Willingness to Pay and Willingness to Accept Shale Drilling: A Survey of Ohio Residents

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Background
- Shale gas drilling activities present many opportunities as well as potential environmental costs, both perceived and realized, to homeowners located near those activities. As shale gas drilling and exploration moves forward, it is important to understand the economic and behavioral impacts on nearby residents.
- In this paper, we utilize a newly developed stated preference survey to examine both willingness to pay (WTP) and willingness to accept (WTA) measures associated with shale gas development and its associated activities.

Survey
- The survey used in this paper implements a conjoint analysis to determine how homeowners respond when faced with a variety of proposed location choices and varying levels of shale gas activity.
- A series of Likert scale questions follow the conjoint section of the survey. We also ask the respondents their demographic information, and predictions on the impacts of shale drilling on local communities. The survey follows the best practices outlines by Dillman (2000) to maximize response rates.

1. Drilling rights under the home

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Supply</td>
<td>Municip</td>
<td>Municipal</td>
<td>Municipal</td>
</tr>
<tr>
<td>Monthly Housing Cost</td>
<td>$500</td>
<td>$600</td>
<td>$700</td>
</tr>
<tr>
<td>Distance from Home to Shale Drilling</td>
<td>0.5 miles</td>
<td>1 mile</td>
<td>2 miles</td>
</tr>
<tr>
<td>Number of Wells on Site</td>
<td>5</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Daily Liquid Trash (tons/day)</td>
<td>10 tons/day</td>
<td>15 tons/day</td>
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2. Competing homes for hypothetical move

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Results
- Logit model with the choice from each scenario presented in the survey representing an observation.
- Scenarios for the WTA have positive estimates on the payment made for rights under a home.
- There is a negative estimate on WTP for homes with higher monthly housing costs.
- Signs on the estimated coefficients are consistent across WTA and WTP models.
- Municipal water and drilling distance have positive coefficients in each model.
- Number of wells and number of trucks per day have negative estimates for WTP and WTA.

Conclusions
- The impact of drilling distance from the home is constant across models.
- The effect of water source, number of wells, and number of trucks per day is less in the WTA scenario than in the WTP scenario.
- Under both scenarios, the ranking and relative magnitude of drilling distance, number of wells, and number of trucks per day is similar.
- Residents are more willing to receive direct payments than to be compensated through lower housing prices.
- Future rounds of surveys should improve statistical significance and allow the stratification of results into different demographics categories to test for heterogeneity in the results.

Bibliography