# A DOUBLE-QUESTION SURVEY MEASURE OF FARMLAND PRICE BUBBLE

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# *Background*

**Pesaran & Johnson (2020)**

- Normal Condition: High/ Low Valuation = Price Adjustment

- Economic Bubble: High Valuation = Higher expected price in the future

- Crash: Low valuation = Lower expected price in the future

- Why do expectations matter? Self-fulfilling prophecy

# *Rising expectations for a bubble*

## Top Quality Land results

- In 2021

    36% respondents said land prices were overvalued

    22% thought the prices will further increase in the six-month horizon, less than 20% thought the prices will increase in 18- and 60-month horizons
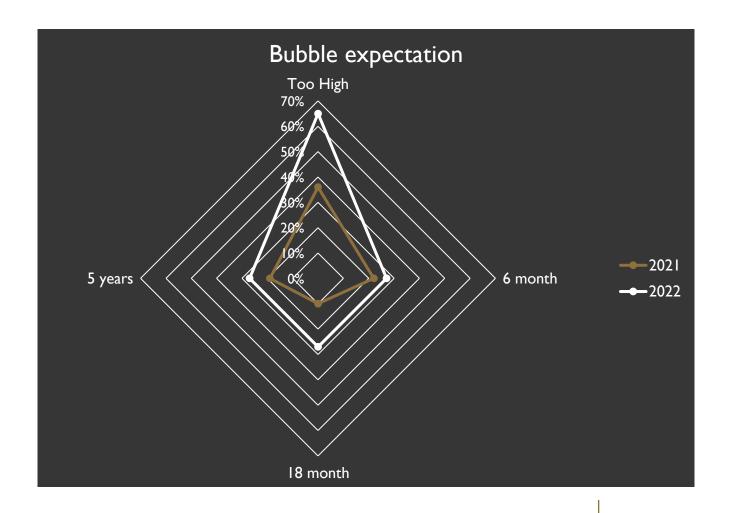
- In 2022

    65% respondents said land prices were overvalued

    27% thought land prices will increase in 6 months, 18 months and 60 months horizons.

Purdue Farmland and Cash Rent survey

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# *Rising expectations for a bubble*



Bubble expectation

# The Model

$$\pi_Q = \alpha + \beta x + \gamma z + u \tag{1}$$

$$\pi_Q = \alpha + \beta x + \sigma t + \gamma z + u \tag{2}$$

$$\pi = \alpha + \beta x + \sigma t + \phi q + \gamma z + u \tag{3}$$

$\pi = Percentage\ change\ in\ expected\ price\ of\ the\ land\ \left(\dfrac{FV - PV}{PV} \times 100\right)$

$x = Valuation\ of\ the\ land\ (-1, undervalued, 0\ just\ right, +1\ over\ valued)$
$z = Profession^1$
$t = Time\ horizon^1$
$Q = Land\ quality$
$q = Land\ quality^1$

[1]Dummy variables

# *Results*

## Model 1

- Top Quality: All coefficients are negative. **Valuation** is significant in 18- and 60-month horizon. Lender is significant in 6– and 60-month horizon.

- Average Quality: All coefficients are negative. **Valuation** and Lender is significant in 60 months.

- Poor Quality: All coefficients are negative. **Valuation** is significant in 60 – month horizon. Lender is weakly significant (0.068) in 60 – months

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# *Results*

## Model 2

- Top Quality: All coefficients are negative. Land **Valuation**, Lender and 18-month horizon are significant

- Average Quality: All coefficients are negative. **Valuation**, and Lender are significant

- Poor Quality: Mixed results. **Valuation**, Appraisers and Farm Managers had positive but **insignificant** coefficient. Lenders had negative coefficient but **insignificant**

# *Results*

## Model 3

- Valuations for all land types have negative coefficient and is significant
- 18 – month horizon and all occupations have negative and significant coefficient

| Model 3 | | |
|---|---|---|
| Predictors | Estimates | P value |
| (Intercept) | 1.82 | <0.001*** |
| Valuation (all) | -0.99 | <0.001*** |
| Top Quality | 0.31 | 0.183 |
| Avg Quality | 0.19 | 0.427 |
| T6-Months | -0.33 | 0.164 |
| T18 – Months | -0.58 | 0.014* |
| RE/ Appraisers | -0.56 | 0.039* |
| Lenders | -1.00 | <0.001*** |
| Farm Managers | -0.80 | 0.028* |
| Observations: | 890 | |
| $R^2/R^2$ Adjusted : 0.062/0.054 | | |

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# *Conclusion*

- Farmland bubble expectations are higher in 2022 than 2021

- Our model shows in general market participant are cautious

  Mostly negative coefficients

- More significant results in longer time horizons

  i.e., respondents are cautious and consistent in their expectations for longer time horizons

# *THANK YOU*

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Purdue Agricultural Economics Report:
https://ag.purdue.edu/commercialag/home/purdue-agricultural-economics-report/