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Appearances and Realities in the Chinese Economy

Trends and Cycles in the Macroeconomy

Between 1997 and 2010, China's industries steadily increased their capital investment even though the investment-to-output ratio was increasing and labor's share of income was trending down. While traditional two-sector models of the Chinese economy are hard pressed to explain these phenomena, a variant that divides the economy into "heavy" and "light" sectors, rather than the traditional state-owned and privately owned sectors, can explain these patterns as well as other macroeconomic regularities, according to **Trends and Cycles in China's Macroeconomy** (NBER Working Paper No. 21244). Government policies that encouraged loans to capital-intensive industries are a key part of the explanation.

"We argue that preferential credit policy for promoting heavy industries accounts for the unusual cyclical patterns as well as the post-1990s economic transition featured by the persistently rising investment rate, the declining labor income share, and a growing foreign surplus," write authors Chun Chang, Kaiji Chen, Daniel F. Waggoner, and Tao Zha. Their study collects and analyzes new Chinese data. The authors have created annual and quarterly macroeconomic time series that they say are as consistent as possible with U.S. time series. These data highlight ways in which China's transition to a developed economy differed from the experience in the West.
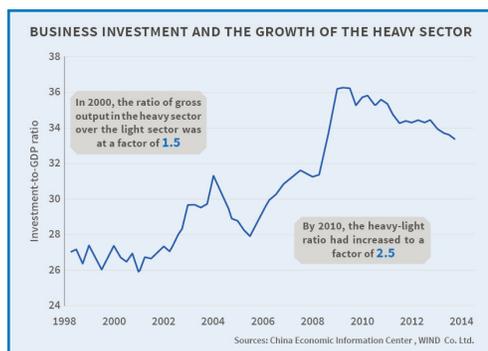
The authors' novel division of the economy into heavy and

BUSINESS INVESTMENT AND THE GROWTH OF THE HEAVY SECTOR

In 2000, the ratio of gross output in the heavy sector over the light sector was at a factor of **1.5**

By 2010, the heavy-light ratio had increased to a factor of **2.5**

Sources: China Economic Information Center , WIND Co. Ltd.

Official Statistics Understate Unemployment

China's real unemployment rate is much higher than the official rate and, when correctly measured, is much closer to that in other nations at similar levels of development, according to **Long Run Trends in Unemployment and Labor Force Participation in China** (NBER Working Paper No. 21460). The study estimates that the actual unemployment rate in 2002–09 averaged nearly 11 percent, while the official rate averaged less than half that. Moreover, despite some reports to the contrary, by 2009 China's labor market had still not recovered from huge layoffs that occurred during the later 1990s and early 2000s as the nation transitioned from a government-controlled economy to one in which private enterprise and market forces were more at play.

OFFICIAL STATISTICS UNDERSTATE CHINA'S UNEMPLOYMENT RATE

Authors' estimated rate

Official Chinese rate

Source: Authors' calculations using Urban Household Survey data

"The official unemployment rate series for China is implausible and is an outlier in the distribution of unemployment rates across countries ranked by their stage of development," write researchers Shuaizhang Feng, Yingyao Hu, and Robert Moffitt. "We find that, by approximately 2002, the unemployment in China was actually higher than that of high income countries, exactly the opposite of what is implied by the official series."

The official unemployment rate in China, which is based on registered unemployment figures, has long been viewed with suspicion. Various private studies have tried to come up with better estimates. This paper uses for the first time a nationally representative
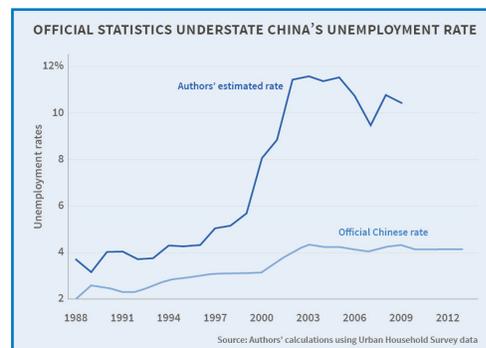
light sectors is based on the decision by the Eighth National People's Congress in the late 1990s to strengthen heavy industries for 15 years. Telecommunications, energy, metal products, and other heavy sectors were given priority for long-term bank loans. The authors include a collateral constraint in their model, and they argue that preferential access to capital enabled the heavy sector to borrow more, and increase its capital investment, even though the returns from that investment were declining. This accounts for the rising share of the heavy sector in aggregate value-added, the increasing investment rate, and the declining labor income share.

The authors attribute some unusual cyclical trends in their data to bank lending frictions. The heavy sector's expanding demand for credit crowded out the light sector's demand, pushing up lending rates. Absent lending frictions, increased borrowing would boost wage income and house-

> The government's policy of promoting heavy industry accounts for China's persistently rising investment rate and declining labor income share.

hold consumption. In fact, the data do not show this. The authors find that for the period beginning in the late 1990s, there was weak or negative co-movement between aggregate investment and consumption; weak or negative co-movement between aggregate investment and labor income; and a negative co-movement between long-term loans and short-term loans. Without lending frictions, it is difficult to explain both the first and second findings.

"Our theory contributes to the emerging literature on the role of financial market imperfections in economic development," the authors conclude. "Our theoretical framework sheds light on a potential cause of the twin first-order problems facing China's macroeconomy today: (a) low consumption and income growth and (b) overcapacity of heavy industries with rising debt risks. How to resolve these problems might have profound policy implications."

—Laurent Belsie

sample of registered urban residents—the "hukou" population—based on urban household survey data, supplemented with weights derived from the decennial census. The study derives a much different picture of how Chinese unemployment has evolved since the mid-1990s.

The authors describe three distinct periods in China's labor market. The first—from 1988 to 1995—was characterized by an official unemployment rate reflected none of that volatility. Unemployment peaked in 2003 and began to fall in later years, by the authors' calculations. It nevertheless still averaged 10.9 percent for the 2002–09 period while the official average was only 4.2 percent.

Compared to other nations with similar gross national income per capita, China's unemployment rate in 2009 was

educated young women and 14.5 percent for non-college-educated young men. In contrast, the estimated rates were less than 2 percent for older college-educated men and women, whose advantage was evident both before and after the transition.

"Overall, we see that people without college degrees, younger people, and females systematically face more slack labor markets than their more educated, older, and male counterparts," the authors conclude. "The most striking pattern is that younger people had very high unemployment rates, especially for more recent cohorts…. Even at the age of around 30, the 1970s female cohorts had roughly a 10 percent unemployment rate, as compared to only 3 percent for females born in the 1960s."

> High and rising unemployment in China created by massive layoffs during major changes in the structure of its labor market is not reflected in government figures.

economy dominated by state-owned enterprises (SOEs). Unemployment was low: their estimate suggests an average of 3.9 percent while the official average was 2.5 percent. Then in 1995–2002, the unemployment rate rose rapidly, by one percentage point per year, as SOEs shed massive numbers of workers and rural migrants flooded the cities in search of jobs. SOEs went from employing 60 percent of China's workforce in 1995 to 30 percent in 2002. Yet the

relatively high. The authors nevertheless caution against making direct comparisons with unemployment rates in other countries, because China's urban household survey data do not define labor-force status in exactly the same way that many developed nations do.

Some groups had worse unemployment rates than others in the transition years from 1995–2002. The study estimates that the jobless rate was 18.3 percent for non-college-

Unsurprisingly, some regions fared worse than others during the transition. The Northeast, South Central, and Southwest regions of the country saw the largest increases in their unemployment rates during the 1995–2002 period. These were also the regions with the greatest number of SOE

layoffs. In the Northeast region, for example, some 7.3 million workers were laid off during the period — 42 percent of its total SOE employment in 1995.

While China's unemployment rate has soared since the mid-1990s, labor force participation has dropped. Participation averaged 83.1 percent around 1995, fell dramatically during the transition, and stabilized at around 74 percent during the 2002-09 period. Young people were hit especially hard by the layoffs during the 1995-2002 period. The labor force participation rate of young men and women, with and without college education, all fell by more than 10 percentage points.

"The results suggest that cohort differences might be in play and that the younger generation may have faced higher cost and/or lower benefit in participating [in the] labor market," the authors conclude.

— Laurent Belsie

Food Shopping Behavior During the Great Recession

During the December 2007–June 2009 recession, U.S. households in all demographics changed their food shopping behavior. On average, they devoted more time to shopping for better deals as unemployment rose. They increased their coupon usage, purchased more on sale, bought more generic goods, bought more goods in large sizes, made more shopping trips, and did more shopping at discount stores.

In **The Elasticity of Substitution Between Time and Market Goods: Evidence from the Great Recession** (NBER Working Paper No. 21318), Aviv Nevo and Arlene Wong show that money-saving shopping behaviors like using manufacturer coupons, waiting to buy on sale, trading down to generic goods, and buying larger sizes were either stable or declining as a fraction of overall household expenditure in the pre-recession period from 2004 to December 2007. They estimate that households could have lowered the average price paid for food by 2 to 4 percent by buying on sale, by 31 to 33 percent by using coupons, and by 5 to 11 percent by buying at discount stores. Buying generic goods would have reduced costs by 13 to 25 percent, and buying large sizes would have reduced costs by 20 to 47 percent.

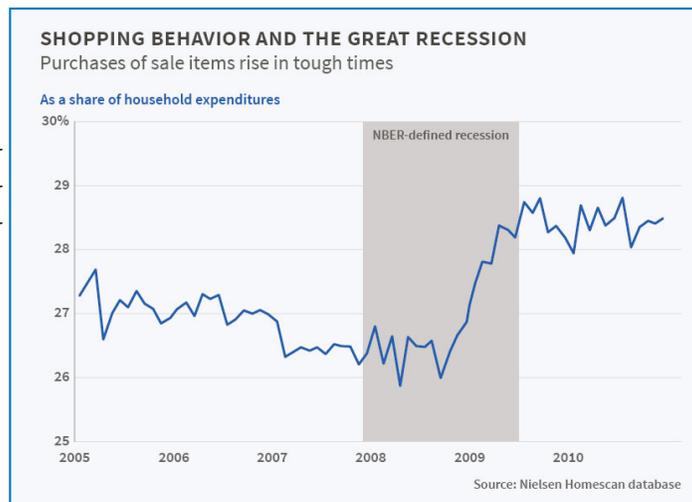Households responded to the recession by watching their budgets more closely, and by increasing their spending in each of the money-saving categories by between 1.5 to 2.0 percent of total household expenditures. But the return for the time spent in these activities, a decrease in the average marginal price paid, dropped by about 2 percent. Doubling the number of shopping trips, for example, reduced the price paid by 12 percent prior to the recession. During the recession, it reduced the price paid by about 9 percent.

Because shopping intensity increased even as the return to shopping fell, the authors estimate that the opportunity cost of time for households decreased by between 14 and 26 percent between 2008 and 2010. Increasing unemployment induced households to substitute non-market shopping work for market work.

The authors' estimates rely on data from the Nielsen Homescan database, which

> Households saved by taking advantage of coupons, sales, generics, and large sizes, but the return on time spent saving in this way declined.

records household shopping behavior at the Universal Product Code level for about 325 million household purchases in 52 large U.S. metropolitan areas. Combining the Nielsen data with data from the American Time Use Survey suggests that substituting leisure and paid employment for time spent in more intense shopping may help households smooth their consumption over the business cycle. Real household median income declined by almost 10 percent from 2007–12. Real median household net wealth fell by 40 percent from 2007–13. Real household expenditure on food fell by 8.8 percent over 2008–10 relative to 2006–07, a 7.7 percent decline in quantity and a 1.1 percent decline in prices paid.

The authors conclude that the "ability to substitute between time and market expenditure can also play an important role in smoothing various non-food household consumption when households are faced with unanticipated income and wealth shocks."

— Linda Gorman

SHOPPING BEHAVIOR AND THE GREAT RECESSION
Purchases of sale items rise in tough times

As a share of household expenditures

Source: Nielsen Homescan database

The Power of Nudges in Exercise Commitment Contracts

Can the power of suggestion kick start an exercise habit? It depends. That's the conclusion Jay Bhattacharya, Alan M. Garber, and Jeremy D. Goldhaber-Fiebert reach in **Nudges in Exercise Commitment Contracts: A Randomized Trial** (NBER Working Paper No. 21406).

The researchers followed 4,000 people who enrolled in a web-based exercise commitment site. The site is designed for a self-selected group: people who recognize that on their own, they are not likely to stick to an exercise regimen. Through the web site, they enter into a "contract" to exercise. At the outset, they specify the duration of the contract in weeks, the frequency of exercise per week, and how large a financial penalty, if any, they would face for falling short of their goals.

In the study, conducted between October 2010 and April 2012, the researchers examined whether people's exercise habits were affected by randomly assigning users 8-, 12-, or 20-week contract durations that would take effect by default unless the person contracting to exercise specified otherwise.

The researchers found that users assigned the higher default settings tended to select longer contracts—with an 8-week default, 12.5 weeks; a 12-week default, 14 weeks; and a 20-week default, 18.8 weeks. The duration nudge had no discernible effect on users' choice of exercise frequency or penalty level.

It is important to note that these statistics are averages. Some participants selected contracts shorter than the default duration assigned to them, and some might have opted for longer contracts even if they hadn't been nudged.

Committing to a contract is one thing; fulfilling it is quite another. To determine how the nudges affected performance, the researchers

performed two separate analyses.

First, they compared people on the basis of their assigned random nudge—regardless of the contract duration they actu-

ally chose. Those assigned an 8-week default completed an average of 3.2 weeks of exercise; those assigned a 20-week default completed 4.3 weeks.

Then the researchers devised a formula to tease out only those users whose contract durations appeared to have been influenced

NUDGES AND EXERCISE COMMITMENT CONTRACTS

Average contract commitment (weeks)

| Suggested length of commitment (weeks) | 12.5 / 3.2 | 14.0 / 3.4 | 18.8 / 4.3 |

Actual weeks of exercise
Source: Authors' randomized trial

by the default assigned to them. Of that group, those who responded to the longest nudge completed 6 weeks of exercise, compared with 3.3 weeks for those who were assigned the shortest. In other words, those given the 20-week default stuck to their exercise habit for nearly twice as long as those

given the 8-week default.

The researchers next set out to determine whether nudges help coax people into making a habit of exercise, which they

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Among people who have trouble sticking to an exercise regimen, a push to make a commitment appears to be effective.

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defined as whether members of the sample group signed up for a new contract within 90 days of the expiration of the first one.
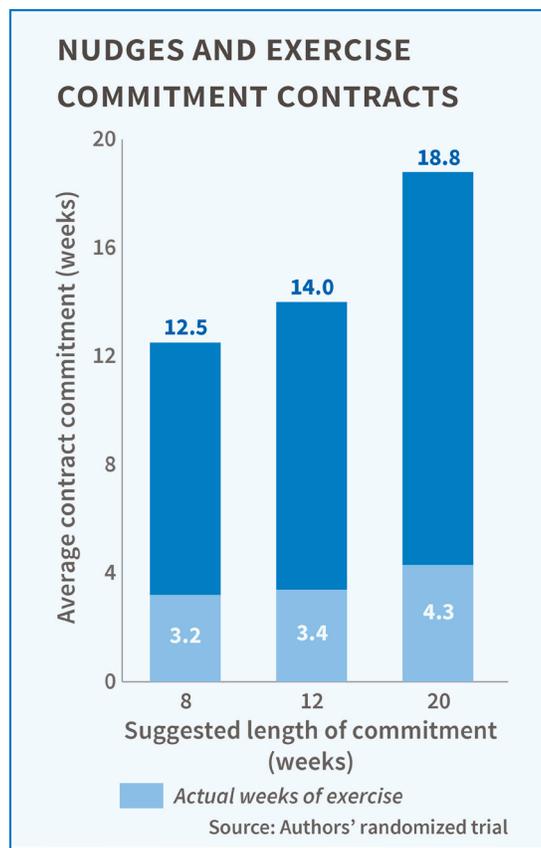
As before, the researchers first analyzed data for the entire sample group and then focused just on those users whose contracts were influenced by the nudge.

Mirroring the earlier results, those assigned the longest duration defaults were more likely to sign up again. The results were most pronounced for those successfully nudged into the longest contracts. Of that group, 9.4 percent signed new contracts within 30 days and 11.6 percent within 90 days. By comparison, only 6 percent of the entire sample signed a second contract.

The researchers point out that their sample group is not representative of the population at large. The website they studied would not attract self-disciplined people with established workout routines. Nor would it draw those—called "myopic" by the researchers—who lack the self-awareness to realize they can't on their own stick to an exercise program.

The authors point out that it is difficult to generalize from their findings to the design of exercise program incentives for the broader population. "A policy that is guaranteed to help more people than it harms…would require more information about each individual's myopia and exercise preferences than any organization typically possesses."

—Steve Maas

Organizational Barriers to Adoption of New Technology

Slow diffusion of promising new technology has long been the bane of inventors, innovators, company owners, and enterprising employees who recognize opportunities to improve productivity. In **Organizational Barriers to Technology Adoption: Evidence from Soccer-ball Producers in Pakistan** (NBER Working Paper No. 21417), David Atkin, Azam Chaudhry, Shamyla Chaudry, Amit K. Khandelwal, and Eric Verhoogen explore reasons for resistance to change.

A traditional soccer ball has 20 hexagons and 12 pentagons cut from sheets of artificial leather known as rexine. A metal die and hydraulic press are used to cut the panels from laminated rexine sheets. In the course of their research on the soccer ball industry, Verhoogen and his wife, Annalisa Guzzini, an architect, discovered a new die design (based on a cutting pattern from a YouTube video of a Chinese factory) that allowed more pentagons to be cut from each rexine sheet, thus reducing waste and improving efficiency in the production process. The new technology was calculated to reduce production costs by 1 percentage point in an industry with an average profit margin of only 8 percentage points—an unambiguous benefit to ball-manufacturing companies.

The researchers introduced this new technology in Sialkot, Pakistan, where a cluster of some 135 soccer-ball manufacturers employs thousands of workers and makes about 30 million soccer balls per year, some of them for large global firms. They found that a majority of firms adopted the technology only after introduction of a pay-incentive program for workers. The clear benefits of the technology from the firm's perspective were not sufficient to ensure adoption.

In an initial experiment, the researchers randomly divided participating companies into three groups: those that would be given the new technology, those that would be given cash equivalent to the value of the new technology, and those that would be given nothing.
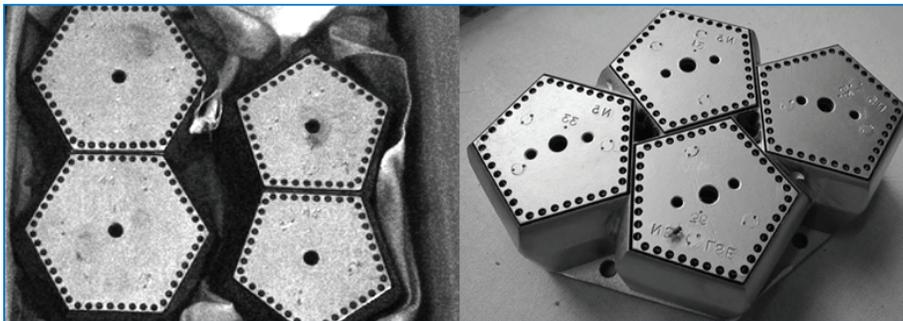

Left, traditional two-hexagon and two-pentagon dies; right, new four-pentagon die.

After 15 months, they found the adoption rate of the technology was low in all three categories. After surveying employers and employees, they strongly suspected that a misalignment of payment incentives was at play, particularly among rexine cutters and printers, who traditionally were paid by the number of pieces they produce and who feared the slightly more time-consuming new technology might reduce their earnings. Anecdotal evidence suggested that some workers were actually misinforming employers about the productivity benefits of the new die.

In a second experiment, producers who had been given the new technology were divided randomly into two categories: those to which the researchers gave only reminders of the production benefits of the technology and those where the researchers implemented a new payment-incentive system in which workers received a lump-sum payment equal to a month's earnings if they demonstrated competence using the new technology.

Of the firms that implemented the new payment scheme and had not yet adopted the new die, a majority did adopt the new technology, while none of the firms that did not use the worker-payment system did so in the first six months, and only one did so in the first year.

> An experiment in the production of soccer balls suggests that sharing production gains with workers helps firms embrace change.

Though the sample size was small, the researchers were able to conclude that modest pay changes—small in comparison to the cost savings generated by the technology—had a significant impact on adoption and produced significant production benefits.

In follow-up surveys, the researchers found evidence suggesting that technology diffusion was slowed not only by workers' resistance, but also by employers' concerns about disrupting the explicit or implicit payment contracts already in place. Lack of knowledge about alternative payment systems also appears to have played a role in managers being hesitant to make changes.

"It seems likely that in order for technology adoption to be successful, employees need to have an expectation that they will share in the gains from adoption," the authors conclude. "[T]o the extent that firms must rely on the knowledge of shopfloor workers about the value of new technologies or how best to implement them, it appears to be important that some sort of credible gain-sharing mechanism be in place."

—Jay Fitzgerald

Hospitals as Insurers of Last Resort

When patients can't or won't pay for hospital care, who picks up the tab?

During the debate over the Affordable Care Act, many proponents argued that hospitals made up for losses by charging other patients more, resulting in higher insurance premiums and co-pays. In **Hospitals as Insurers of Last Resort** (NBER Working Paper No. 21290), Craig Garthwaite, Tal Gross, and Matthew J. Notowidigdo calculate that hospitals pass along only one third of those costs by raising rates. As a result, they predict, the impact of the ACA on insurance premiums will be considerably less than anticipated.

The researchers analyze previously confidential, hospital-level financial data from 1984 through 2011. In addition, they study hospital finances in Tennessee and Missouri, which sharply reduced their Medicaid rolls in 2005 because of budget shortfalls. The national and state datasets yield similar results.

"We estimate that each newly uninsured person leads to nearly $900 in uncompensated care costs … that association is remarkably robust to state and year fixed effects, the inclusion of time-varying state economic controls, and region-by-year fixed effects." On average, they conclude, hospitals absorb approximately two-thirds of these costs through lost profits.

In 2012, uncompensated care cost U.S. hospitals more than $46 billion. Had hospitals been able to collect all of these bills, their profits would have been 70 percent higher. The researchers lump together the cost of caring for the uninsured with unpaid debts. Given the disparity between hospital list prices and payments negotiated with insurers, the researchers use a cost-to-charge ratio to approximate the

HOSPITALS AS INSURERS OF LAST RESORT
Change in uncompensated costs in remaining area hospitals after a closure

In a given area, the closing hospital accounted for about 25% of the uncompensated care provided in the year prior to its closure

Hospital closure

Sources: Authors' calculations from American Hospital Association and Government Accountability Office data

actual cost of services. Federal law mandates that hospitals treat emergency patients regardless of whether they are covered by insurance. Moreover, more than half of all hospitals studied are nonprofit organizations that are exempt from federal, state, and local taxes. In return, they are expected to provide community benefits such as charity care.

The researchers find that nonprofit hospitals care for a disproportionate number of the uninsured. For example, when a hospital closes, the authors find a significant increase in the number of uninsured patients at surrounding nonprofit hospitals, but little change at for-profit hospitals. The research-

> Each newly uninsured person leads to nearly $900 in uncompensated care costs, of which hospitals absorb approximately two thirds as lost profits.
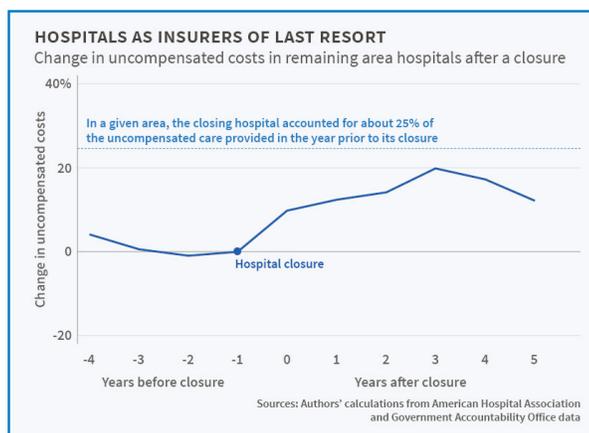
ers caution that nonprofit hospitals may be more likely than for-profits to locate in areas with a high concentration of the uninsured. In addition, they suggest, for-profit hospitals may keep their costs lower than nonprofits by more closely managing services provided to uninsured patients.

The authors note that their findings are particularly relevant to the 21 states that as of May 2015 had chosen not to expand Medicaid coverage under the Affordable Care Act, leaving 5.2 million individuals ineligible. "We calculate that the money states will 'save' from not expanding Medicaid is less than the hospital uncompensated care costs generated by not expanding Medicaid."

In their conclusion, the researchers suggest that insurance protects not only patients but also health providers, particularly those located in low-income areas. Noting that Medicaid has escaped the cutbacks experienced by other welfare programs, such as food stamps, they observe that "Given that hospitals are an important political force at all levels of government, the factors requiring hospitals to provide uncompensated care may thus have unintentionally assured Medicaid's long-term political stability."

—Steve Maas

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