An Analysis of Farmland Option Value: Ascertaining the Nature of the Recent Farmland Bubble Phenomenon

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Introduction

With the spectacular increase in farmland value, it is suspected that we are experiencing a “bubble” in the farmland sector in Iowa State.

Farm Market Value Percentage Change (FMV%) Vs Farm Market Value (FMV)

However, how do we tell whether a “bubble” is speculative harmful or benign?

Objective

- How to identify a harmful speculative “bubble”?
- How to identify the contributing factors to the “bubble”?

Methods

Farm Market Value (FMV) = Speculative Force
Farm Value (V) = PV+F(V)
PV=Present value of rent or fundamental value
F(V)=Opportunity cost of investing today or option value

Geometric Brownian Motion

FMV Vs PV

Dependent Variable: Ratio=(FMV/V)-1, large Ratio indicates a speculative “bubble”
Significant Variables:
Corn Price, Debt/Asset, DirGovPay, Production Cost, Net Farm Income, Net Farm Income%, FMV%, Urban Land/Total Land

Concluding Factors: Regression Analysis

Ratio Vs Corn Price (per bushel)

Ratio Vs Net Farm Income (per acre)

Ratio Vs Direct Gov Pay (per acre)

- We may now be experiencing a speculative “bubble” in Iowa.
- With the significant variables, we may be able to predict and control the speculative “bubble”.
- Different values of the parameters (discount rate, capitalization rate, FMV volatility) for calculating the option value, F(V), as well as the assumption of the Geometric Brownian Motion may change F(V) thus leading to different conclusions.

Reference


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