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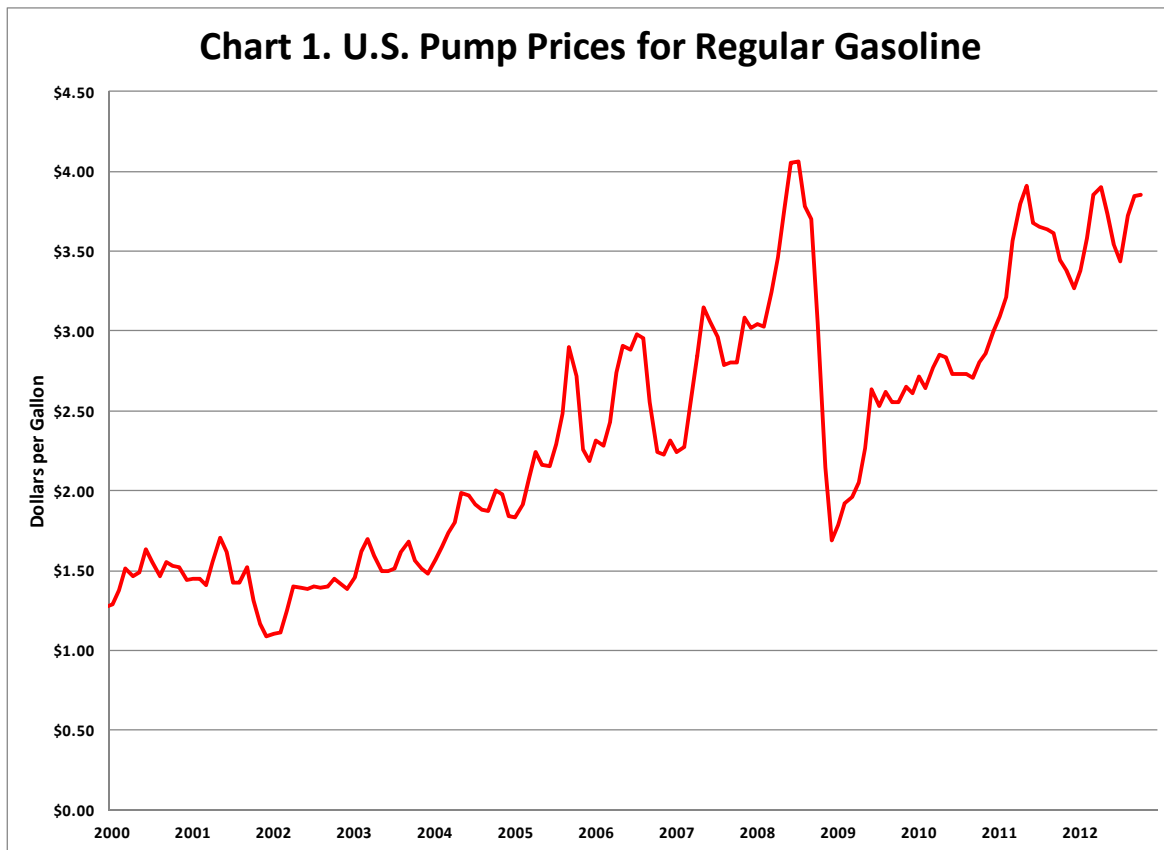
## What's Up at the Pump?

Stephen P. A. Brown

High pump prices for gasoline naturally have Nevadans concerned. Nevada residents have seen a growing share of their expenditures go toward gasoline, and they also recognize the impact that higher gasoline prices can have on the state's all-important tourism industry. Fortunately, most market indicators suggest that gasoline prices have peaked and should begin falling soon.

### Why Gasoline Prices Increased

In most years, the summer driving season sees the highest gasoline prices. Gasoline prices typically begin falling after Labor Day, as the summer driving season ends.<sup>1</sup> In 2012, however, increased tensions with Iran led to fears of disrupted world oil supplies and a surge in crude oil prices. In addition, U.S. inventories of gasoline have been low since late spring. Combined these two factors led to rising U.S. gasoline prices well after the summer driving season ended (Chart 1).



<sup>1</sup> See Stephen P. A. Brown and Raghav Virmani, "What's Driving Gasoline Prices?" *Economic Letter*, Federal Reserve Bank of Dallas, October 2007.

## **Tighter Gasoline Markets on the West Coast**

On the West Coast, extremely low inventories and refinery outages further boosted gasoline prices. In fact, gasoline markets on the West Coast were tight throughout much of 2012. A series of refinery outages in the region led to persistently low gasoline inventories. The region's gasoline supply problems began with a fire at BP's Cherry Point, Washington, refinery in February, which led to a three-month shutdown. Market pressures were exacerbated when BP's Carson City, California, refinery went through planned maintenance in March.

These two outages and other smaller market disruptions contributed to sharp inventory draws during the spring months. By mid-May, West Coast gasoline inventories were about 20 percent below the five-year average level for that time of year, marking the lowest level in more than ten years. Inventories were rebuilt to some extent over the summer months but remained relatively low by seasonal standards.

Late summer and early fall saw three additional refinery outages. Most notable among these was a fire at Chevron's refinery in Richmond, California, in early August, which is expected to keep parts of that refinery out of service through the end of 2012. In September, Tesoro's Golden Eagle, California refinery went through planned maintenance. Adding to the supply problems, ExxonMobil's Torrance, California, refinery experienced an unexpected loss of electric power that resulted in a shutdown on October 1. With West Coast inventories already low, concerns about short gasoline supplies in the region drove gasoline prices much higher on the West Coast during the first week of October.

Unlike the earlier refinery disruptions on the West Coast, which affected prices in Washington, Oregon, California, and to some extent Nevada, the effects of the Torrance refinery were mostly limited to California. The Torrance refinery returned to normal operations on October 5, and wholesale gasoline prices were calmed.

The market response to refinery outages on the West Coast was highly regional—with effects mostly confined to gasoline markets on the West Coast. Unlike other U.S. markets, which are interconnected by pipelines and barges, the West Coast's gasoline market is relatively isolated from the rest of the country and largely supplied by refineries in the region. As a consequence, its prices can see somewhat different movements than in the rest of the United States. Low inventories and refinery outages in the region typically have a more pronounced effect on the region's gasoline prices than are seen in other regions of the country.

### **A Uniquely California Problem**

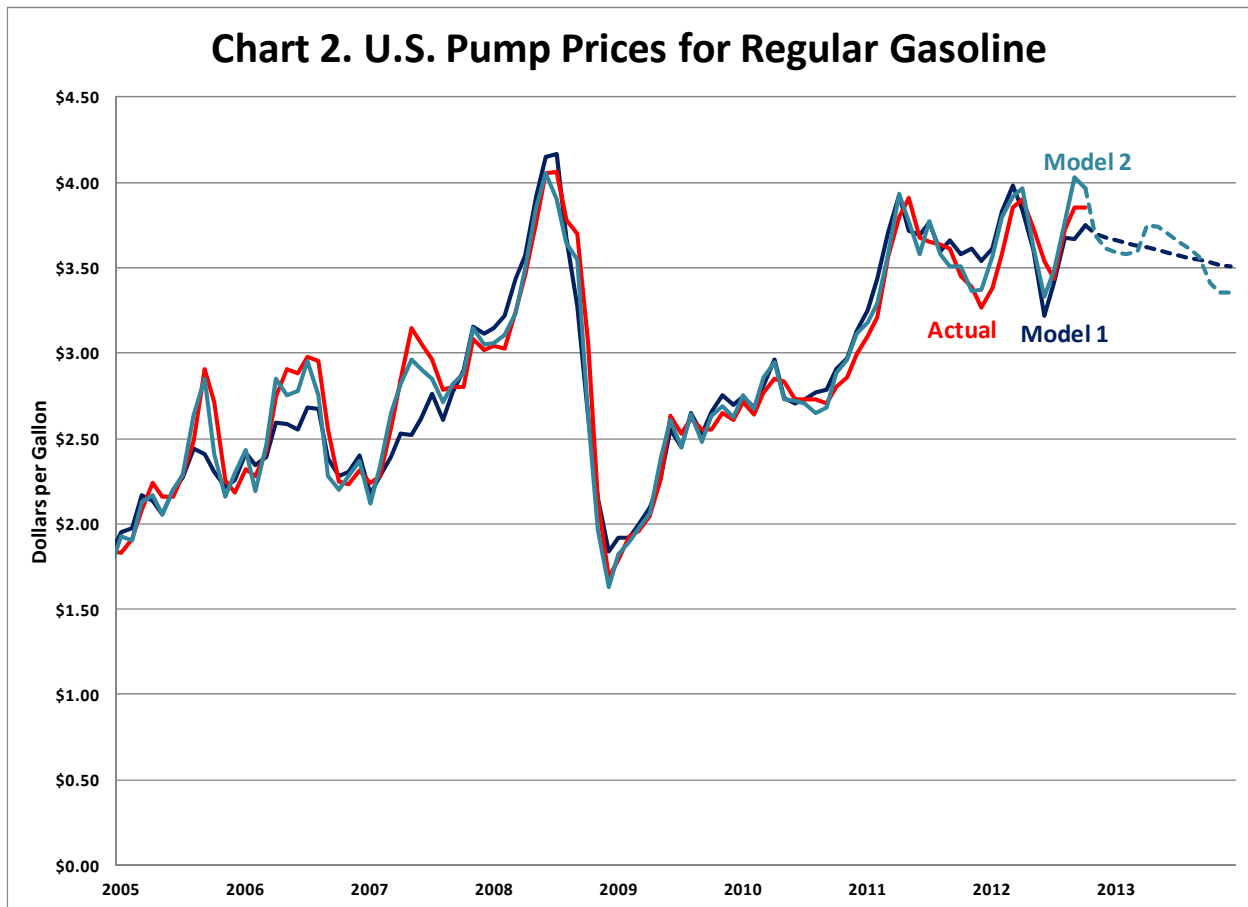
California sees particularly high and volatile prices because the state uses unique and expensive gasoline blends to meet its air-quality standards. California also requires a different, more-expensive fuel for its summer gasoline than for its winter gasoline. The requirement for summer-blend gasoline extends through the end of October. Because refiners want to avoid holding summer-blend gasoline through the winter, inventories of summer-blend gasoline are drawn down as November approaches. When two of the main refineries producing California's summer-blend gasoline—those in Richmond and Torrance—were forced to suspend production near the end of the summer driving season, California's gasoline prices rose sharply.

Two important developments helped reverse those increases. First, the Torrance refinery was back in operation only four days after it was forced to suspend operations. In addition, California's

Governor Jerry Brown directed the California Air Resources Board to allow the use of winter-blend gasoline in early October instead of waiting until November 1. Brown's directive allowed existing stocks of winter-blend gasoline to be added to California's depleted summer-blend supplies. The increased supply of gasoline brought down the state's gasoline prices.

### The Gasoline Price Outlook

As shown in Chart 2, we are beginning to see downward pressure on U.S. gasoline prices. The futures market shows a downward trajectory for crude oil prices. If that trajectory for crude oil prices is sustained, a simple model based on the relationship between pump prices for gasoline and those for crude oil prices (Model 1) shows that U.S. pump prices for gasoline also can be expected to decline—from the current \$3.85 per gallon to about \$3.50 per gallon in December 2013.



Another simple model based on prices on the gasoline futures market (Model 2) provides a more nuanced outlook for U.S. gasoline pump prices, while highlighting the seasonality of U.S. gasoline prices. According to the second model, U.S. pump prices for regular gasoline can be expected to drop fairly quickly from the current \$3.85 per gallon to \$3.61 per gallon in December 2012. Prices will slip further to \$3.58 in February 2013. After February, prices will take a seasonal rise reaching \$3.75 in April before beginning to slip downward with crude oil prices. In October 2013, gasoline prices will begin a seasonal decline and reach \$3.35 per gallon in December.

**West Coast Prices May Prove Slower to Fall**

On the West Coast, however, gasoline prices are likely to be a little slower to fall. Gasoline inventories on the West Coast are little farther below normal than are gasoline inventories in other parts of the country. Given the isolation of the West Coast gasoline market from other U.S. gasoline markets, the low gasoline inventories on the West Coast are likely to slow the rate at which the region's gasoline prices decline.

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