

\$2.00 Gas! Studying the effects of a gas tax moratorium[☆]

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Abstract

There are surprisingly few estimates of the effects of sales taxes on retail prices, especially at the firm level. We consider the temporary suspension, and subsequent reinstatement, of the gasoline sales tax in Illinois and Indiana following a price spike in 2000. Earlier laws set the timing of the reinstatements, providing plausibly exogenous changes in the tax rates. Using a unique dataset of daily prices at the gas-station level, 70% of the tax suspension is passed on to consumers in the form of lower prices, while 80–100% of the tax reinstatements are passed on to consumers. Some evidence suggests that these short-run pass-through estimates are smaller near the state borders, with the tax reinstatements associated with relatively higher prices up to an hour's drive into neighboring states.

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1. Introduction

Gasoline prices are particularly visible, and when they spike there are often calls to reduce or eliminate gas taxes (Berryman, 2005; Sanger, 2006). State and federal taxes add forty cents to the average gallon of gasoline in the United States, resulting in over \$8 billion in tax receipts each year (EIA, 2005). For a tax moratorium to reduce prices it is necessary to understand whether taxes are passed through to consumers or absorbed by producers, at least in the short run. In addition, tax suspensions may lead to lower prices in neighboring states as geographic markets may not end at the state border.

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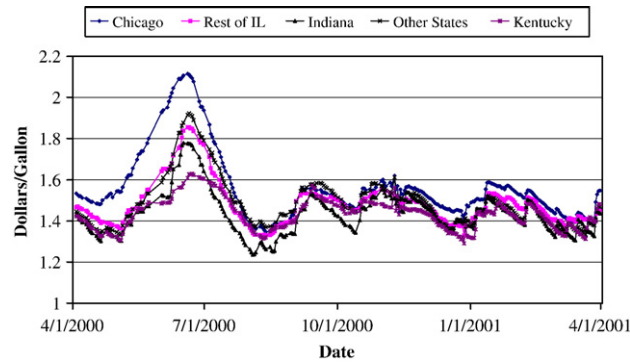


Fig. 1. Retail gasoline prices in Midwest: April 2000–April 2001.

Standard tax incidence theory suggests that the fraction of a tax passed on to consumers in a competitive market depends on the elasticities of supply and demand. For example, the tax would be fully passed on to consumers if the industry exhibited constant marginal costs, while less than ‘full shifting’ is expected in markets with increasing marginal costs. In markets that are less competitive, strategic behavior results in pass-through rates that can be greater or less than 100%.¹

Despite the attention paid to the theory of tax incidence, surprisingly little empirical work has estimated the effect of sales taxes on prices, especially at the firm level (Poterba, 1996). This paper studies a moratorium on gasoline sales taxes in Illinois and Indiana following a price spike in the spring of 2000, when prices eclipsed the \$2.00 per gallon mark. While relatively low by current standards, this proved to be a politically unattractive price during an election year. Effects of these tax changes on retail prices and cross-border competition are estimated using a unique data set of daily prices at the gas-station level. These data are linked with census and geographic data—including driving distance to the state border—and prices are compared to neighboring states before and after the tax changes.

Given that the reforms were known to be temporary, the estimates necessarily relate to short-run effects of tax changes and likely do not reflect long-run responses. Nevertheless, short-run conditions drive price volatility in this closely watched market. The results also provide an estimate of the geographic size of the gasoline market (with its well-posted prices and mobile consumers) by considering price effects into neighboring states. Last, the estimates provide an evaluation of the tax suspension policy.

The tax moratoria in Illinois and Indiana offer three main advantages for studying the response of prices to changes in tax rates. First, the reinstatements offer plausibly exogenous changes in the tax rate, as the timing of the reinstatements are set in earlier laws. Second, the repeal and subsequent reinstatements allow estimates of the pass-through rate for both decreases and increases in the tax. Similar estimates would suggest that the price changes are tied to the tax rate policies. The comparisons also provide a test for asymmetry in the response to changes in stations’ marginal costs, as the speed of adjustment has been found to be slower in response to downward cost shocks than to cost increases (Borenstein et al., 1997; Alm et al., in press). Third, gasoline is a homogeneous product where quality differences across space are minimized when studying the pass-through rate of sales taxes across retailers. The key differentiation in the market would appear to be location, a subject we consider in detail below.

The results suggest that 70% of the tax reduction is passed on to consumers in the form of lower prices, while prices increase by 80–100% of the tax when it is reinstated. Combined with recent estimates that suggest the short-run demand elasticity is close to zero, this lack of ‘full shifting’ of the tax when it is suspended suggests that the supply response may be fairly inelastic in the short run as well. In terms of distance to the border, the tax increase in Indiana is associated with higher prices up to an hour away from its border, though the evidence is mixed for the Illinois reinstatement.

The structure of the paper is as follows. Section 2 briefly provides background on the reasons for the tax repeals and how they were conducted, a review of the related literature, and an analytical framework to place the current results in context. Section 3 describes the gas station-level data and presents mean comparisons of ZIP code characteristics across the comparison groups. Section 4 presents the empirical model and results, and Section 5 concludes.

¹ Kotlikoff and Summers (1987) and Fullerton and Metcalf (2002) offer detailed reviews.

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