

Gasoline Price Changes And The Petroleum Industry An Update

This primer will help improve public understanding of the major factors that influence the U.S. price of gasoline & the challenges facing the U.S. on issues related to gasoline supply, demand, & prices. This primer presents information on the factors that influence the price of gasoline &, to the extent possible, why those factors have developed. Specifically, it explains how gasoline is made & distributed, what consumers pay for in a gallon of gasoline, why gasoline prices change over time, & why gasoline prices vary from place to place. The information is presented in a question-&-answer format & is written for a nontechnical audience. Charts, tables & graphs.

The dramatic increase in gasoline prices from close to \$1 in 1999 to \$4 at their peak in 2008 made it much more expensive for consumers to operate an automobile. In this paper we investigate whether consumers have adjusted to gasoline price changes by altering what automobiles they purchase and what prices they pay. We investigate these effects in both new and used car markets. We find that a \$1 increase in gasoline price changes the market shares of the most and least fuel-efficient quartiles of new cars by +20% and -24%, respectively. In contrast, the same gasoline price increase changes the market shares of the most and least fuel-efficient quartiles of used cars by only +3% and -7%, respectively. We find that changes in gasoline prices also change the relative prices of cars in the most fuel-efficient quartile and cars in the least fuel-efficient quartile: for new cars the relative price increase for fuel-efficient cars is \$363 for a \$1 increase in gas prices; for used cars it is \$2839. Hence the adjustment of equilibrium market shares and prices in response to changes in usage cost varies dramatically between new and used markets. In the new car market, the adjustment is primarily in market shares, while in the used car market, the adjustment is primarily in prices. We argue that the difference in how gasoline costs affect new and used automobile markets can be explained by differences in the supply characteristics of new and used cars.

Discusses how Connecticut's gasoline prices compared to those in the region and in the rest of the country during the spring and summer of 1998.

On April 25, 2006, Pres. Bush directed the Dept. of Justice to work with the Fed. Trade Comm. (FTC) & the Energy Dept.(DoE) to conduct inquiries into illegal manipulation or cheating related to current gasoline prices. The FTC was, at that time, investigating the increases in gasoline prices that occurred following Hurricane Katrina, including an intensive examination of whether refiners & other market participants had manipulated, or tried to manipulate, gasoline prices. The FTC found no evidence of manipulation & only limited instances of price gouging by gasoline wholesalers & retailers. The FTC & DoE conducted this economic analysis & investigation of the nat. avg. gasoline price increases that began during the spring of 2006 & continued through the summer. Illus.

It is often asserted that consumers undervalue future gasoline costs relative to purchase prices when they choose between automobiles, or equivalently that they have high "implied discount rates" for these future energy costs. We show how this can be tested by measuring whether relative prices of vehicles with different fuel economy ratings fully adjust to time series variation in gasoline price forecasts. We then test the model using a detailed dataset based on 86 million transactions at auto dealerships and wholesale auctions between 1999 and 2008. Over our base sample, vehicle prices move as if consumers are indifferent between one dollar in discounted future gas costs and only 76 cents in vehicle purchase price. We document how endogenous market shares and utilization, measurement error, and different gasoline price forecasts can affect the results, and we show how to address these issues empirically. We also provide unique empirical evidence of sticky information: vehicle markets respond to changes in gasoline prices with up to a six month delay.

Since 1999, regional retail and wholesale gasoline markets in the United States have experienced significant price volatility, both intertemporally and across geographic markets. In particular, gasoline prices in California, Illinois and Wisconsin have spiked occasionally well above gasoline prices in nearby states. The three chapters of my thesis study the relationship between gasoline price spikes, environmental regulation of gasoline content, unanticipated refinery outages and other recent structural changes in the domestic oil market. In the first chapter, I detail current regulations related to gasoline content. Implemented regionally to address local mobile-source emissions, gasoline content regulations increase costs to refiners, transporters and distributors of gasoline, as well as reduce the fungibility of gasoline across different regions. Chapter one provides a summary of the regulations and a qualitative description the costs the regulations impose on refiners, transporters and distributors of gasoline. In chapter two, I estimate two distinct effects of gasoline content regulations in California, Illinois and Wisconsin: (i) the effect of increased production costs due to supplementary regulation, and (ii) the effect of incompatibility between these blends and gasoline meeting federal reformulated gasoline standards. Using a structural model based on the production optimization problem of refiners, I simulate wholesale prices for jet fuel, diesel and four blends of gasoline in each geographic market. I then specify a counterfactual in which gasoline in the three states met federal requirements.

Gasoline prices and driving behavior. Volume of traffic ; Speed of traffic ; Applicability of findings to other regions of the United States -- Gasoline prices and vehicle markets. Market shares for cars and light trucks ; Gasoline prices and vehicle market status ; Changes in new vehicle fuel economy and pricing ; Changes in the used vehicle market -- Study data -- Analytical approach and economic results.

This paper investigates the impact of domestic fuel price increases on export growth in a sample of 77 developing countries over the period 2000-2014. Using a fixed-effect estimator and the local projection approach, we find that an increase in domestic gasoline or diesel price adversely affects real non-fuel export growth, but only in the short run as the impact phases out within two years after the shock. The results also suggest that the negative effect of fuel price increase on exports is mainly noticeable in countries with a high-energy dependency ratio and countries where access to an alternative source of energy, such as electricity, is constrained, thus preventing producers from altering energy consumption mix in response to fuel price changes.

The German petrol station market is characterized by strong intraday price cycles, which probably correspond to the well-known Edgeworth cycles. The prices go up strongly in the late evening or in the middle of the night, fall relatively heavily in the early morning and then go up and down several times in the course of the day. Locally, the analysis is limited to the

26 petrol stations that plausibly form a common market in the Lueneburg region. This essay picks out the specific sequence in which, after generally rising prices during the day, a single supplier is the first to reverse the price trend and lower its price. For this purpose, current price reports are used to define the price reduction event down to the second, and to show only the valid prices of competitors prior to the event. All German petrol stations have to report price changes to the Bundeskartellamt's Market Transparency Department. Tankerkoenig then publishes the full reports. This results in one panel observation for each price reduction event. Out of nearly 300,000 price observations, just over 10,000 panel observations result. Fixed-effect logit estimates are used to test whether the theoretically and economically significant price differences of the Edgeworth cycles explain the behavior of the price cutters, or whether market structure factors, such as brand affiliation/independence of the petrol station, service offerings, or location characteristics predict price-cutting behavior. The novel recording of the price dynamics in the petrol station market by using the accurate petrol station price data to the second indicates promising research of extensive price data and avoids the enormous loss of information in the previously common calculation of average prices at certain times.

Gasoline Price Changes and the Petroleum Industry An Update Gasoline Price Changes The Dynamic of Supply, Demand, and Competition Gasoline Price Changes The Dynamic of Supply, Demand, and Competition The Consumer Response to Gasoline Price Changes Empirical Evidence and Policy Implications Stanford University

Prepared for the use of the Joint Economic Committee, Congress of the United States.

The dissertation consists of three empirical studies and takes a closer look at price fluctuations using German gasoline prices as an example for a homogenous good. It analyzes consumers' reaction to price fluctuations and respectively the pricing behavior of firms. The first paper, which was developed with co-authorship, explores consumers' online price search effects on the pricing behavior of firms (gasoline price level and price dispersion). As regulators have recently implemented a mechanism for reporting all price changes to a central data base, the core assumption of this price reporting scheme is that the increase in price transparency will lead to a decline in the price level and a reduction in price dispersion. The second study addresses the question whether German gas stations adjust their retail prices asymmetrically in response to crude oil price changes, i.e., whether gas stations react quicker to crude oil price increases than to crude oil price decreases. The third study aims to analyze whether consumers react more strongly to gasoline price increases or to price decreases when considering buying a new vehicle.

When gasoline prices rise, people notice: the news is filled with reports of pinched household budgets and politicians feeling pressure to do something to ameliorate the burden. Yet, raising the gasoline tax to internalize externalities is widely considered by economists to be among the most economic efficiency-improving policies we could implement in the transportation sector. This dissertation brings new evidence to bear on quantifying the responsiveness to changing gasoline prices, both on the intensive margin (i.e., how much to drive) and the extensive margin (i.e., what vehicles to buy). I assemble a unique and extremely rich vehicle-level dataset that includes all new vehicle registrations in California 2001 to 2009, and all of the mandatory smog check program odometer readings for 2002 to 2009. The full dataset exceeds 49 million observations. Using this dataset, I quantify the responsiveness to gasoline price changes on both margins, as well as the heterogeneity in the responsiveness. I develop a novel structural model of vehicle choice and subsequent utilization, where consumer decisions are modeled in a dynamic setting that explicitly accounts for selection on unobserved driving preference at both the time of purchase and the time of driving. This utility-consistent model allows for the analysis of the welfare implications to consumers and government of a variety of different policies, including gasoline taxes and feebates. I find that consumers are responsive to changing gasoline prices in both vehicle choice and driving decisions, with more responsiveness than in many recent studies in the literature. I estimate a medium-run (i.e., roughly two-year) elasticity of fuel economy with respect to the price of gasoline for new vehicles around 0.1 for California, a response that varies by whether the vehicle manufacturer faces a tightly binding fuel economy standard. I estimate a medium-run elasticity of driving with respect to the price of gasoline around -0.15 for new personal vehicles in the first six years. Older vehicles are driven much less, but tend to be more responsive, with an elasticity of roughly -0.3. I find that the vehicle-level responsiveness in driving to gasoline price changes varies by vehicle class, income, geographic, and demographic groups. I also find that not including controls for economic conditions and not accounting for selection into different types of new vehicles based on unobserved driving preference tend to bias the elasticity of driving away from zero -- implying a greater responsiveness than the true responsiveness. This is an important methodological point, for much of the literature estimating similar elasticities ignores these two issues. These results have significant policy implications for policies to reduce gasoline consumption and greenhouse gas emissions from transportation. The relatively inelastic estimated responsiveness on both margins suggests that a gasoline tax policy may not lead to dramatic reductions in carbon dioxide emissions, but is a relatively non-distortionary policy instrument to raise revenue. When the externalities of driving are considered, an increased gasoline tax may not only be relatively non-distortionary, but even economic efficiency-improving. However, I find that the welfare changes from an increased gasoline tax vary significantly across counties in California, an important consideration for the political feasibility of the policy. Finally, I find suggestive evidence that the "rebound effect" of a policy that works only on the extensive margin, such as a feebate or CAFE standards, may be closer to zero than the elasticity of driving with respect to the price of gasoline. This suggestive finding is particularly important for the analysis of the welfare effects of any policy that focuses entirely on the extensive margin.

Many developing and emerging countries do not fully pass-through increases in international fuel prices to domestic retail prices, with adverse consequences for fuel tax revenues and tax volatility. The adoption of an automatic fuel pricing mechanism can help to address this problem, and the incorporation of a price smoothing mechanism can ensure pass-through over the medium term but also avoid sharp increases (and decreases) in domestic prices. This technical note addresses the following issues: (i) the design of an automatic fuel pricing mechanism; (ii) the incorporation of domestic price smoothing and resulting tradeoffs; (iii) the transition from ad hoc pricing adjustments to an automatic mechanism; and (iv) policies to support this transition and the maintenance of an automatic mechanism. A standardized template for simulating and evaluating the implications of alternative pricing mechanisms for price and fiscal volatility is available on request.

Although there is much interest in the future retail price of gasoline among consumers, industry analysts, and policymakers, it is widely believed that changes in the price of gasoline are essentially unforecastable given publicly available information. We explore a range of new forecasting approaches for the retail price of gasoline and compare their accuracy with the no-change forecast. Our key finding is that substantial reductions in the mean-squared prediction error (MSPE) of gasoline price forecasts are feasible in real time at horizons up to two years, as are substantial increases in directional accuracy. The most accurate individual

model is a VAR(1) model for real retail gasoline and Brent crude oil prices. Even greater reductions in MSPEs are possible by constructing a pooled forecast that assigns equal weight to five of the most successful forecasting models. Pooled forecasts have lower MSPE than the EIA gasoline price forecasts and the gasoline price expectations in the Michigan Survey of Consumers. We also show that as much as 39% of the decline in gas prices between June and December 2014 was predictable.

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