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## Prices in U.S. Broadband Services

Between 2004 and 2009, as U.S. computer users were switching from dial-up Internet service to faster broadband service, the price of broadband declined anywhere from 3 percent to 10 percent, even after adjusting for quality. That was faster than the declines reflected in Internet pricing data from the U.S. Bureau of Labor Statistics, but was decidedly modest compared with the rapid price decline in electronic hardware during that period, according to researchers **Shane Greenstein** and **Ryan McDevitt**.

In **Evidence of a Modest Price Decline in U.S. Broadband Services** (NBER Working Paper No. 16166), they note that despite the rapid growth in adoption and revenue in broad-

band over the period they examine, there was no dramatic price decline after adoption. They further show that this market looks nothing like other

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“Adjust[ing] for quality...cable prices declined 14 percent over the period, while DSL prices fell 6 percent.”

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types of electronics — such as CPUs, lap tops, printers, or storage devices — where the quality-adjusted price declines regularly exceed double digits each year.

The authors analyze more than 1,500 service contracts offered by DSL and cable providers in the United States. In their sample of prices from 2004, the average cost of cable was almost \$49 per month; DSL was \$58.

Cable prices dipped in subsequent years but, on average, were higher in 2009 than in 2004. DSL prices did not change much in their sample.

When the authors adjust for quality, they find that cable prices declined 14 percent over the period, while DSL prices fell 6 percent. That works out to a savings of about \$6.85 and \$3.50 per month, respectively. Factoring in inflation, they conclude that real prices may have declined nearly 5 percent per year.

—Laurent Belsie

## Cost Recovery in Superfund Cases

Economic theory suggests that under the joint-and-several liability imposed by the federal Superfund statute, the government will recover more of its costs of cleaning up contaminated sites than it would under non-joint liability. Further, the amount recovered should increase with the number of defendants.

In **An Empirical Analysis of Cost Recovery in Superfund Cases:**

**Implications for Brownfields and Joint and Several Liability** (NBER Working Paper No. 16209), authors

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“The share of [Superfund] cleanup costs recovered by the government increases with the number of...potentially responsible parties.”

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**Howard Chang** and **Hilary Sigman** test these predictions using data from the EPA’s Integrated Compliance Information System (ICIS), which

contains records of civil, judicial, and administrative federal EPA enforcement cases filed through April 2009.

Consistent with the theory, they find that joint-and-several liability increases the share of cleanup costs recovered by the government and

that this share increases with the number of defendants and with the number of potentially responsible parties (PRPs).

The increases in cost recovery that occur with more defendants may be the result of joint-and-several liability, which acts as an implicit tax on transactions that add another PRP to the site. This

implicit tax in turn may discourage sales of sites with known or suspected contamination (“brownfields”), thereby inhibiting the redevelopment of brownfields. The estimated effect on recovered cleanup costs suggests a substantial implicit tax on sales of brownfields.

There have been efforts — including actions by the EPA, Congress,

and the states — to protect brownfields purchasers from liability for cleanup costs. By reducing or eliminating the probability that the purchaser would be liable, such policies may avoid or mitigate the effects of the threat of environmental liability on the incentives to buy contaminated property.

—Lester Picker

## Medicare Part D and the Financial Protection of the Elderly

In 2003, Medicare recipients spent an average of \$2,500 on prescription drugs, more than twice what the average American spent on all health care in 1965. Most of the nation’s elderly had some form of private insurance to cover the costs of prescription drugs, but many did not. The Medicare Modernization Act of 2003, known as Medicare Part D, addressed this coverage shortfall by adding a prescription drug benefit to the government’s health insurance options for the elderly.

In **Medicare Part D and the Financial Protection of the Elderly** (NBER Working Paper No. 16155), authors **Gary Engelhardt** and

**Jonathan Gruber** analyze data from the 2002–7 waves of the Medical Expenditure Panel Survey (MEPS)

but some did come from patient out-of-pocket spending. The latter was a consequence of the protection

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“Much of the new coverage and spending under Medicare Part D served to crowd out previous private insurance coverage.”

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to estimate some of the effects of the new drug coverage. The authors conclude that much of the new coverage and spending under Medicare Part D served to crowd out previous private insurance coverage: about 80 percent of Medicare’s spending on this program simply displaced private spending.

Much of this displacement was from private insurance expenditures,

that Part D was designed to bring to uninsured drug expenditures. Engelhardt and Gruber conclude, however, that the gains to consumers from reduced expenditure risk were smaller than the cost to the government of raising the funds to finance this program.

—Matt Nesvisky

## Credit Conditions and International Trade during the Global Financial Crisis

In **Off the Cliff and Back? Credit Conditions and International Trade During the Global Financial Crisis** (NBER Working Paper No. 16174), co-authors **Davin Chor** and **Kalina Manova** provide new evidence that adverse credit conditions were an important channel through which the global economic and financial crisis of 2008–9 affected trade volumes. Using data on U.S. trade with the world before

and during the crisis, they find that countries with tighter credit markets exported less to the United States during the peak of the crisis.

Because exports incur higher financial risks than domestic activities, it has been estimated that over 90 percent of world trade depends on some form of trade finance or insurance. To acquire that financing, firms need to guarantee lenders that export revenues will be high

(and thus that demand in the export destination market is high). A fall in U.S. demand makes it harder for foreign firms to obtain trade financing at home, thereby reducing the quantities they export. As a result, the plummeting U.S. demand during the financial crisis likely magnified the detrimental trade effects of tight credit in foreign markets.

Moreover, the tighter credit conditions in the United States dur-

ing the crisis period reduced export activity for firms outside the United States that relied on some form of financing in the U.S. destination market. This had more severe consequences in exporting countries with tighter initial credit conditions, because such firms could not fall back on domestic credit markets to compensate for the tighter credit conditions in the United States.

These effects were especially pronounced in sectors that require extensive external financing, have few tangible assets to use as collateral to secure a loan, or have limited access to trade credit. Exports of financially dependent industries thus were more sensitive to the cost of external capital than exports of less dependent industries, and this sensitivity rose during the financial crisis. Therefore, the uneven impact of the crisis across

countries and sectors can be attributed to the multiplicative effects of tighter credit at home, tighter credit

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“Adverse credit conditions were an important channel through which the global economic and financial crisis of 2008–9 affected trade volumes.”

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and depressed demand in the export market, and sectors’ varying degree of financial dependence. The authors explore the extent to which strong pre-crisis financial institutions mitigated the subsequent impact of the crisis on export activity. They confirm that economies with higher initial levels of financial development and stronger initial financial institutions exhibited greater resilience to this crisis.

The authors also study the potential effects of policy intervention. If credit conditions had remained

as tight as they were in September 2008 for one year — through August 2009 — they estimate that U.S.

imports would have fallen by an additional 2.5 percent. Imports in sectors of the U.S. economy that are highly dependent on external financing would have fallen over 13 percent more than in other sectors. On the other hand, had credit conditions been eased to the levels of August 2009 at the beginning of the crisis, U.S. imports would have been 5.5 percent higher than they were.

— Claire Brunel

## How Well Are Social Security Recipients Protected from Inflation?

Social Security, a major source of retirement income for elderly people in the United States, indexes benefits for inflation by using the Consumer Price Index for Urban Wage Earners (CPI-W). In **How Well Are Social Security Recipients Protected from Inflation?** (NBER Working Paper No. 16212), authors **Gopi Shah Goda, John Shoven, and Sita Nataraj Slavov** assess the extent to which the indexation of benefits actually protects Social Security beneficiaries against inflation.

For two reasons, indexing benefits by the CPI-W may not keep the purchasing power of Social Security beneficiaries constant as they age. One is that retirees spend a greater share of their income on medical care than workers, and medical care costs tend to grow at a faster rate than the costs of other goods and services. Second, as the authors show using the 1995 through 2006

waves of the Health and Retirement Study (HRS), the share of income spent on medical care tends to increase with age.

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“For men born in 1918 who began receiving benefits at age 65 ... in 1983, [there was] a decline in real purchasing power of almost 20 percent [by 2007]. Women born in 1918 saw their average Social Security benefit, net of out-of-pocket medical expenses, decline by almost 27 percent.”

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In fact, the authors show that protecting the real purchasing power of Social Security benefits, net of out-of-pocket medical costs, for men born in 1918 who began receiving benefits at age 65 would require the amount paid to have risen from \$588.63 per month in 1983 to \$1,080.90 per month in 2007. The actual benefit was \$866.80 per month in 2007, which suggests a decline in real purchasing power of almost 20 percent. Women born in 1918 saw their average Social Security benefit, net of out-of-

pocket medical expenses, decline by almost 27 percent.

The authors also investigate how using an experimental price index

for the elderly, known as the CPI-E, to index annual Social Security benefits might change the level of protection against inflation. They conclude that indexing benefits with the CPI-E instead of the CPI-W would result in a smaller, but still substantial reduction in real purchasing power for both men and women (11 percent and 18 percent, respectively).

— Linda Gorman

## Information and Employee Evaluation

As part of the incentives built into its \$4.3 billion Race to the Top Fund, the federal government is prodding states and school districts to use data on growth in student achievement to measure teacher effectiveness, and then to implement policies to “recruit, develop, reward, and retain effective teachers.” But some would argue that teaching is a multidimensional task with varying goals and that basing employee evaluations strictly on objective performance measures may lead to dysfunctional behaviors, including cheating on standardized tests.

In **Information and Employee Evaluation: Evidence from a Randomized Intervention in Public Schools**, (NBER Working Paper No. 16240), co-authors **Jonah Rockoff**, **Douglas Staiger**, **Thomas Kane**, and **Eric Taylor** examine how school principals gauge the performance of individual teachers in their schools, and how such a process is affected by the addition of objective data on teachers’ success in raising students’ standardized achievement test scores. This study is based on the results of a

randomized pilot program conducted by the New York City Department of Education in its public schools during the school year 2007–8. Roughly one quarter of eligible school principals participated in the study, with half of them selected at random to receive

economic theories about employer learning. The impact of providing information is greater when value-added estimates of teachers are more precise and is smaller when principals have already supervised their teachers for a greater number of years.

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“The impact of providing [objective performance] information [on teachers] is greater when [it is]...more precise and is smaller when principals have already supervised their teachers for a greater number of years.”

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objective performance data and training in how these “value-added” performance metrics were created.

Rockoff and his co-authors first document the existence of a positive correlation between objective estimates of teacher performance based on student test data and the principals’ prior subjective beliefs. The strength of this correlation rises with the precision of the objective estimates and with the length of the principals’ relationship with the teacher. Principals provided with this objective data incorporate it into their subsequent evaluations, and do so in a way that is consistent with eco-

As a result of principals incorporating the new performance data into their evaluations, those teachers with lower value-added estimates are more likely to exit teaching in the school. There is also a small but marginally significant improvement in student test scores the following year, consistent with these changes in selective retention of the better teachers. The authors’ results suggest that objective performance data provides useful information to principals in constructing employee evaluations and using these evaluations to improve productivity.

— Frank Byrt

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