Introduction

Deregulation of the retail gasoline market in Mexico was completed in November 2017. Before then, nearly all gasoline stations in Mexico charged an identical regulated price for gasoline (Davis, McRae and Seira, 2018). All stations carried the logo of the government-owned hydrocarbon monopoly PEMEX. Since deregulation, station owners have been able to switch to alternative franchises. Both international and local oil companies have entered the market and the logos of firms such as BP, Shell, Mobil, and Repsol appear on stations along the streets and highways of Mexico. Furthermore, all stations can set their own prices for gasoline and diesel.

This project studies the medium-term effects of the deregulation process for gasoline consumers in Mexico. Using a detailed panel of station-level prices, we study the relationship between station characteristics and retail gasoline margins. In particular, we construct measure of local competition for each gasoline station in Mexico, based on the number of competing stations within a fixed drive-time radius around the stations. Controlling for observed characteristics of each station, we show that retailers that have fewer local competitors set higher prices and earn higher margins.

This research is important to understand the costs and benefits of the recent energy reforms in Mexico, which led to the restructuring of both the hydrocarbons and electricity sectors. The work provides more general insights into the nature of spatial competition in retail energy markets. In particular, we study a setting in which firms have switched from charging a regulated price to being able to choose their own retail prices each day. In this environment, we observe both retailers learning how to price and consumers learning to search. This work provides unique insights into firm and consumer learning in a newly-created market (Doraszelski, Lewis and Pakes, 2018).

Data and Methodology

We have data for the universe of gasoline stations in Mexico. For each station, we have daily retail prices from January 2017 (before deregulation) until March 2019. Each station is linked to a wholesale fuel terminal and we have the daily terminal prices between 2017 and 2019. With this data, we can calculate the retail margin as the difference between the retail and wholesale prices. This margin includes the cost of transportation from the terminal to the station.

We have data on the attributes of each station including its brand, size (number of pumps), and other attributes (such as the presence of a convenience store). We also have the exact geographical coordinates of each station. With this geographical information, we extract statistical information on the surrounding locality, including measures of household income and market size (number of registered vehicles). We also match the station to the road network and calculate driving times along the road network to the surrounding gasoline stations. This allows us to count the number of competitors within a given drive-time radius around every station in Mexico. To control for transportation costs, we calculate the delivery time from the wholesale terminal to the station.

Local spatial competition is limited for many gasoline stations. More than 20 percent of stations have zero competitors within a five-minute drive. The maximum number of competitors within a five-minute radius is 15.

We use the data on station margins and characteristics to estimate a model of the determinants of retail gasoline margin in Mexico. We regress the daily margin for regular gasoline on a set of indicator variables for the number of competitors within a five-minute radius of the station. We include the terminal driving time, brand dummies, station attributes, locality characteristics, and state and day fixed effects in the regression. The coefficients on the competition dummies provide our measure of the effect of competition on margins.
Preliminary Results
Our results for the main variable of interest are shown in Figure 1. The graph shows the coefficients on the competition indicators, measured relative to the excluded group of “zero competitors”. As the number of competing stations in the surrounding area increases, the retail margin earned by the gas station decreases. For a station with five competitors within a five-minute drive, the margin is 30 Mexican cents per liter (approximately US$0.06 per gallon) lower than a station with no competitors. An increase in the number of competitors beyond five has no additional effect on margins.

![Figure 1: Relationship between local competition and retail gasoline margins in Mexico, for regular gasoline, in December 2018](Image)

Conclusions
Our results show that Mexican gasoline stations that have fewer local competitors charge higher prices and earn higher margins. In future work, we will group stations by their ownership status, in order to distinguish between local competitors that have the same or different owners. We expect that the effect of competition will be greatest for the local competitors that do not share the same owner.

Our results suggest that the full benefit of retail gasoline restructuring in Mexico will only be realized when there is entry by new gasoline stations. The existing density of stations in Mexico is low by international standards, as the result of the long history of entry regulation by a government monopoly. A focus for government policy should be the reduction of the remaining barriers to entry for new stations that wish to enter the market. Additional entry will increase the competitiveness of local markets and reduce gasoline margins.

References