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The Housing Market Bust and Farmland Values: Identifying the Changing Influence of Proximity to Urban Centers

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The Housing Market Bust and Farmland Values: Identifying the Changing Influence of Proximity to Urban Centers

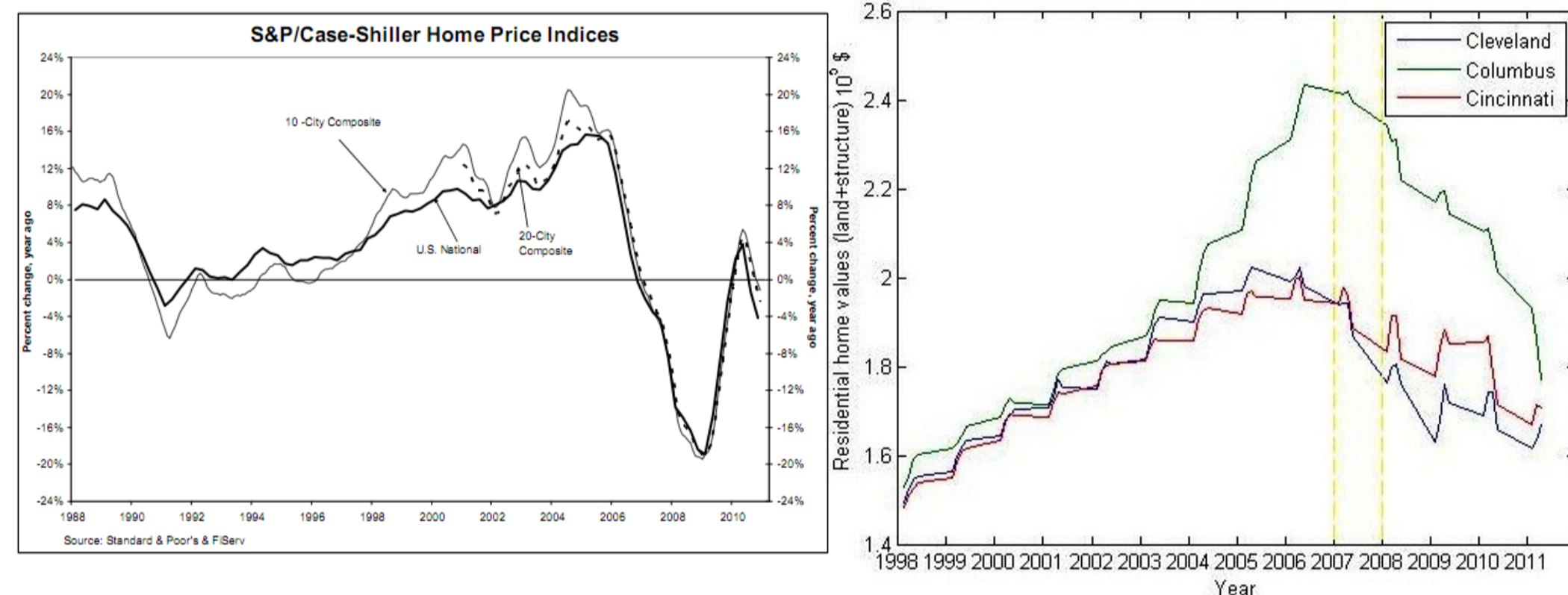
Wendong Zhang* and Cynthia J. Nickerson**

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Abstract

Though about one-third of farmland is subject to urban influences, little is known about how changes in urban land markets affect farmland values. This paper identifies the impact of the recent residential housing market bust and subsequent economic recession on farmland values, using parcel-level farmland sales data from 2001-2010 for a 50-county region under urbanization pressure in Western Ohio. Our estimates from hedonic regressions reveal that farmland was not immune to the residential housing bust; the portion of farmland value attributable to urban demands for developable land was almost completely wiped out shortly after the housing market bust in 2009-2010.

Introduction

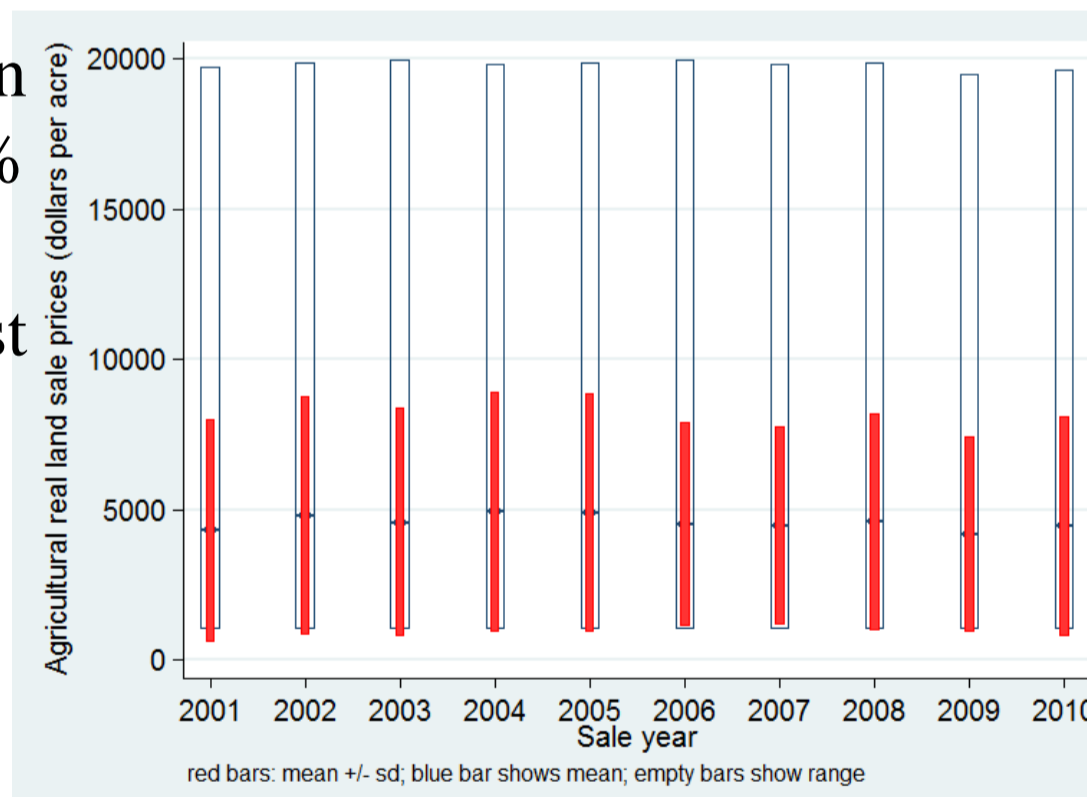


Trends in Farmland Market and Urban Land Market

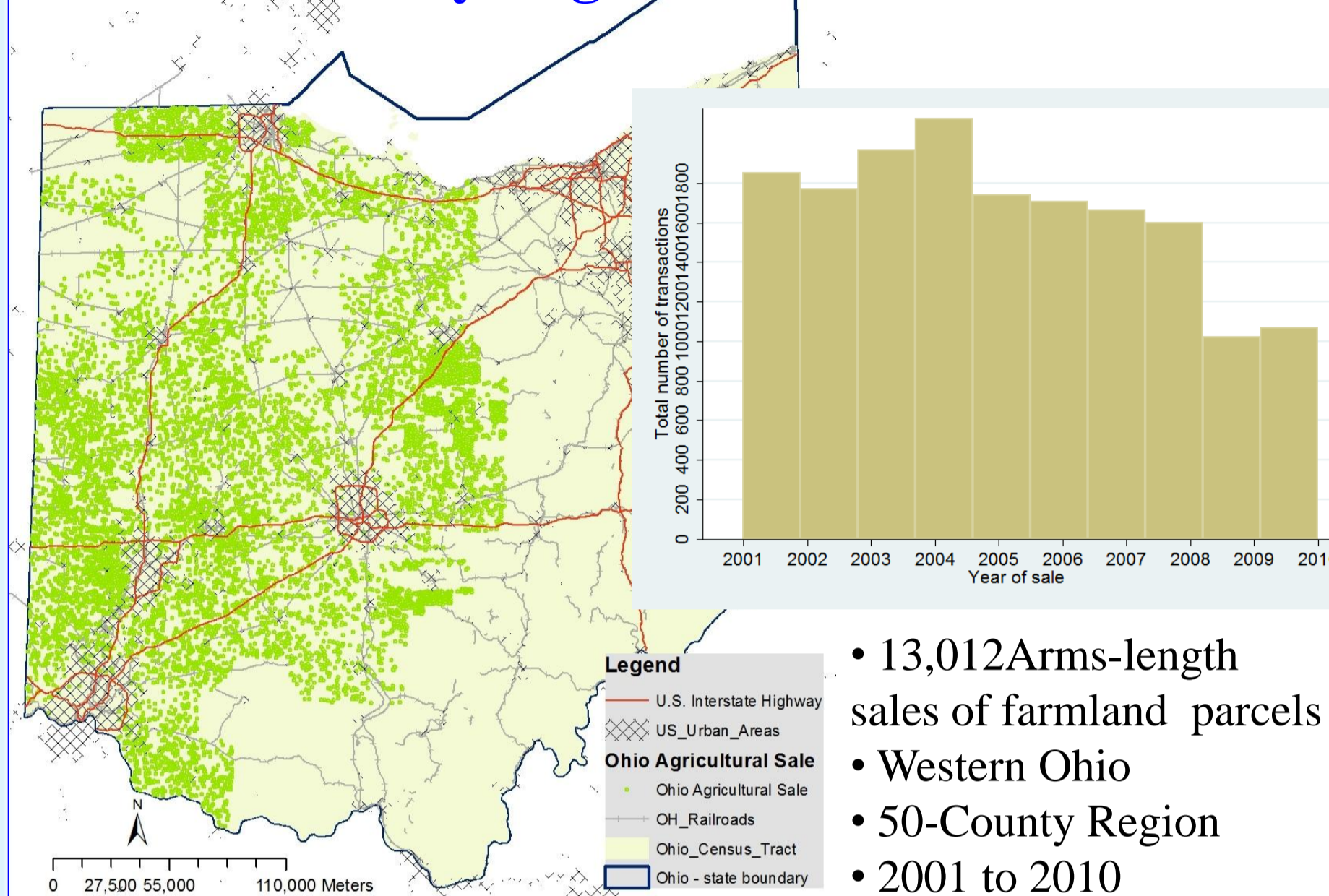
- Residential property values in major MSAs declined by ~40% between early 2007-late 2008
- No corresponding dip in Midwest farmland values
 - ethanol expansion
 - grain exports to China
 - historically low interest rates

Research Objectives and Hypothesis

- Farmland close to urban areas typically sells for a premium (Capozza and Helsley 1989)
- Demand for developable land for residential or commercial uses is the most significant nonfarm factor affecting farmland values
- Did the “urban premium” that accrues to nearby farmland remain largely intact, as suggested by recent farm real estate trends, or are these trends masking a larger downturn in the value of proximate farmland?
- We hypothesize that the urban housing market bust imposed significant downward pressure on urban demands for developable land and hence the urban premium that accrues to farmland near urban areas.**



Data and Study Region



- 13,012 Arms-length sales of farmland parcels
- Western Ohio
- 50-County Region
- 2001 to 2010

Methods

Conceptual Model = Ricardo + Capozza & Helsley

Farmland Values = f(Ag_Vars, Urban_Vars)



Agricultural Productivity
Influence Variables

- Soil quality, slope, distance to nearest grain elevator, ethanol plants



Urban Influence
Variables

- Distance to cities and highways, surrounding population, etc.

Hedonic regressions with census tract fixed effects

$$\log(V_{it}) = \beta_0 + \beta_A' A_{it} + \beta_{U_{boom}}' U_{it} + \beta_{U_{bust}}' U_{it} * D_{t_{bust}} + \tau_t + \theta_j + \varepsilon_{it}$$

- Parcel-level hedonic regression v.s. county-level
- Census tract fixed effects v.s. county fixed effects
- Four major parcel-level measures of urban influences that account for multiple urban centers v.s. dist_1st city center
 - Distance to nearest city center
 - Incremental distance to 2nd nearest city center <NEW>
 - Surrounding urban population within 25 miles of a parcel <NEW>
 - Gravity index (popu/dist^2) for 3 nearest cities

Parcel-level urban premium

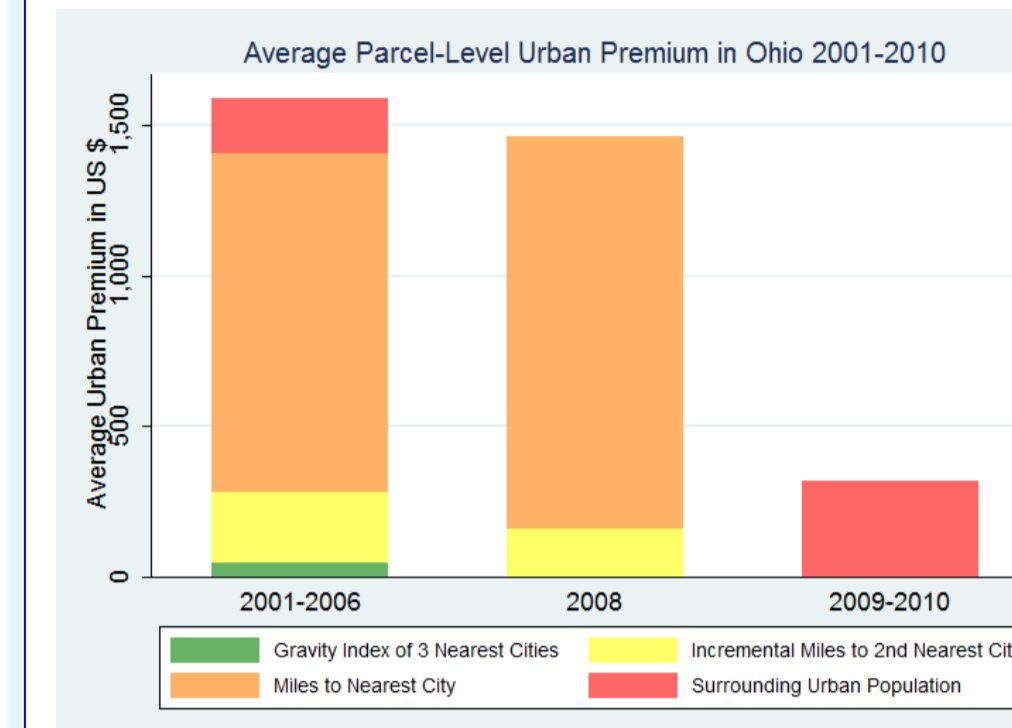
$$urban\ premium = \exp(\log(\widehat{P_{it}}(U_{it}))) - \exp(\log(\widehat{P_{it}}(\bar{U})))$$

- This metric quantifies for each parcel, **relative to a hypothetical agricultural land parcel with no urban influence**, the total dollar value resulting from being located closer to urban areas.

\bar{U}

60 miles away from nearest city, 40 in addition from 2nd nearest city
0 for surrounding urban population and gravity index

Results



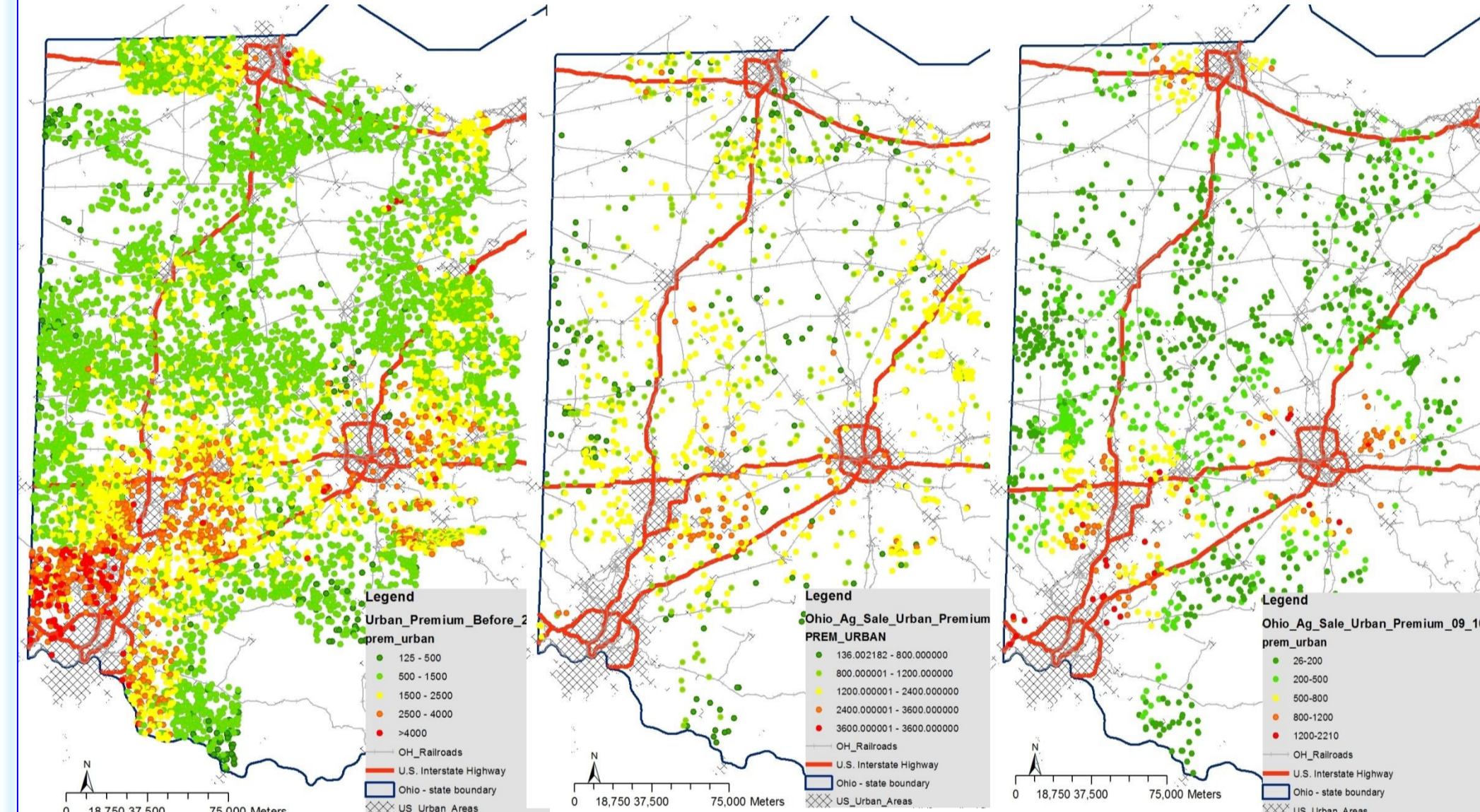
Major Urban Influence Variables	Marginal Effects	
	01-06	09-10
Distance to Nearest City Center	\$28/mile ***	\$8/mile
Incremental Distance to 2 nd Nearest City Center	\$11/mile ***	\$0/mile
Surrounding Urban Population n 25 miles	\$680/million ***	\$1051/million ***
Gravity Index	\$60/unit ***	\$0/unit

Distribution of Parcel-Level Urban Premium

2001 – 2006

2008

2009-2010



Conclusion and Contributions

- The value of being within close proximity to urban centers on surrounding farmland values declined by an estimated 80 percent or more shortly after housing market bust
 - On average: \$1588 /acre (01-06) to \$318/acre (09-10)
 - 40% of per-acre farmland prices pre-bust to <10% after the bust
- Measures of influences from multiple urban centers + surrounding popu account for ~30% of parcel-level urban premium before 2007
- This paper offers the first analysis of the magnitude of the short-run structural break in the effect of urban influence on surrounding farmland values due to the recent housing market bust.

References

- Kuminoff, N. V., and J. C. Pope. 2013. “The Value of Residential Land and Structures during the Great Housing Boom and Bust.” *Land Economics* 89(1): 1-29.
- Guiling, P., B.W. Brorsen, and D. Doye. 2009. “Effect of Urban Proximity on Agricultural Land Values.” *Land Economics* 85: 252-64.

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