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# **MEDITA**

## **A Corporate tax microsimulation model at PBO**

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31<sup>st</sup> Annual Conference SIEP  
Torino, September 2019

# Outline

## The Medita model objectives and framework

- Data issues
- Model structure
- Validation
- An application to the recent tax changes

# Tax policy analysis on corporate sector

- Economic and distributional consequences of tax changes
- Tax revenue estimation and budgetary impact

# MEDITA

## A static multi period corporate tax model

### Detailed tax simulations

- Business Tax (IRAP)
- Corporation tax (IRES)
- Social contributions (*under construction*)

### At firm level

- tax base and net tax liabilities (yearly fiscal rules)
- Multi-period tax variables: interest deductions; losses and tax allowances carry forwards

## Data sources

- Financial Accounting Data  
2011-2017

Censuary data at company level  
Non financial corporations

- Demographic characteristics
- Balance-sheets
- Ownership structure

- Aggregate Tax Statistics  
2011-2017

- Corporation tax returns returns - Profit tax (IRES) and Business tax (IRAP)
- Consolidated Profit tax returns

- Administrative register  
2015-2017

- Single corporation tax returns - Profit tax (IRES) and Business tax (IRAP)
- Consolidated Profit tax returns

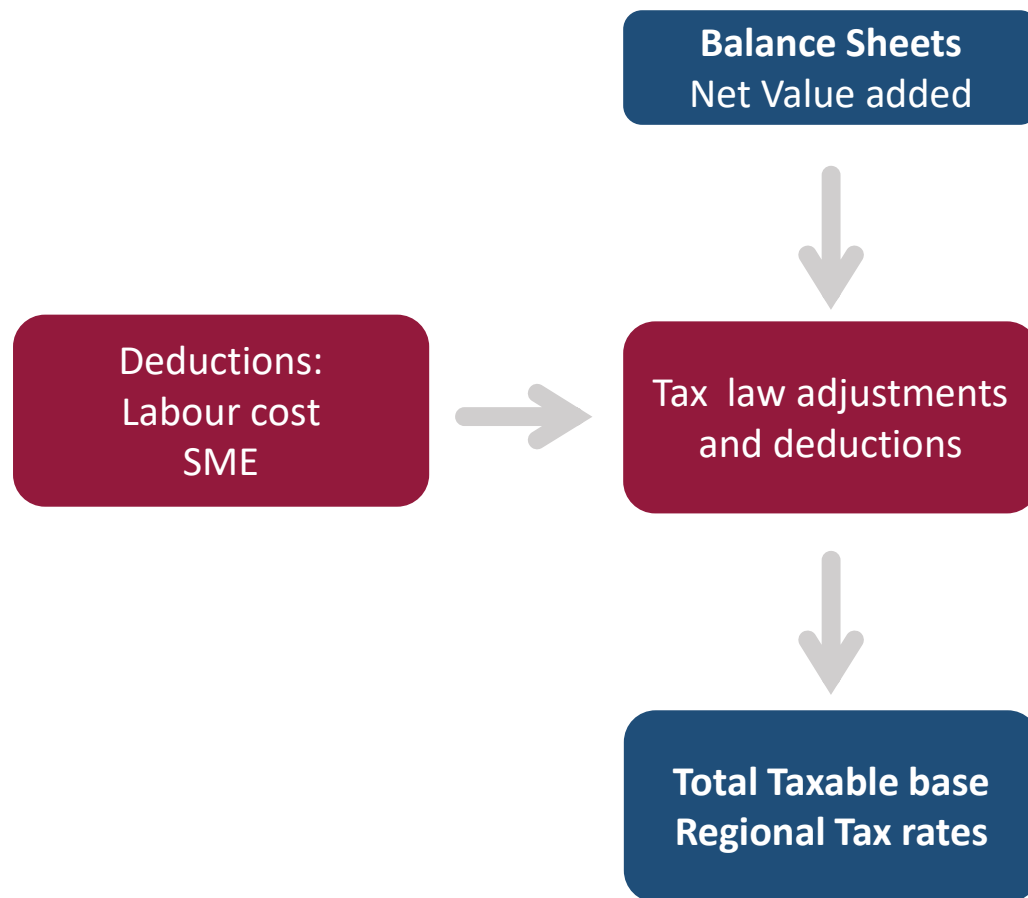
## The state of the art

MEDITA (\*) - **First version** (*born in 2015*)

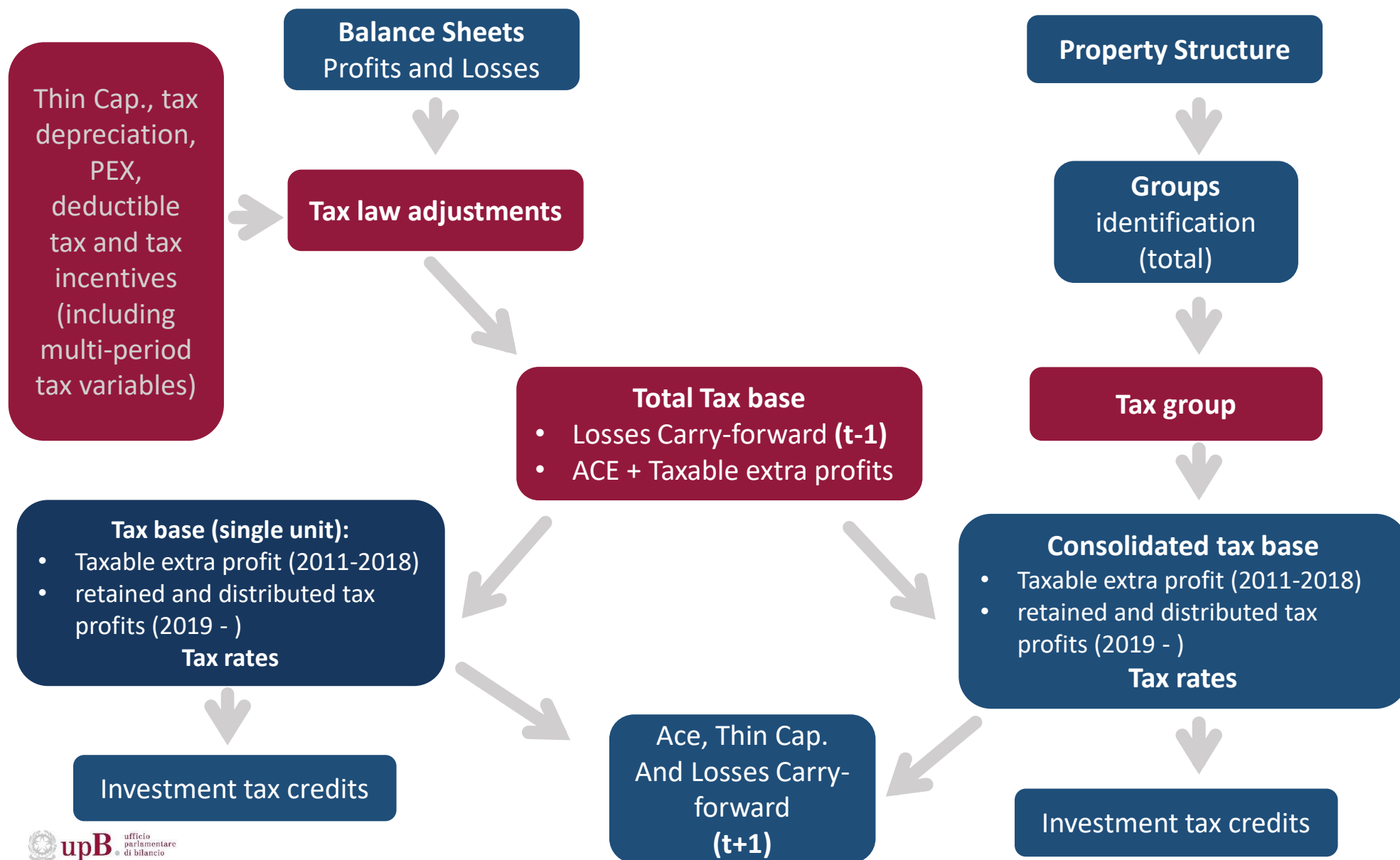
- **Financial Accounting Data + aggregated tax return data**
- **(excluding financial sector)**
- **Problems:**  
Tax codes contain complex and detailed rules for the determination of the tax base and tax liability: necessary information details are not included in financial accounting firms data sets

(\*) UPB microsimulation unit and the external support of M.G. Pazienza

# IRAP



# IRES





- **Positive and negative tax law adjustments**

**At firm level (accounting data)**

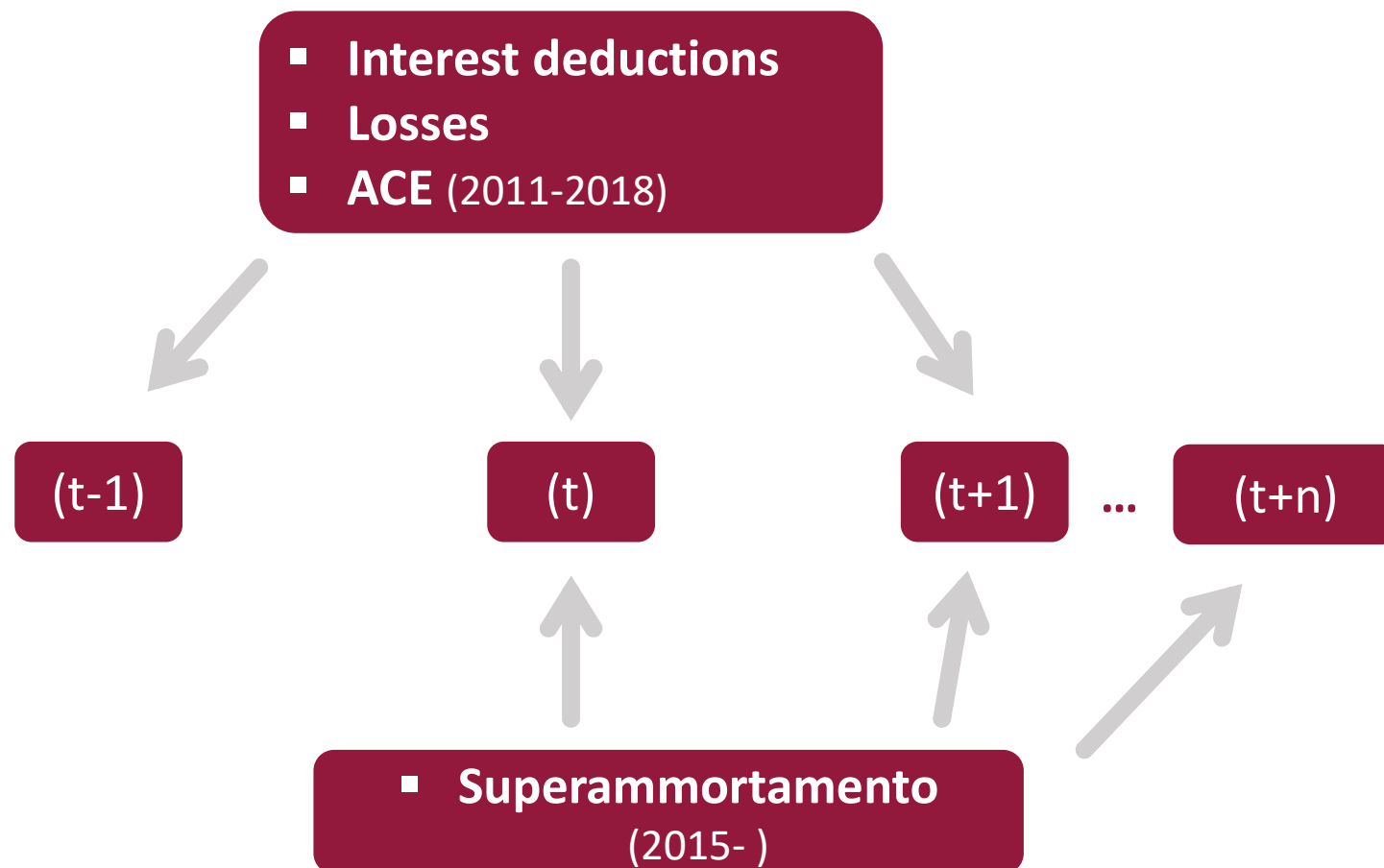
- + not deductible interest
- + capital loss PEX
- capital gains PEX
- dividends PEX
- tax deductions: Irap and IMU
- Patent box
- Superammortamento

**+**

**At aggregated level (tax returns data)**

**Residual tax law adjustment  
Sector and dimension mean value**

- **Multi-period tax variables**



- **Property structure do not define tax group for consolidated taxable profits**

**Identification  
(around 5200 groups)  
Propensity score method**

MEDITA - **New** version (*born in 2019*)

**Integration with Micro Tax Return Data (Administrative register): 2015 - 2016 and 2017 in progress**

Improves precision and allows more comprehensive analysis overcoming the previous problems

- 2015-2016 residual tax adjustment **at firm level** and projected backward (2011-2014) and forward (2017- )
- Exogenous identification of Tax Groups for consolidated taxable base.
- Sectoral matching

Improves validation and assessment of budgetary impact

## MEDITA - **New** version (*born in 2019*)

Using tax return data, a **new module** computes corporation tax **for financial sector** and allows simulations of some tax changes

(e.g. ACE removal from 2019)

## The validation of the model

	Companies with tax returns		Net profits after tax adjustments		Net profit/loss after tax adjustements (positive)	Net profit/loss after tax adjustements (negative)
	% composition	coverage	% composition	coverage	%	%
Total	100,00	0,762	100,00	1,043	0,997	0,956
Agriculture	1,894	0,719	0,155	1,396	0,994	0,853
Manufacturing	14,285	0,837	36,622	0,981	0,990	1,009
Public utilities	1,830	0,789	9,888	1,047	1,034	0,987
Construction	14,488	0,713	2,544	1,094	1,016	0,929
Services	67,502	0,760	50,790	1,072	0,994	0,927
Fino a 250	43,323	0,749	2,014	1,765	1,018	0,809
da 250 a 1.000	39,802	0,885	6,073	1,076	0,992	0,850
da 1.000 a 2.000	33,114	0,944	5,119	1,041	0,998	0,880
da 2.000 a 5.000	16,148	0,958	8,987	1,070	1,020	0,846
da 5.000 a 10.000	10,198	0,966	7,935	1,055	1,010	0,842
da 10.000 a 50.000	5,548	0,970	21,679	1,029	1,005	0,892
da 50.000 a 250.000	3,157	0,968	21,100	0,978	0,999	1,109
oltre 250.000	0,653	0,963	27,988	1,010	0,975	0,856
Nord	42,178	0,882	60,863	1,036	1,008	0,910
Centro	32,898	0,821	29,556	1,040	0,980	0,840
Sud	24,925	0,571	9,581	1,019	0,987	0,898

## The validation of the model

	Taxable base		Tax liabilities
	% composition	coverage	%
Total	0,968	0,968	0,969
Single	71,041	1,017	1,018
<i>Agriculture</i>	0,386	0,895	0,896
<i>Manufacturing</i>	38,879	1,041	1,041
<i>Public utilities</i>	4,003	1,029	1,030
<i>Construction</i>	6,585	1,033	1,033
<i>Services</i>	50,147	0,997	0,999
<i>Fino a 250</i>	5,309	0,958	0,959
<i>da 250 a 1.000</i>	10,324	1,020	1,020
<i>da 1.000 a 2.000</i>	7,848	1,023	1,023
<i>da 2.000 a 5.000</i>	12,580	1,017	1,018
<i>da 5.000 a 10.000</i>	10,558	1,016	1,017
<i>da 10.000 a 50.000</i>	25,079	1,021	1,024
<i>da 50.000 a 250.000</i>	16,633	1,021	1,025
<i>oltre 250.000</i>	11,322	1,030	1,030
<i>Nord</i>	58,563	1,023	1,025
<i>Centro</i>	28,477	1,005	1,006
<i>Sud</i>	12,960	1,014	1,018
Consolidated	28,959	0,867	0,867

# Evaluating recent tax changes

**At present**

**2011 – 2017**

yearly and intertemporal analysis (on real economic and tax data)

**2018 – 2022 (current legislation)**

Each year fiscal rules apply to a constant population hypothesis (last year available)



## MEDITA model in the PBO Publications

Working Paper no. 1/2016

*Investment incentives in the 2016 Stability Act*

2016 Budgetary Policy Report

- *Corporate tax rate cut from 2017 - (from 27.5% to 24%)*
- *Superammortamento*
- *Investment tax credit*

2017 Budgetary Policy Report

- *Changes in the ACE regime (2017 Budget Bill)*
  - a) *reduction of the notional return on equity*
  - b) *restriction of tax base relief*

2018 Budgetary Policy Report

- *ACE - reduction of the notional return on equity*
- *Changes in thin capitalisation rules*

2019 Budgetary Policy Report

Focus Paper no. 4 / 10 June 2019

*Taxation of business income in the wake of the Growth Decree*

The redistributive effects of the main measures adopted with the budget package for 2019:

- Abolition of the ACE,
- introduction of the new reduced rate on retained profits,
- increase in the deductibility of municipal property tax (IMU)
- and extra depreciation (Superammortamento).

For the entire sector of **non-financial corporations**, the combined effect of the measures reduces tax liabilities and the effective tax rates;

while for **financial corporations and banks** (accounting for around 1.5 per cent of all corporations and 15 per cent of total IRES revenue) the effect is of opposite sign and especially significant.

## Tax changes in 2019 Budget Bill – Impact effects on tax revenue and implicit tax rate (2019)

	Tax revenues ( % changes)						Tax rate changes			
	Abolition ACE	Reduced rate on retained profits	IMU (dal 20 al 50%)	Proroga super ammort.	Total net effect	Tax incentives on retained profits	Abolition ACE	Reduced rate on retained profits	IMU (dal 20 al 50%)	Proroga super ammort.
<i>Non financial Sector</i>										
Single	2.2	-2.0	-0.7	-0.3	-0.7	-3.0	0.6	-0.5	-0.2	-0.7
Consolidated	3.3	-2.5	-0.5	-0.2	0.1	-3.3	0.8	-0.6	-0.3	-0.8
<b>Total</b>	<b>2.4</b>	<b>-2.1</b>	<b>-0.7</b>	<b>-0.3</b>	<b>-0.6</b>	<b>-3.1</b>	<b>0.6</b>	<b>-0.5</b>	<b>-0.2</b>	<b>-0.7</b>
<i>Financial Sector</i>										
Single	9.5	0.0	-0.3	-0.2	8.9	n.d	2.6	0.0	2.5	n.d
Consolidated	7.1	0.0	0.0	0.0	7.1	n.d	1.9	0.0	1.9	n.d
<b>Total</b>	<b>7.7</b>	<b>0.0</b>	<b>-0.1</b>	<b>-0.1</b>	<b>7.6</b>	<b>n.d</b>	<b>2.1</b>	<b>0.0</b>	<b>2.1</b>	<b>n.d</b>

Smaller non-financial companies enjoy the greatest net benefit, thanks to the greater importance of the deduction of IMU, whose impact decreases as company size increases.

Examining the distribution of tax benefits by location of firms, the savings are more evenly distributed than those associated with the repealed ACE system, which on average favoured companies in the North and the Centre over those in the South. Altogether, the budget measures have had a more favourable impact in the South.

## Tax changes in 2019 Budget Bill – Impact effects on tax revenue and implicit tax rate (2019) (Turnover classes)

	Tax revenues ( % changes)					Tax incentives on retained profits	Tax rate changes			
	Abolition ACE	Reduced rate on retained profits	IMU (dal 20 al 50%)	Proroga super ammort.	Total net effect		Abolition ACE	Reduced rate on retained profits	IMU (dal 20 al 50%)	Proroga super ammort.
<b>Single</b>										
Fino a 100	2.9	-1.8	-2.3	-0.1	-1.4	-0.7	0.7	-0.4	0.0	-0.2
da 100 a 250	2.1	-1.8	-2.1	-0.2	-1.9	-1.8	0.5	-0.4	-0.2	-0.5
da 250 a 1.000	2.0	-1.8	-1.5	-0.3	-1.6	-3.1	0.5	-0.4	-0.2	-0.8
da 1.000 a 2.000	1.9	-1.8	-1.0	-0.3	-1.2	-3.7	0.5	-0.4	-0.2	-0.9
da 2.000 a 5.000	2.0	-1.9	-0.8	-0.4	-1.1	-3.8	0.5	-0.5	-0.3	-0.9
da 5.000 a 10.000	2.2	-2.0	-0.6	-0.3	-0.8	-3.5	0.5	-0.5	-0.3	-0.8
da 10.000 a 50.000	2.2	-2.0	-0.5	-0.3	-0.6	-2.7	0.6	-0.5	-0.2	-0.7
da 50.000 a 250.000	2.7	-2.2	-0.3	-0.3	0.0	-2.8	0.7	-0.5	-0.2	-0.7
oltre 250.000	2.3	-2.1	-0.3	-0.1	-0.2	-2.6	0.6	-0.5	-0.1	-0.6
<b>Nord</b>	2.5	-2.0	-0.7	-0.3	-0.5	-2.8	0.6	-0.5	-0.2	-0.7
<b>Centro</b>	2.0	-1.9	-0.8	-0.3	-0.9	-3.0	0.5	-0.5	-0.2	-0.7
<b>Sud</b>	1.6	-2.0	-0.7	-0.4	-1.5	-4.0	0.4	-0.5	-0.2	-1.0
<b>Total</b>	<b>2.2</b>	<b>-2.0</b>	<b>-0.7</b>	<b>-0.3</b>	<b>-0.7</b>	<b>-3.0</b>	<b>0.6</b>	<b>-0.5</b>	<b>-0.2</b>	<b>-0.7</b>

Thanks for your attention !



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