

## Do farmland sales markets price in weak property rights enforcement?

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# Contents

1. Motivation
2. Theory
3. Data and methods
4. Results
5. Conclusion and discussion

## **Ukraine's 2021 land reform: "flagship reform" after the Revolution of Dignity in 2014 (Maidan)**

### **Before:**

- Private ownership was recognized but moratorium on land sales: 7 mln landowners disadvantaged
- Land relations based on land rental
- Rental prices based on artificially determined land value

### **After:**

- Sales allowed for Ukrainian individuals
- Legal entities were included in 2024
- Max ownership cap of 100 ha per individual



## Low support rates: Public concern about land institutions

- Incomplete land property rights registries: hostile overtakes
- Lack of knowledge about how to enforce property rights + bad institutions for land disputes
- Revolution of Dignity (2014) improved institutions dramatically but in some areas old elites have continued “business as usual”
- Large powerful land users can navigate this environment better
- Excessive land concentration has been one of the explicit fears connected to land reform

## Research Questions:

Are differences in institutional quality across Ukraine priced in by the newly established land sales market?

Do powerful landowners exercise market power in the Ukrainian land sales market?

# Theoretical framework:

## Land prices are modelled in the following way:

- Hedonic model: Plot characteristics affect its value (Palmquist and Danielson, 1989; Maddison, 2000)
- Bad institutions may lead to lower WTA:
  - ✓ Bad institutions increase expropriation risk and push landowners into unfavorable deals
  - ✓ Bad institutions may increase sales transaction costs
- Land concentration
  - ✓ Powerful market players may use their bargaining power and put downward pressure on land prices

# Hypotheses:

**H1:** Worse land-related institutions should be associated with lower land sales prices

**H2:** Land sales prices will be lower in regions with high land concentration



## Data:

- Plot-level data by State Service for Geodesy, Cartography and Cadaster (SSGCC) since the launch of the sales market on July 1, 2021 up to February 24, 2022.
- Country-wide representative survey with stratification by sex, age, and employment status conducted in May 2019 – March 2020 by the World Bank
- Supplemented by the State Statistics Service of Ukraine (SSSU)

## General model (Tobit):

$$Price_i = \beta_0 + \beta_1 Inst_j + \beta_2 ConCENT_j + \beta_3 Controls_i + \varepsilon_{ij}$$

where

*Price<sub>i</sub>* - log of the sales price of a land plot *i*

### Explanatory variables:

*Inst<sub>j</sub>/Inst<sub>k</sub>* - Quality of land-related institutions

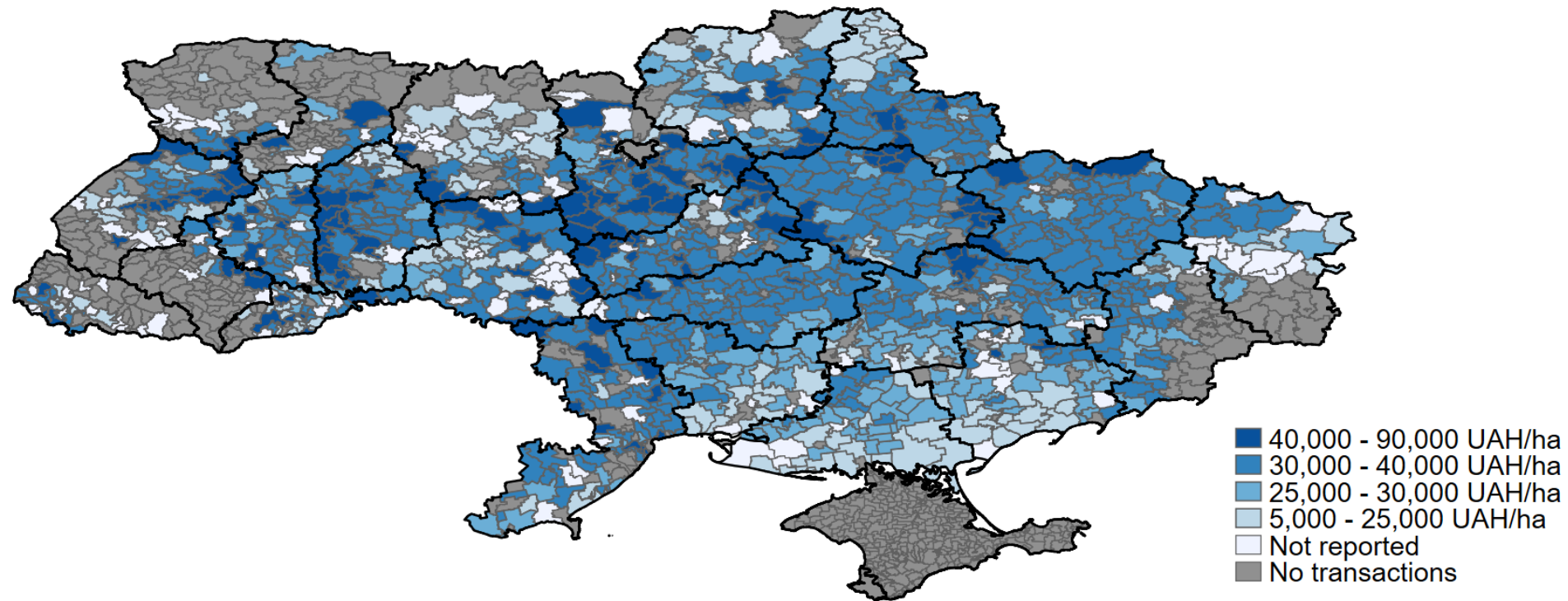
- agreement with statements “Ordinary (influential) people can get a redress if their land rights are violated” on a 1 to 4 Likert scale
- Land rights index – inverse ratio between the scores above (1 to 4)
- Share of registered private/state-owned land in a given municipality *k*

*ConCENT<sub>r</sub>* - Herfindhal-Hirschman Index (HHI) of the owned land within rayon *r*

*Controls<sub>i</sub>* - plot characteristics

*ε<sub>i</sub>* - error term

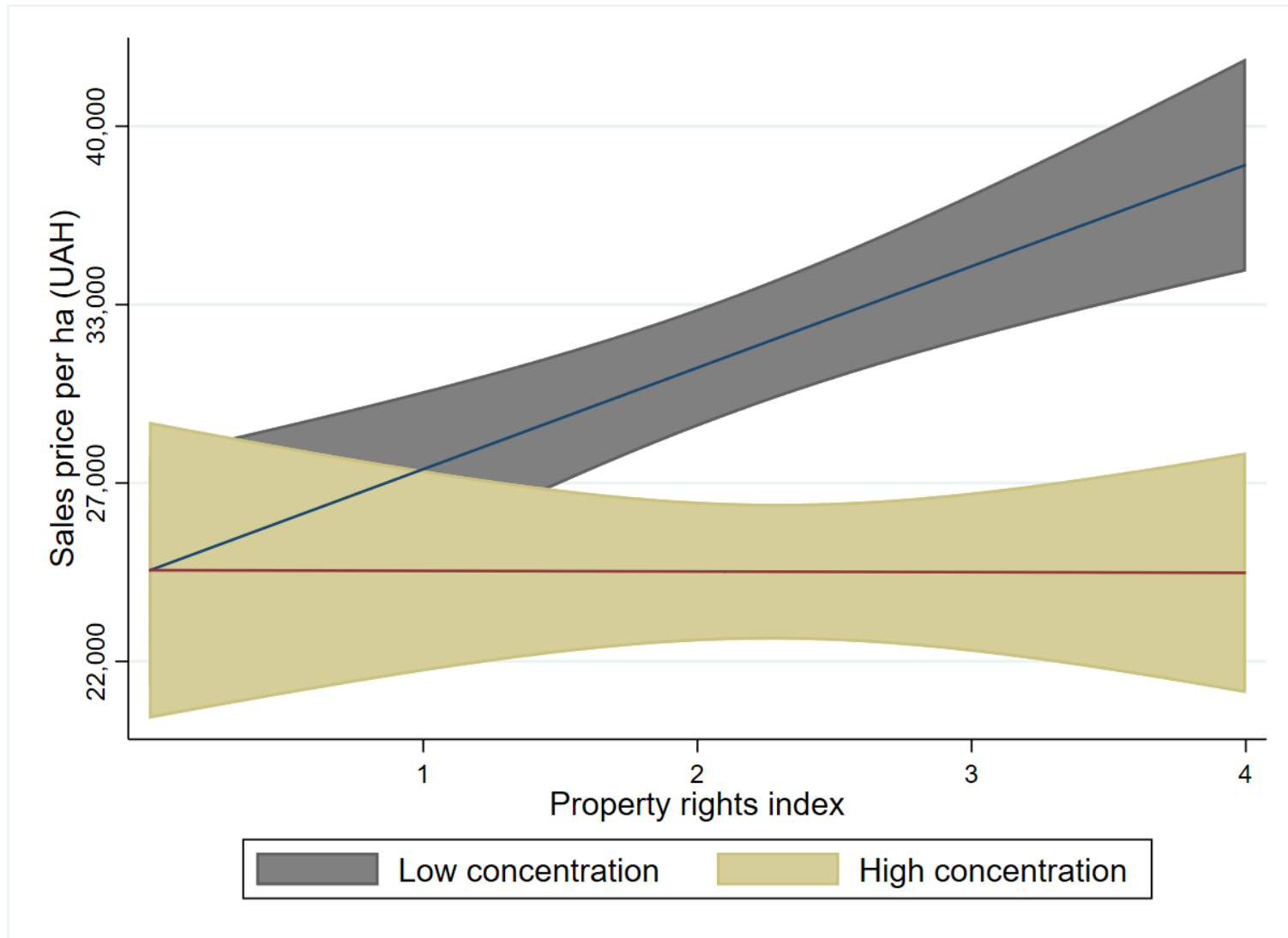
# Spatial distribution of land prices (UAH/ha)



## Estimation of the sales prices

	Tobit (1)	Tobit (2)	Tobit (3)	Tobit (4)
Land rights index (1- bad; 4 – good)	0.076*** (0.000)			
Ordinary people can get redress if their land rights are violated (1 – completely disagree; 4 fully agree)		0.085*** (0.000)		
Share of registered private land within a municipality (0 to 1)			0.201*** (0.006)	
Share of registered state-owned land within a municipality (0 to 1)				0.207*** (0.005)
HHI index of owned land (0 to 1 range)	-0.269*** (0.000)	-0.253*** (0.000)	-0.248*** (0.000)	-0.249*** (0.000)
Area (ha)	-0.020*** (0.000)	-0.020*** (0.000)	-0.020*** (0.000)	-0.020*** (0.000)
Area squared (ha)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
Dummy for pastures or hayfields	-0.548*** (0.000)	-0.546*** (0.000)	-0.507*** (0.000)	-0.506*** (0.000)
NMV per ha	0.022*** (0.000)	0.023*** (0.000)	0.020*** (0.000)	0.020*** (0.000)
Inst. quality # HHI index	-0.128*** (0.020)	-0.075 (0.255)	-1.243*** (0.000)	-1.258*** (0.000)
N	12,478	12,482	18,188	18,063
Pseudo R2	0.187	0.187	0.167	0.166

## Predicted effect of property rights index depending on land concentration



# Robustness:

## Possible selection bias for the non-missing obs.:

- Heckman selection model (HSM)
- Selection equation is identified by the share of rayon population that complained to free legal aid on land issues
- Results are similar

## Robustness:

### Possible spatial bias for $Price_i$ :

- Spatial autoregressive model with autoregressive disturbances (SARAR)

$$Price_i = \beta_0 + \rho \sum_k M_{ik} P_i + \beta_1 Inst_i + \beta_2 Concent_j + \beta_3 Controls_i + \lambda \sum_j M_{ik} u_k + \varepsilon_i$$

- SARAR modes deliver similar results

**Challenge:** Land plots within municipalities have the same coordinates

- Bootstrapping procedure to construct inverse-distance matrix with 1 obs. per municipality (Kim et. al. (2019))
- Results are similar




## Conclusion:



- **Institutions related to property rights enforcement matter for the reforms' success**
  - 1 unit (1-4 range) change in property rights index = 7.6% change in land sales prices
  - 10% increase in land registration = 2% land sales price increase
- **Initial distribution of owned land is a strong predictor of the sales price**
  - 10% increase in HHI Index = 2.5% decrease in land sales price
- **Institutional quality appears to be priced in only if a local land market is competitive**



**Thank you for your attention!**

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