The NBER Digest

NATIONAL BUREAU OF ECONOMIC RESEARCH

March 2000

*IN THIS ISSUE*



# Hospital Competition Improves Quality and Lowers Cost

Not much good is being said these days about Health Maintenance Organizations (HMOs). But NBER Research Associates **Daniel Kessler** and **Mark McClellan** have something positive to report. They find that increasing HMO enrollment through the 1980s and 1990s partially explains the increase in the beneficial effects of hospital competition during this period.

In **Is Hospital Competition Socially Wasteful?** (NBER Working Paper No. 7266) Kessler and McClellan analyze Medicare claims data for the vast majority of elderly non-rural beneficiaries admitted to a hospital with a primary diagnosis of a heart attack (acute myocardial infarction, or AMI) from 1985 to 1994. They combine that with data on hospital characteristics collected by the American Hospital Association.

They find that, before 1991, competition led to higher costs and, in some cases, lower rates of adverse health outcomes for elderly Americans with heart disease. After 1990, competition led both to substantially lower costs and to significantly lower rates of adverse outcomes. As of 1991, it was approximately 8 percent more costly to be treated in the least competitive fourth of hospital markets, as compared to the most competitive fourth. And, the quality of care in competitive markets was higher as well. Patients in the least competitive fourth of hospital markets experienced approximately 1.5 percentage points higher mortality (that is, were more likely to die) than those in the most competitive areas.

Expressed as a share of 1994 average mortality from AMI in the elderly, competition had the potential to improve mortality by 4.4 percent, the authors find. Patients from the least competitive markets also experienced higher rates of readmission for some cardiac complications, suggesting that the additional survivors attributable to competition in hospital markets were not in especially marginal health.

> "Patients in the least competitive fourth of hospital markets experienced approximately 1.5 percentage points higher mortality after heart attacks than those in the most competitive areas."

For two reasons, the authors conclude that increasing HMO enrollment over the sample period partially explains the dramatic change in the impact of hospital competition. First, hospital competition unambiguously improves welfare throughout their sample period in geographic areas with above-median HMO enrollment rates. Second, point estimates of the magnitude of the benefits of competition are uniformly larger for patients from states with high HMO enrollment as of their admission date, as compared to patients from states with low HMO enrollment.

Kessler and McClellan suggest that spillover effects from increasingly efficient treatment of privately-insured patients may have affected the treatment regimen of Medicare patients, by mediating the consequences of hospital competition in a way that enhances medical productivity. In particular, managed care appears to increase efficiency by reducing the tendency of hospital competition to result in a "medical arms race" of expenditure growth—excessive spending on medical care producing minimal benefits for patients.

These findings, the two economists write, are not affected by the

## FREE Electronic Version of the *DIGEST*

The NBER now offers the monthly *Digest* free of charge by e-mail. To receive the *Digest* by e-mail each month, simply sign up online at **http://www.nber.org/bulletin.html.** If you do register for the electronic version of the *Digest* and would like to cancel your hardcopy subscription, please send an e-mail to **subs@nber.org.** NBER Working Papers are available at **www.nber.org.**

structure of the hospital market, such as distance to the nearest hospital, hospital bed capacity utilization, and the characteristics of area hospitals. In future work, they intend to explore whether these findings extend to patients with non-acute illnesses (such as cancer), and to study further the mechanisms through which competition among providers enhances social welfare.

—David R. Francis

## Many Households Are Underinsured

A significant proportion of U.S. households do not have sufficient life insurance to protect them in case of the death of the primary breadwinner, according to new research by **Douglas Bernheim, Lorenzo Forni, Jagadeesh Gokhale,** and **Laurence Kotlikoff.** Secondary earners, primarily wives, and dependent children can face severe hardship if the main earner in the household dies and they are not covered by enough insurance.

Couples where one partner earns much more than the other and those with dependent children—and thus with more family members to protect—are most likely to be underinsured, Bernheim et al show in **The Adequacy of Life Insurance: Evidence from the Health and Retirement Survey** (NBER Working Paper No. 7372). Older couples in the study's sample, with household heads close to retirement (51–61 years old in 1992) are more likely to have adequate insurance. Also, secondary earners are less likely to be underinsured if their level of education is higher, and when they have pension rights. Underinsurance is also less common among couples that own their home.

To analyze life insurance coverage in U.S. households, Bernheim and his colleagues introduce a number of benchmarks: for example, life insurance is deemed inadequate if it does not allow individuals and their children to sustain their standard of living, in financial terms, upon the death of one spouse. Severe underinsurance refers to a situation where the individual (and children) would face a drop in living standards of 40 percent or more. Significant underinsurance refers to a decline of 20 percent or more. The researchers stress that these are only benchmarks; for example, couples quite rationally may regard life insurance as too expensive.

This study shows that a sizeable minority of the 7,500 couples in the 1992 Health and Retirement Survey sample was significantly underinsured. Almost one third of wives and 10 percent of husbands would have suffered a decline in living standards of more than 20 percent had their spouse died in 1992. And 15 percent of wives would have suffered a decline in living standards of 40 percent or more. Among some groups, the level of underinsurance exceeds two thirds and the extent of severe underinsurance exceeds one quarter.

> "Almost one third of wives and 10 percent of husbands would have suffered a decline in living standards of more than 20 percent had their spouse died in 1992. And 15 percent of wives would have suffered a decline in living standards of 40 percent or more."

Household life insurance needs are calculated using ESPlanner, a financial planning software package. This allows the researchers to account for a broad array of economic, demographic and financial factors. The average level of recommended life insurance for husbands, taking the sample as a whole, is put at $88,000. This is around 50 percent more than the average actual level shown in the results, of $60,000. Under-insurance tends to decline with household income at low levels of income, though, and then to level-off at moderate levels of income, the study shows. Among some groups, however, the degree of under-insurance increases with income. One quarter of secondary-earners in households with incomes of at least $100,000 was severely under-insured.

Couples do not increase their life insurance to cover this increased risk, the researchers show. Non-earners in single-earner households are particularly vulnerable. More than one in five non-earners is severely under-insured and another one in seven is significantly under-insured. Nor do couples take full account of the needs of their kids. Families with children are more vulnerable than childless couples or those with adult children but do not buy more insurance to compensate. More than two-thirds of secondary earners in households with dependent children is under-insured, and more than a quarter is severely underinsured. The comparable figures for couples without children are much lower.

Younger households are more vulnerable than older households, but again do not adequately compensate. The degree of under-insurance exceeds 70 percent for 40-something secondary earners, with nearly half the group severely or significantly under-insured. By contrast, the frequency of under-insurance is just over one-third for 60-something secondary earners, with only one in four significantly or severely underinsured.

The researchers also demonstrate a strong relationship between underinsurance and race or ethnicity. The occurrence of under-insurance is more than three times higher for non-white husbands and nearly twice as high for non-white wives as for their white counterparts. Among non-white households, more than one in four secondary-earners are severely under-insured and nearly half are severely or significantly under-insured.

—Andrew Balls

## Employee Drug Testing is Effective

Employers are increasingly concerned about illicit drugs in the workplace. Besides being illegal, drug abuse is costly in many ways, from lost productivity to frequent accidents. The percentage of medium- to large-sized companies that have instituted some form of drug testing program almost doubled from 1988 to 1993—from nearly 32 percent to over 62 percent.

How effective are these programs in deterring current and potential employees from using marijuana, cocaine, and other drugs? In **The Effectiveness of Workplace Drug Prevention Policies: Does 'Zero Tolerance' Work?** (NBER Working Paper No. 7383), **Stephen Mehay** and **Rosalie Liccardo Pacula** explore the deterrence effect of the military's anti-drug program. The military combines mandatory random drug testing and zero tolerance, an especially aggressive approach relatively rare elsewhere in the economy. "Using the U.S. military's policy of random drug testing and zero tolerance, we find that a strict employer anti-drug program is a highly effective means of deterring illicit drug use among current users as well as potential users," the authors write.

Indeed, drug use by military personal and civilian workers mirrored one another before the military instituted drug-testing in 1981. Yet now, drug abuse among military workers is far less prevalent than among their civilian counterparts. Surveys suggest that employees in the military are about 16 percent less likely to report using drugs in the past year than their civilian counterparts. Drug prevalence rates in the military fell from 27.6 percent in 1980 to only 3.4 percent in 1992. After taking into account selection bias (potential drug-using recruits are aware of the drug-testing program and steer clear of a military career), the deterrence effect of the military's program ranges between 4 percent and 16 percent, the authors calculate.

"Using the U.S. military's policy of random drug testing and zero tolerance, we find that a strict employer anti-drug program is a highly effective means of deterring illicit drug use among current users as well as potential users."

A drug-testing program curbs drug abuse through three channels: The fear of getting caught; the probability of getting punished; and the severity of the penalty. The structure of the drug-testing program largely determines its effectiveness. For example, in some programs drug tests are mandatory only after an accident, limiting their deterrence value. Far more effective are programs requiring all workers to submit to random drug tests. The military's initial anti-drug programs had some second chances built into them, but since 1995 all the services have instituted a draconian penalty for getting caught—job loss.

Nevertheless, drug use hasn't been eradicated from the military, and the researchers wonder whether a strict anti-drug policy is really worth the cost. The primary cost of a zero tolerance policy is the cost of replacing terminated workers. They note that the military's approach in the early 1980s, which coupled lower random testing rates and a more lenient two-strikes-and-you're-out policy, still showed a sizeable deterrence effect. "These results suggest that policies that would be feasible today in the private sector can be expected to reduce drug use in a cost-effective manner," they say.

—Christopher Farrell

## Crises Increased by Excessive Short-Term Debt

Perhaps it seemed like a trivial issue at the time: the country's economy was booming; foreign investors were eager to get in on the action; and, given the pace of things, no one really gave much thought to the fact that the new money flowing across the border often came in the form of short-term loans. Maybe short-term debt seemed cheaper than long-term debt, or perhaps there was some quirk in the local tax or regulatory structure that made short-term loans the preferred investment instrument. Whatever the rationale, NBER Research Associates **Dani Rodrik** and **Andrés Velasco** argue that a country that "binged" on short-term investments in the 1990s often discovered that what seemed to be so effective at keeping the good times rolling quickly flipped into its opposite and became a major show-stopper.

In **Short Term Capital Flows** (NBER Working Paper No. 7364), they look at financial crises of the past few years and find that in almost every situation—particularly the East Asia meltdowns—countries set themselves up for trouble because they had far more short-term debt than they did the resources or "reserves" to rapidly repay skittish creditors. "Countries with short-term liabilities to foreign banks that exceed reserves are three times more likely to experience a sudden and massive reversal in capital flows," state Rodrik and Velasco. "Furthermore, greater short-term exposure is associated with more severe crises when capital flows reverse."

The authors note that in the international lending boom of the 1990s, debt extended to emerging countries more than doubled, rising, at one point, from $1 trillion in 1988 to $2 trillion in 1997, with short-term debt rising "particularly rapidly." This left those countries vulnerable to what Rodrik and Velasco refer to as a "self-

fulfilling confidence crisis." The imbalance itself made investors nervous and more likely to call in their debts, resulting in the so-called "capital flight" that saw once-booming economies suddenly starved for cash.

For example, in late 1997, as the financial crisis in Thailand began to spread across the region, investors looked at Korea and what they saw was a country holding short-term debt equal to 300 percent of its reserves and around 15 percent of GDP. Foreign creditors began demanding payment and almost overnight a nation that was often cited as a sterling example of the new Asian economic powerhouses was flirting with default.

> "Countries set themselves up for trouble because they had far more short-term debt than they did the resources or 'reserves' to rapidly repay skittish creditors."

These economic horror stories aside, the authors do not intend to convey that short-term debt is a bad thing. They note that in many instances, it's a prudent form of investment. But they believe that "one has to keep an alert eye on the ratio of short-term liabilities to available liquid assets." Interestingly, it's countries that are currently doing relatively well that might want to watch this particular meter. Rodrik and Velasco point out that "as economies get richer and financial markets become deeper...the external debt profile gets tilted towards short-term liabilities." In other words, corrective action to bring things into balance is required when countries are booming, a time when they may be least inclined to do something that might be perceived as slowing growth.

But is that perception equal to the reality? Must growth be sacrificed to achieve some equilibrium in the debt portfolio? Turning to this issue, Rodrik and Velasco examine the controversial area of capital controls—policies intended to discourage wild swings in investment flows but with restrictions that frequently prove irritable to both international and domestic entrepreneurs.

The authors contend that an effort in the 1990s by Chile to discourage high-levels of short-term investment —for which it was roundly criticized in some quarters—was a success in reducing dependence on short-term capital. They note that, by 1997, the country's short-term debt was only 7.6 percent of total debt.

They also assert that while Malaysia's brief attempt in 1994 to limit short-term investments from abroad "did not prevent Malaysia from getting into trouble a few years later," at the time the policy was "remarkably effective," reducing short-term debts in 1994 to 26 percent of total debt compared to 37 percent in 1993. (The authors believe one possible explanation for why 1994 policy did not protect Malaysia from having problems in 1997 is that "the controls were lifted too soon.")

Perhaps most importantly, according to Rodrik and Velasco, these proactive efforts to discourage short-term debt did not appear to affect economic growth. In fact, they may have been responsible for good fiscal health. "Chile is a success case of the 1990s, in no small part because it has managed to avoid the destabilizing influence of short-term capital flows," the authors conclude. "Even in Malaysia, where the imposition of restrictions in January of 1994 resulted in a massive turnaround in capital flows, growth was unaffected. In fact, the Malaysian economy grew faster in 1994 and 1995 than in 1993."

—Matthew Davis


NBER

*The National Bureau of Economic Research is a private nonprofit research organization founded in 1920 and devoted to objective quantitative analysis of the American economy. Its officers are:*

*Martin Feldstein—President and Chief Executive Officer*
*Carl F. Christ—Chairman*
*Kathleen B. Cooper—Vice Chairman*

*Contributions to the National Bureau are tax deductible. Inquiries concerning the contributions may be addressed to Martin Feldstein, President, NBER, 1050 Massachusetts Avenue, Cambridge, MA 02138-5398.*

*The* **NBER Digest** *summarizes selected Working Papers recently produced as part of the Bureau's program of research. Working Papers are intended to make preliminary research results available to economists in the hope of encouraging discussion and suggestions for revision. The* **Digest** *is issued for similar informational purposes and to stimulate discussion of Working Papers before their final publication. Neither the Working Papers nor the* **Digest** *has been reviewed by the Board of Directors of the NBER.*



*The* **Digest** *is not copyrighted and may be reproduced freely with appropriate attribution of source. Please provide the NBER's Public Information Department with copies of anything reproduced.*



*Preparation of the* **Digest** *is under the supervision of Donna Zerwitz, Director of Public Information.*


*Individual copies of the NBER Working Papers summarized here (and others) are available free of charge to Corporate Associates.* ***For all others, there is a charge of $5.00 per downloaded paper or $10.00 per hard copy paper. Outside of the United States, add $10.00 per order for postage and handling. Advance payment is required on all orders.*** *To order, call the Publications Department at (617) 868-3900 or visit* ***www.nber.org/papers.*** *Please have the Working Paper Number(s) ready.*

***Subscriptions*** *to the full NBER Working Paper series include all 500 or more papers published each year. Subscriptions are free to Corporate Associates. For others within the United States, the standard rate for a full subscription is $1850; for academic libraries and faculty members, $1070. Higher rates apply for foreign orders.*

***Partial Working Paper subscriptions,*** *delineated by program, are also available. For further information, see our Web site, or please write: National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138-5398.*

*Requests for* **Digest** *subscriptions, changes of address, and cancellations should be sent to* **Digest,** *NBER, 1050 Massachusetts Avenue, Cambridge, MA 02138-5398. Please include the current mailing label.*