Creation of a Data Bank of Farmland Rental Prices using FADN data

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OBJECTIVES

- Creating a **data base of rental prices** for multiple end users
  - Banca Dati dei Canoni di Affitto (**BDCA**)

- Expected end users:
  - **decision makers** (complementation of NUTS 2-level estimates, already available from Eurostat)
  - **farmers** with interest in renting in some agricultural land (in Italy 50% UAA is rented)
  - **consultants** and practitioners
  - **researchers**

- Source **Eurostat**
  - Statistics on agricultural land prices and rents. Handbook 2020 Edition

- **No** other information available in Italy

FIELD OF OBSERVATION AND DATA SOURCES ACCORDING TO EUROSTAT

- Definition of the observation unit:
  - **Arable land** - land worked (ploughed or tilled) regularly (as defined for the latest Farm Structure Survey)
  - **Permanent grassland** - land used permanently (for five years or more) to grow herbaceous forage crops and that is not included in crop rotation

- Where the detailed prices for renting arable land or permanent grassland are available and appropriate data for separate weights exist, they shall be provided. They are otherwise non-mandatory

- Statistical data can be collected by means of / in combination of:
  - **Direct observation** of land prices and rents (through surveys like FADN)
  - Statistical data collection via a network of **experts**
  - Use of **administrative data** (used in Italy --> Eurostat)

THE RENTAL PRICE OF AGRICULTURAL LAND ACCORDING TO EUROSTAT

- **Includes**
  - the actual rent price agreed upon by the persons closing the transaction
  - related levies/taxes
  - payments in kind valuated at the current year price

- **Excludes**
  - entitlements related to the land
  - deductible VAT
  - rentals of buildings or dwellings situated on the land
  - any other expenses related to other assets except the agricultural land (current maintenance expenditure on buildings, buildings insurance, depreciation of buildings, rents paid for the professional use of non-residential buildings etc.)

WHAT ABOUT THE USE OF FADN DATABASES?

- Minimal request on FADN according to EU legislation:
  - **Rented UAA** (land not belonging to the holding for which a fixed rent is paid cash or in kind)
  - **Paid rent** for land

- There are some specific situations (not so important)

- The potential of RICA Italia, thanks to the particular data collection system

- General Accounting Bookkeeping through a specific software: **GAIA** (Gestione Aziendale delle Imprese Agricole)

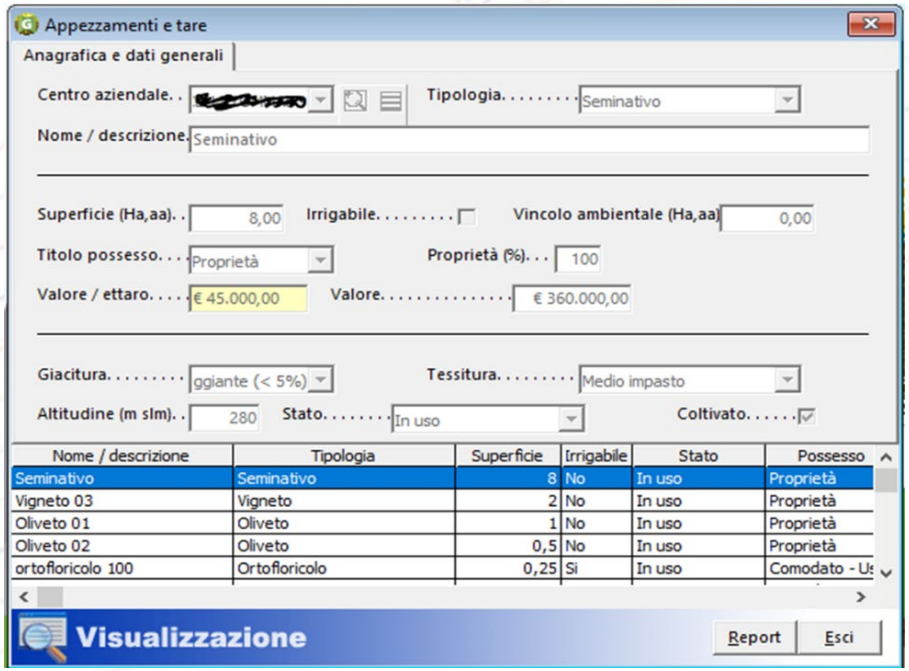
THE MAIN GAIA'S FEATURES

The numbers of GAIA	FADN UE	FADN IT
Types of accounting records, divided into **80** types of accounting transactions	< 20	30
Accounts managed directly by user	0	280
Types of agricultural machinery and equipment (*farm tractor, farm kit, tank car, etc.*)	0	300
Types of farm buildings (*storehouse, stalls, greenhouse, dung-hill, silos, etc.*)	0	70
Types of soil (*physical characteristics and fertility*)	0	20
Crop species (*arable land and arboreal*) and **6800** cultivars	< 100	380
Animal species and categories	< 30	100
Breeds (*attitude: beef, milk, mixed, eggs, etc.*)	10	290
Types of crop products (*primary and processed – combinz crop-prod over **1.055** case*)	< 50	54
Types of livestok products (*primary and processed*)	< 10	35
Categories of technical inputs (*fertilizers, crop protection, feed, motor fuels, seeds, etc.*)	< 25	110
Types of public aid (*investments subsidies and annual payments*)	< 300	500
Variables	1000	>2500

THE LOGIC OF DATA COLLECTION IN GAIA

- The land "parcel":
  - **elementary territorial unit** within the farm
  - a share of agricultural land with **homogeneous** physical and productive characteristics and potential --> same type of crop / same tenure system / same pedological characteristics
  - may be made of **multiple parcels** with the same "land use" type

- This enables the creation of **crop categories** that we used to analyse and compare rental prices



CHARACTERISTICS OF THE SOURCE DATA BASE

- **Period**: 2010 - ongoing

- **Number of observations**: on average 5.500 farms with rented UAA per year out of 10.000 total farms per year

- **Geographic information**
  - regions (NUTS-2) - 20 classes
  - altitude + group of regions - 9 classes

- **Crop categories**:
  - specialisation (>66%) on arable crops
  - specialisation (>66%) on permanent grassland
  - specialisation (>66%) on vegetables and flower plants
  - specialisation (>66%) on permanent crops
  - mixed crops

METHODS

- The Italian FADN survey is a sample survey that adopts a **stratified sampling plan**, which increases the **homogeneity** of the statistical units within the defined strata (more **efficient** estimates)

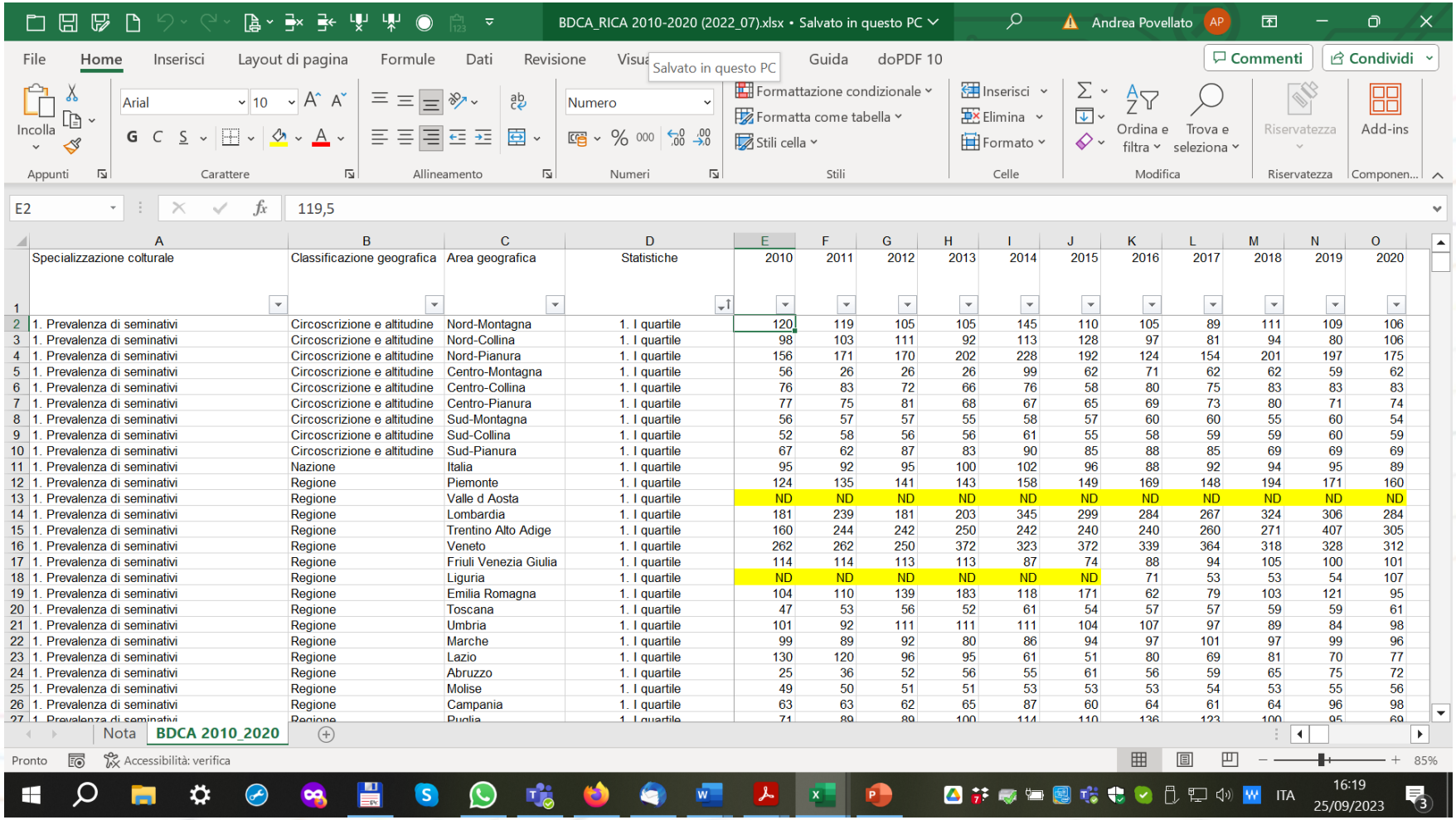
- Stratification variables - defined by region, type of farming and economic size - ensure good representativeness of the sample, controlling for the **three strategic variables**, Standard Output (SO), Utilised Agricultural Area (UAA) and economic size of farm

- **Post-stratification** of the Italian FADN sample consistent with the stratification of the BDCA:
  - Preliminary treatment for the identification of **potential anomalous data** carried out through a boxplot corrected for asymmetric distributions
  - Sample weights are **calibrated** on the total estimated rented UAA from the General Census of Agriculture

STRUCTURE OF THE RENT PRICE DATA BASE

- Single **spreadsheet**
- Data are aggregated by NUTS 2 regions (**20 classes**) OR geographical area and altitude (**9 classes**) AND crop categories (**5 classes**)
- Cut-off: >**5** observations per class
- Yearly data :
  - number of observations
  - mean
  - median
  - 1st and 3rd quartiles
- The selected summary statistics enable the identification of a **range for rent prices** that includes a large share of observations

THE BDCA SPREADSHEET



BDCA_RICA 2010-2020 (2022_07).xlsx • Salvato in questo PC

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Commenti Condividi

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Incolla Appunti Arial 10 Carattere Allineamento Numero Numeri Formattazione condizionale Formatta come tabella Stili cella Stili Inserisci Elimina Formato Celle Ordina e filtra Trova e seleziona Modifica Riservatezza Add-ins Componen...

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	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	Specializzazione colturale	Classificazione geografica	Area geografica	Statistiche	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
2	1. Prevalenza di seminativi	Circoscrizione e altitudine	Nord-Montagna	1. I quartile	120	119	105	105	145	110	105	89	111	109	106
3	1. Prevalenza di seminativi	Circoscrizione e altitudine	Nord-Collina	1. I quartile	98	103	111	92	113	128	97	81	94	80	106
4	1. Prevalenza di seminativi	Circoscrizione e altitudine	Nord-Pianura	1. I quartile	156	171	170	202	228	192	124	154	201	197	175
5	1. Prevalenza di seminativi	Circoscrizione e altitudine	Centro-Montagna	1. I quartile	56	26	26	26	99	62	71	62	62	59	62
6	1. Prevalenza di seminativi	Circoscrizione e altitudine	Centro-Collina	1. I quartile	76	83	72	66	76	58	80	75	83	83	83
7	1. Prevalenza di seminativi	Circoscrizione e altitudine	Centro-Pianura	1. I quartile	77	75	81	68	67	65	69	73	80	71	74
8	1. Prevalenza di seminativi	Circoscrizione e altitudine	Sud-Montagna	1. I quartile	56	57	57	55	58	57	60	60	55	60	54
9	1. Prevalenza di seminativi	Circoscrizione e altitudine	Sud-Collina	1. I quartile	52	58	56	56	61	55	58	59	59	60	59
10	1. Prevalenza di seminativi	Circoscrizione e altitudine	Sud-Pianura	1. I quartile	67	62	87	83	90	85	88	85	69	69	69
11	1. Prevalenza di seminativi	Nazione	Italia	1. I quartile	95	92	95	100	102	96	88	92	94	95	89
12	1. Prevalenza di seminativi	Regione	Piemonte	1. I quartile	124	135	141	143	158	149	169	148	194	171	160
13	1. Prevalenza di seminativi	Regione	Valle d Aosta	1. I quartile	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
14	1. Prevalenza di seminativi	Regione	Lombardia	1. I quartile	181	239	181	203	345	299	284	267	324	306	284
15	1. Prevalenza di seminativi	Regione	Trentino Alto Adige	1. I quartile	160	244	242	250	242	240	240	260	271	407	305
16	1. Prevalenza di seminativi	Regione	Veneto	1. I quartile	262	262	250	372	323	372	339	364	318	328	312
17	1. Prevalenza di seminativi	Regione	Friuli Venezia Giulia	1. I quartile	114	114	113	113	87	74	88	94	105	100	101
18	1. Prevalenza di seminativi	Regione	Liguria	1. I quartile	ND	ND	ND	ND	ND	ND	71	53	53	54	107
19	1. Prevalenza di seminativi	Regione	Emilia Romagna	1. I quartile	104	110	139	183	118	171	62	79	103	121	95
20	1. Prevalenza di seminativi	Regione	Toscana	1. I quartile	47	53	56	52	61	54	57	57	59	59	61
21	1. Prevalenza di seminativi	Regione	Umbria	1. I quartile	101	92	111	111	111	104	107	97	89	84	98
22	1. Prevalenza di seminativi	Regione	Marche	1. I quartile	99	89	92	80	86	94	97	101	97	99	96
23	1. Prevalenza di seminativi	Regione	Lazio	1. I quartile	130	120	96	95	61	51	80	69	81	70	77
24	1. Prevalenza di seminativi	Regione	Abruzzo	1. I quartile	25	36	52	56	55	61	56	59	65	75	72
25	1. Prevalenza di seminativi	Regione	Molise	1. I quartile	49	50	51	51	53	53	53	54	53	55	56
26	1. Prevalenza di seminativi	Regione	Campania	1. I quartile	63	63	62	65	87	60	64	61	64	96	98
27	1. Prevalenza di seminativi	Regione	Puglia	1. I quartile	71	89	89	100	114	110	136	123	100	95	69

Nota BDCA 2010_2020

Pronto Accessibilità: verifica 85%

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EXAMPLES

- End users can identify **reasonable values** for the area of interest and for a given type of crop, over the last 10 years

	A	C	D	L	M	N	O	P
1	Specializzazione colturale	Area geografica	Statistiche	2017	2018	2019	2020	
4	1. Prevalenza di seminativi	Nord-Pianura	1. I quartile	154	201	197	175	
184	1. Prevalenza di seminativi	Nord-Pianura	2. Mediana	355	369	380	344	
364	1. Prevalenza di seminativi	Nord-Pianura	3. Media	401	423	420	393	
544	1. Prevalenza di seminativi	Nord-Pianura	4. III quartile	573	577	588	556	
724	1. Prevalenza di seminativi	Nord-Pianura	5. Numerosità campionaria	1087	1106	1223	1237	
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	A	C	D	L	M	N	O	P
1	Specializzazione colturale	Area geografica	Statistiche	2017	2018	2019	2020	
10	1. Prevalenza di seminativi	Sud-Pianura	1. I quartile	85	69	69	69	
190	1. Prevalenza di seminativi	Sud-Pianura	2. Mediana	156	133	114	109	
370	1. Prevalenza di seminativi	Sud-Pianura	3. Media	287	254	236	220	
550	1. Prevalenza di seminativi	Sud-Pianura	4. III quartile	400	356	296	273	
730	1. Prevalenza di seminativi	Sud-Pianura	5. Numerosità campionaria	411	402	404	403	
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NEXT STEPS

- There are many possible **determinants** for the rental price
- **1st Pillar payments**: information currently missing for rented UAA - to be added to the FADN survey? --> statistical burden
- **Other entitlements** (e.g., replanting rights), presence of agricultural **buildings**, presence of **irrigation** infrastructure, land **suitability**
- Use of **hedonic models**

- R

Thanks for the attention!
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