Land Governance for Land Markets

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Land Governance for Land Markets

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Marije Louwsma
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Summary

• Land price determinants theory and an Institutionalist proposition
• Mass Land Valuation – techniques and examples – the bunded system;
• Dutch system – cadaster integrated with valuation for taxation and others
• Hedonic prices: an example from Brazil
• Bunded system for land consolidation: a case from the Netherlands
A Global Land Administration Perspective
Adequate Land Administration and Land Markets

• Good/transparent Land registers and mapped cadaster – secure property rights;

• Land Markets functioning well:
  ➢ Efficient Renting markets – cost/benefits
  ➢ Selling Land prices – similar to expected economical gains with land;
Land prices: a Post Keynesian proposition
Real Price of Farm Land

Source: USDA, Economic Research Service, WASDE and Bloomberg Professional (C 1, S 1, W 1, CPI Index)
Land Prices and Markets

- land prices are determinate by double land aspects: a) as capital asset and b) as liquid asset.
- As capital asset land does not have a fix-price market (as most capital assets), because it cannot be produced.
- As landowners speculate over the future prices of their stocks of land, selling when they think is the best moment, land is traded in a flex-price market.
Land Markets analysis

• Land markets - regions or areas where land is being traded.

• Land is bought and sold because buyers think a property will yield a better global return than other assets.

• Local land price reflects:
  ✓ a) macro tendencies and
  ✓ b) local conditions (can capsize tendency);
Global Farmland Index Compared with Key Commodities

- Farmland Global Average
- Farmland South America
- Oil Prices
- Gold Prices
- Food Prices

Source: Savills Research.

http://www.savills.co.uk/research_articles/141557/204108-0
Land valuation – techniques and challenges
Valuation

• methodologies to determine the value of real estate (land or buildings).
• different purposes: for transactions, monitor the trends on the (agricultural) land market, housing market, etc.,
• a systematic valuation of multiple parcels in a project, for taxation of land/real estate etc.
Valuation Theory

- **Market value**
  - The most probable price of a property on the open market
  - Used in most cases

- **Net income value**
  - The present value of future yearly net income
  - Used e.g. for
    - investment decisions
    - market simulation

- **Cost value**
  - Replacement costs minus depreciation
  - Used e.g. for
    - insurance compensation
    - market simulation
Bandend system of Land valuation
Countries use the Banded system with:

a. the absence of funds to pay for a more complex system;

b. the need for a system that would be broadly acceptable to the taxpaying public;

c. the absence of up-to-date sales data and therefore an inability to produce an ‘ad valorem’ tax base;

d. the absence of a complete register of landowners; the need for a speedy introduction of a tax system.
Elements for a banded system

1. the range covered by the bands (which should reflect the range of ‘values’ of the real estate within the jurisdiction);

2. the number of value Bands and linked to that the Band widths (the fewer the bands, the wider the ‘value’ ranges and the more tolerant they are to rough estimates of property ‘values’); and

3. the tax multiplier (or tax ratio) per Band or the tax rate (%) per band.
Monitoring Land Markets – The Dutch Kadaster
Dutch system of Key Registers

SDI developments in the Netherlands are strongly related to the key registries of e-government policy (interrelated system).

Spatial key registries with Legal Acts for:
- **BRK** – Cadastre
- **BRT** – Topography
- **BGT** – Large scale Topography
- **BAG** – Addresses and Buildings
- **BRO** – Soil and Geology
- **NHR** – Chamber of commerce
- **WOZ** – Real estate value

Non-spatial registries, like population, car license plates, income.
Figure – Land mobility of agricultural land (in ha) per region between 2017 – 2020 (source: Kadaster/RVO/Wageningen Economic Research)
Figure – Price (in €/ha) of unleased land for arable land, grassland, and total (arable, grass, silage maize) between 2017 – 2020 (source: Kadaster/RVO/Wageningen Economic Research)
Figure 5 – Land price monitor for the Netherlands in Q3 2021 (Source: Kadaster/RVO/Wageningen Economic Research)
Hedonic prices for market value estimation: an Brazilian example

- Statistical Method used to estimate land prices based on a land trading sample that occurred recently.
- A deals cadastre is necessary to select a sample of buyers to apply a questionary;
- The price will be associated to relevant variables;

\[
\text{PRICE}_t = a_0 + a_1X_{1t} + a_2X_{2t} + \ldots + a_nX_{nt} \quad l = 1, 2, \ldots,k. \quad t = 1, 2, \ldots,n
\]

\( \text{PRICE}_t \) = Negotiated price per hectare. This variable can refer to the current price (PCTE) or the real market price (PREAL). 
\( X_i \): represents the relevant variables that explain the variation of rural land price in the specific market.
Figure 6 - Geographic distribution of sampled municipalities
# Table 2 – Maranhão homogeneous zone 211: Description of model variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Expected signal of the estimated coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric Power</td>
<td>Dummy variable which indicates the access to electric power. It takes value 1 when the farm has accessible electric power and 0 otherwise.</td>
<td>Positive, as besides representing benefits from electric power itself, this variable may be a proxy of other characteristics of infrastructure which usually come together with electric power.</td>
</tr>
<tr>
<td>Improvements</td>
<td>Dummy variable that indicates the existence of improvements in the farm, such as barns. It takes value 1 if there are improvements in the farm and 0 otherwise.</td>
<td>Positive, since improvements increase production alternatives.</td>
</tr>
<tr>
<td>Rock Fragments</td>
<td>Dummy variable which indicates the presence of rock fragments is considered good (1) soils with no restrictions due to rocks to mechanization and bad (0) the soil with rock fragments that makes mechanization impossible.</td>
<td>Positive, since it is expected that the property where rocks do not interfere in the use of mechanization has higher prices. Those in which the rock fragments make mechanization impossible have lower prices.</td>
</tr>
<tr>
<td>Soil</td>
<td>Composite index which considers soil’s physical properties, such as depth, texture. This index varies in a range from 10 to 100.</td>
<td>Positive, as soil with better physical properties allow greater land productivity and rent.</td>
</tr>
<tr>
<td>Subsistence</td>
<td>Dummy variable value 1 when the system of production of the property is agricultural and cattle raising related to subsistence and trade of surplus and 0 in the opposite situation.</td>
<td>The signal depends on the group of production system of HZ referred.</td>
</tr>
</tbody>
</table>
Results regression model for homogeneous zone 211

Dependent: LNR$HAAT

Multiple $R = 0.83907609$  
$R^2 = 0.70404868$  
No. of cases: 61

adjusted $R^2 = 0.67714401$  
p = 0.000000

Standard error of estimate: 0.303109987

<table>
<thead>
<tr>
<th></th>
<th>Beta</th>
<th>Std.Err.</th>
<th>B</th>
<th>Std.Err.</th>
<th>t(55)</th>
<th>p-level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>2.831</td>
<td>0.434</td>
<td>6.531</td>
<td>0.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rock_Fragments</td>
<td>0.374</td>
<td>0.087</td>
<td>0.450</td>
<td>0.104</td>
<td>4.317</td>
<td>0.000</td>
</tr>
<tr>
<td>Improvements</td>
<td>0.370</td>
<td>0.075</td>
<td>0.455</td>
<td>0.092</td>
<td>4.943</td>
<td>0.000</td>
</tr>
<tr>
<td>Subsistance</td>
<td>-0.216</td>
<td>0.076</td>
<td>-0.254</td>
<td>0.089</td>
<td>-2.852</td>
<td>0.006</td>
</tr>
<tr>
<td>Electric_Power</td>
<td>0.271</td>
<td>0.079</td>
<td>0.293</td>
<td>0.085</td>
<td>3.442</td>
<td>0.001</td>
</tr>
<tr>
<td>Soil</td>
<td>0.277</td>
<td>0.084</td>
<td>0.019</td>
<td>0.006</td>
<td>3.292</td>
<td>0.002</td>
</tr>
</tbody>
</table>

Table 3 – Maranhão homogeneous zone 211: Estimated coefficients
Figure 7 – Maranhão homogeneous zone 211: Predicted versus observed price of rural land hectare
A banded valuation methodology example for land consolidation in the Netherlands

- A good system for mass valuation of land;
- Land consolidation to optimize the allocation of land for spatial developments (reducing land defragmentation, improve nature conservation, etc.)
- Land consolidation - many parcels are exchanged, new parcels are formed, or parcel boundaries are adjusted, needs a systematic approach for land valuation;
- The value of all land within the area is determined based on its agronomic value, which is based on the soil type and groundwater levels (Figure 8);
Final Remarks

• Good cadastres and land administration are essential for the development and regulation of land markets and prices;

• Land prices are defined in a two sided market: productive and speculative;

• Lack of good land prices information can be supplied by different mass valuations systems: banded valuation, hedonic prices, and others

• This is crucial for land administration as land scarcity is increasing;
Everything happens somewhere

Thank you for your attention

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