PROFITABILITY AND FINANCIAL STRUCTURE OF ITALIAN REAL ESTATE COMPANIES: QUANTITATIVE PROFILES[1]

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Summary

Topicality - The pandemic has had devastating effects on real estate companies. The sector is economically important in many countries and therefore needs special attention.

Purpose - This research analyses the economic and financial dynamics of Italian real estate companies before and during the pandemic. This is also to outline possible relaunch strategies, post Covid-19.

Research methods - The balance sheets of 1,559 Italian companies, with a turnover exceeding € 800,000, for the decade 2011-2020 were analysed. The average trends of Roe and the Financial Independence Ratio were then illustrated, for Italy and each of its macro-areas (North, Centre, and South). The data were subjected to statistical processing. The Anova and Tukey-Kramer methods were used for the comparison between macro-regions.

Results - ROE decreased in the years 2012-2013, presumably due to the reverberations of the 2008 crisis. Then it improved, with a decline due to the pandemic, but this was not generalised. Roe has always been positive. There are no significant differences between the different geographical areas. There is evidence of a good financial situation, which has improved over time.

Implications - This study implements the modest economic literature on real estate companies. Quantitative research highlights the gains that justify the presence of numerous companies. Public policies should be attentive to the sector that implements the national GDP. The Italian situation can be a useful reference for all countries that want to develop the real estate market.

Keywords*: Performance, Roe, Indice di Indipendenza finanziaria, Anova, Tukey Kramer test.*

JEL: *G32, R30, R31.*

UDC: *332.721+568.155](450)*

[1] This paper is the result of collaboration between the two authors. It is however possible to attribute the paragraphs “Literature review”, “Research methodology” and " Conclusions" to Guido Migliaccio. The other paragraphs are by Andrea De Palma.

Introduction. The real estate sector plays a central role in the development of productive activity and the stability of the financial system.

It plays a central role in the Italian economy, as its contribution to employment, production and the country's financial stability is fundamental and of absolute importance. This sector is characterised by a complex variety of interconnected activities, such as the construction of new buildings and infrastructures, the demolition or renovation of housing stock, as well as all interventions involving the maintenance and static and energy upgrading of buildings to achieve a better quality of living.

The pandemic has had devastating effects on the country's economy, and consequently, also on the sector being researched. In 2020, the turnover of the real estate services business in the five major European countries was estimated at around EUR 350 billion, down 6.3 percent compared to 2019. This was to be expected due to the periods of total business standstill the world experienced during the pandemic.

According to the seventh edition of the report on the real estate services sector in Europe and Italy produced by "Scenari Immobiliari" (Lunghini, 2022), the sector, together with construction, still plays an important role in the economic systems of the main European countries, with added value accounting for between 18 and 21% of the total.

This research analyses the economic and financial dynamics of Italian real estate companies in the decade 2011-2020, i.e. before and during the pandemic, to outline possible post-Covid-19 recovery strategies. The analysis is conducted on the 3 main geographical areas that make up the country, i.e. the North, the Centre, and the South, to answer the following questions:

- *RQ1: What has been the evolution of the main economic-financial indices?*
- *RQ2: Has the pandemic crisis had an impact on the profitability trend and the balance sheet situation of companies in the sector?*

Everything refers to the Italian context, which may be a useful reference for other countries. After the main bibliographic references, the methodology used to elaborate the values of the financial statement is outlined. Then, the main results, implications, limitations of the research, and possible developments of the study with critical considerations and conclusions.

Literature review. The attention of international scholars to the real estate sector is considerable. This is also demonstrated by the most recent publications related to it. Indeed, there are several contributions to investment possibilities (Jayanthi & Saravanakumar, 2022) in a sector that could also be profitable.

Tang et al. (2022) analysed stock market responses and the comovement of returns, while Huang et al. (2022), concerning the Chinese market only, sized up the systemic financial risks arising from the recent pandemic.

Other interesting analyses were developed by Mis et al (2022) who, again regarding Covid-19, quantified the daily rate of return of three major industrial sector share price indices related to the real estate sector.

In addition to the studies focusing on regulated financial markets, there are also more classical bank financing methods (Abuamsha, 2022).

These initial mentions are useful to emphasise the importance of national economies of a sector that, of course, has also been the subject of more typically corporatist analyses.

Particular attention has been paid to the market, and the evolution of prices (De Stefani, 2021) even considering that some experiences are exportable between different nations (Tuyet et al., 2022). This is mainly due to the advent of digital marketing (Luís et al., 2022), which has undoubtedly significantly changed the more classic modes of relationship between supply and demand.

This is also because of the frequent integration of big data in the decision-making process in the real estate sector (Cheryshenko & Pomernyuk, 2021).

The most recent news reserves a relevant place for sustainability requirements for a sector that certainly needs information (Grishkina et al., 2022) and specific training. This is especially so to develop processes typical of the circular economy (Gupta & Tiwari, 2022).

In this context, the quality of life of employees (Majumder & Biswas, 2022), who are suffering the effects of the digitisation of their typical activities (Piazolo & Dogan, 2021), is particularly important.

The Italian situation has mainly been the subject of studies on the economic impact of monetary policy (Ahmed et al., 2021), also unconventional (Ahmed et al., 2020), as well as specific analyses on equity crowdfunding (Battisti et al., 2020).

In Italy, monographic writings on the local language have been widespread (Baiardi et al., 2010; Cermignano & Fasano, 2011).

The absence of quantitative studies on the balance sheet data of Italian companies in the decade 2011-2020 prompted this research intending to implement the economic literature on companies and to test the following hypotheses:

- *(H1) The profitability trend declines;*
- *(H2) The financial structure worsens;*
- *(H3) Location differentiates pandemic effects.*

The purpose of research. The purpose of this study is therefore to outline an initial analysis of the economic and financial situation of Italian companies with Ateco code 68, also distinguishing them by geographical area, in the period 2011-2020, using the study of the temporal evolution of two indices (ROE and Financial Independence Ratio) obtained from the analysis of their financial statements.

Research methodology. A sample of companies with the ATECO code 68: Real estate activities was taken from the AIDA database of Bureau van Dijk (www.bvdinfo.com). The balance sheets of 1,559 companies, with a turnover exceeding € 800,000, for the decade 2011-2020 were then analysed.

The companies were divided according to the 3 Italian macro-regions, North, Centre, and South. Subsequently, ROE, the economic ratio, and the Financial Independence Ratio were analysed.

The graphical representation of the trend of the average annual data for each ratio also required the determination of the interpolating curve, using, as a rule, the polynomial equation of degree 6 that maximized the value of R^2.

ANOVA methods (with a 0.05 level of significance) and, if necessary, Tukey-Kramer were used for the comparison between macro-regions. Each outcome is illustrated and commented on.

Main results

ROE. ROE indicates the return on equity and is the ratio of net income for the period to equity. The ratio shows how many euros of income have been gained (in the case of a profit) or lost (in the case of a loss) for every euro invested in the company by the shareholders. Its value should be as high as possible, away from the value of the appropriate rate of return and the return on public bonds often used as references.

Table 1 shows the values of the ratio for each year for Italian macro-areas.

Table 1: **ROE% - Annual average values**

	2011	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Italy	3,85	2,06	2,08	1,91	2,38	2,65	3,00	3,13	2,92	2,65
North	3,78	2,17	2,11	2,14	2,72	2,87	3,40	3,57	3,28	2,38
Center	3,61	1,68	2,11	1,63	1,62	2,47	2,31	2,55	2,49	3,00
South	5,29	2,46	1,73	1,02	2,12	2,31	2,34	2,42	2,24	3,71

Source: elaboration on AIDA data.

To plot the trend graph of annual average values, we first determine the interpolating equation that maximizes the R2 value (Table 2).

Table 2: **Equations of ROE for interpolating curves**

	Equation	R^2
Italy	$y = 0{,}0004x^6-0{,}0147x^5+0{,}2001x^4-1{,}3988x^3+5{,}3476x^2-10{,}546x+10{,}251$	0,9812
North	$y = 0{,}0003x^6-0{,}0097x^5+0{,}1409x^4-1{,}0459x^3+4{,}2668x^2-8{,}8955x+9{,}3227$	0,9861
Centre	$y = 0{,}0008x^6-0{,}0266x^5+0{,}3491x^4-2{,}3075x^3+8{,}1052x^2-14{,}356x+11{,}813$	0,8877
South	$y = 1E\text{-}04x^6-0{,}002x^5+0{,}0186x^4-0{,}188x^3+1{,}6301x^2-6{,}5222x+10{,}344$	0,9726

Source: elaboration on AIDA data.

The R2 value in the North and South is close to 1, which shows that the trend depicted in Figure 1 is statistically valid. In the Centre, the R2 value is slightly lower, thus, the depicted trend deviates, albeit slightly, from optimal values. The analysis of the ROE reveals a sector with a sufficient return on equity, as except for a few years, the sector and the three geographic areas analysed, always show appreciable values, albeit with an uncertain and fluctuating trend.

This results in Figure 1, which shows an irregular ratio trend.

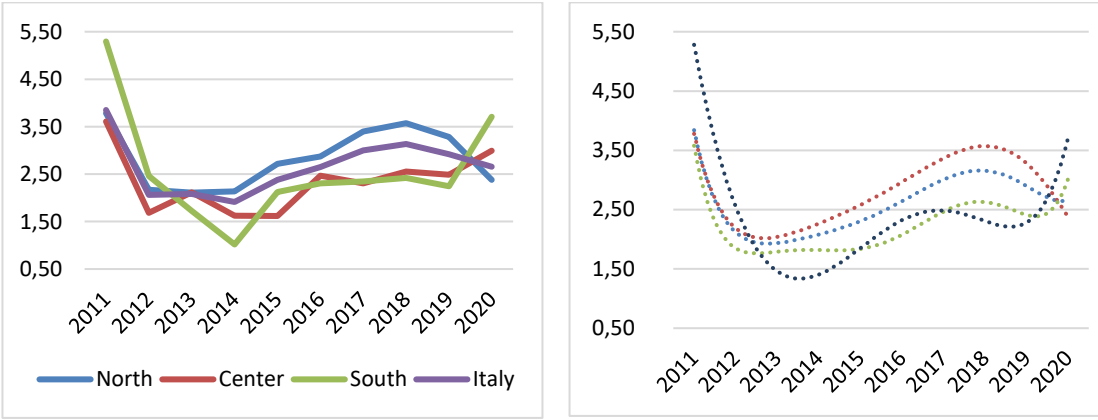

Figure 1: **ROE trend 2011-2020**
Source: elaboration on AIDA data.

The trend in the South starts from very high values, compared also to the other geographic macro-areas, and then registers a more considerable drop in 2014 to a value of 1%. This is followed by a sharp recovery that brings the values of the South back above the other areas under consideration, to values close to 4. The North and the Centre, on the other hand, show a less fluctuating trend than the South, but it should be noted that the North is the only one to have a drop in the ROE ratio in the last years of the decade under review. Moreover, the trends of the curves all show a decline in the years 2013-14, the cause of which can presumably be attributed to the reverberations of the 2008 crisis.

To better measure and evaluate the differences, the annual average data of the ROE were subjected to the ANOVA test (*Table 3)*.

Table 3: **Anova Roe For Countries**

SUMMARY				
Groups	*Count*	*Sum*	*Average*	*Variance*
North	10	28,40824	2,840824	0,403715318
Center	10	23,46232	2,346232	0,404209632
South	10	25,6457	2,56457	1,366922036

ANALYSIS OF VARIANCE						
Origin of Variation	*SQ*	*dof*	*MQ*	*F*	*Significance value*	***F critic***
Between groups	1,228696	2	0,614348	0,847436198	0,439595052	**3,35413083**
In the groups	19,573623	27	0,724949			
Total	20,802319	29				

Source: elaboration on AIDA data.

Confirming the hypothesis, the variance of the ROE shows an F-value of 0.84, lower than F (3.35), which confirms the lack of statistically significant differences between the averages of the three areas examined, as can be seen from Table 4 in which the Tuckey-Kramer test is reported.

Table 4: **Tuckey Kramer Leverage**

Average North group	2,84
Group size North	10
Average Center group	2,35
Group size Center	10
Average South group	2,56
Group size South	10
Mq	0,72
q static	3,51
Comparison between North and Center	
Absolute difference	0,49
Critical value	0,95
Average between North and Center	Difference NOT significant
Comparison between North and South	
Absolute difference	0,28
Critical value	0,95
Average between North and South	Difference NOT significant
Comparison between Center and South	
Absolute difference	0,22
Critical value	0,95
Average between Center and South	Difference NOT significant

Source: Our elaboration.

Financial Independence Ratio. The Financial Independence Ratio shows the relationship between venture capital and investments, and thus the proportion in which the company is dependent on or independent of third-party capital. The ratio formula is:

$$\text{Financial Independence Ratio} = \frac{Net\ assets}{Total\ assets} * 100$$

An abstractly ideal value is 50%.
The data obtained from the AIDA database on the ratio are shown in Table 5.

Table 5: **Financial Independence Ratio - Annual average values**

	2011	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Italy	43,03	43,84	44,87	45,76	46,54	47,36	48,51	49,26	50,04	54,72
North	42,93	42,34	46,88	54,62	55,61	50,26	51,86	53,13	49	47,53
Center	32,09	33,22	34,82	35,87	37,64	39,63	41,42	44,58	45	46,29
South	48,73	49,43	47,11	59,97	57,99	63,51	61,53	55,25	54,48	34,55

Source: elaboration on AIDA data.

The Financial Independence Ratio has a rather regular trend for the Centre and the North, while for the South it follows an unstable course, with a maximum in 2016 and a minimum in 2020. This shows that in the South of Italy, firms felt the effects of the pandemic more strongly, increasing their debt exposure to third parties. Table 6 shows the equations needed to obtain the interpolating trend curves and, with R^2, their representative effectiveness.

Table 6: **Equations of Financial Independence Ratio for interpolating curves**

	Equation	R^2
Italy	$y=0{,}0011x^6-0{,}0345x^5+0{,}4097x^4-2{,}3891x^3+7{,}0718x^2-8{,}8898x+46{,}869$	0,9997
North	$y = 0{,}0058x^6-0{,}2002x^5+2{,}7474x^4-18{,}804x^3+65{,}525x^2-102{,}41x+96{,}312$	0,8995
Centre	$y = 0{,}0023x^6-0{,}0695x^5+0{,}8226x^4-4{,}7519x^3+13{,}907x^2-17{,}778x+39{,}98$	0,9973
South	$y = -0{,}0043x^6+0{,}1432x^5-1{,}795x^4+10{,}487x^3-28{,}6x^2+34{,}685x+33{,}964$	0,8587

Source: elaboration on AIDA data.

The equations show that the R2 value for the Centre is close to 1: the trend depicted in Figure 2 is statistically significant. For the North and South, however, it merely approximates the broken line.

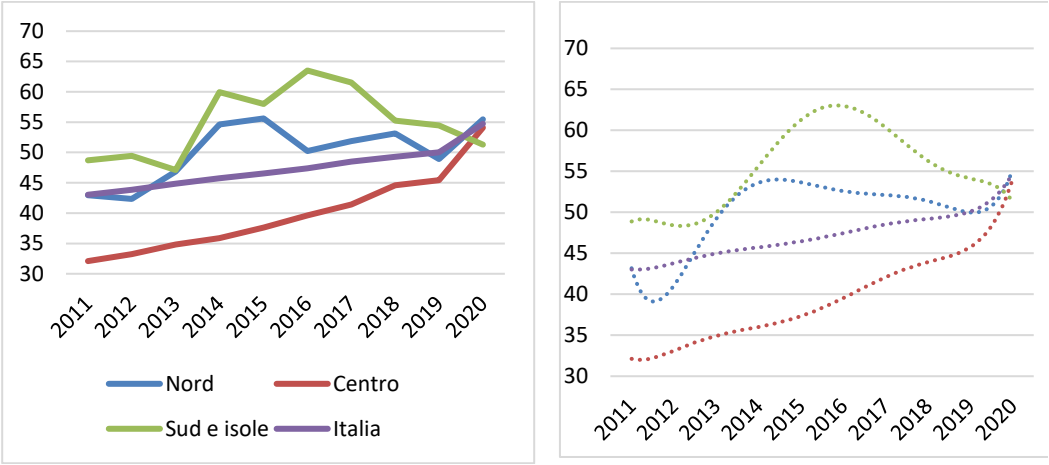

Figure 2: **Trend of the Financial Independence Ratio 2011-2020**
Source: elaboration on AIDA data.

The trend of the different macro-areas is similar for the North and the Centre, which overall, although starting with low values in 2011, continues to grow until reaching a value close to 55 in 2020.

The trend for the South, on the other hand, is fluctuating and, while presenting values that are always higher than those of the other geographic areas, in recent years it has been declining, reaching around 50.

The measurement and evaluation of the difference between the groups are entrusted to the ANOVA test (Table 7).

Table 7: **Anova test on Financial Independence Ratio**

SUMMARY				
Groups	*Count*	*Sum*	*Average*	*Variance*
North	10	494,08	49,408	20,92202
Center	10	391,01	39,101	26,9233
South	10	532,55	53,255	74,37523

ANALYSIS OF VARIANCE						
Origin of Variation	*SQ*	*dof*	*MQ*	*F*	*Significance value*	*F critic*
Between groups	1071,231	2	535,6156	13,14711	0,000103	3,354131
In the groups	1099,985	27	40,74018			
Total	2171,216	29				

Source: elaboration on AIDA data.

The analysis of variance shows that the F-value (13.14) is higher than the critical F-value (3.35), which therefore requires the Tuckey-Kramer test (Table 8).

Table 8: **Tuckey Kramer - Financial Independence Ratio**

Average North group	50,199
Group size North	10
Average Center group	39,881
Group size Center	10
Average South group	54,93
Group size South	10
Mq	40,74
q static	3,51
Comparison between North and Center	
Absolute difference	10,32
Critical value	7,08
Average between North and Center	Difference NOT significant
Comparison between North and South	
Absolute difference	4,73
Critical value	7,08
Average between North and South	Difference NOT significant
Comparison between Center and South	
Absolute difference	15,05
Critical value	7,08
Average between Center and South	Difference significant

Source: Our elaboration.

The statistically significant differences are between the values in the Centre and the South.

Conclusions. The effects of the pandemic on the economic-financial equilibrium of enterprises prompted this analysis of a sector that is fundamental to the economy of many countries, especially Italy.

Using the balance sheets of the last decade of a sample of 1,559 companies characterised by the ATECO code 68 - Real Estate Activities, the trends of two ratios expressing profitability and the degree of independence from third-party capital were outlined.

Appropriate statistical elaborations supported the analysis.

The first hypothesis (H1) can only be confirmed to a limited extent because profitability has declined slightly over the past year and only in certain areas of the country. And the decline was certainly less than in some previous years in which, in Italy, there was the reverberation of the 2008 financial crisis.

The second hypothesis (H2) is by no means confirmed because, over time, the financial structure of companies improves, approaching, even the pandemic years, values considered optimal.

Despite the considerable differences that characterise the Italian macro-regions, very little diversity was found among them. The third hypothesis (H3), therefore, cannot be considered confirmed.

These are the conclusions of a purely quantitative study, without considering other qualitative aspects that could justify the trends described. In the future, the analysis could be more detailed by analysing the trend of the other indices and correlating them with market prices, the cost of money, and, above all, the public support policies that intervened in the most critical periods.

Despite these limitations, the study is nevertheless useful to the management of companies operating in the sector, who can compare their situation with the average, to identify any negative differences, presumably due to management inefficiencies that need to be remedied. It also provides governments with useful indications to guide support and development policies.

Analyses of this kind would not be possible without the valuable contribution of balance sheet databases, which are a fundamental element for quantitative balance sheet studies.

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