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Agricultural Land as a Multipurpose Capital Asset

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The views expressed are those of the authors and should not be attributed to the Economic Research Service or USDA.

Introduction

- Nearly 40% of agricultural land in the United States is rented out or leased by the farm operator (USDA 2015)
- Roughly 75% of rented farmland is owned by landlords who identify themselves as non-operators (USDA 2015)
    - Non-operator landlords (NOLs): landlord entities who own farmland, but do not make any day-to-day decisions for a farm or ranch operation

Motivation

- In addition to the cash rents paid by their tenants, other forms of income are also available to landlords
    - Oil and gas extraction
    - Wind energy production
    - Development rights
    - Recreation revenue

Research questions

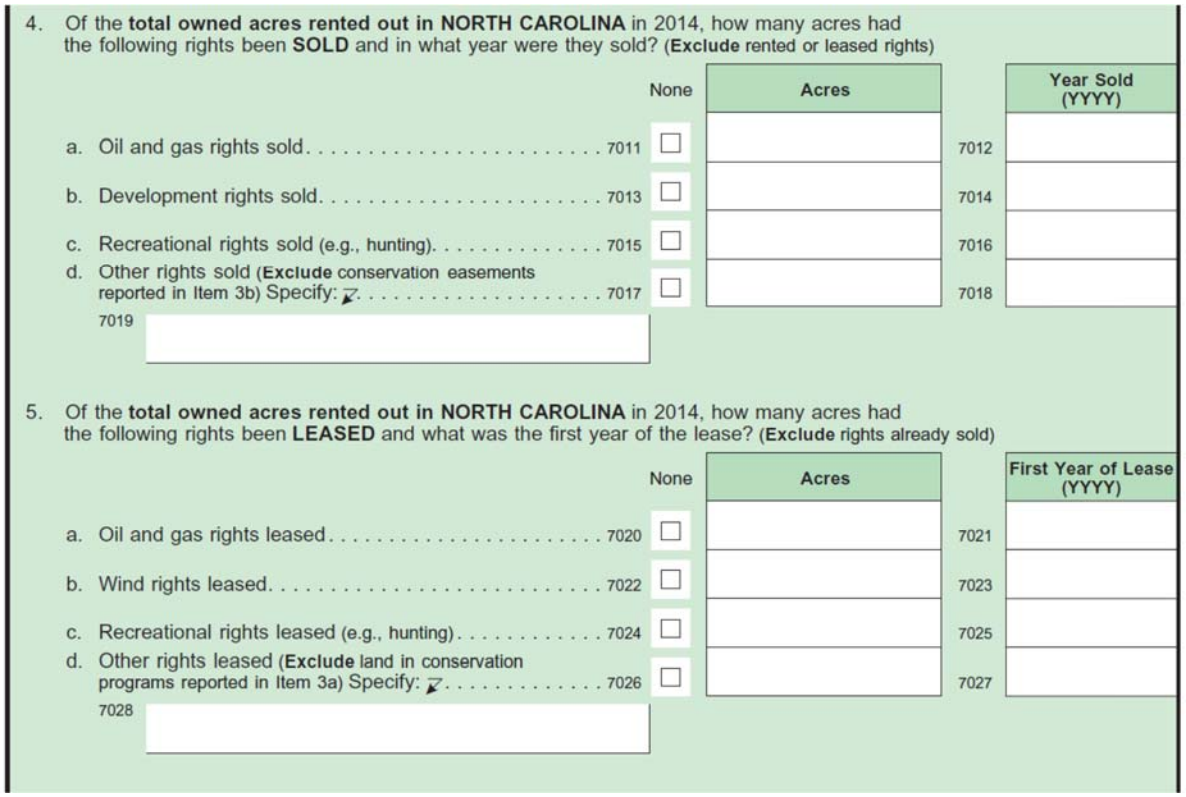
- What factors affect NOL decisions to exercise secondary, non-agricultural use rights?
- How important is the proximity of the NOL to the land they rent out?
- Are secondary rights more likely to be exercised on higher-quality land?
- How does the lease arrangement, and the degree to which tenants have control over practices, affect whether or not secondary rights are used?

Data

Tenure, Ownership, and Transition of Agricultural Land (TOTAL) survey

Surveys conducted by the USDA, for example, ARMS, typically focus on farm operations. However, little is known about the landowners (landlords) of the 39 percent of farmland in the contiguous 48 states that is rented. To learn more about rented farmland and who owns it, USDA's Economic Research Service (ERS) and National Agricultural Statistics Service (NASS) conducted a special study as part of the Census of Agriculture program to collect data from landowners and landlords of agricultural land. The 2014 TOTAL survey collected data in the 48 contiguous states on farmland owned and rented out by operator and non-operator landlords. The TOTAL survey provides a current and unprecedented source of information on a variety of topics related to farmland, including ownership, income, expenses, debt, assets, and characteristics of non-operator landlords, as well as information specific to land such as the acquisition and transfer of land, sale and leasing of gas and oil rights, and rental agreements.

Figure 1: TOTAL survey questions of interest



4. Of the **total owned acres rented out in NORTH CAROLINA** in 2014, how many acres had the following rights been **SOLD** and in what year were they sold? (**Exclude** rented or leased rights)

	None	Acres		Year Sold (YYYY)
a. Oil and gas rights sold . . . 7011	☐		7012	
b. Development rights sold . . . 7013	☐		7014	
c. Recreational rights sold (e.g., hunting) . . . 7015	☐		7016	
d. Other rights sold (**Exclude** conservation easements reported in Item 3b) Specify: . . . 7017	☐		7018	

7019

5. Of the **total owned acres rented out in NORTH CAROLINA** in 2014, how many acres had the following rights been **LEASED** and what was the first year of the lease? (**Exclude** rights already sold)

	None	Acres		First Year of Lease (YYYY)
a. Oil and gas rights leased . . . 7020	☐		7021	
b. Wind rights leased . . . 7022	☐		7023	
c. Recreational rights leased (e.g., hunting) . . . 7024	☐		7025	
d. Other rights leased (**Exclude** land in conservation programs reported in Item 3a) Specify: . . . 7026	☐		7027	

7028

Figure 2: density of non-operator landlord locations

- We obtained special permission from NASS to supplement the TOTAL data with information on the location of where the NOL surveys were mailed
- Mailing addresses do not necessarily correspond to where NOLs reside
- Many NOLs have mailing addresses in major cities throughout the country (Phoenix, Minneapolis, St. Louis, Denver, etc.)
- North Carolina also has a large concentration of NOLs

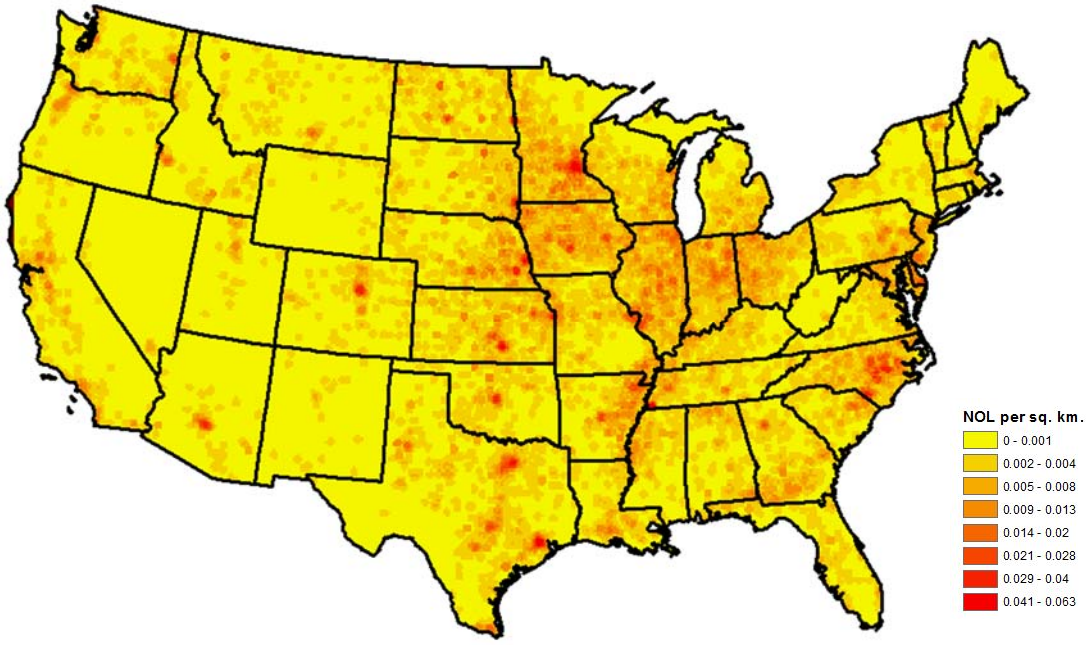
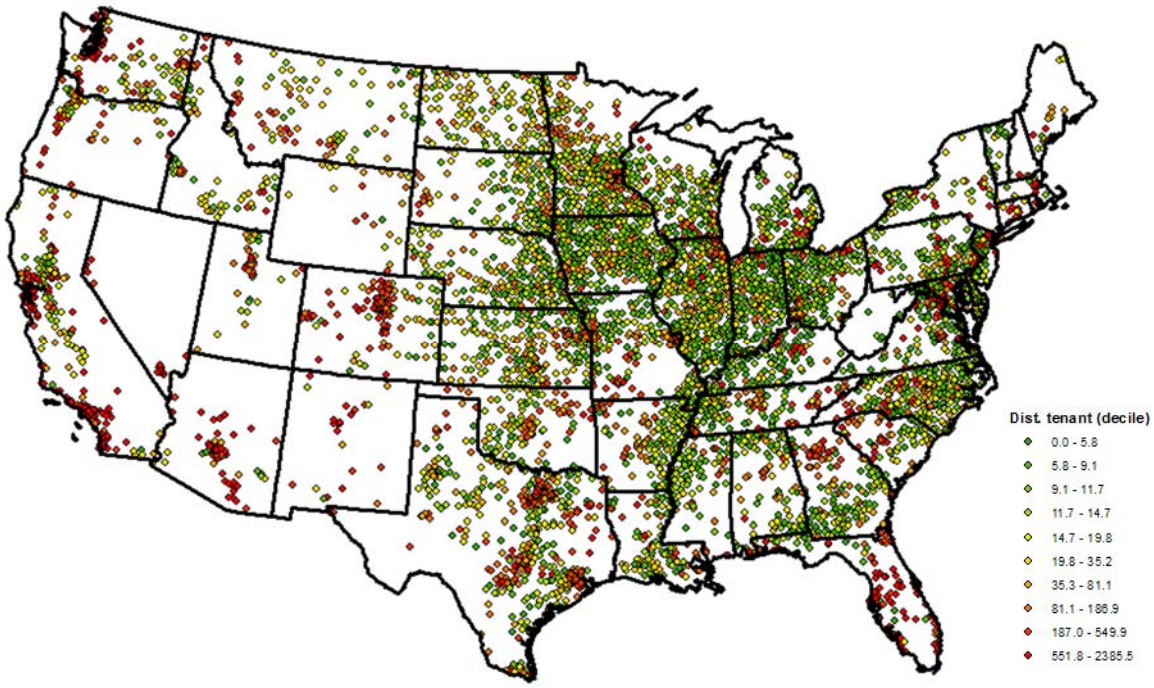


Figure 3: Distance from non-operator landlord zip codes to tenant

- Calculated distance from NOL zip codes to county in which (some of) the land they rent out is located
- Significant heterogeneity in Midwest in terms of how removed landlords are from the land they rent out
- NOLs located in major urban areas tend to be more physically removed from their land
- NOLs in Florida and Arizona are generally at the higher end of the distance distribution



Methods

- Estimate a series of discrete-choice models to measure the extent to which landlord, land, and lease arrangement characteristics affect the decision to exercise non-agricultural use rights
- For example: $P(R_i^{OG} = 1) = f(X_i, Y_i, Z_i)$, where R_i^{OG} denotes the binary decision to sell or lease oil and gas rights and $X_i, Y_i,$ and Z_i are the associated landlord, land, and lease attributes.

Table 1: Oil and gas rights results

Variable	Coefficient	
Rent per acre	-0.002	**
Distance to tenant	0.001	***
Different county from tenant	0.314	**
Non-share lease	-0.368	***
Tenant perm. cons.	-0.313	*
Tenant one-season cons.	0.544	***
Tenant gov. program	-0.021	
Corporate ownership	-0.108	
Constant	-0.069	

Notes: Sample size = 1,432 single-tenant landlords. The asterisks, ***, **, and *, denote the 1, 5, and 10% significance levels, respectively. The dependent variable is binary and denotes whether oil and gas rights have been sold or leased. Zeros are determined by landlords reporting a positive oil/gas value with no sale/lease or location in a shale county.

- Landlords outside of county in which rented land is located are more likely to sell/lease o/g rights, an effect that increases with greater remoteness
- Higher quality land is less likely to be associated with exercised o/g rights
- Surprisingly, non-share agreements are less likely to be affiliated with exercising o/g rights
- Effects on degree to which tenant exercises control over conservation practices are mixed

Table 2: Wind energy rights

Variable	Coefficient	
Rent per acre	<0.001	
Wind potential index	0.310	***
Distance to tenant	0.000	*
Different county from tenant	-0.083	
Non-share lease	-0.930	***
Tenant perm. cons.	0.116	
Tenant one-season cons.	-0.264	
Tenant gov. program	0.557	**
Corporate ownership	-0.472	
Constant	-4.140	***

Notes: Sample size = 6,598 single-tenant landlords. The asterisks, ***, **, and *, denote the 1, 5, and 10% significance levels, respectively. The dependent variable is binary and denotes whether wind energy rights have been leased. Zeros are determined by landlords that do not report a lease but rent out land located in a county with wind energy potential.

- Landlords outside of county in which rented land is located are less likely to sell development rights, though the magnitude of this effect declines with distance
- Urban influence and hydric soils both point to development right sales taking place in areas more suitable for conversion to urban uses
- Corporate ownership weakly associated with a greater propensity to sell development rights

Table 3: Development rights

Variable	Coefficient	
Rent per acre	>-0.001	
Urban influence	-0.222	***
Hydric soils	-1.342	
Distance to tenant	0.001	***
Different county from tenant	-1.845	***
Non-share lease	-0.024	
Tenant permanent cons.	-0.187	
Tenant one-season cons.	-0.105	
Tenant gov. program	0.074	
Corporate ownership	0.825	*
Constant	-3.892	

Notes: Sample size = 9,362 single-tenant landlords. The asterisks, ***, **, and *, denote the 1, 5, and 10% significance levels, respectively. The dependent variable is binary and denotes whether development rights have been sold.

- Weak evidence that more remote landlords are more likely to lease land for wind energy
- Wind rights more likely to be exercised on land with greater potential for wind energy generation
- Non-share leases negatively correlated with leasing land for wind energy
- Allowing the tenant to make decisions regarding govt. program enrollment positively associated with exercising wind rights

Conclusions

- Proximity of landlords to the land they rent out has a detectable effect on exercising secondary rights associated with agricultural land
- Land quality has a significant effect on exercising oil and gas rights, but not development or wind energy rights
- Lease arrangement characteristics matter, and in different ways, for whether secondary rights are exercised
- Future work: incorporate rights exercised by owner-operators and operator landlords, incorporate recreation rights