



AGH UNIVERSITY OF SCIENCE  
AND TECHNOLOGY

# **The Possibilities of Real Estates Market Development in Poland in Connection with INSPIRE Directive**

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## **INSPIRE DIRECTIVE**

**European Parliament and Council (2007): Directive 2007/2/EC of The European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE)**



## INSPIRE DIRECTIVE

- The INSPIRE directive applies to spatial data held by or on behalf of public authorities, where spatial data means any data with direct or indirect reference to a specific location or geographical area.
- According to the INSPIRE directive these data should be in electronic format.
- *Cadastral parcels* and *Buildings* are among INSPIRE spatial data themes



## **The Act on Spatial Information Infrastructure**

- On March the 4th 2010, the lower house of polish parliament (Sejm) accepted the act on spatial information infrastructure that transponds the INSPIRE directive into the polish law system.
- This act came into power on 7th June 2010



## **SYSTEMS CONTAINING INFORMATION ON CADASTRAL PARCELS AND REAL ESTATES IN POLAND**

There are two systems containing information on cadastral parcels and real estates in Poland

- The Land Register
- The Cadastre for Grounds and Buildings



## The Land Register

- The Land Register in Poland captures, keeps and reveals information concerning legal objects (real estates)
- This information generally concerns description and designation, rights, rights established for somebody else thing and receivables (including mortgage)
- The Land Register is managed by the courts of law



## The Cadastre for Grounds and Buildings

- The Cadastre for Grounds and Buildings data are mainly objects spatial description, cadastral objects attributes, values and corresponding official documents
- The Ground and Building Cadastre objects are cadastral parcels and buildings or flats being separately owned estates
- Cadastre is managed by the local authorities at the county (powiat) level



## **The Register of Prices and Values for Real Estates**

- The Register of Prices and Values for Real Estates is the integral part of Ground and Building Cadastre
- It is the data set containing information on real estates transactions and results of estates valuation
- The information on price in the authenticated deed usually concerns the whole estate as it has been bought



## Real estates in Poland

- The transactions concerning estates having composite structure make the substantial or even major part of all real estates transactions in Poland
- Composite structure means that the estate being subject of trade consists of elements having different prices
- The real estate may consist of land and building (or buildings)
- The land itself may include parts that have different soil classes or destination in local spatial plan, so its unit prices are different



## Real estates in Poland

- There is no information on estate elements (like parcels or buildings) prices in the authenticated deed, so we do not know land or building elements separate prices.
- Such information is very difficult for interpretation and conclusion reaching.
- Without knowing prices of elements that make the estate it is not possible to use them for spatial data themes *Cadastral parcels* or *Buildings* defined by INSPIRE directive

## Valuation models

The problem of defining the separate real estate elements unit prices has not been yet solved by either polish law or other regulations, but it is possible to find that values using statistical methods.

- In such cases two different statistical estimation models can be used
  - Parametrical estimation model
  - Conditional estimation model

## Conditional estimation model

- The real estate market in Poland is relatively young, for the free market economy has been functioning here for only twenty years, so the polish real estate market should be rather treated as a narrow market
- In this case the conditional estimation model ought to be used for real estates elements prices computation

## Conditional estimation model

- For such calculations, real estates should be separated into groups. The criteria are their destination in local spatial plan and type of buildings, erected on the ground
- To divide transaction price into separate estates parts prices, it is necessary to set equations for each estates group.

## Conditional estimation model

Generally, the equation has the following formula

$$C_{Tj} = S_1 \cdot c_1 + S_2 \cdot c_2 + \dots + S_i \cdot c_i$$

- Where
- $C_{Tj}$  - transaction price for whole j-estate,
- $S_i$  - the area of every i-element (parcel, parcel parts having defined soil classes, flat or building usable areas or whole building),
- $c_i$  - i-element unit price.



## The valuation coefficients

- The real estates markets reference levels may be estates elements unit prices proportion coefficients.
- The valuation coefficients may be used for agricultural or forest estate value estimation.
- They are provided in the order in case of real estates valuation and preparing appraisal report (The Order, 2004) in tabular format.

## The valuation coefficients for arable land

Tax district	The valuation coefficients given in quintals (100kg) of rye grain obtained from 1 ha of arable land								
	Land soil classes:								
	I	II	IIIa	IIIb	IVa	IVb	V	VI	VIz
I	145	132	118	100	80	60	35	15	8
II	126	115	103	86	70	52	30	12	5
III	110	100	90	75	60	45	25	10	1
IV	94	85	76	64	50	38	20	6	1



## Practical example

- The three transactions from the year 2005, concerning agricultural estates, have been selected for market analysis.
- These estates consist of arable land, permanent grassland and permanent pastures having different land soil classes.
- We have following information obtained from authenticated deeds.



## Practical example

Estate number 1:

- Arable land - class II, area: 1.2500 ha,
- Arable land - class IIIb, area: 2.7200 ha,
- Grassland - class II, area: 3.3400 ha,
- Grassland - class III, area: 1.8400 ha,
- Pasture - class IV, area: 2.2300 ha,
- Transaction price: 160 000 PLN.

Estate number 2:

- Arable land - class IIIb, area: 3.3800 ha,
- Grassland - class III, area: 2.9400 ha,
- Pasture - class IV, area: 3.8600 ha,
- Transaction price: 120 000 PLN.

Estate number 3:

- Arable land - class II, area: 4.7400 ha,
- Grassland - class II, area: 3.8900 ha,
- Pasture - class IV, area: 2.4200 ha,
- Transaction price: 176 000 PLN.

## Practical example

- After performing calculations on matrixes we have obtained estates elements unit prices vector  $\{\hat{c}_i\}$  [PLN/ha]  
 $\{\hat{c}\}^T = \{18805 \quad 13581 \quad 16448 \quad 12790 \quad 9455\}$
- The standard deviation vector for estimated estates elements unit prices gets the subsequent values  
 $\{\sigma[\hat{c}]\}^T = \{177 \quad 225 \quad 106 \quad 271 \quad 188\}$
- The values above are as follows:
  - Arable land - class II
  - Arable land - class IIIb
  - Grassland - class II
  - Grassland - class III
  - Pasture - class IV

## RECAPITULATION

- When purchasing real estate the price for the whole estate is registered
- The idea presented in this paper enable us to obtain real estates elements unit prices applying statistical methods
- In the case of polish estates market it is conditional estimation model.
- This procedure is not defined by polish law.
- However, authors think that its application may be helpful in INSPIRE directive implementation in Poland if we consider themes cadastral parcels and buildings in the aspect of its value evaluation.



**Thank you very much**