrooms per teacher. This disparity disappeared after the E-Rate program began. By 2000, some poorer districts had more Internet connections than their wealthier counterparts. Without the subsidy, the

authors predict, the average school would have had 14.7 classrooms connected to the Internet by 2000-1. With the subsidy the number of connected classrooms was 24.4.

Increased Internet access was not associated with better student scores on the math, reading, or the science sections of the Stanford

“Increased Internet access was not associated with better student scores on the math, reading, or the science sections of the Stanford Achievement Test.”

Achievement Test. The authors caution that it may be too early to see the positive effects from increased Internet access because surveys show that most teachers are “novice or completely inexperienced” with computers.

— Linda Gorman

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