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Financial corporations' performances and corruption indices around Europe 1996–2008

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Abstract: This paper is devoted to the increasingly relevant issue of corruption. Financial and economic literature has progressively focused its attention on the impact of corruption on the financial performances of listed companies, highlighting the existence of a negative relation between a Corruption Perception Index (CPI) and companies' financial performances. Taking into account the performances of 311 intermediaries of the financial sector of 17 countries belonging to both the Euro and the non-Euro area and listed without any interruption since 1996–2008, the analysis confirms that corruption affects corporations' total investment returns.

Keywords: corruption; banks; insurance; financial companies; financial performance; Euro and non-Euro area; panel regression analysis; economics and finance.

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and international levels. Her main research interests are corporate governance, corporate finance, law and finance and law and economics, political connections and corruption.

¹ **Introduction and related literature¹**

National and international institutional and monetary authorities have progressively devoted an increasing attention to the issues of bribery and corruption. Their targets consist in developing a well-conceived institutional framework to fight corruption, bribes and money-laundering activities. Economic and financial literature (Arnone and Iliopoulos, 2005) has clearly highlighted how the social costs of corruption negatively affect not only the rate of economic growth, because of a systematic *rent-seeking* activity in the resources allocation (Murphy et al., 1991), but also represents an unfair and no more sustainable burden for the whole society (Tanzi and Davoodi, 2002).

More specifically, corruption, like a hydra, envelops civil societies, economical activities and may effectively jeopardise the main economic and financial indices showing the development of countries and corporations. Arnone and Iliopoulos (2005) clearly demonstrated how a low level of corruption supports different features of economic development ranging from a higher rate of birth of new corporations to a significantly lower weight average cost of capital for listed and unlisted corporations. Moreover, the two authors detect a negative and statistically significant correlation between countries' level of corruption and a degree of corporations' competitiveness. In a similar way, corruption negatively affects all the indicators that are generally used to measure the degree of human development and civil rights, like the levels of education or different countries' life expectancy.

For all these reasons, the above-mentioned national and transnational authorities and the single countries governments have progressively focused their attention and their efforts in a tough fight against corruption without any residual tolerance. The timing of this anti-corruption crusade does partially coincide with the beginning of the global economic and financial turmoil lasting since 2007. This unlucky coincidence has partially relaxed the average corporate standards and requirements about the issue of corruption.² Moreover, a feasible measure of the level corruption that features a specific country is not easy to identify. For these reasons, economic and social literature generally adopts the CPI that measures a sentiment about the perceived level of corruption of a specific country. The empirical evidences about the CPI (Coffee, 2001)³ suggest extremely relevant differences within Europe.

For example, over a long period of time between 1995 and 2011, the average CPI level within the European countries belonging to the Euro area fluctuates between a minimum value of 4.15 for Greece and a maximum value of 9.50 for Finland.⁴ Previous studies (Bellavite Pellegrini, 2008; Bellavite Pellegrini et al., 2011), extending the results of the Fama and French three-factor model of asset pricing, have focused their attention on the impact of control variables, like productivity or macrogovernance variables, on the financial performances of listed industrial companies. The first study takes into examination all the 1058 industrial companies, which have been listed without any interruption since 1996–2006 in all the countries of the euro zone. This sample represents, on average, 55% of the market capitalisation. The research detects a positive

relation between these control variables and the corporations' financial performances with statistical significance, but little by size coefficients. The second study (Bellavite Pellegrini et al., 2011) extends and confirms the previous results to 5213 industrial listed corporations of 22 European countries, belonging to both Euro and non-Euro areas. This second sample takes into consideration a balanced panel of firms, composed by corporations listed without any interruptions and by other corporations listed only for some years in the above-described period of time. Moreover, Bellavite Pellegrini and Pellegrini (2013) described the impact of corruption on the above-mentioned sample of listed industrial European corporations, highlighting the existence of a negative relation between the index and the financial performances of listed companies.

This paper tries to further extend the previous empirical analyses examining the impact of corruption on the financial performances of the financial sectors' corporations, which have been not taken into consideration by the previous studies. The study is organised as follows: Section 2 presents the data and the related descriptive statistics; meanwhile, Section 3 implements the empirical model that has been utilised to discover the relevance of corruption on the above-mentioned financial performances. Section 4 is devoted to the analysis of the estimation results and it will be followed by a concluding section highlighting some further remarks and some reflections for future paths of research.

² **Data**⁵

The sample is composed by 311 financial intermediaries of 17 European countries⁶ belonging to both the Euro and the non-Euro areas in the period between 1996 and 2008. More specifically, the sample is composed by 147 banks, 39 insurance companies and 125 financial companies. The composition of the sample is highlighted in Table 1.

Table 1 Details about the sample's composition

<i>Country/Typology</i>	<i>Banks</i>	<i>Insurance companies</i>	<i>Financial companies</i>
<i>Euro area</i>			
Austria	5	1	2
Belgium	2	1	9
Finland	2	1	3
France	12	2	27
Germany	5	9	22
Greece	9	0	2
Ireland	2	2	1
Italy	13	6	7
Luxembourg	1	0	6
Netherlands	0	2	3
Portugal	4	0	2
Spain	7	1	1

Table 1 Details about the sample's composition (continued)

<i>Country/Typology</i>	<i>Banks</i>	<i>Insurance companies</i>	<i>Financial companies</i>
<i>Non Euro area</i>			
Czech Republic	6	1	0
Denmark	52	7	7
Hungary	2	0	1
Poland	9	0	0
Sweden	16	6	32
<i>Total Euro area</i>	<i>62</i>	<i>25</i>	<i>85</i>
<i>Total non Euro area</i>	<i>85</i>	<i>14</i>	<i>40</i>
Total sample	147	39	125

Source: Authors' elaboration on Eurostat data

As it is possible to detect from Table 1, the sample is composed by 172 financial intermediaries belonging to the Euro area, 62 of them are banks, meanwhile insurance companies and financial institutions represent, respectively, 25 and 85 units. The remaining 139 institutions, belonging to five countries that did not join euro, are divided in the following way: 85 banks, 14 insurance companies and 40 financial institutions.

We provide some macroeconomics and financial statistical evidences of the sample. During the analysed years, the countries of the sample were characterised by the following relative dynamic of Gross Domestic Product (GDP). In Table 2, we show the evidence of the relative weight of single countries' GDP, in percentage of the GDP of the total sample. For this reason, gains and losses of each country's GDP necessarily imply other balances of the same sizes for other countries of the sample.

Table 2 shows a stable relative weight of GDP for France, Belgium, Austria and Denmark, compared with the GDP of other analysed countries; on the contrary, Spain, Czech Republic, Hungary and Poland register a relevant growth of their ratio, although, excluding Spain, they do remain quite tiny in absolute value. On the other hand, Germany registered a significant decrease in its weight in the total European GDP, suggesting in this way that German economy is more likely to have shifted its production towards other non-European areas. In Table 3, we consider the relative weight of market capitalisation with the same methodology described earlier.

The analysis of Table 3 shows that the relative weight of the market capitalisation of Sweden, Netherlands and Germany registered a significant reduction, meanwhile Polish, Spanish and French capital markets experienced a clear increase in their relative weight, all the remaining countries showing a stable weight in their market capitalisation.

With specific regard to the capitalisation, the listed financial companies of Euro area belonging to our sample, on average, represent 15.36% of the total capitalisation of this area.⁷ This evidence is implicitly confirmed by other previous researches (Bellavite Pellegrini, 2008). More specifically, the ratio between the samples and the market capitalisation⁸ for each single year of the Euro area is described in Table 4.

The ratio between sample and market total capitalisation ranges from a minimum of 12.03% in 1996 and a maximum of 18.12% in 2005. In Table 5, we provide a descriptive statistics of the weight of the corporations listed in each single country in comparison with the total sample.

Table 2 Relative weight of national GDP (in percentage on the total)

<i>Country</i>	<i>1996</i>	<i>1997</i>	<i>1998</i>	<i>1999</i>	<i>2000</i>	<i>2001</i>	<i>2002</i>	<i>203</i>	<i>2004</i>	<i>2005</i>	<i>2006</i>	<i>2007</i>	<i>2008</i>	<i>Mean</i>
<i>Euro area</i>														
Austria	2.92	2.83	2.82	2.82	2.79	2.75	2.73	2.72	2.72	2.73	2.73	2.74	2.75	2.77
Belgium	3.43	3.40	3.38	3.39	3.38	3.33	3.33	3.33	3.37	3.37	3.37	3.35	3.37	3.37
Finland	1.60	1.67	1.72	1.73	1.77	1.79	1.78	1.76	1.76	1.75	1.75	1.80	1.80	1.74
France	19.56	19.33	19.45	19.37	19.29	19.19	19.12	19.17	19.16	19.11	18.98	18.85	18.78	19.18
Germany	30.32	29.33	28.84	28.35	27.44	26.98	26.42	25.92	25.42	24.74	24.43	24.26	24.04	26.65
Greece	1.73	1.85	1.81	1.87	1.85	1.88	1.94	2.08	2.14	2.15	2.20	2.23	2.27	2.00
Ireland	0.92	1.11	1.17	1.29	1.42	1.51	1.62	1.70	1.74	1.81	1.88	1.89	1.74	1.52
Italy	15.75	16.30	16.21	16.07	16.06	16.12	16.13	16.20	16.18	15.97	15.76	15.53	15.30	15.97
Luxembourg	0.26	0.25	0.26	0.28	0.29	0.29	0.30	0.31	0.32	0.34	0.36	0.37	0.36	0.31
Netherlands	5.20	5.25	5.33	5.47	5.60	5.75	5.76	5.76	5.69	5.71	5.70	5.71	5.78	5.59
Portugal	1.51	1.57	1.63	1.68	1.71	1.73	1.74	1.73	1.73	1.72	1.70	1.69	1.67	1.68
Spain	7.74	7.79	7.96	8.22	8.44	8.73	9.04	9.45	9.74	10.11	10.40	10.52	10.57	9.13
<i>Non Euro area</i>														
Czech Republic	0.81	0.81	0.85	0.83	0.85	0.92	1.03	1.02	1.06	1.16	1.25	1.32	1.50	1.03
Denmark	2.29	2.32	2.30	2.31	2.33	2.30	2.29	2.28	2.28	2.31	2.31	2.27	2.28	2.30
Hungary	0.57	0.63	0.63	0.64	0.67	0.76	0.87	0.89	0.95	0.99	0.95	0.99	1.03	0.81
Poland	1.95	2.14	2.27	2.23	2.49	2.72	2.60	2.31	2.36	2.72	2.87	3.11	3.53	2.56
Sweden	3.44	3.44	3.37	3.44	3.60	3.26	3.30	3.37	3.38	3.32	3.36	3.38	3.24	3.38
Euro area	90.94	90.66	90.58	90.55	90.06	90.04	89.90	90.13	89.97	89.51	89.26	88.93	88.42	89.92
Non Euro area	9.06	9.34	9.42	9.45	9.94	9.96	10.10	9.87	10.03	10.49	10.74	11.07	11.58	10.08
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Source: Authors' elaboration on Eurostat data

Table 3 Relative weight of the market capitalisation of each national stock exchange (%)

<i>Country</i>	<i>1996</i>	<i>1997</i>	<i>1998</i>	<i>1999</i>	<i>2000</i>	<i>2001</i>	<i>2002</i>	<i>203</i>	<i>2004</i>	<i>2005</i>	<i>2006</i>	<i>2007</i>	<i>2008</i>	<i>Mean</i>
<i>Euro area</i>														
Austria	1.20	1.05	0.72	0.53	0.51	0.52	0.84	1.01	1.31	1.76	1.98	1.97	1.28	1.13
Belgium	4.24	4.01	5.16	2.96	3.09	3.54	3.34	3.19	4.15	4.08	4.11	3.33	2.96	3.70
Finland	2.23	2.15	3.24	5.60	4.97	4.07	3.64	3.13	2.79	2.96	2.75	3.18	2.72	3.34
France	20.92	19.76	20.81	23.64	24.46	25.08	25.35	24.95	23.68	24.85	25.17	23.86	26.34	23.76
Germany	23.75	24.18	22.96	22.94	21.48	22.88	18.12	19.86	18.14	17.26	16.98	18.13	19.55	20.48
Greece	0.86	1.00	1.68	3.27	1.87	1.85	1.80	1.97	1.90	2.05	2.16	2.28	1.60	1.87
Ireland	1.23	1.45	1.40	1.10	1.38	1.61	1.58	1.57	1.73	1.61	1.69	1.24	0.87	1.42
Italy	9.14	10.10	11.96	11.67	12.99	11.26	12.60	11.31	11.99	11.28	10.64	9.23	9.19	11.03
Luxembourg	1.16	0.99	0.74	0.58	0.58	0.51	0.65	0.69	0.76	0.72	0.82	1.43	1.17	0.83
Netherlands	13.40	13.74	12.66	11.14	10.83	9.78	10.53	8.99	8.18	8.38	8.08	8.23	6.85	10.06
Portugal	0.87	1.14	1.32	1.07	1.03	0.99	1.12	1.07	1.07	0.95	1.08	1.14	1.21	1.08
Spain	8.59	8.51	8.44	6.92	8.53	10.00	12.19	13.36	14.29	13.56	13.71	15.50	16.70	11.56

Table 3 Relative weight of the market capitalisation of each national stock exchange (%)
(continued)

Country	1996	1997	1998	1999	2000	2001	2002	203	2004	2005	2006	2007	2008	Mean
<i>Non Euro area</i>														
Czech Republic	0.64	0.37	0.25	0.19	0.19	0.20	0.42	0.33	0.47	0.54	0.50	0.63	0.86	0.43
Denmark	2.54	2.75	2.08	1.69	1.82	1.89	2.01	2.24	2.30	2.52	2.39	2.39	2.32	2.23
Hungary	0.19	0.44	0.29	0.26	0.20	0.22	0.34	0.31	0.44	0.46	0.43	0.41	0.33	0.33
Poland	0.30	0.36	0.43	0.47	0.53	0.56	0.75	0.68	1.08	1.33	1.54	1.78	1.59	0.88
Sweden	8.75	7.99	5.85	5.98	5.55	5.05	4.70	5.33	5.72	5.71	5.94	5.27	4.46	5.87
Euro area	87.59	88.09	91.10	91.41	91.71	92.09	91.77	91.11	89.99	89.45	89.18	89.51	90.44	90.26
Non Euro area	12.41	11.91	8.90	8.59	8.29	7.91	8.23	8.89	10.01	10.55	10.82	10.49	9.56	9.74
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Source: Authors' elaboration on Eurostat data

Table 4 Descriptive statistics of market capitalisation by year (euro)

Years	Total market capitalisation	Sample's capitalisation	Ratio between sample and total market capitalisation (%)
1996	2,208,616,567,345.64	265,772,682,000	12.03
1997	3,028,047,122,590.64	449,037,155,000	14.83
1998	4,388,509,941,188.14	668,347,377,000	15.23
1999	6,052,905,744,432.98	904,642,674,000	14.95
2000	6,169,084,502,357.19	1,064,305,924,000	17.25
2001	5,532,543,083,886.54	858,430,529,000	15.52
2002	3,861,363,237,655.59	553,152,210,000	14.33
2003	4,731,876,414,080.58	689,584,022,000	14.57
2004	5,412,189,716,327.41	789,591,058,000	14.59
2005	5,846,289,814,348.47	1,059,288,159,000	18.12
2006	7,545,241,460,198.66	1,326,848,212,000	17.58
2007	8,600,921,281,702.15	1,271,737,254,000	14.79
2008	3,596,296,628,261.54	570,831,167,000	15.87

Source: Authors' elaboration on Eurostat data

Capitalisation of financial intermediaries belonging to Euro countries counts for almost 90% of our sample and among them the weight of Germany, France, Italy and Spain is approximately two-thirds. The remaining percentage is substantially represented by Sweden and Denmark. Moreover, if we split the sample in three different subsamples featured by the different typologies of financial intermediaries, which compose our database, we have the following evidence highlighted in Table 6.

On average, banks represent 56.26% of the capitalisation of our sample, insurance companies 36.83% and the residual 6.92% being represented by financial companies. The three above-described subsamples do represent, respectively, 8.49, 5.77 and only 1.10% of the market capitalisation.

Table 5 Market capitalisation of financial intermediaries by country

<i>Country</i>	<i>Weight of average single country capitalisation (%)</i>
Austria	0.48
Belgium	6.56
Finland	0.79
France	15.47
Germany	19.74
Greece	3.41
Ireland	2.98
Italy	13.36
Luxembourg	0.22
Netherlands	9.89
Portugal	1.63
Spain	14.10
<i>Total of euro belonging countries</i>	<i>88.62</i>
Czech Republic	0.38
Denmark	2.60
Hungary	0.46
Poland	0.34
Sweden	7.61
<i>Total of not euro belonging countries</i>	<i>11.38</i>

Source: Authors' elaboration on Eurostat data

For each corporation belonging to the above-described sample, we obtained the following variables that have been successively utilised for the empirical analysis. All the data have been obtained by Thompson DataStream. The annual total investment return is our dependent variable and represents the annual return index of a public traded company. It sums up both the capital gain and the loss of the stock over the time and any cash distribution, like any form of dividends, assuming that they are completely reinvested in issuers' stocks. With regard to the independent variables, we use the following ones:

- market capitalisation
- market risk premium
- leverage
- price volatility
- CPI
- operating profit margin.

Market capitalisation expresses the current market value at the end of each single year of the outstanding ordinary shares. We take into analysis only *one share-one vote* equity and the market capitalisation is expressed as a natural logarithm to improve the fit of the model. Market risk premium represents the main financial indicator for predicting

ordinary shares returns, both in the classical formulation of the Capital Asset Pricing Model (Sharpe, 1964) and in the more recent Fama and French model of asset pricing (Fama and French, 1992). The market risk premium is calculated as the difference between the return of market portfolio and the interest of a risk-free asset. Because of the difficulty to find an index for the European stock exchange till 2000, the market risk premium for the years 1996 till 1999 has been calculated for each year as the difference between the return on any single country market portfolio and the 10 years governmental bonds return of each specific country. For the following period, since 2000 to the end of our analysis, this difference has been weighted by the mean between the relative weight of the national GDP and the national stock exchange market capitalisation. The leverage has been calculated as the ratio between the current value of the total debt and the current value of the total capital and represents a good proxy of the corporations' financial risk (Penman et al., 2007). Price volatility represents the measure of a stock average annual price movement to a high and a low from an average annual price for each single year. It is a key variable used in the literature to explain stocks' returns (Duffee, 1995). With relation to CPI, as it has been described in the introduction, low scores do represent a high level of corruption, meanwhile high scores mean a very low level or the absolute absence of corruption. The operating profit margin represents an accounting variable of the profitability of the corporations.

Table 6 Average weight of market capitalisation for each single subsample

<i>Years</i>	<i>Banks (%)</i>	<i>Insurance companies (%)</i>	<i>Financial companies (%)</i>
1996	48.23	43.23	8.55
1997	49.87	43.19	6.95
1998	45.75	48.47	5.79
1999	47.97	45.75	6.28
2000	46.34	48.09	5.57
2001	50.67	42.81	6.52
2002	52.97	34.20	12.83
2003	61.75	32.36	5.99
2004	62.10	31.65	6.25
2005	61.53	31.96	6.51
2006	63.23	30.06	6.71
2007	64.75	28.19	7.07
2008	60.87	30.35	8.78
<i>Mean</i>	56.26	36.83	6.92
Relative weight of average market capitalisation (over total market capitalisation)	8.49	5.77	1.10

Source: Authors' elaboration on Eurostat data

3 Empirical model and estimation results⁹

With the above-mentioned variables, as they have been described in Section 2, we implement the subsequent empirical models. Meanwhile, the first empirical model will take into consideration the whole sample, whereas successive other models will examine progressively more specifically determined subsamples of the different financial institutions that compose our analysis.

$$\begin{aligned}(\text{Totalinvreturn})_i = & \beta_0 + \beta_1(\text{Cpi}) + \beta_2(\text{Longtermdebt})_i + \beta_3 \log(\text{MarketCap})_i \\ & + \beta_4(\text{Marketriskpremium})_i + \beta_5(\text{Pricevolatility})_i \\ & + \beta_6(\text{Operatingprofitmargin})_i + \beta_7 \text{ dummy years} + \varepsilon_i.\end{aligned}$$

The result of the regression on the whole sample shown in Table 7, puts in evidence a discrete explained variance because of the overall statistical significance of the different independent variables. More specifically, market capitalisation, market risk premium and price volatility show, respectively, the positive coefficients of 1.20, 62.78 and 0.61 and they are all statistically significant. The positive sign of these coefficients is widely predicted by asset-pricing literature. The same evidence is provided for the operating profit margin, but this last coefficient shows a very little and not statistically significant coefficient. The coefficient of the ratio between the current value of long-term debt and total capital is negative and very little, but with a high level of statistical significance. A particularly high level of leverage affects negatively the total return of investment of financial institutions as well. Notwithstanding these promising results, the coefficient of CPI is positive and quite low, but it is not statistically significant. This variable is not likely to affect the total investment return. For some extent, it is easily detectable a mismatching between CPI, which is built up on a national sentiment basis, and the sample that is partially composed by some highly interconnected financial institutions. More interconnected financial institutions are more likely to weaken the statistical power of the index of CPI, being built on national basis. For the above-mentioned reasons, to isolate the impact of the most interconnected financial institutions, we propose a second regression in which we have eliminated from our sample financial intermediaries belonging to the first decile of capitalisation. In this way, we try to leave out of consideration the most interconnected corporations without losing any meaningful power of explanation.

Table 8 highlights the results. This second regression shows a substantial similar level of explained variance and analogous evidences and signs of the coefficients about the previous described variables of leverage, market capitalisation, market risk premium and price volatility. At the same time, the operating profit is extremely tiny and not statistically significant. However, this additional regression shows a level of CPI featured by a definitely higher positive coefficient that is statistically significant, although at the 10% level. The existence of a positive coefficient underlines the deeply rooted idea in the literature that lower levels of corruption are consistent with higher equity returns. This evidence is further confirmed in a successive regression of Table 9 in which we divide our sample in four quartiles and in which we take into consideration the first three, again eliminating the last one, composed by the highest-level capitalisation's corporations. In this additional regression, we try to supply more homogeneity to the two sets of observations.

Table 7 Regression on the whole sample of European financial intermediaries 1996–2008^a

<i>Variables</i>	<i>Coefficients</i>	<i>Std. Err.</i>
CPI index	0.231	0.531
Ratio long term debt to total capital	-0.063***	0.012
Log market capitalisation	1.206***	0.412
Market risk premium	62.78***	8.385
Price volatility	0.615***	0.142
Operating profit margin	0.002	0.005
'Year' dummies		Yes
Constant	-24.826***	7.381
Observations	2414	
R^2	0.196	
F test	37.45	

^aOn a logarithmic scale; * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table 8 Regression on the sample of European financial intermediaries with the exclusion of the highest decile of capitalisation 1996–2008^a

<i>Variables</i>	<i>Coefficients</i>	<i>Std. Err.</i>
CPI index	0.961*	0.585
Ratio long term debt to total capital	-0.631***	0.128
Log market capitalisation	1.872***	0.556
Market risk premium	60.310***	9.249
Price volatility	0.694***	0.157
Operating profit margin	0.001	0.004
'Year' dummies		Yes
Constant	-38.732***	10.114
Observations	2115	
R^2	0.173	
F test	29.31	

^aOn a logarithmic scale; * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

This regression confirms all the previously described results, notwithstanding a lower degree of explained variance, but in this last case, CPI shows a positive definitely bigger coefficient and is completely statistically significant. This evidence supports the idea that there is a positive relation between a minor level of CPI and a higher return of equity. Finally, if we divide our sample in two subsamples representing each of them the half of the overall capitalisation, we find the following results highlighted in Table 10.

The synoptic analysis of the two above-represented regressions clearly underlines that CPI shows higher size of the coefficient and statistical significance mainly in the financial institutions featured by a lower degree of capitalisation. Companies belonging to the upper capitalisation sample are more likely to be more internationally connected and therefore to register a methodological mismatching in relation with the building up of

the CPI.¹⁰ Among the other coefficients, there are not any relevant results, with the exception that in the lower capitalisation sample the coefficient of the ratio between long-term debt and capital is tiny and not statistically significant. If we take into consideration only the banks, we achieve the following results highlighted in Table 11.

Table 9 Regression on the sample of European financial intermediaries with the exclusion of the first quartile of capitalisation 1996–2008^a

<i>Variables</i>	<i>Coefficients</i>	<i>Std. Err.</i>
CPI index	1.44**	0.709
Ratio long term debt to total capital	−0.055***	0.013
Log market capitalisation	2.769***	0.748
Market risk premium	46.40***	9.480
Price volatility	0.737***	0.187
Operating profit margin	0.001	0.004
‘Year’ dummies		Yes
Constant	−51.080***	13.60
Observations	1727	
R^2	0.138	
F test	19.20	

^aOn a logarithmic scale; * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table 10 Regression on the sample of European financial intermediaries divided in two subsamples according to the level of capitalisation 1996–2008^a

<i>Variables</i>	<i>Larger capitalisation financial intermediaries</i>		<i>Lower capitalisation financial intermediaries</i>	
	<i>Coefficients</i>	<i>Std. Err.</i>	<i>Coefficients</i>	<i>Std. Err.</i>
CPI index	−0.770	0.633	2.075*	1.165
Ratio long term debt to total capital	−0.058***	0.017	−0.035	0.050
Log market capitalisation	1.323**	0.640	4.46***	1.317
Market risk premium	74.378***	6.867	29.367**	14.935
Price volatility	0.451***	0.094	0.841***	0.160
Operating profit margin	0.013	0.017	0.001	0.004
‘Year’ dummies		Yes		Yes
Constant	−15.685	10.754	−72.270***	23.260
Observations	1323		1091	
R^2	0.381		0.097	
F test	40.15		6.87	

^aOn a logarithmic scale; * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

The focusing of our analysis specifically on banks allows us to achieve a definitely better explained variables, but interestingly only risk premium and price volatility show positive and statistically significant coefficients. The CPI coefficient is negative

and statistically significant at 10% level. Notwithstanding the only partial statistical significance of this result, it contradicts the previously described literature, because it suggests a positive correlation between level of corruption and equity. From this point of view, corruption should be considered as one among the many risks' factors and, therefore, returns should be adjusted by a corruption's risk factor. In another research (Bellavite Pellegrini and Pellegrini, 2013), we find partially similar results for European listed large stock companies belonging to the Euro area for which this coefficient is negative, but not fully statistically significant. If we further consider specifically the two remaining sectors, the CPI coefficient is not significant for insurance companies; meanwhile, for financial services,¹¹ it is positive and significant at a low level, but very close to the 10% degree.

Table 11 Regression on the sample of European banks 1996–2008^a

<i>Variables</i>	<i>Coefficients</i>	<i>Std. Err.</i>
CPI index	−0.882*	0.504
Ratio long term debt to total capital	−0.048	0.041
Log market capitalisation	0.596	0.385
Market risk premium	75.057***	13.554
Price volatility	0.473***	0.169
Operating profit margin	0.170	0.121
'Year' dummies		Yes
Constant	−4.459	6.493
Observations	1204	
R^2	0.341	
F test	21.66	

^aOn a logarithmic scale; * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

In Table 12, we split our data set in two samples composed by the financial intermediaries belonging to the Euro area and of one not belonging to the single currency area.

If we compare the two different areas, substantial differences emerge from several points of view. The two samples register a different degree of explained variance, being higher for the non-euro sample, probably because of the bigger homogeneity of this sample's observations. Euro area's corporations show a positive and significant coefficient for market capitalisation and price volatility, meanwhile the relation with the ratio between long-term debt and capital is negative and statistically fully significant. CPI coefficient is positive and of a significant size, but it is only significant at 10% level. Different evidences occurred for financial intermediaries belonging to the non-Euro area, in which just market risk premium and, surprisingly, operating profit margin are significant and positively related to equity return. In this area, the CPI is positive, quite little and not statistically significant.

Moreover, we have tried to divide our database in further subsamples of the different typologies of companies belonging to the two different currency areas. We have to notice that only in the subsamples of the financial services companies of the Euro area we find an extremely high and positive coefficient of the CPI with a fully statistical

significance at 1% level. Financial services companies in the Euro area are more likely to gain consistent benefits from a lower degree of corruption than other financial intermediaries.

Table 12 Regression on the sample of European financial companies according to the currency area 1996–2008^a

<i>Variables</i>	<i>Euro area</i>		<i>Non Euro area</i>	
	<i>Coefficients</i>	<i>Std. Err.</i>	<i>Coefficients</i>	<i>Std. Err.</i>
CPI index	1.357*	0.861	0.080	0.212
Ratio long term debt to total capital	−0.075***	0.013	−0.091	0.075
Log market capitalisation	1.430***	0.558	0.151	0.0874
Market risk premium	70.124	10.958	9.305***	2.017
Price volatility	0.518***	0.190	0.495	0.333
Operating profit margin	0.0007	0.004	0.0186***	0.007
‘Year’ dummies		Yes		Yes
Constant	−31.295***	9.677	−2.769	2.592
Observations	1668		746	
R^2	0.231		0.393	
F test	48.12		26.97	

^aOn a logarithmic scale; * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

4 Conclusions and discussions¹²

In this research, we have tried to measure the impact of a CPI on the financial performances of all the 311 financial intermediaries listed without any discontinuity in the period 1996–2008 in 17 European countries belonging to the Euro and non-Euro areas. These financial intermediaries, on average, represent approximately 15.36% of the capitalisation of the markets belonging to the euro area. This study develops previous research, enquiring the same issue about all the industrial corporations listed in the Euro area only during a similar period of time 1996–2006 (Bellavite Pellegrini and Pellegrini, 2013).

We find many coloured evidences. In a first instance, CPI is not likely to affect the performances of the European financial companies, but this result must be more properly enquired. CPI is in fact framed on a national basis of sentiment of perceived corruption; meanwhile, in our sample we have evidence of many globally widespread financial intermediaries. The existent discrepancy between the modalities of implementation of these two variables may provoke the partial inconsistency of these first results. For this reason, we decided to run a second regression in which we do not consider the first decile of capitalisation, which is supposed to be composed by the largest and, therefore, most interconnected financial intermediaries. In this way, CPI clearly improves its statistical significance, highlighting a positive coefficient. This means that a lower level of corruption positively affects equity returns.

The above-described result receives additional evidence if we progressively leave out of consideration the largest and supposedly most interconnected financial intermediaries. Successively, we analyse the sample composed only by banks. For this sample, the coefficient of the CPI is negative and with a statistical significance of some sort, highlighting a result that partially contradicts the existing literature, although it is partially consistent with other achieved outcomes related to the largest European listed industrial companies. If corruption is a factor of risk, banks are more likely to require a higher return as corruption increases and not decreases. Finally, we divide our sample belonging and not to the Euro zone. With specific relation with this point, we detect a 10% level statistical significance of the index of CPI only for the financial institutions belonging to the single currency area.

The setting up of a more properly defined supranational index of corruption to better understand in which way corruption affects the largest financial institutions may be a reasonable point for a future agenda of research.

References

- Arnone, M. and Iliopoulos, E. (2005) *La corruzione costa. Effetti economici, istituzionali e sociali*, Vita e Pensiero, Milano.
- Bellavite Pellegrini, C. (2008) *Modelli d'equilibrio e fondamentali d'impresa*, Carocci, Roma.
- Bellavite Pellegrini, C. and Pellegrini, L. (2013) 'The impact of corruption in shares' returns of euro-area listed industrial firms', in Arnone, M. and Borlini, L. (Eds.): *Corruption: Economic Analysis and Evolution of the International Law and Institutions*, Chapter 5, Edward Elgar, UK, pp.115–123.
- Bellavite Pellegrini, C., Romelli, D. and Sironi, E. (2011) 'The impact of governance and productivity on stock returns in European industrial companies', *Investment Management and Financial Innovations*, Vol. 8, No. 4, pp.22–30.
- Coffee, J. (2001) *Do Norms Matter? A Cross Country Examination of Private Benefits of Control*, Working Paper No. 183, School of Law, Columbia University.
- Duffee, G.R. (1995) 'Stocks returns and volatility: a firm level analysis', *Journal of Financial Economics*, Vol. 37, No. 3, pp.399–420.
- Fama, E. and French, K.R. (1992) 'The cross section of expected returns', *Journal of Financial Economics*, Vol. 2, October, pp.3–26.
- Murphy, K., Schleifer, A. and Vishny, R. (1991) 'The allocation of talent: implications for growth', *Quarterly Journal of Economics*, Vol. 106, pp.503–530.
- Penman, S.h., Richardson, S.A. and Tuna, A.I. (2007) 'The book to price effect in stock returns: accounting for leverage', *Journal of Accounting Research*, Vol. 45, No. 2, pp.427–467.
- Sharpe, A. (1964) 'Capital assets prices: a theory of market equilibrium under conditions of risks', *The Journal of Finance*, Vol. 29, No. 3, pp.425–442.
- Tanzi, V. and Davoodi, H. (2002) 'Corruption, growth and public finance', in Abed, G. and Gupta, S. (Eds.): *Governance, Corruption and Economic Performances*, IMF, Washington DC.

Notes

¹This section is written by Carlo Bellavite Pellegrini.

²By this regard, the Economist of 2 June, 2012 asserts:

“In a global fraud survey by Ernst & Young, 39% of businesses say corruption is common in countries where they operate. Corporate standards are more liable to slip when time are tough: 15% of surveyed firms think cash payments to win business can be justified if they help companies to survive an economic down turn, compared with 9% last year. Bribery would be less of a problem if it was not a solid investment. Bribery offered an average return of 10–11 times the bung paid out to win a contract, measured by the jump in stock market value when the contract was won.”

³CPI is, therefore, not the effective level of corruption, but people’s sentiment about it. The scores of CPI are included between 1 and 10. A low score of CPI means a high level of corruption and vice versa. A well-conceived framework of macrogovernance indices for Scandinavian countries is confirmed even by the financial literature (Coffee, 2001).

⁴In the above-mentioned period, the other European countries belonging to the Euro area report the following level of CPI: Austria 7.62, Belgium 6.75, Cyprus 5.80, France 6.63, Germany 7.70, Ireland 7.38, Italy 4.44, Luxembourg 8.37, Nederland 8.64, Portugal 6.09 and Spain 6.29. With specific regard to non-euro countries Denmark 9.28, Poland 4.24, Czech Republic 4.21, UK 8.01, Sweden 9.10 and Hungary 4.83.

⁵This section is written by Laura Pellegrini.

⁶Twelve of them do belong to the euro area, meanwhile the remaining five did not join euro.

⁷We do not have similar evidences about the weight of the average capitalisation of the remaining five countries.

⁸This evidence about total market capitalisation is connected with the capitalisation of the markets belonging to the sample. There are, therefore, some little discrepancies between the sample and the area of euro, because some countries, like Slovakia and Slovenia, although they do belong to the Euro area, do not belong to our sample.

⁹This section is written jointly by Carlo Bellavite Pellegrini and Laura Pellegrini.

¹⁰Taking into specific consideration the more interconnected companies, it should be theoretically possible to build up a weighted average CPI according to the different exposition in terms of assets of each single bank in different countries in which it is present. This argument does not belong to the target of this study.

¹¹We do not give full evidence of this regression because the explained variance is quite low.

¹²This section is written by Carlo Bellavite Pellegrini.