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Research Brief
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Estimating the impact of competition

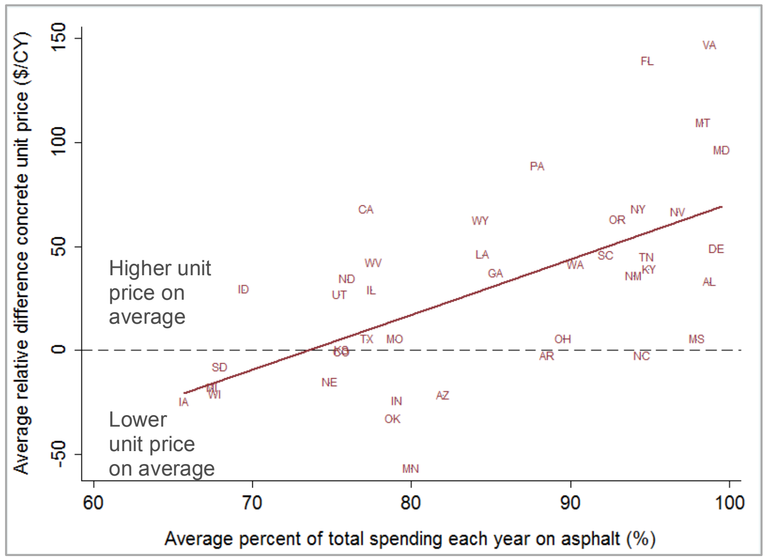
PROBLEM

There is wide variation across states in the amount spent on concrete and asphalt, the two primary paving materials. These two materials can be considered substitutes because they perform a similar function for consumers. In many contexts, the existence of either inter-industry or intra-industry competitive substitutes drives down prices. This research brief explores the question: Does the presence of inter-industry competition within a state between paving material substitutes impact pavement material prices?

APPROACH

We gathered concrete and asphalt pay item and state-level DOT bid information. Pay items were screened in order to compare only activities that had legitimate concrete or asphalt alternatives (patching, grinding, curbs, and similar projects were removed). Jobs that had at least the equivalent of one mile of 5-lane pavement 6 inches thick in either material were included. To simultaneously compare unit prices over multiple years, we adjusted for year-to-year change. To do so, we found a relative difference unit price by subtracting a state's unit price each year from the national average that year.

We selected the percent of total spending on asphalt within a state each year to represent inter-industry competition. Comparisons were then made using ten-year averages from 2005 to 2014 for the 41 states that recorded spending on both materials during that period (New England states had insignificant concrete spending and AK, HI, and NJ do not report bid data). A regression analysis was then performed on the two sets of ten-year average data to compare average relative difference concrete unit price with the average percent of total spending on asphalt.



Comparison between the average relative difference unit price of concrete and the 2005-2014 average percent of total spending on asphalt in the 44 states with concrete spending. Zero is the average unit price across all states, and higher average relative difference unit price indicates a higher unit price for a state.

FINDINGS

Our analyses suggest that if a state were to sustain more competitive pavement spending for multiple years, they could expect to then pay a lower unit price for concrete paving. Results from a regression analysis show that the percent of total spending on concrete pavement explains approximately 36% of the variation in the unit price of concrete pavement. There is a negative trend in the asphalt case as well, but it explains little of the variation in asphalt unit price.

IMPACT

In 2014, state DOTs spent nearly $10 billion on paving materials. Given the need to expand and improve the road networks across the country and the enormous sums of taxpayer funds expended, it is vital that agencies obtain maximum benefit from the limited funds available. Leveraging competition between industries to reduce paving material prices appears to be one way to extend the impact of paving funds.

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