COLEGIO UNIVERSITARIO DE ESTUDIOS FINANCIEROS

GRADO EN ADMINISTRACIÓN Y DIRECCIÓN DE EMPRESAS BILINGUE

Trabajo de fin de Grado

Análisis de Datos Financieros:

Assicurazioni Generali S.p.A

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1.Introduction

Assicurazioni Generali S.p.A. It is the largest insurer in Italy and one of the largest in Europe. It offers a wide range of insurance and financial services. The group operates mainly in Europe, the Middle East and East Asia, with a sales force of more than 100,000 people serving 70 million customers in 68 countries.

To analyze this company, we will consider the contribution values from January 2003 to December 2017, as well as different information from, press releases and other truthful sources.

The main objective of this work will be to issue an own assessment of the company and therefore to issue a recommendation on this in the future, we will use as tools: Microsoft Excel, to do the statistical analysis and Eviews, for the econometric analysis.

It will start with a description of the company: what does it do, its history briefly, the sector in which it operates, as well as a brief financial analysis, all of this, to have a first idea about the company. Then we will follow with an analysis of the variations in the prices of the adjusted value since 2003 and a descriptive analysis of it. Later we will pose a series of questions to which we will respond with a series of hypothesis contrasts. All this will not be enough to value the company, so it will proceed to the construction of a CAPM model (Capital Asset Pricing Model) to analyze the volatility of the company with respect to the market. Additionally, it will be seen what effect strategic alliances have on volatility in our company. All this, to finally issue a critical opinion on whether to invest or not in this company.

2. Description of the company

2.1 Assicurazioni Generali S.p.A

Historical Framework Assicurazioni Generali (General Insurance) was founded in Trieste, Italy on December 26, 1831, at which time the insurance business was unknown in many countries of the European Continent. The founders of this group wanted to create an entity with powerful financial means that allowed a very wide margin of action and the simultaneous exercise of all branches of insurance, known then and consented by law, hence the name Generali emerges. The international character that has distinguished Generali for 180 years, is its remarkable presence in more than 50 markets in the 5 continents Operates all branches of insurance, with the peculiarity of adapting to the characteristics and demands of each market, responding efficiently to your needs. From this international projection that Generali enjoys, comes the feeling that he is the INSURER WITHOUT FRONTIERS, neither geographical nor intellectual. The social emblem that it adopted is the Winged Lion of San Marcos, symbol of the City of Venice. The Generali Group has a wide network, with international interests, which makes it the largest Insurance Group in Italy and one of the most important in Europe and the World, as well as being one of the oldest.

2.2 Main events in its History from 2003-2017

In the change of century Generali successfully acquires Ina, consolidating its dominance in Italy and becoming Europe's premier life insurance provider. During 2003 Generali launches a three-year strategy for the first time in their history, which it succeeds by the end of 2005. Generali continues its expansion in Italy and acquires TORO the insurance company and all its subsidiaries, making Generali the leader in domestic non-life insurance as well as life insurances. It also begins with the expansion in China By the end of 2006 Generali was now present in ten countries in central and eastern Europe. Also, during those years Generali enters in the Italian national football team as an official partner among other sports.

The 175th anniversary sees Generali in peak conditions, with an excellent 2006 balance sheet and giving away dividends to its shareholders close to €1bn

Hard times in 2010, In the mist of the 2007 crisis the groups try to fight against the recession with the acquirement of Estrella and Vitalicio into the Generali Seguros in Spain.

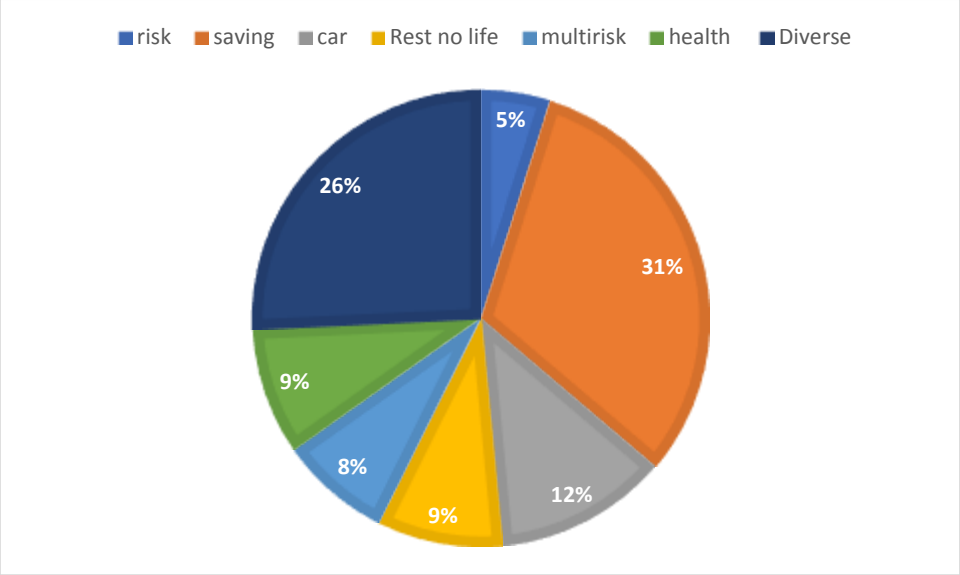
In 2012 and after being criticize the past president the board of directors appoints the experienced Mario Greco as the Group's CEO, charged with implementing new ides that will put Generali again in the leadership

Time passed, and stability appeared in Generali the plan to sell off non-core assets comes to fruition a year ahead of schedule. At the same time, strategic acquisitions in central and eastern Europe continue to strengthen the Group's position in this all-important growing market.

2.3 Sector in which Operates

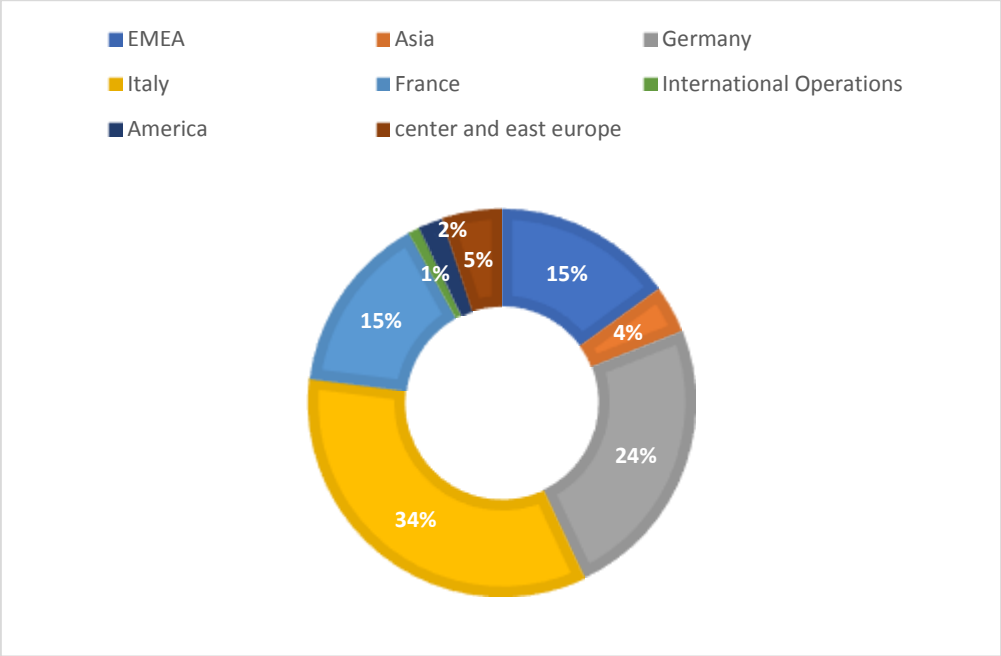
Generali acts as the parent to the Generali Group (the Group). The Group operates through two segments: Life and a Non-life. The Life segment's product line consists of saving and protection policies, as well as the health and pension policies. Through the Non-life segment, it provides various insurance products, such as house, car, travel insurance and reinsurance policies. Additionally, it is involved in the asset management and private-banking financial services. The Company operates through subsidiaries in 69 countries, including Italy, Germany, France, Austria, Spain and Argentina, among others. It operates through Generali Deutschland Holding AG, MyDrive Solutions Ltd and Generali Colombia Seguros Generales SA, among others.

The graphic 1 shows the proportion of insurance sold and the type of premiums they are selling to their clients during 2016. As seen in the graph, savings are nº1 selling type of premiums.



Graphic 1. Amount of insurance sold in 2016 divided by sectors in Spain. Source: Generali Memories, Own Elaboration, Excel

In Graphic 2 we can see the places where the company sold its insurances during 2016 it has been made to have an idea of where Generali has more market share insurances, being Italy the strongest “client” or we could say where Generali has more power.



Graphic 2. Premiums Issued in 2016 around the world. Source: Generali dossier prensa 2016, Own Elaboration, Excel.

2.4 Ratio Analysis

To examine and speak about this part it will rely con data obtained through the web page morning stars, gathered in the figures 10.1.1 and 10.1.2 of the annex.

If we observe the figures indicated in the annex, we can see how Generali has a minimum presence of short-term debt and the long-term debt is relatively small. Therefore, the probability of no payment from the company is nearly inexistent.

The company also presents a return on assets(ROA) of 0.40, this means that for every unit of euro in their assets it will generate 0,40% of benefits, said in other word it obtains 0,40% of profit from its assets.

On the other hand, the return on equity(ROE) is 8.8. Interpreting this, means that its high enough and good for the shareholders, because it obtains a profitability of 8.8%.

Finally, if we observe the debt to equity ratio which is 0,67 we could say the company is protecting more their money and thinking more right now on the creditors rather than the shareholders.

3. Data Obtained

The data obtained have been gathered through the platform yahoo finance and are data periodically monthly**.** Even though it started listing in 1987, the FTSEMIB which is Milan´s market had some issues during the 20th century and the data has been focused between 2003 and 2017. The quoted values used will be the adjusted closing price.

We compare the data obtained from the company (Generali) with the ones obtained from the market(FTSEMIB). Additionally, for the CAPM model a risk-free asset will be used such as the bond to 10 years of the Italian Government.

4. Variation of the Quotes

Now we will proceed to the analysis of the rate of monthly change to study the behavior form the quotes along the time.

As you can see in graph 3, during de early 2000 the company was showing some good vibes about the situation this is due to Generali implementing a three years strategy for the first time in their history, succeeding in all its objectives increasing a 28% of premium income and a 67% rise in consolidating earnings, this was reflected in the stock price, also this high increment of its stock price was due the expansion of Generali to china, the acquisition of TORO and its subsidiaries and the entrance in sport sponsorship, all of this made Generali reach its peck in 2007. Its noticeable that in 2007 after having some excellent numbers the financial crisis also affected the Insurance Giant, not even Generali was able to protect himself of the financial crisis. Another remarkable point is in 2012 where the stock price was very low €9,78. The doubtful job the previous president had made creates a bad environment and in 2012 a new director, Mario Greco is put as CEO, the market seems to accept this decision. During the last few years the company has stablished its price around €14 and €15.

Graph 3. Adjusted value of quote price for Generali.

Source: Yahoo Finance, Own Elaboration, Excel

Speaking about the market as it can be seen in graph 4 after the (dot com crisis) the index fell to a minimum of 20,539 points in mars of 2003. From that until the end of 2007 the market started to increase, and it reached before the financial crisis a maximum of 44,364 points.

During the financial crisis that had its origins in the USA the MIB started to decline again, reaching in 2008, 29,854points. The financial crisis was a phenomenon that affected a lot of markets around the world and as a fact the MIB lost in 1 day 8,24%.

The lowest point the MIB reached during the crisis was 12,620.57 points, this was more than 200% fall comparing it to the 2007s index points.

The European mechanism of stability started to be implemented and by may of 2009 the bleeding was over and the MIB was starting to grow again.

There is also a marked point in the MIBS history when in 2010 the euro crisis affected the MIB

The announcement of new programs of buying Bonds by the European Central Bank and the Federal Reserve made the market recover.

To end this analysis in 2015 there was another flexing point due to the crisis of the Chinese markets and the problems in the Greeks economy that made the market humble.

Now the MIB is stablished around the 20,000 points but it is still far way from being what it was in the past.

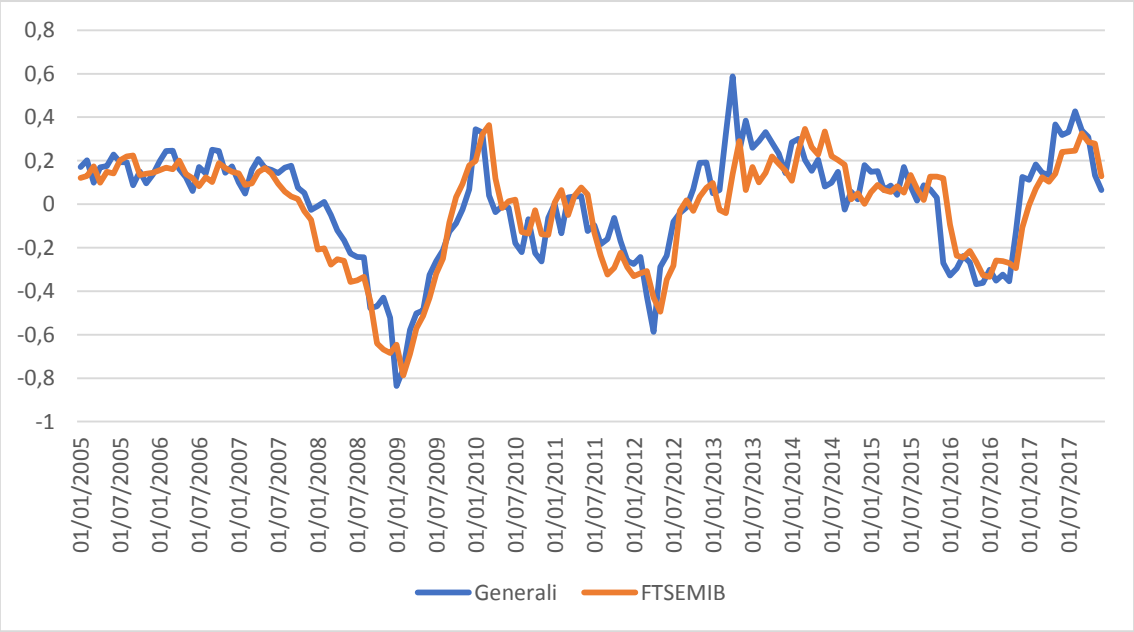
Graphic 4 Adjusted quoted value of FTSEMIB.

Source; Yahoo Finance, Own Elaboration, Excel

Now we can observe in graph 5 the interannual logarithm variation between the years 2003 and 2017. This means the variation of increment that suffers from one month with respect the same month form last year.

As it can be seen in the graph the 3 years strategy implementation is making its profits and, they are moving along with the market but in 2005 until mid-2007 they both experimented the first negative variation in their adjusted quoted value falling up to 80%. In 2007 and 2008 raises again and maintains until 2010.

During end of 2010 until 2013 it maintains having a peak over the market in 2011, it keeps stable until 2014 that falls negative again. Nowadays the adjusted quoted value is recovering from a breve fall in 2016.



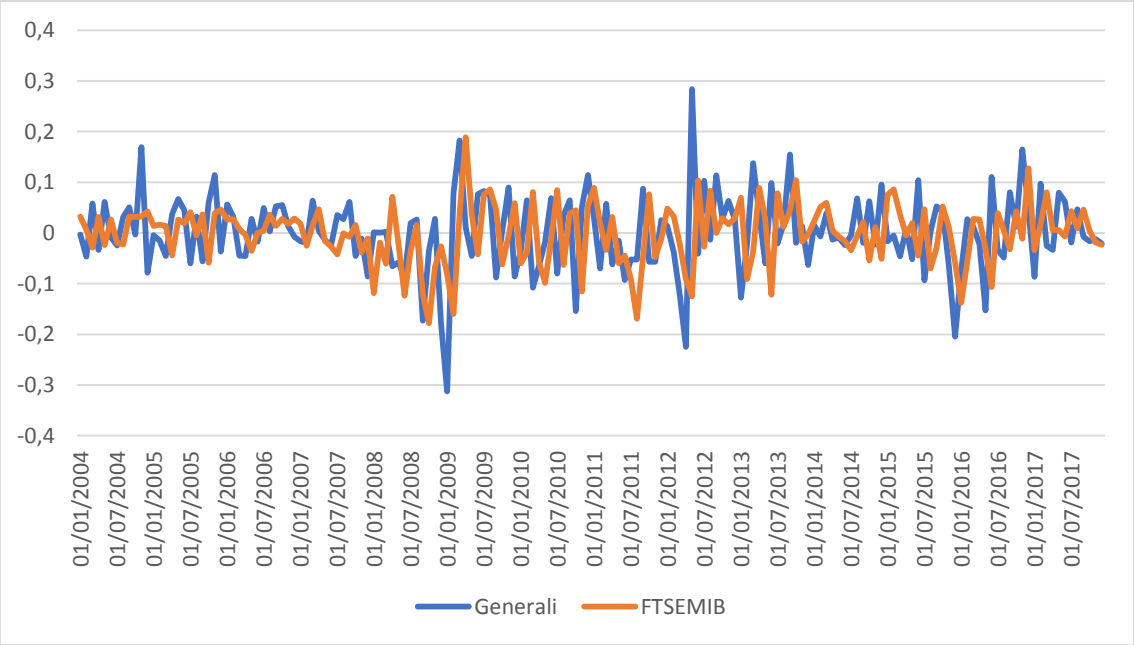
Graphic 5: Interannual Logarithm Variation of Generali & FTSEMIB

Source: Yahoo Finance, Own Elaboration, Excel

Unlike graph 5, in graph 6 we can see the same variation but now is intermonth, in other words, the variation that suffers the increase of the value adjusted form 1 month with respect from the month before.

It can be appreciated that the variations of Generali and MIB are similar with the a few exceptions from November 2003, January of 2008 and May of 2011, even though they are more significant than the market they both follow the same tendency.

So, we could say the company has a direct relation, and positive with respect the market. This is showed in the graph as they both synergize well.



Graphic 6 **Intermonthly Logarithm Variation** Generali and MIB

Source; Yahoo Finance, Own Elaboration, Excel

5.Descriptive Analysis

In this part we will make some comments about the figures showed in the annex 10,2,3 that have relation with the statistical analysis of the adjusted quoted value from Generali, and the market.

All the comments and the figures from section 10.2 of the annex will be in terms of relative variation, because it is easier to comment rather than only the adjusted value of the company and the market in absolute terms due to the huge differences of size.

As its observable in figure 10.2.1 of the annex, it can be appreciable that the mean of the market is smaller, being 0,001466; comparing to the company which is 0,003246; so, what it could be said that they Generali presents a higher variability in their quoted values than the market.

If we observe the histograms to see its distribution figure 7 & 8 we can see how the distribution of the company follows a normal distribution clearer than the market.

Looking at the figures 10.2.4 and 10.2.6 of the annex the relative variation of Generali and MIB are organized in class. Both have 8 class. If you see the annex 10.2.2, it can be seen which de modal class from both and the frequencies are that corresponds. This is interesting, because the company presents a class modal of 4 and this corresponds to the frequency 80. This means that the company in 80 times has experimented a decrease between -2,8% and increment of 5,2%. This is appreciable in the figure 7.

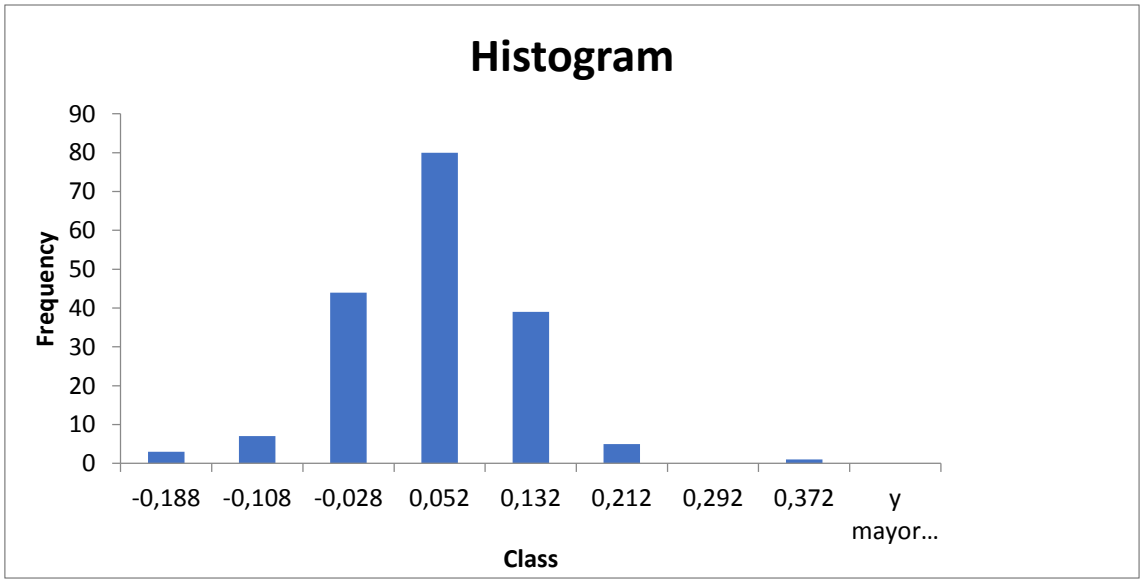


Figure 7 Histogram Relative Variation Generali

Source: Yahoo Finance, Own Elaboration, Excel

The market has also a modal class of 4, with the corresponding frequency of 69 times. This can be interpreted as that in 69 times the market has expressed a variation between -1% and 4%. This can be seen in figure 8.

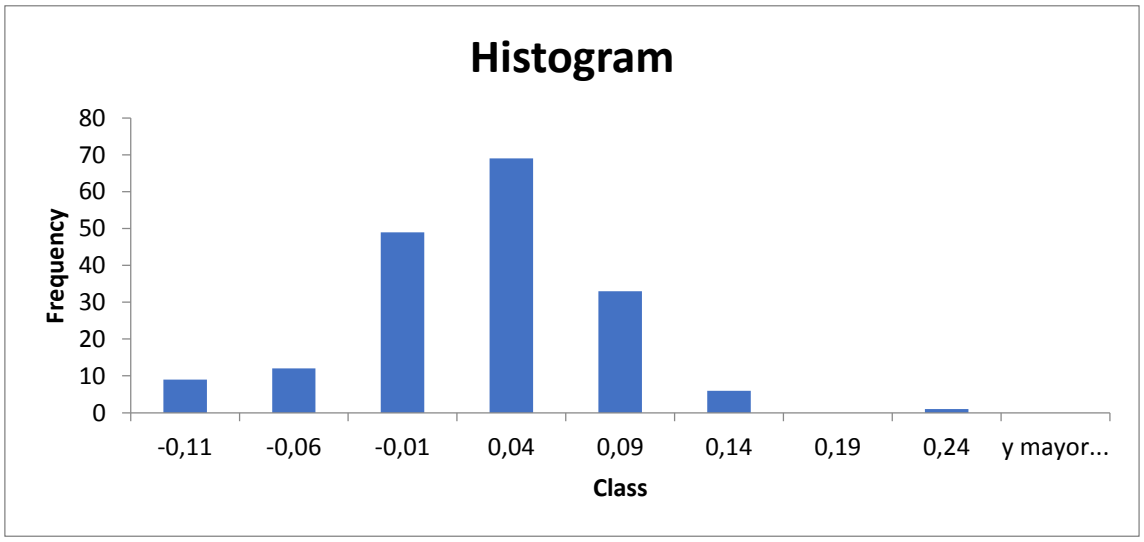


Figure 8 Histogram Relative Variation FTSEMIB

Source: Yahoo Finance, Own Elaboration, Excel

This could mean that when the market is doing bad the company does worse than the market but when the market is being positive, the company express with higher increments than the market. It is a similar reaction, but the company suffers more.

Now observing the figure 10.2.7 of the annex, we analyze the form of its distribution in numeric terms thanks to the Asymmetric and Kurtosis Coefficient. In terms of profitability, the company and the market are very close to the ideal asymmetry which is 0. In terms of Kurtosis they are both far from the normal distribution form being allot of the data concentrated in the in the mean so the normal distribution stretches.

If we observe figure 10.2.8, we must observe the quotes and profitability terms from the variance, standard deviation and variance coefficient. To compare both, one must look at the coefficient of variation, and this indicates that in terms of quotation the market has a much greater variation than the company, and in profitability terms it also does.

6.Hypothesis Approach

In this part we will expose the questions approached and its corresponding results found thanks to the hypothesis contrast.

The first Hypothesis that we approach is if the average yield of Generali is positive or null from the year 2003 when they launched the first 3 years strategic plan until 2006. This strategy as seen before looks like if it was profitable for the company, but we are going to verify if this is true or not. Will make the next contrast of unilateral means and we will suppose that we know the variance and that the data distributes normally.

This first Hypothesis is unilateral and is solved in section 10.3.1 of the annex. Finally, ones its solved we can reach the evidence to say that the hypothesis is null, there is no evidence to say that the company was more profitable after implementing the strategies, even though it looks like it was. Because we have got a p-value of 0,8930 we can't reject the null hypothesis.

The second hypothesis that we will approach is, as said in the main events on the history of Generali, in 2012 a new CEO and board of directors were elected; the graphs show a response to this, but we are going to contrast the hypothesis to see if the average yield was positive or not.

Second hypothesis is solved in section 10.3.2 and we reach to the evidence that the response of the election of new CEO, Mario Greco, it is not negative. The p-value is 0,9334, at a 5% level of significance we would reject the null hypothesis and we could say the election of the new CEO didn't had any effect. But with a 10% level of significance we would accept the null hypothesis.

Finally, our third hypothesis would be if the average yield of Generali was equal to FTSEMIB during the financial crisis and its recession, April of 2007 until de end of 2011. From our results we can conclude that with a p-value of 0,7222 confirms that we can't reject the null hypothesis.

7. Our CAPM model

Now we will proceed to comment on the study that has been prepared to know the risk of the company and the market based on the CAPM model. For this, the figures in section 10.4.0 will be observed in the annex.

The mathematical formulation of the CAPM model is:

$RA = RF + \beta (RM - RF)$

Where:

• RA: expected rate of return on the asset.

• RF: rate of return of a risk-free asset, in this case, the ten-year bond of the Italian Government.

• (RM-RF): expected premium of the market.

•β: measure of the variation of the return of the asset in the face of movements in the profitability of the market.

To solve this model, it must be solved by means of the following econometric model:

$(RA - RF) = \alpha + \beta (RM-RF) + Et$

Being

•α: measure to know if the profitability of the asset is systematically higher or lower than market profitability for exogenous reasons.

• Et: the residuals of the model.

Once the model is estimated by OLS (Ordinary Least Squares) as can be seen in Figure 10.4.0.2 of the annex, the estimated β is -0,00196 and α is -0,28; both being very significant. Alpha (α) is a measure used to determine how well an asset works in relation to its expected return on investment with a given amount of risk. The β tells us that the variation in the performance of the asset is going in the other way than the

variation in market performance, in other words, our model shows that the company has an asset whose correlation with the market is inverse -0,28 what it means is that if the market increases our asset decreases and vice versa. α is telling us to be smaller than 0, that the profitability of the asset is systematically lower than the market for reasons unrelated to this, so it suggests to the investor of Generali that the expected premium for the share is lower than what it would correspond to the company by his level of risk according to the behavior of the market. In conclusion, the company presents a lower volatility but not a better systematic profitability than the market explained by factors outside the market.

But to know that the conclusions of the model are accurate, normality, heteroscedasticity and autocorrelation of disturbances must be analyzed. If you look at Figure 10.4.0.4 of the annex, you can see that it practically follows a normal distribution, with a Jarque-Bera statistic and adequate p-value, although it could become more normal.

If we observe the figure 10.4.0.5. of the annex will be verified by the White Test that is in a desired homoscedasticity situation, as in Figure 10.4.0.6. and 10.4.0.7 of the annex it shows how by the contrast pf Breusch-Godfrey for R2 AND R12 meets the conclusion of absence of autocorrelation. Finally, it can be said that the disturbances meet these three requirements in addition to the fact that the disturbances have an average equal to zero per construction, which is why the disturbances are White Noise.

We also must keep in mind that R^2 is 0,000002, that nearly 100% of the behavior of the asset is caused by exogenous factors.

Also, we can say by seeing the figure 10.4.0.8 of the annex that the profitability of the company is higher the market because mainly the profitability of the market is

negative. Being for Generali a 0.333 and for FTSEMIB -0,0170 so looking at these, this is not a very attractive market.

7.1 Analysis of the Dummies applied

It has generated interest to know the effect that have had the different decisions the company has adopted. This will divide in 3 groups

1. At the beginning of 2009 Generali announced they wanted to consolidate their position and gain more market quote in Spain and where looking for possible company to acquire, This would in September of 2009 transform in the acquisition of Estrella and Vitalicio Insurance.
2. The situation of Generali was drastic as the CEO was not giving any dividend and shareholders where starting to get angry
3. This 3r point is linked because is the result of naming a new board of directors and CEO, Mario Greco.

To analyze the first point the tool used has been applying a dummy seen in figure 10.4.2 of the annex, with the desire of study what effect had in the company.

Once estimated the definitive model to study what is said in section 10.4.3 of the annex we can observe that it had a high repercussion. The speculation of this acquisition provoked a fall of the risk in -31.6 basic point with a higher profitability than the market.

Now to analyze the second point, we introduced a new dummy, with the purpose of seeing what effect had the investors angriness with the CEO.

Once estimated the definitive model to study what is said in section 10.4.4 of the annex we can observe that it didn't had any evidence that this was affecting the asset at all. From this it is concluded that it has no significance.

For the last point, we again introduced a dummy, with know the purpose of analyzing what was the effect on the asset from this change of directors and CEO

If we see de section 10.4.6 of the annex we can see that the risk of the asset has increased in 29,08 points this could be explained by the uncertainty of the investors on how the new director would be.

As a conclusion of this segment, we can say that the 1st and the 3rd question approach where significant in the behavior of the asset. The speculation of the Generali Spain and the change of CEO where relevant when increasing and decreasing the risk of the company. But we also must consider that the reduction of risk is also an incentive for investors not to invest due to a lower return on their investments.

8. Conclusion

Generali has shown that even though they move along with the market they mainly are affected by exogeneous variables outside the FTSEMIB.

Along the years Generali has always been a very stable company even though they also were affected by the financial crisis.

With the great strategy applied during 2003 and the politics adopted, ratios, and other factors of Generali it has shown some profitable returns but because it is a company with not a high risk and volatility it is made not for investors looking to make money, it is made for people who are looking to obtain a return low comparing with other companies but more secure. If you are looking to minimize your risk by scarifying some profits Generali would be a very good option.

Generali has a similar sensitivity as the market, being slightly higher. And its profitability is higher than the market, but this is explained by exogenous variables. The problem is that FTSEMIB isn't quite a profitable market now and the returns from Generali are very low.

As said in the previous paragraph it is a secure asset but there is not a lot of profitability on the stocks.

So, to conclude and answer to the main objective of my TFG y would recommend Generali to be invested if what we are looking for is placing your money in a secure company.

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10.1 Company Information

Balance Sheet Items (in %)	2007-12	2008-12	2009-12	2010-12	2011-12	2012-12	2013-12	2014-12	2015-12	2016-12	Latest Qtr
Cash & Short-Term Investments	1.95	2.74	2.47	2.60	6.04	4.90	4.32	1.70	1.81	1.45	1.18
Accounts Receivable	18.77	2.22	21.63	21.38	20.64	2.52	1.69	1.49	1.30	1.37	1.39
Inventory	—	—	—	—	—	—	—	—	—	—	—
Other Current Assets	—	—	—	—	—	—	—	—	—	—	—
Total Current Assets	—	—	—	—	—	—	—	—	—	—	—
Net PP&E	0.86	0.99	0.89	0.90	1.16	1.14	1.06	0.92	0.89	0.86	0.84
Intangibles	1.60	2.42	2.46	2.53	2.47	2.24	2.08	1.72	1.73	1.70	1.65
Other Long-Term Assets	—	—	—	—	—	—	—	—	—	—	—
Total Assets	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**
Accounts Payable	2.06	2.13	1.81	2.04	1.17	2.20	2.05	2.05	1.93	2.04	2.20
Short-Term Debt	—	—	—	—	—	—	—	—	—	—	—
Taxes Payable	0.31	0.24	0.24	0.38	0.32	0.37	0.36	0.28	0.26	0.32	0.31
Accrued Liabilities	—	—	—	—	—	—	—	—	—	—	—
Other Short-Term Liabilities	—	—	—	—	—	—	—	—	—	—	—
Total Current Liabilities	—	—	—	—	—	—	—	—	—	—	—
Long-Term Debt	—	—	—	—	0.79	—	—	—	—	2.91	2.95
Other Long-Term Liabilities	—	—	—	—	—	—	—	—	—	—	—
Total Liabilities	**96.10**	**97.02**	**96.04**	**95.83**	**96.32**	**95.48**	**95.59**	**95.36**	**95.28**	**95.28**	**95.52**
Total Stockholders' Equity	**3.90**	**2.98**	**3.96**	**4.17**	**3.68**	**4.52**	**4.41**	**4.64**	**4.72**	**4.72**	**4.48**
Total Liabilities & Equity	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Liquidity/Financial Health	2007-12	2008-12	2009-12	2010-12	2011-12	2012-12	2013-12	2014-12	2015-12	2016-12	Latest Qtr
Current Ratio	—	—	—	—	—	—	—	—	—	—	—
Quick Ratio	—	—	—	—	—	—	—	—	—	—	—
Financial Leverage	25.87	33.94	25.45	24.15	27.32	22.28	22.74	21.60	21.24	21.23	22.37
Debt/Equity	—	—	—	—	0.21	—	—	—	—	0.61	0.66

Figure 10.1.1. Financial Ratios. Generali

Source: Morning stars

Key Ratios

Profitability | Growth | Cash Flow | Financial Health | Efficiency Ratios

Margins % of Sales	2007-12	2008-12	2009-12	2010-12	2011-12	2012-12	2013-12	2014-12	2015-12	2016-12	TTM
Revenue	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
COGS	—	—	—	—	—	—	—	—	—	—	—
Gross Margin	—	—	—	—	—	—	—	—	—	—	—
SG&A	3.73	4.97	3.68	4.00	4.72	3.57	2.96	2.84	2.86	3.07	3.02
R&D	—	—	—	—	—	—	—	—	—	—	—
Other	96.27	95.03	96.32	96.00	95.28	96.43	97.04	97.16	97.14	96.93	96.98
Operating Margin	—	—	—	—	—	—	—	—	—	—	—
Net Int Inc & Other	—	—	—	—	—	—	—	—	—	—	—
EBT Margin	**5.66**	**2.18**	**2.39**	**3.27**	**2.46**	**1.71**	**2.88**	**3.35**	**3.78**	**3.73**	**3.73**

Profitability	2007-12	2008-12	2009-12	2010-12	2011-12	2012-12	2013-12	2014-12	2015-12	2016-12	TTM
Tax Rate %	28.45	30.75	22.97	30.64	36.12	75.70	31.94	34.98	32.64	29.08	29.75
Net Margin %	3.50	1.22	1.44	1.87	1.17	0.10	2.25	1.89	2.21	2.46	2.41
Asset Turnover (Average)	0.22	0.18	0.22	0.21	0.17	0.20	0.19	0.19	0.18	0.17	0.17
Return on Assets %	0.77	0.22	0.32	0.40	0.20	0.02	0.43	0.35	0.41	0.41	0.40
Financial Leverage (Average)	25.87	33.94	25.45	24.15	27.32	22.28	22.74	21.60	21.24	21.23	22.37
Return on Equity %	19.44	6.60	9.36	9.97	5.19	0.51	9.67	7.77	8.68	8.65	8.80
Return on Invested Capital %	—	—	—	—	—	—	—	—	—	—	—
Interest Coverage	2.52	2.00	2.72	3.29	—	2.19	2.68	3.28	4.09	3.84	4.15

Figure 10.1.2 ROE AND ROA Generali

Source: Morning Stars

10.2 Descriptive Analysis

	Generali	FTSEMIB
Mean	0,003243	0,001466
Median	-0,00344	0,005945
Modal Class	4	4

Figure10.2.1 Statistic Data Generali & FTSEMIB

Source: Yahoo Finance, Own Elaboration, Excel

	Generali	FTSEMIB
Q1	-0,04425554	-0,03245521
Q2	-0,0034413	0,0059449
Q3	0,05201879	0,03677309

Figure 10.2.2 Quartiles Generali & FTSEMIB

Source: Yahoo Finance, Own Elaboration, Excel

Nª Clase	8,483815777
Max	0,328104696
Min	-0,268711573
Rango	0,596816268
Amplitud	0,066312919

Figure 10.2.3 Statistic Data Generali

Source: Yahoo Finance, Own Elaboration, Excel

Clases	Lim Sup	Frequency	Class marc
1	-0,188	3	-0,244
2	-0,108	7	-0,148
3	-0,028	44	-0,068
4	0,052	80	0,012
5	0,132	39	0,092
6	0,212	5	0,172
7	0,292	0	0,252
8	0,372	1	0,332

Figure 10.2.4 Statistic Data Generali

Source: Yahoo Finance, Own Elaboration, Excel

NºClase	8,483815777
Max	0,208
Min	-0,163063063
Range	0,371063063
Amplitude	0,041229229

Figure 10.2.5 Statistic Data FTSEMIB

Source: Yahoo Finance, Own Elaboration, Excel

Class	Lim Sup	Frequency	Class marc
1	-0,11	9	-0,105
2	-0,06	12	-0,085
3	-0,01	49	-0,035
4	0,04	69	0,015
5	0,09	33	0,065
6	0,14	6	0,115
7	0,19	0	0,165
8	0,24	1	0,215

Figure 10.2.6. Statistic Data FTSEMIB

Source: Yahoo Finance, Own Elaboration, Excel

	Varianza		Desviación Típica		Coeficiente de Varición	
	Generali	FTSEMIB	Generali	FTSEMIB	Generali	FTSEMIB
Quote	12,832828	60834306,9	3,58229368	7799,63505	0,24935675	0,31920528
Profitability	0,00582592	0,00325556	0,07632773	0,05705749	23,5379035	38,9235726

Figure 10.2.7. Measurements of Variability of Generali & FTSEMIB

Source: Yahoo Finance, Own Elaboration, Excel

	Asimetría		Curtosis	
	Generali	FTSEMIB	Generali	FTSEMIB
Quote	0,76039162	0,86186825	0,07647397	-0,32125769
Profitability	-0,12122964	-0,19242122	2,36297699	0,90461671

Figure 10.2.8. Measurements of form of Generali & FTSEMIB

Source: Yahoo Finance, Own Elaboration, Excel

	Mean		Median	
	Generali	FTSEMIB	Generali	FTSEMIB
2003-2017	0,00324276	0,00146589	-0,003441351	0,00594493
2003	-0,00137395	0,01851494	0,005560152	0,02570829
2004	0,01631976	0,01043466	-0,00388693	0,02044446
2005	0,01808813	0,01366676	0,035455133	0,02281894
2006	0,0090253	0,01197788	0,007922325	0,01607678
2007	7,6762E-05	-0,01655319	-0,005054834	-0,01312573
2008	-0,06283838	-0,05048261	-0,046170487	-0,04663538
2009	0,03230956	0,02052779	0,044638813	0,03783545
2010	0,00325183	0,00308199	0,031957426	0,01358391
2011	-0,02121094	-0,0252932	-0,051078213	-0,03830699
2012	0,01248458	0,0101816	0,006850465	0,02334186
2013	0,02649385	0,01117174	0,013993374	0,01794172
2014	0,01336222	0,00535365	-0,007908589	-0,00081613
2015	-0,02411843	-0,00603941	-0,025110883	0,00372761
2016	0,01287194	0,00134719	0,012451196	-0,00281827
2017	0,01486792	0,01524691	-0,011703511	0,00594493

Figure 10.2.11 Relatives Variations of Generali & FTSEMIB during 2003-2007

Source: Yahoo Finance, Own Elaboration, Excel

10.3. Hypothesis testing

10.3.1 First Hypothesis

The Hypothesis will be the following:

- Null Hypothesis: The average yield of Generali between 2003 and 2007 was higher than 0, expressed in another way: H_0; $\mu >= 0$
- Alternative Hypothesis: The average yield of Generali between 2003 and 2007 was lower than 0, expressed in other ways: H_A: $\mu < 0$

Too find el contrast statistic is done by using the relative mean from the period between 2003 and 2007, the standard deviation of this one and the number of total data of quotes used, all this is made in the next way.

$$d = \frac{0,00110}{0,0611/\sqrt{47}} = 1,243$$

The p-value is found directly with Excel y=DISTR.NORM. ESTAND (1,243) =0,8930

The statistic must compare with a contrast of $Z\alpha$=1,282(α=10%)

10.3.2: Second Hypothesis

The hypothesis will be the following:

- Null Hypothesis: The average yield of Generali between 1 August 2012 (when Mario Greco) was elected CEO of the group and 2014 was >0:H_0: $\mu >= 0$
- Alternative Hypothesis: The average yield of Generali between 1 August 2012 and 2014 was <0: H_a: $\mu < 0$.

Too find the statistic contrast is done by using the relative mean from the period between 2012 and 2014, the standard deviation of this one and the number of total data of quotes used, all this is made in the next way.

$$d = \frac{0,0183}{0,0634/\sqrt{27}} = 1,502$$

El p-value is found directly with Excel y =DISTR.NORM. ESTAND(1,502) = 0,9334.

The statistic must be compared with the contrast Zα=1,96 (α=5%).

10.3.3: Third Hypothesis

The hypothesis will be the following:

- Null Hypothesis: The average yield of Generali between 2007 until 2011 equal to FTSEMIB H_0: $\bar{X}G - \bar{X}F$>=0
- Alternative Hypothesis: The average yield of Generali between 2007 until 2011 was different to FTSEMIB: H_a: $\bar{X}G - \bar{X}F$ <0.

To find the statistic contrast is done by using the relative mean form the period between 2007-2011, and because we don't know the population variance and we have a big sample, we will use the sample variance, 0,0058 of the profitability of Generali and 0,0032 of FTSEMIB.

$$d = \frac{-0,00968+0,01374}{\sqrt{\frac{0,0058}{69}+0,0032/69}} = 0,3555$$

The P-value was found directly from Excel y=2*(1-DISTR.NORM. ESTAND (0,3555)) = 0,7222

The statistic must be compared with the contrast Zα=1,96 (α=5%).

10.4.0 CAPM MODEL

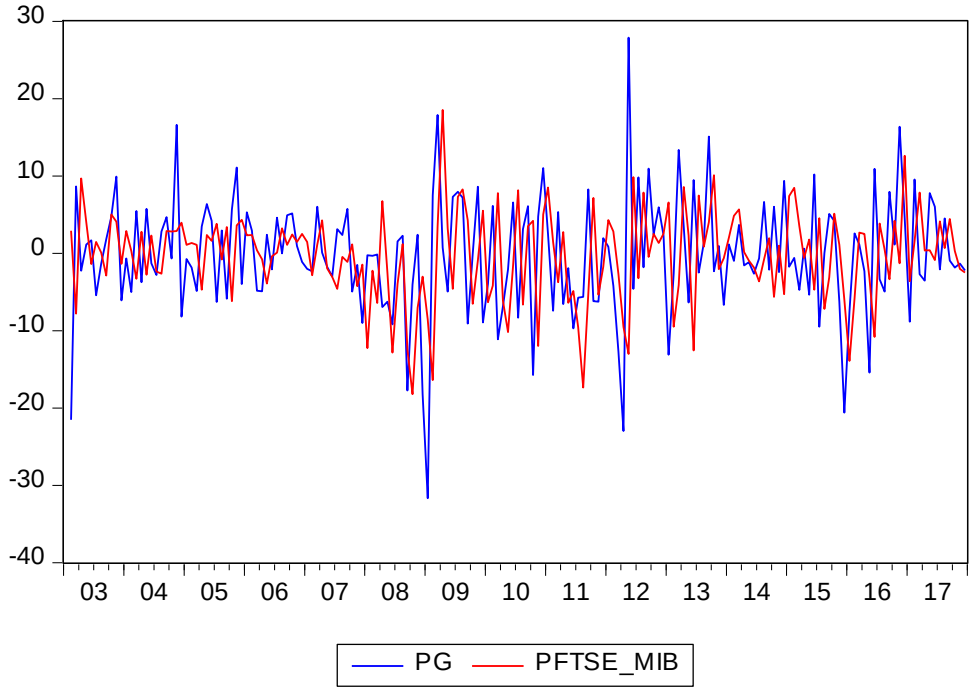

Figure 10.4.0.1. Premiums graphic of Generali & FTSEMIB

Source: Yahoo Finance, Own Elaboration, Eviews

Dependent Variable: PG
Method: Least Squares
Date: 04/18/18 Time: 08:20
Sample (adjusted): 2003M02 2017M12
Included observations: 179 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.282891	0.576194	-0.490965	0.6241
PFTSE_MIB	-0.001965	0.099962	-0.019661	0.9843

R-squared	0.000002	Mean dependent var	-0.282237
Adjusted R-squared	-0.005648	S.D. dependent var	7.674457
S.E. of regression	7.696097	Akaike info criterion	6.930414
Sum squared resid	10483.69	Schwarz criterion	6.966027
Log likelihood	-618.2721	Hannan-Quinn criter.	6.944855
F-statistic	0.000387	Durbin-Watson stat	2.131904
Prob(F-statistic)	0.984336		

Figure 10.4.0.2. CAPM Estimation Model for Generali

Source: Yahoo Finance, Own Elaboration, Eviews

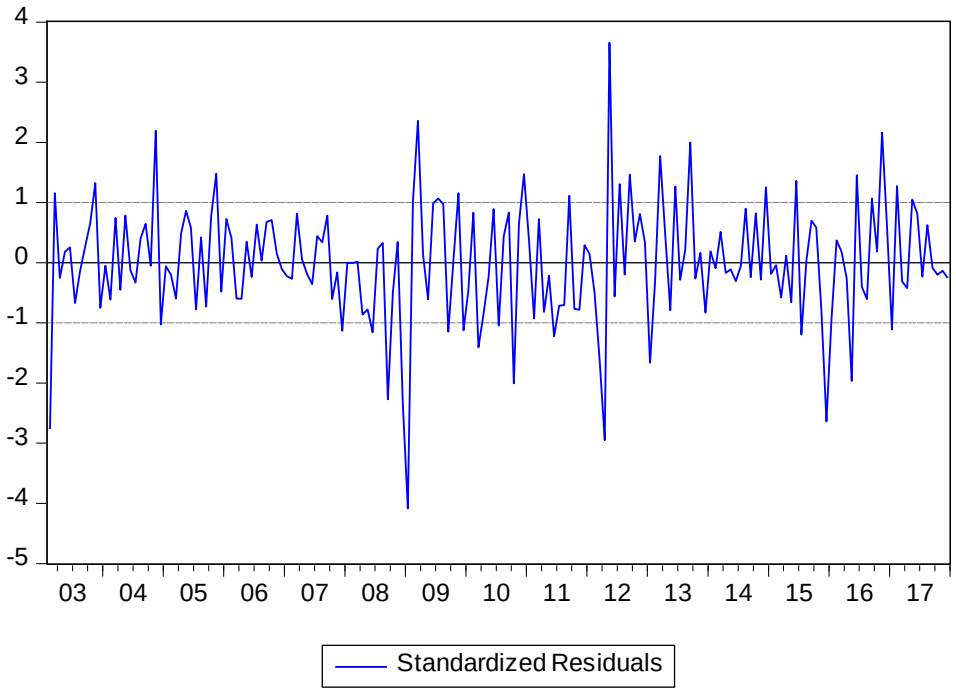

Figure 10.4.0.3 Standardized Residuals Graph for Generali

Source: Yahoo Finance, Own Elaboration, Eviews

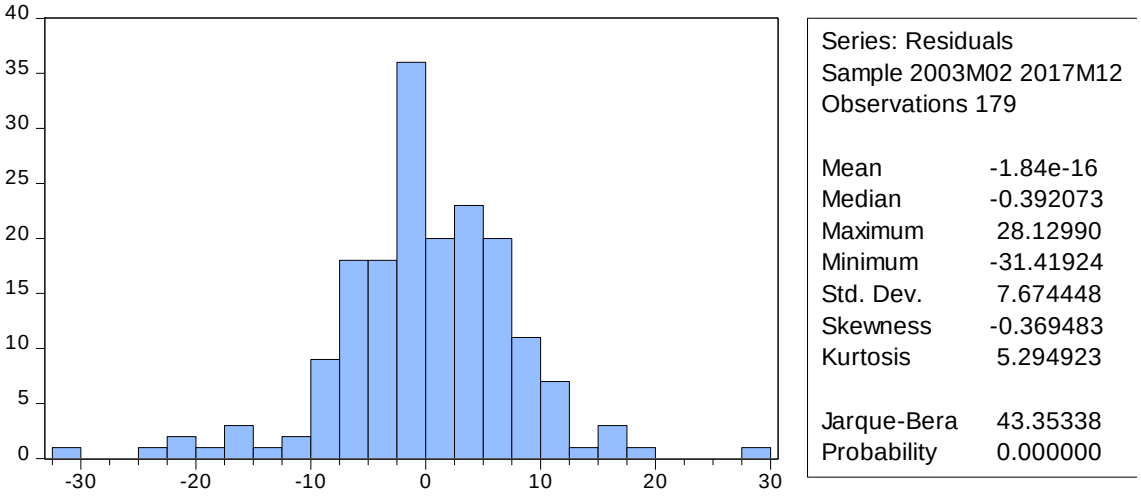

Figure 10.4.0.4 Histogram Normality Test for Residuals Generali

Source: Yahoo Finance, Own Elaboration, Eviews

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 04/18/18 Time: 08:27
Sample: 2003M02 2017M12
Included observations: 179
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.111244	0.568660	0.195625	0.8451
PFTSE_MIB	0.317258	0.167403	1.895173	0.0597
RESID(-1)	-0.292723	0.126358	-2.316620	0.0217
RESID(-2)	-0.149853	0.075155	-1.993919	0.0477

R-squared	0.043483	Mean dependent var	-1.84E-16
Adjusted R-squared	0.027085	S.D. dependent var	7.674448
S.E. of regression	7.569803	Akaike info criterion	6.908304
Sum squared resid	10027.83	Schwarz criterion	6.979530
Log likelihood	-614.2932	Hannan-Quinn criter.	6.937186
F-statistic	2.651801	Durbin-Watson stat	1.932404
Prob(F-statistic)	0.050287		

Figure 10.4.0.5. Breusch-Godfrey contrast results for (R2)

Source: Yahoo Finance, Own Elaboration, Eviews

C	0.092911	0.580728	0.159990	0.8731
PFTSE_MIB	0.286439	0.176285	1.624861	0.1061
RESID(-1)	-0.269238	0.132134	-2.037621	0.0432
RESID(-2)	-0.136026	0.078285	-1.737576	0.0842
RESID(-3)	0.027289	0.077984	0.349932	0.7268
RESID(-4)	0.097199	0.078172	1.243392	0.2155
RESID(-5)	0.006832	0.079105	0.086363	0.9313
RESID(-6)	0.013140	0.078471	0.167455	0.8672
RESID(-7)	-0.035704	0.079325	-0.450105	0.6532
RESID(-8)	0.016288	0.078981	0.206223	0.8369
RESID(-9)	-0.000576	0.079344	-0.007261	0.9942
RESID(-10)	0.009262	0.078770	0.117581	0.9065
RESID(-11)	-0.063573	0.078253	-0.812410	0.4177
RESID(-12)	0.029796	0.078437	0.379873	0.7045

R-squared	0.060736	Mean dependent var	-1.84E-16
Adjusted R-squared	-0.013267	S.D. dependent var	7.674448
S.E. of regression	7.725189	Akaike info criterion	7.001834
Sum squared resid	9846.959	Schwarz criterion	7.251127
Log likelihood	-612.6641	Hannan-Quinn criter.	7.102920
F-statistic	0.820725	Durbin-Watson stat	1.936389
Prob(F-statistic)	0.637694		

Figure 10.4.0.6. Breusch-Godfrey contrast results for (R12)

Source: Yahoo Finance, Own Elaboration, Eviews

Heteroskedasticity Test: White

F-statistic	4.951304	Prob. F(2,176)	0.0081
Obs*R-squared	9.534922	Prob. Chi-Square(2)	0.0085
Scaled explained SS	20.02087	Prob. Chi-Square(2)	0.0000

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 04/18/18 Time: 08:26
Sample: 2003M02 2017M12
Included observations: 179

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	51.71840	10.37380	4.985484	0.0000
PFTSE_MIB^2	0.165206	0.164791	1.002518	0.3175
PFTSE_MIB	-4.090043	1.633053	-2.504538	0.0132

R-squared	0.053268	Mean dependent var	58.56812
Adjusted R-squared	0.042509	S.D. dependent var	121.7182
S.E. of regression	119.1030	Akaike info criterion	12.41447
Sum squared resid	2496653.	Schwarz criterion	12.46789
Log likelihood	-1108.095	Hannan-Quinn criter.	12.43613
F-statistic	4.951304	Durbin-Watson stat	1.660389
Prob(F-statistic)	0.008091		

Figure 10.4.0.7 Heteroscedasticity of the residuals contrast for Generali

Source: Yahoo Finance, Own Elaboration, Eviews

	RG		RFTSE_MIB
Mean	0.033367	Mean	-0.017095
Median	-0.344729	Median	0.592733
Maximum	28.37529	Maximum	18.89661
Minimum	-31.29473	Minimum	-17.80066
Std. Dev.	7.672964	Std. Dev.	5.758528
Skewness	-0.357490	Skewness	-0.424574
Kurtosis	5.303574	Kurtosis	3.844008
Jarque-Bera	43.38996	Jarque-Bera	10.69079
Probability	0.000000	Probability	0.004770
Sum	5.972740	Sum	-3.059962
Sum Sq. Dev.	10479.64	Sum Sq. Dev.	5902.595
Observations	179	Observations	179

Figure 10.4.0.8. Profitability Analysis of Generali and FTSEMIB

Source: Yahoo Finance, Own Elaboration, Eviews

10.4. Analysis of the Dummy applied

Dependent Variable: PG
Method: Least Squares
Date: 04/18/18 Time: 18:03
Sample (adjusted): 2003M02 2017M12
Included observations: 179 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.223708	0.532300	-0.420267	0.6748
PFTSE_MIB	0.018636	0.093562	0.199180	0.8424
D09_01	-31.30215	7.118680	-4.397184	0.0000
D12_04	-6.403945	7.081370	-0.904337	0.3671
D12_05	28.33920	7.176584	3.948843	0.0001

R-squared	0.173694	Mean dependent var	-0.282237
Adjusted R-squared	0.154699	S.D. dependent var	7.674457
S.E. of regression	7.055916	Akaike info criterion	6.773145
Sum squared resid	8662.755	Schwarz criterion	6.862178
Log likelihood	-601.1965	Hannan-Quinn criter.	6.809247
F-statistic	9.143957	Durbin-Watson stat	2.072759
Prob(F-statistic)	0.000001		

Figure 10.4.1 CAPM model with dummy incorporated

Source: Yahoo Finance, Own Elaboration, Eviews

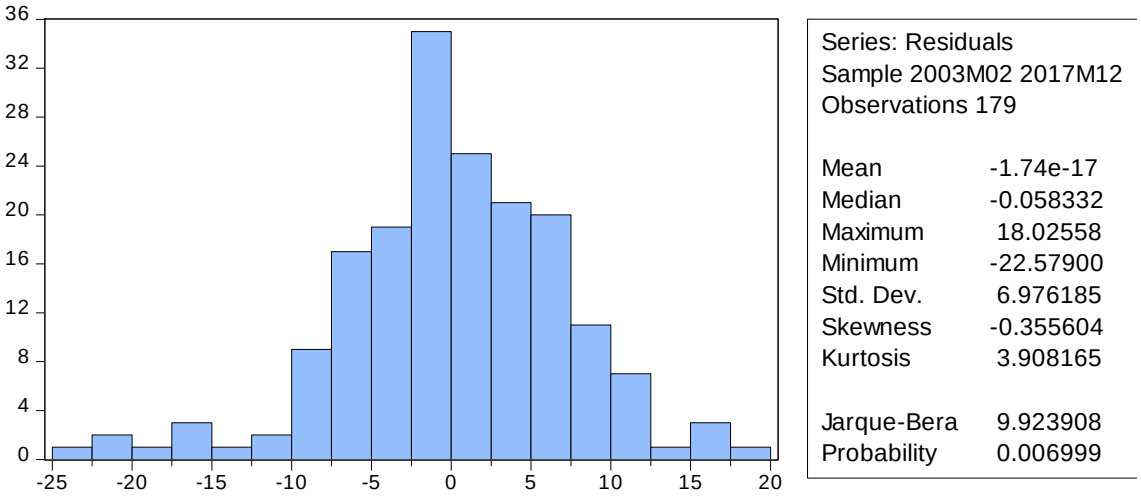

Figure 10.4.2 Histogram of Residuals after Dummy

Source: Yahoo Finance, Own Elaboration, Eviews

Dependent Variable: PG
Method: Least Squares
Date: 04/18/18 Time: 20:45
Sample (adjusted): 2003M02 2017M12
Included observations: 179 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.119084	0.550765	-0.216215	0.8291
PFTSE_MIB	-0.046312	0.095875	-0.483047	0.6297
D09_01	-31.96252	7.402153	-4.318004	0.0000

R-squared	0.095792	Mean dependent var	-0.282237
Adjusted R-squared	0.085517	S.D. dependent var	7.674457
S.E. of regression	7.338974	Akaike info criterion	6.840893
Sum squared resid	9479.456	Schwarz criterion	6.894313
Log likelihood	-609.2599	Hannan-Quinn criter.	6.862554
F-statistic	9.322790	Durbin-Watson stat	2.171602
Prob(F-statistic)	0.000142		

Figure 10.4.3 To study Generali D09_01 situation

Source: Yahoo Finance, Own Elaboration, Eviews

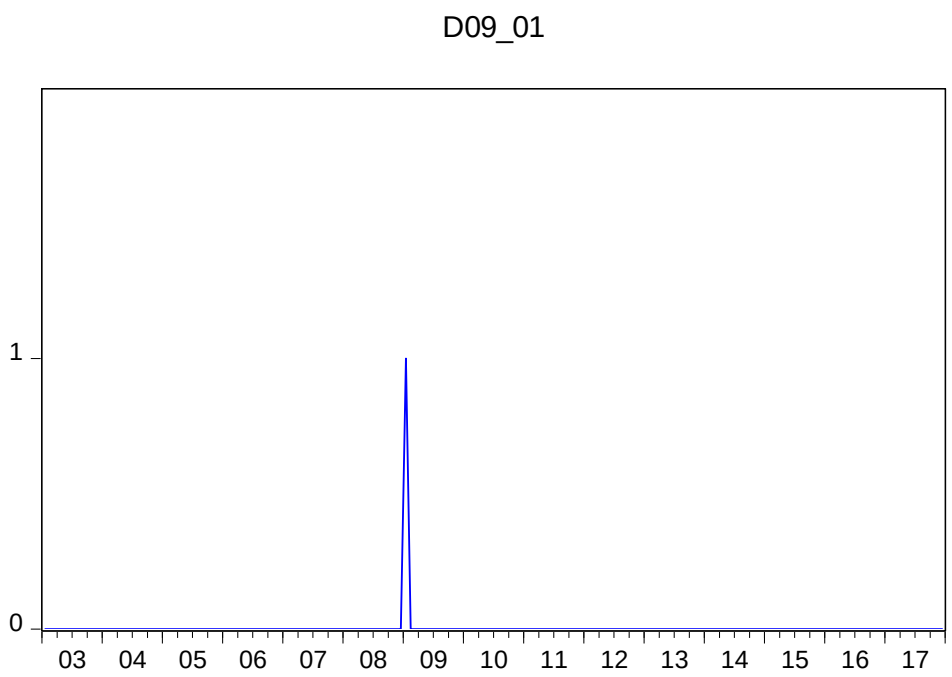

Figure 10.4.4. Dummy to study the D09_01 situation

Source: Yahoo Finance, Own Elaboration, Eviews

Dependent Variable: PG
Method: Least Squares
Date: 04/18/18 Time: 20:46
Sample (adjusted): 2003M02 2017M12
Included observations: 179 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.246416	0.578446	-0.425997	0.6706
PFTSE_MIB	0.001312	0.100135	0.013101	0.9896
D12_04	-6.333870	7.731034	-0.819278	0.4137

R-squared	0.003801	Mean dependent var	-0.282237
Adjusted R-squared	-0.007519	S.D. dependent var	7.674457
S.E. of regression	7.703255	Akaike info criterion	6.937781
Sum squared resid	10443.86	Schwarz criterion	6.991201
Log likelihood	-617.9314	Hannan-Quinn criter.	6.959442
F-statistic	0.335802	Durbin-Watson stat	2.130929
Prob(F-statistic)	0.715222		

Figure 10.4.5 To study Generali D12_04 situation

Source: Yahoo Finance, Own Elaboration, Eviews

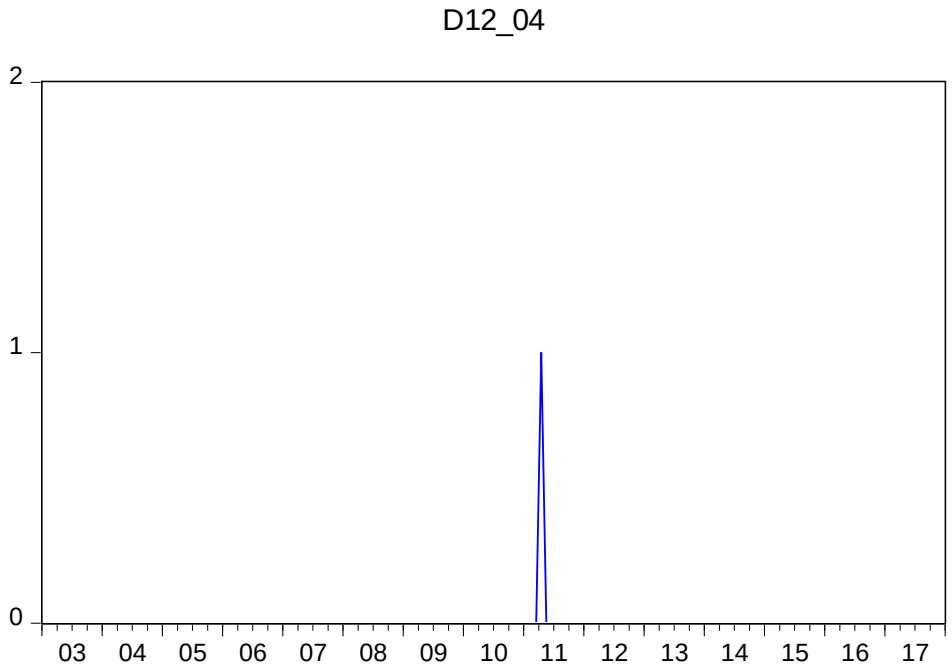

Figure 10.4.6 Dummy to study D12_04 situation

Source: Yahoo Finance, Own Elaboration, Eviews

Dependent Variable: PG
Method: Least Squares
Date: 04/18/18 Time: 20:46
Sample (adjusted): 2003M02 2017M12
Included observations: 179 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.424638	0.556039	-0.763685	0.4461
PFTSE_MIB	0.060348	0.097600	0.618324	0.5372
D12_05	29.08375	7.535266	3.859685	0.0002

R-squared	0.078040	Mean dependent var	-0.282237
Adjusted R-squared	0.067563	S.D. dependent var	7.674457
S.E. of regression	7.410669	Akaike info criterion	6.860336
Sum squared resid	9665.571	Schwarz criterion	6.913756
Log likelihood	-611.0001	Hannan-Quinn criter.	6.881998
F-statistic	7.448793	Durbin-Watson stat	2.048903
Prob(F-statistic)	0.000785		

Figure 10.4.7 To study Generali D12_05 situation

Source: Yahoo Finance, Own Elaboration, Eviews

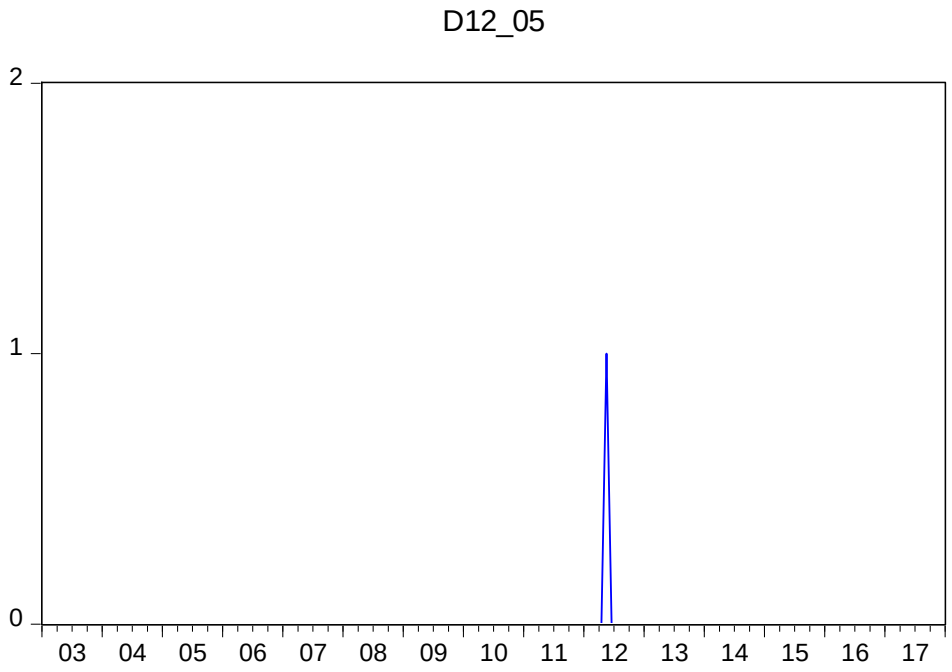

Figure 10.4.8 Dummy to study D12_05 situation

Source: Yahoo Finance, Own Elaboration, Eviews