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The Effect of a Gasoline Tax on Carbon Emissions

Some policymakers and economists have proposed a carbon tax for the United States. In practice, such a tax must take the form of a tax on the consumption of energy products, such as gasoline. How effective would this be in controlling harmful emissions?

In **Estimating the Effect of a Gasoline Tax on Carbon Emissions** (NBER Working Paper No. 14685), authors **Lucas Davis** and **Lutz Kilian** seek to answer that question by exploiting the historical variation in U.S. federal and state gasoline taxes. Their central estimates imply that a 10 cent per gallon increase in the gasoline tax would reduce U.S. gasoline consumption by 4 percent and reduce total U.S. carbon emissions by about 1.3 percent. This is roughly equal to the typical annual increase in U.S. carbon emissions.

Assuming that, in the absence of a carbon tax, U.S. carbon emissions would continue to increase at historical rates, then over the next

ten years they would rise by 12 percent. The authors' results imply that this cumulative rate of increase would drop to 10.7 percent if a ten-cent increase on gasoline taxes

"A gasoline tax increase of the magnitude currently contemplated by policymakers would have only a modest short-run impact on carbon emissions."

were adopted today. The impact on global carbon emissions would be even smaller. They conclude that there is no statistical evidence that a gasoline tax increase of the magnitude recently contemplated by policymakers would reduce carbon emissions enough to reach the targets described by the United Nation's Intergovernmental Panel on Climate Change in 2007.

Because nearly 40 percent of carbon dioxide emissions in the United States are derived from the transportation sector, the responsiveness of gasoline consumption to tax changes may determine how overall carbon dioxide emissions will respond to policy interven-

tions. A tax of ten dollars per ton of carbon dioxide, which some economists have suggested, would increase gasoline taxes by approximately 27 cents per gallon. Based

on their estimates the authors find it unlikely that a gasoline tax of this magnitude would materially affect U.S. carbon emissions.

The 1.3 percent reduction cited above falls far short of the emissions reductions targets discussed by the United Nation's Intergovernmental Panel on Climate Change in 2007. Although it is not clear how well the predictions of econometric models hold up in the presence of historically unprecedented tax changes, the authors' estimates suggest that even a U.S. tax of \$1.00 per gallon would reduce world carbon emissions by only 2.8 percent.

—Lester Picker

Coverage Effects under Medicare Part D

Fifty to sixty percent of senior citizens who did not have drug coverage in 2004 took advantage of Medicare Part D,

Medicare's prescription drug benefit, when it took effect in 2006.

As a result, the share of seniors without drug coverage went from 24 percent in 2004 to 7 percent in 2006, according to **Take-Up of Medicare Part D: Results from the Health and Retirement Study** (NBER Working Paper No. 14692) by **Helen Levy** and **David Weir**.

The most important determinant of the decision to enroll in Part D among those with no prior drug coverage was the demand for prescription drugs, they find. Many who remained without drug coverage report not using prescribed medicines and having relatively low out-of-pocket spending. For the most part, Medicare beneficiaries seem to have been able to make economically rational decisions about Part D enrollment. Levy and Weir find little circumstantial evidence that Part D crowded out private coverage in the short run. The persistence of employer coverage was only slightly lower in 2004–6 than in 2002–4.

The data for this study are drawn from the 2004 and 2006 waves of the Health and Retirement Study (HRS), a longitudinal study conducted since 1992. Analysis of the HRS data shows that seniors who decided to enroll in Part D were slightly younger and slightly more likely

to be married than those who remained without coverage; the older elderly were less likely to sign up, and unmarried men were significantly more likely to be

“Part D erased socioeconomic gradients in drug coverage among the elderly. Before Part D, individuals in the highest education or income category were significantly less likely to lack coverage than their less-advantaged counterparts.”

without coverage from any source. The main differences between Part D enrollees and non-enrollees were that those who signed up were sicker, were more likely to use prescription drugs, and had higher out-of-pocket spending.

The HRS data also show that Part D erased socioeconomic gradients in drug coverage among the elderly. Before Part D, individuals in the highest education or income category were significantly less likely to lack coverage than their less-advantaged counterparts. After 2006, take-up of Part D was high for all racial and ethnic groups, and rates of seniors lacking coverage dropped for all groups. Coverage gains were larger for low socioeconomic groups.

Unlike Medicare Parts A and B, take-up of which is close to universal among eligible individuals as a result of essentially automatic enrollment, Part D requires

most beneficiaries to make an active decision about whether to participate. Understanding take-up is important for at least three reasons. First, it reveals whether

benefits are reaching the individuals they are intended to help. Second, low rates of take-up may indicate that the costs of enrolling—such as how time-consuming or cognitively challenging applications are—discourage some from enrolling and reduce the value of the program even for those who do enroll. Third, the underlying “managed competition” framework of the Part D program, in which individuals choose among private insurance plans in a regulated and subsidized market, forms the basis for many proposals to expand health insurance coverage in the under-65 population as well. The success or failure of Part D becomes, in effect, an important test case for the potential of market-based reforms relying on private plans and individual choices to expand insurance coverage.

— Sarah H. Wright

A Tale of Two Islands

Economists have long believed that there is a correlation between institutions and economic performance. Rich countries, they argue, have laws that provide incentives to engage in productive economic activity. Investors rely on secure property rights, facilitating investment in human and phys-

ical capital. Government power is balanced and restricted by an independent judiciary. Contracts are enforced effectively, supporting private economic transactions. Yet these institutional factors are not the only determinants of economic growth, even over horizons of several decades.

Barbados and Jamaica provide a striking counter-example to the institution-focused long-run view of income determination. In **Institutions vs. Policies: a Tale of Two Islands** (NBER Working Paper No. 14604), authors **Peter Blair Henry** and **Conrad Miller** remind us that

both countries inherited property rights and legal institutions from their English colonial masters, yet experienced starkly different growth trajectories in the aftermath of independence. From 1960 to 2002, Barbados' GDP per capita grew roughly three times as fast as Jamaica's. Consequently, the income gap between Barbados and Jamaica is now almost five times larger than at the time of independence. Since their property rights and legal systems are virtually identical, recent theories of development cannot explain the divergence between Barbados and Jamaica. The authors show that differences in macroeconomic policy choices, not differences in institutions, account for the differing growth experiences of these two Caribbean nations.

Both Barbados and Jamaica are former British colonies, small island economies, predominantly inhabited by the descendants of Africans who were brought to the Caribbean to cultivate sugar. The two islands inherited almost identical political, economic, and legal institutions: Westminster Parliamentary democracy, constitutional protection of property rights, and legal systems rooted in English Common Law. Yet the standard of living in the two countries diverged widely in the roughly forty-year period following their independence.

The authors argue that the explanation for the divergence lies in differences in macroeconomic policy. They lay out the qualitative and quantitative data that make their case. When Jamaica gained independence in 1962, the Jamaican Labor Party (JLP) held a parliamentary majority. For the next ten years the JLP remained in power and GDP per capita grew at a rate of 5.4 percent per year. However, for a vari-

ety of reasons, that strong growth was accompanied by rising unemployment. The unemployment rate was 13 percent in 1962 and 23.2 percent in 1972. Rising unemployment, income inequality, and the attendant societal tensions proved too much for the JLP. In 1972 the People's National Party (PNP) rose to power with the promise of "dem-

"Differences in macroeconomic policy choices, not differences in institutions, account for the differing growth experiences of Barbados and Jamaica."

ocratic socialism," which translated as extensive state-intervention in the economy. The PNP nationalized companies, erected import barriers in the form of higher tariffs and outright bans, and imposed strict exchange controls. Social justice meant income redistribution through job-creation programs, housing development plans, and subsidies on basic food items.

Government spending subsequently rose in Jamaica from 23 percent of GDP in 1972 to 45 percent of GDP in 1978. Revenue did not keep pace with the rise in expenditure. From 1962 through 1972 Jamaica's average fiscal deficit was 2.3 percent of GDP, but from 1973 to 1980 the average fiscal deficit was 15.5 percent of GDP. Much of the deficit was financed through direct borrowing from the Bank of Jamaica. Predictably, inflation also rose. From 1962 to 1972 the average rate of inflation was 4.4 percent per year. By 1980 inflation was 27 percent per year and investment had collapsed to 14 percent of GDP, down from 26 percent in 1972.

Because Jamaica's reversal of fortune coincided with the Oil Price Shock of 1973 and the onset of worldwide stagflation, it is tempting to blame the coun-

try's downward spiral on external events. However, even a cursory comparison with Barbados makes it difficult to do so. The inflation rate in Barbados also spiked in the early 1970s, hitting a peak of 39 percent in 1975, but Barbados's policy response to the external shocks that precipitated the spike was radically different than Jamaica's.

policy choices, not differences in institutions, account for the differing growth experiences of Barbados and Jamaica."

First, Barbados kept state ownership to a minimum, avoided nationalization, and adopted an outward-looking growth strategy. Second, instead of delaying the inevitable retrenchment needed to adjust to higher energy prices, policymakers in Barbados kept government spending under control. While the fiscal deficit in Barbados did climb to 7.7 percent of GDP in 1973, that number was down to 2.9 percent by 1978. Since much of deficit financing comes from the central bank, by extension, Barbados also ran a tighter monetary ship than Jamaica.

The authors attribute the divergence of the two nations' growth rates over the last four decades to differences in macroeconomic policy. They observe that for small open economies, the response of policy to macroeconomic shocks, such as a fall in the terms of trade, is particularly important. Changes in macroeconomic policy, even those that do not have a permanent effect on growth rates of GDP per capita, can have a significant impact on a country's standard of living within a single generation.

— Lester Picker

Are Health Insurance Markets Competitive?

In the United States, more than 67 percent of individuals with health insurance coverage purchase private insurance. Unfortunately, because data on private insurance are complex and difficult to obtain, more researchers have focused their attention on public insurance than on private markets. However, in **Are Health Insurance Markets Competitive?** (NBER Working Paper No. 14572), author **Leemore Dafny** sheds some light on private markets by studying the relationship between health insurance pricing and the profits of firms purchasing insurance for their workers. Using data on “fully insured” health plans offered to employees of 184 publicly-held firms in over 100 geographic markets in the United States for the years 1998 to 2005, she finds that increases in company profits are associated with increases in health insurance premiums, but only in geographic markets served by fewer than ten major insurance carriers. In the most concentrated markets—those with six or fewer carriers—a 10 percent increase in company profits is associated with a 1.2 percent increase in health insurance premiums. These results control for vari-

ous attributes of the employee pool, such as family size, gender, and age, and for a variety of plan characteristics.

Further analysis suggests that in order to get lower rates, employers must be willing to

“...profitable firms pay more for health insurance only in markets with ten or fewer major carriers, and the effect is most pronounced in markets with six or fewer carriers.”

change health plans. A plan switch is a “tough sell” in good times because employees must identify in-network providers, transfer medical records, and figure out the claims reimbursement system. The data reveal that employers are “especially reluctant to drop health plans when profitable, a finding that supports the hypothesis that profits act to raise employers’ switching costs.”

Given the consolidation of insurers during the study period, Dafny concludes that healthcare insurers are exercising market power in an increasing number of geographic areas. Therefore, research into the extent to which uncompetitive markets are contributing to higher healthcare costs would help to inform the public debate over healthcare reform.

When health plans are “fully-insured,” insurance carriers bear the risk of medical expenditures incurred by plan enrollees in exchange for monthly premiums. By comparison, employers bear this risk in the case of self-

insured plans, although many purchase “stop loss” insurance from a third party to mitigate this risk. Because many of the same large insurance carriers offer both self and fully-insured plans, enrollees are unlikely to be aware of the distinction. Dafny focuses on fully-insured plans because pricing for these plans is wholly determined by insurers.

The benefits consulting firm that supplied the plan data for this study also provided a measure of plan design that accounted for generosity of benefits. Plan restrictiveness was divided into four categories: indemnity, preferred provider, point of service, and health maintenance organization. Approximately 90 percent of the plans in the sample were health maintenance organizations.

— Linda Gorman

Unions’ Long-Run Effects on Firms

A successful effort to unionize a workplace apparently reduces the market value of affected publicly-traded firms, even if there is no immediate change in their operating perfor-

mance. In **Long-Run Impacts of Unions on Firms: New Evidence From Financial Markets, 1961–1999** (NBER Working Paper 14709), co-authors **David Lee** and **Alexandre Mas** estimate

that the average effect of a union win at a workplace is to decrease the market value of the affected business by at least \$40,500 (in \$1998) per worker eligible to vote, based on monthly stock

prices for 24 months before and after a vote to unionize. Their simulations suggest that a policy-induced doubling of unionization in the United States would “lead to a 4.3 percent decrease in the equity value of all firms at risk of unionization.”

The decrease in equity value associated with unionization begins at the time the union wins its election and continues for about 15 months afterward. Calculations of the effects of a union victory suggest that it produces large negative returns of 10 to 14 percent. The authors also find that the effects are quite variable, depending on the degree of support for the union. When unions win elections with a bare majority, there is almost no union effect. But when unions win by a large margin, the effect can be as large as 25 to 40 percent.

The advantage of analyzing the stock market response to unionization is that if the stock market “correctly prices the firm, it should capture the sum of all costs imposed by the union, and effects

that might occur many years in the future should be capitalized into the stock market valuation of the firm in the short run.”

“[The] 10 percent equity loss translates to a total loss of about \$40,500 (in 1998 dollars) per voter, [which] represents a combination of a transfer to workers as well as lost profit due to inefficiencies caused by the union”

Lee and Mas also present evidence that suggests a possible mechanism behind the effect. Their analysis of Compustat data shows that, relative to cases in which unions lose organizing votes, organizing victories reduce growth in assets, because of decreased growth in plant, property, and equipment. Profit, and return on assets, appears unaffected by unionization.

Stable profits are consistent with less growth if firms grow by investing only in projects that “are sufficiently profitable.” If unionization “reduces the number of these high net present value (NPV) projects, then it is possible for the company’s growth rate to decline in spite of experi-

encing no change in its operating performance.”

The authors note that the reduction in equity value repre-

sents “a combination of a transfer to workers as well as lost profit due to inefficiencies caused by the union.” Their calculations suggest that if the true union wage effect were 8 percent, this would imply a 2 percent efficiency loss attributable to unions, as priced by the market.

The authors combine data from the National Labor Relations Board, the Center for Research on Security Prices, and Compustat to match union elections to stock prices and accounting data. Their main analysis limits the sample to firms where at least 5 percent of the workers voted on unionization of a particular workplace.

— Linda Gorman

Social Security, Retirement, and Youth Employment

Social Security Programs and Retirement around the World: the Relationship to Youth Employment (NBER Working Paper No. 14647) summarizes the results of the fourth phase of an ongoing NBER project that will be published in full by the University of Chicago Press in a book of the same title. The authors of the volume’s introduction, **Jonathan Gruber, Kevin Milligan, and David Wise** report that the studies which comprise this project find no evidence in favor of the common claim that there are a fixed number

of jobs into which the young will move when older workers retire. In fact if anything, they find that generous government retirement benefits, which lead to more retirement by older workers, end up *hurting* the employment status of younger workers. “In short, these results provide no evidence that inducing older persons to leave the labor force frees up jobs for the young. If anything, the opposite is true; paying for old persons to leave the labor force reduces the employment rate and increases the unemployment rate of youth and

of persons in their prime age working years,” they write.

The ongoing project involves studies for a number of countries by analysts in those countries. The volume includes these country-specific analyses as well as an introduction and a summary of the results. The first phase of the project described the retirement incentives inherent in plan provisions and documented the strong relationship across countries between social security incentives to retire and the proportion of older persons out of the labor force. The second phase documented the large

effects that changing plan provisions would have on the labor force participation of older workers. The third phase examined the fiscal implications that extending labor force participation would have on net program costs—reducing government social security benefit payments and increasing government tax revenues

This phase of the project investigates the relationship between the labor force participation of older persons and the labor force participation of younger persons in twelve countries. The results are based on several methods of analysis. Some of the results are based on sharp policy changes in various countries. These policy changes often led to large movements in the employment of older workers. By examining the work behavior of the young during these episodes, the authors study the impact of elderly employment on the young.

In Germany, for example, 1972 legislation allowed older workers to retire earlier than 65 and to still receive full social security benefits. Within four years, the employment rate of people aged 55 to 64 fell 7 percentage points. But in 1992, Germany reversed course. A new

reform phased in lower benefits for early retirement and, effectively, reduced the incentive to leave the labor force. Within nine years of those measures taking effect, the

“...paying for old persons to leave the labor force reduces the employment rate and increases the unemployment rate of youth and of persons in their prime age working years.”

employment rate of older workers rose 9 percentage points.

What happened to German youth employment during that time? It followed the trend of older workers in the 1970s, falling 2 percentage points. Youth unemployment rose 1.7 percentage points at the same time. After the 1990s reform, when older people’s labor participation rose, youth employment stayed the same and unemployment actually fell slightly. The results were essentially the same when the authors controlled for economic growth and other factors. Much the same story took place in France and, to a lesser degree, in the United Kingdom. The authors find that an increase in employment of older people generally *increased* youth employment and decreased youth unemployment.

Looking across twelve countries,

the authors find that the employment of older and younger workers moves together rather than in opposite directions. Taken together, these nations saw an increase in employ-

ment among people aged 55 to 64 during the past 10 to 15 years—on average, a rise of 8.1 percentage points. Youth employment also rose 4.7 percentage points and youth unemployment fell 2.6 percentage points. The six countries with the greatest increase in the employment of older workers saw the largest increase in youth employment and the greatest decrease in youth unemployment.

“In short, the overwhelming weight of the evidence, as well as the evidence from each of the several different methods of estimation, is contrary to the boxed economy proposition. We find no evidence that increasing the employment of older persons will reduce the employment opportunities of youth,” the authors conclude.

— Laurent Belsie

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