

Summary of the Papers

THIS ISSUE CONTAINS papers presented June 13 and 14, 1997, at the eleventh meeting of the Brookings Microeconomics Panel. The five papers in this volume address economic and policy issues in telecommunications, labor turnover, health care, and antitrust law. Jerry A. Hausman measures the value of new telecommunications services and concludes that regulatory delays in offering these services cost consumers billions of dollars. Henry S. Farber explores the incidence and reasons for job loss in the 1990s and finds that the rate of job loss has increased, despite the recent economic expansion. In the 1990s educated workers experienced the greatest increase in job displacement rates, even though less educated workers continued to have much higher rates of overall job loss.

Martin Neil Baily and Alan M. Garber summarize the results of a lengthy field study conducted by McKinsey and Company that compared the health care delivery system in the United States to those in the United Kingdom and Germany. The analysis of four diseases shows that the United States has greater relative productivity than Germany and is usually more productive than the United Kingdom. David M. Cutler and Elizabeth Richardson measure the health status of the U.S. population over the last forty years and find that the nation's "health capital" increased substantially between 1970 and 1990. They value a newborn's improved status at \$100,000 and an elderly person's improvement at \$169,000. Finally, Richard Gilbert and Carl Shapiro summarize the current state of intellectual property antitrust law. After reviewing the current law, they analyze the efficiency of the most common intellectual property licensing practices.

Hausman on the Value of New Telecommunication Services

Hausman proposes methods for valuing new telecommunications services and uses those methods to estimate how much consumers lost when lengthy regulatory delays kept voice messaging and cellular services from the market. Building on earlier methods he developed for measuring changes in consumer surplus, Hausman develops a framework for valuing services before they were available. Using estimates of the postintroduction demand curves for voice messaging and cellular services, he calculates how much welfare consumers would have attained had regulators not delayed the introduction of these services.

The first part of the paper outlines Hausman's valuation method. Following his earlier work, he estimates the demand of a representative consumer using postintroduction information on service prices and consumption. From these demand estimates he calculates a virtual price; that is, a price at which there would be no demand for the service. Taking the virtual price as the price that regulators effectively set when they delay a product introduction, Hausman compares the virtual price to the price that would have prevailed had the product been available. By substituting these two prices into the representative consumer's expenditure function, he assigns a dollar cost to not having the service.

Hausman first uses this framework to study the Bell operating companies' introduction of voice messaging services in 1990. Using four years of price and service data from eighteen states, he finds that the price elasticity of demand for messaging services is approximately minus 1.6. His linear specification implies that the virtual price is roughly \$13 a month. From these and other estimates, he then computes the cost of regulatory delay. His calculations show that the delay cost more than \$1 billion a year, for a total of more than \$10 billion over the estimated ten-year regulatory delay.

He next applies his method to cellular service. Because cellular service is a relatively larger market and has a more inelastic demand, Hausman finds much more striking costs of regulatory delay. Depending on the year, these costs range from \$16 billion to \$35 billion. During the estimated ten-year delay, he conservatively estimates a \$100 billion cost.

Hausman concludes by exploring two related issues. First, to what extent should the introduction of new services affect economic indexes,

such as the Consumer Price Index. Second, how is current pricing regulation likely to affect the future introduction of new services. On this latter question, Hausman concludes that new network and pricing regulations issued by the Federal Communications Commission will retard innovation and the introduction of new services. These delays could cost consumers billions of dollars.

Farber on the Changing Face of Job Loss

Farber's paper on job loss extends his previous Brookings Microeconomics paper describing how job loss varies across economic and demographic groups and over the business cycle. The paper updates the earlier work using more recent data from the Displaced Workers Survey published by the Bureau of the Census, and it focuses on the reasons workers give for their job loss. Two key facts emerge from this new analysis. First, Farber finds that the overall rate of job loss has increased during the 1990s, despite the improving economy. Second, the relative rates of job loss for specific reasons have been changing.

Farber's main analyses compare three-year job-loss rates calculated from seven Displaced Workers Surveys (1984 to 1996). The rate of job loss varied from 10 to 13 percent during the 1980s but increased to 15 percent in the 1990s. Farber also finds interesting differences in the reasons given for displacement. Most of the increase in displacement in the 1990s appears to be due to an increase in the number of workers listing "other" than traditional reasons (such as slack work or plant closings) for job loss. More educated workers also have experienced an increase in job loss because firms have abolished their positions in greater numbers. Farber explores in detail possible explanations for the increase in workers reporting "other" reasons for job loss. Although some losses might be caused by worker retirements, buyouts, and the like, the main sources of the increase remain a puzzle.

Farber's paper also finds that job loss substantially lowers the probability of reemployment and increases the probability that the worker will take on part-time work. These reemployment effects differ, however, across classes of workers. The more educated have higher rates of reemployment, are more likely to be reemployed full time, and experience less of a decline in wages. For the average displaced worker,

the reduction in earnings is substantial. Once reemployed, this worker loses between 11 and 13 percent of earnings. The distribution of losses also is unequal across workers. Less educated workers experience greater declines. Educated workers who are displaced because their position or shift is abolished also have larger-than-average declines.

Farber concludes by noting that his paper raises new puzzles. Although there is some evidence of a shift in job-loss patterns, the causes of this shift are unclear. Increases in displacement rates among more educated workers may provide a clue, but the available data do not allow him to say whether this increase is related to well-publicized corporate downsizings and restructurings.

Baily and Garber on Health Care Productivity

Baily and Garber report on a joint project with McKinsey and Company that compares the productivity of health care systems in the United States, the United Kingdom, and Germany. One goal of the analysis is to inform policy debates about the effectiveness of different health care systems; another is to identify those practices that can improve productivity. The authors argue that current debates rely too much on aggregate expenditure and performance data. These data mask tremendous differences in demographics, morbidity, and lifestyles. By analyzing individual patient and hospital data, the authors hope to provide more systematic measures of health care productivity.

The early sections of the paper document problems in measuring and comparing health care inputs and outputs across countries for four specific diseases. The authors also distinguish between productive and allocative efficiency, defining productive efficiency as the relative position of each country's health care production function for a specific disease. Although the authors do not actually estimate production functions, the assumption of diminishing returns allows them to rank input and output differences across countries.

The authors divide the discussion of their results by the four diseases: diabetes, cholelithiasis (gallstones), breast cancer, and lung cancer. Table 1 of the paper summarizes the productive efficiency comparisons. The United States clearly has higher productivity than either of the other two countries for cholelithiasis and lung cancer, and the United

Kingdom has greater productivity for diabetes. Because of differences in inputs and outputs, the authors could not determine whether the United Kingdom or the United States had higher productive efficiency for breast cancer. The authors go on to list six features of health care delivery systems that could explain these productivity differences: screening, treatment duration, staffing, treatment location, organizational form, and technology.

The remainder of the paper asks whether differences in regulatory and reimbursement practices can explain country-level efficiency differences. The authors find that fee-for-service reimbursement and competition among U.S. providers has made the United States more efficient. They also note that the centralized system in the United Kingdom and, to a lesser degree, in Germany is better poised to exploit integrated disease prevention and disease management programs. There may be no single best health care model, the authors conclude, but there are clear benefits to flexible organization, competition, and financial incentives.

Cutler and Richardson on Measuring Health Capital

Cutler and Richardson value changes in the health of the U.S. population over the past forty years. Their main goal is to provide economic measures that can inform public policy debates about the productivity of the U.S. health care system. Cutler and Richardson do this by developing a measure of “health capital”—the discounted value of current and future utility associated with health status. Because they cannot estimate baseline levels of health, they measure changes in health capital from 1950 to 1990. Their estimates suggest that health capital for newborns increased by about \$100,000 between 1970 and 1990; health capital for individuals over 65 increased by about \$169,000. They attribute the greater increase in health capital for the elderly to decreased mortality from heart disease. The authors also find that health capital changes differed across demographic groups. Health capital for women improved relative to that for men before 1970 and then fell between 1970 and 1990. Health capital for blacks also rose relative to whites between 1950 and 1980 and remained constant between 1980 and 1990.

The authors begin by adapting Grossman's concept of health capital. Noting that the concept of health has many facets, the authors use a variety of data sources to measure health. Their basic measure is years of life, which they later adjust for quality of each year of life. Because they cannot measure the baseline health of the U.S. population, they choose to work in changes. Thus, the authors' initial estimates are based on valuing changes in mortality over time. Although the years-of-life estimates are somewhat sensitive to assumptions about discount rates and the economic value of a year of life, they nonetheless show that the health status of the U.S. population has increased dramatically.

Because health changes in ways that people cannot objectively measure as they age, the authors look at individual-level data on reported health status to develop a quality-of-life scale. This approach draws on annual national health surveys to estimate how individuals' self-reported health status varies with demographic factors and disease. From these estimates, the authors construct a disease-adjusted quality-of-life measure for different demographic groups. This measure is then discounted to construct a measure of health capital. The authors divide changes in this measure into three categories: changes resulting from reductions in mortality; changes caused by changes in the prevalence of disease at each age; and changes resulting from increases in the quality of life at each age conditional on surviving a serious illness.

The authors also compare changes in health care capital to changes in health care expenditures and find that the rate of return to health care expenditures is nontrivial. Or, as they phrase it, returns are not so low as to suggest that the United States should reduce expenditures on health care. The authors also find that changes in health care expenditures do not explain all of the changes in health capital. This result suggests that more work is needed to inform policy debates about the benefits of disease prevention programs.

Gilbert and Shapiro on Antitrust and Intellectual Property

Gilbert and Shapiro describe recent changes in the U.S. government's policy toward the licensing of intellectual property. The general purpose of their paper is to classify and analyze instances in which the licensing of intellectual property may reduce economic efficiency. The

paper discusses the economic logic of the Justice Department's 1995 antitrust guidelines on the licensing of intellectual property and provides a theoretical analysis of the economic consequences of licensing contracts. Their theoretical analysis leads them to study the efficiency of specific license practices in detail. The authors conclude by suggesting areas in which antitrust law regarding intellectual property could be made more economic.

The first part of the paper discusses the dilemma that antitrust officials face between protecting firms' intellectual property and consumers' interests. The authors discuss this trade-off in the context of the so-called Nine No-No's—nine licensing practices regarded as anticompetitive. The authors then turn to a discussion of the Justice Department's 1995 antitrust guidelines for licensing intellectual property. Here the authors draw the useful distinction between horizontal and vertical licensing practices. Horizontal licenses occur between actual or potential competitors; all other licenses are classified as vertical. Much of the paper analyzes vertical licenses that contain "penalty" clauses—generally, restrictions that penalize a licensee for using alternative suppliers or technologies.

To understand the economic consequences of penalty clauses, the authors develop a theoretical model that identifies circumstances in which licensors and licensees will mutually agree on penalty clauses that reduce economic efficiency. The clauses reduce efficiency either because they exclude competitors or change output. The key contribution of the model is that it explicitly shows what the licensee and licensor gain through a penalty clause. The model also shows how penalty clauses reduce efficiency by reducing the demand for rival firms' products, increasing rivals' costs, or reducing competition.

The paper concludes by revisiting the Nine No-No's and recent intellectual property cases, including the Justice Department's complaint against Microsoft. The discussion of these cases illustrates how difficult it is in practice to determine whether these contracts are socially beneficial or harmful. Despite these practical difficulties, the authors note areas of antitrust law that "lack a firm economic foundation" in their treatment of intellectual property.