

Tobacco Tax Increases Remain Most Effective Policy for Reducing Tobacco Use

The recent National Cancer Institute and World Health Organization monograph on *The Economics of Tobacco and Tobacco Control* reaffirmed that "significantly increasing the excise tax and price of tobacco products is the single most consistently effective tool for reducing tobacco use." This conclusion is consistent with the findings from other recent comprehensive and/or systematic reviews.

The International Agency for Research on Cancer, in its 2011 *IARC Handbooks of Cancer Prevention - Tobacco Control, Volume 14: Effectiveness of Tax and Price Policies for Tobacco Control* provided conclusions based a comprehensive review of the evidence as of 2010. Based on its review, IARC concluded that there was "sufficient evidence" (the strongest possible level) that "increases in excise taxes that increase prices" reduced overall tobacco use, the prevalence of tobacco use among adults and young people, initiation and uptake of tobacco use among young, and consumption of tobacco products among continuing users while inducing current tobacco users to quit.

Likewise, in 2012 the Community Preventive Services Task Force recommended policies that raised the prices of tobacco products, particularly increases in excises taxes, given the strong evidence that price increases reduced all aspects of tobacco use, while also reducing tobacco-related morbidity and mortality. Based on a review of 116 studies, the Task Force provided the following median estimates for the price elasticities of different aspects of tobacco use:

- overall consumption: -0.37

- consumption among young people: -0.74
- adult prevalence: -0.18
- prevalence among young people: -0.36
- adult cessation: 0.375
- cessation among young people: 0.93
- initiation among young people: -0.43

Economists define price elasticity as the percentage change in a given outcome in response to a one percent increase in price. Thus, these estimates imply that a ten percent increase in price would, for example, reduce adult prevalence by nearly two percent and increase adult cessation by almost four percent, while reducing youth initiation by more than four percent. Larger tax and price increases will lead to larger reductions in tobacco use, resulting in greater public health benefits and higher tax revenues.

Some recent studies, however, have raised questions about whether or not the effectiveness of higher tobacco taxes has fallen in recent years, as tobacco taxes and prices have increased. For example, a 2014 study by Callison and Kaestner concluded that "it will take sizable tax increases, on the order of 100%, to decrease smoking by as much as 5%", leaving the impression that cigarette tax increases would have little impact on smoking. However, the authors' interpretation of their estimates is misleading at best. In fact, their findings are consistent with existing literature. Part of the confusion results from their use of a tax elasticity rather than a price elasticity, given that taxes account for only a fraction of prices. For example, if the state tax accounts for 25% of price, the

tax needs to rise by 40% in order to increase price by 10%, assuming that the tax increase is fully passed on to smokers.

Based on prices and taxes in effect in the last year of the data used in Callison and Kaestner's analysis, and the range of estimates for adult prevalence provided in the Task Force Review, a doubling of taxes, which would have increased average cigarette prices by about 34%, would have resulted in a 3.7 - 10.5% reduction in prevalence, a range that includes the 5% they estimated.

The level at which prices are measured has also contributed to biased estimates about the impact of tax and price increases on tobacco use. Most studies of cigarette demand rely on state-level measures of prices based on data from the *Tax Burden on Tobacco* reports. Over the past decade-plus, however, significant local tax increases have been implemented in several jurisdictions. Hundreds of city and county governments across the country levy cigarette excise taxes, with dozens levying taxes of more than 50¢ per pack. Many of these cover significant populations, such as the combined \$4.18 city and county tax in Chicago, and the \$1.50 tax in New York City. In states where localities add their own cigarette taxes, using state-level prices will overstate price in places with no local tax, while understating price in places where there are local taxes. This creates a problem known as measurement error that results in elasticity estimates being biased towards zero, which can lead researchers to erroneously conclude that tax and price increases will have little impact on smoking.

For example, a 2017 paper by Hansen, Sabia, and Rees suggests that the impact of cigarette taxes and prices on youth smoking has fallen in recent years. The researchers compare the impact of state taxes and prices on youth smoking for the periods from 1991 through 2005 and from 2007 through 2013, finding that the state-level measures had statistically significant effects on youth smoking during the earlier period, but not the latter. The statistically

insignificant findings for the latter period are not surprising given the sizable local taxes implemented over the past decade-plus that are not accounted for in their analysis. In addition, state taxes increased relatively infrequently in the later period compared to the earlier period, making it more difficult to sort out the effects of taxes and prices on smoking behavior in the models estimated by these researchers which include indicators for states and years as well as state specific time trends. These indicator and trend variables account for nearly all of the variation in state taxes during this period and likely contribute to the statistically insignificant estimates.

In contrast, two recent National Bureau of Economic Research working papers from Tobacconomics researchers provide new evidence confirming that significant tax increases lead to real reductions in smoking.

In the first of these papers, Pesko and colleagues use data from the Tobacco Use Supplements to the Current Population Survey (TUS-CPS) for the period from 2006 through 2015 to estimate the impact of cigarette prices on adult smoking behavior. This study pays particular attention to the level at which prices are measured, given the likely biases in other recent studies that have relied on state-level measures of prices. Using a measure of local cigarette prices based on the prices smokers report paying in their last purchase, Pesko and colleagues estimated a price elasticity for smoking prevalence of -0.21 and an overall price elasticity of -0.38, implying that a 10% price increase would reduce adult prevalence by just over 2%, and reduce total consumption by about 4%. These estimates are consistent with the consensus estimates reported in the IARC Handbook, the Community Preventive Services Task Force report, and the recent NCI/WHO monograph.

In both papers, Tobacconomics researchers examined how price elasticity changes as tax and price levels increase, in order to determine whether or not the effectiveness of tax and price increases falls as taxes

rise. Applying alternative modeling approaches that allowed for various possibilities, such as constant, falling, or increasing elasticity, to annual state-level tax-paid cigarette sales data from 1991 through 2012, Tauras and colleagues found that price elasticity increased as prices increased. Pesko and colleagues came to the same conclusion based on their analysis of the TUS-CPS data.

These estimates imply that tax increases that have the same relative impact on price will lead to *larger* reductions in smoking when tax and price levels are higher. That is, a tax increase that raise prices by 10% at a price of \$8.00 per pack will reduce smoking more than a tax increase that raise price by 10% at a price of \$5.00 per pack. This is consistent with recent economic research emphasizing the role of affordability in explaining differences in price

elasticity. Specifically, in places where tobacco products are relatively affordable, consumers are relatively less responsive to price, while the opposite is true in places where these products are less affordable.

These two Tobacconomics studies add to the extensive evidence that clearly demonstrates the effectiveness of higher taxes and prices in reducing tobacco use. Moreover, rather than 'wearing out', these studies conclude that the impact of tax increases is even larger at higher tax and price levels than at lower levels. The evidence is clear - significant increases in tobacco taxes remain highly effective in reducing tobacco use and the death, disease, and economic costs caused by tobacco use.

Suggested Citation

Chaloupka FJ. Tobacco Tax Increases Remain Most Effective Policy for Reducing Tobacco Use. A Tobacconomics Research Brief. Chicago, IL: Tobacconomics, Health Policy Center, Institute for Health Research and Policy, University of Illinois at Chicago, 2017. <http://www.tobacconomics.org/>.

About Tobacconomics

Tobacconomics is a collaboration of leading researchers who have been studying the economics of tobacco control policy for more than 30 years. The team is dedicated to helping researchers, advocates and policymakers access the latest and best research about what's working—or not working—to curb tobacco consumption and the impact it has on our economy. As a program of the University of Illinois at Chicago, Tobacconomics is not affiliated with any tobacco manufacturer.

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Key References

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