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Financial Analysis of European Energy Companies

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ABSTRACT

Energy union and climate stands as one of the priorities of the European commission, aiming at the provision of secure, environmentally friendly and affordable energy. European energy policy over the last two decades have reshaped energy markets challenging the profitability and viability of energy companies. The latter must prove flexible in their management, including diversification of their portfolio, proceeding on structural unbundling and extending their operations in new markets and regions. Scope of the paper is to assess the financial and liquidity performances of key European energy companies over the period 2008-2017. The focus of the analysis concerns liquidity, profitability, operational performance and capital structure. The analysis is carried out in key energy companies, selected to have an extended geographical representation. Results indicate that gas and oil companies have less risk compared to power companies, attributed mainly to debt exposure. The renewable sector, although underrepresented in the examined sample, implies potential for high profitability. The profitability of power companies is affected by the ownership of assets with low operating costs and by diversification of operations, including regulated network operations. Eastern European power companies are favored by the derogation of EU regulation, though provision of free emission allowances.

1. Introduction

Energy union and climate stands as one of the ten priorities of the European Commission over the period 2014-2019, aiming at the provision of secure, environmentally friendly and affordable energy. This priority came as a result of considerable changes in European energy policy over the last two decades. Energy policy aims at enhancing economic competitiveness of European energy companies and energy sector in general, considering the risks raising from natural resources' avail-

ability and climate change.

However, decision making in the energy sector is not an easy task, due to conflicting interests among national governments, companies and European institutions. Market structure reforms depend on the characteristics of each country, leading each member state to adopt a national energy policy^[1] within the European framework^[2]. Although there are some common elements in energy policy for each country, such as liberalization of energy markets, tackling climate change and energy security, the formation of the strategy of energy companies show high deviations,

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as some choose for radical changes, diversifying of portfolios and operations, while other might insist on conventional business that proved successful for many years in the past. Therefore, reforms take place in each country at different extent and timing^[3].

Liberalization of energy markets, structure reforms form vertical integration to ownership unbundling^[4] and other reforms have reshaped European energy markets, especially in the electricity and gas sectors^[5,6]. However, those changes have challenged the structural organization of energy companies^[7], as well as the profitability and viability of dominant energy companies. Energy companies need to be flexible to the radical changes in the new energy markets structure. Moreover, the rising of environmental awareness lead to decarbonization pathways for energy companies, accompanied with uncertain evolution of carbon pricing, that affects their profitability^[8,9,10]. Energy companies face risks for their operation, requiring sophisticated models for risk strategies^[11,12]. Therefore, the effects of those changes on the economic performance of key energy companies are essential to be studied. Scope of the paper is to assess the financial and liquidity performance, as well as the profitability of key European energy companies over the last decade, namely the period 2008-2017.

The paper is organized in the following way: In section 2 the key energy companies, selected for our analysis, as well as the macroeconomic environment are presented. Section 3 provides methodology adopting for assessing the financial performance of the examined energy companies, while section 4 provides the conclusions.

2. Energy Sector and Macroeconomic Environment

2.1 Energy Sector

This section provides the sample of the companies that have been selected to be examined, as well as the indicators selected for assessing their financial performance. The selected sample concerns key European energy companies, organized in three classifications to depict differences in the energy subsector that they operate, but as well as differences in their geographical location. The last category, namely Renewables, is represented by only one company. This is not attributed to the limited activity in this sector, as most energy utilities of the first category are also investing in renewables. However, complete available information of major companies, active only in renewables over the examined period, was limited to our knowledge. The analysis concerns the last decade, namely the period 2008-2017.

The examined energy companies used in the International Financial Standards (IFRS) for the provision of the financial statements, allowing the comparison of their economic performance. The only exception is Gazprom, adopting national accounting standards over the period 2008-2013. Moreover, three energy companies, NTR plc, Reykjavik Geothermal LTD and Natur Energi, that have initially classified in “Renewables” group, either used solely domestic language or even did not publish their financial statements for some years. On our request for the provision of those data by email, we did not get any response. This has led us to include only one energy company o the last group, leading to an underrepresentation of this category. However, the renewables sector is indirectly represented in the first group of “electricity” companies, as most of them are active in renewables investments. In our analysis, the under-representation of the last category led us to exclude it from the estimations of the total energy sector averages. For the analysis, we used annual reports, published at the energy companies’ websites. Moreover, supplementary material was used from Eurostat database^[13] and other reports. Table 1 shows the examined energy companies, which are classified in three groups: Electricity, Gas/Oil and Renewables.

Table 1. Examined Energy Companies Sample

Electricity		
	Company Name	Country
1	RWE	Germany
2	EON	Germany
3	EnBW	Germany
4	Engie	France
5	EDF	France
6	Enel	Italy
7	Iberdrola	Spain
8	Vattenfall	Sweden
9	SSE	United Kingdom
10	National Grid	United Kingdom
11	PGE	Poland
12	CEZ	Czech Republic
Gas/Oil		
	Company Name	Country
1	TOTAL	France
2	ENI	Italy
3	GAZPROM	Russia
4	STATOIL	Norway
5	OMV	Austria
6	REPSOL	Spain

7	Gas Natural	Spain
8	BP	United Kingdom
9	SHELL	United Kingdom
10	LUKOIL	Russia
11	PKN Orlen	Poland
12	MOL	Hungary
Renewables		
	Company Name	Country
1	EDP Renovaveis	Spain

2.2 Macroeconomic Environment

Europe faced several challenges over the last decade, affecting also the energy sector. The unstable macroeconomic environment, commenced in year 2008, together with sectoral factors, has created a “perfect storm” for the energy sector [14]. The unstable macro-economic environment is depicted by the evolution of the real GDP growth rate over the period 2008-2017 for the twenty eight European member states, shown in Figure 1. This macro environment affected strongly aggregate and disaggregate energy demand. The capitalization of energy companies has also been affected, as power, oil and gas companies lost more than 30% of their capitalization. The average share performance of 19 energy companies is shown in Figure 2. The performance of energy companies is also affected not only by macro-economic environment but by the portfolio of each company as well as the energy mix in each country.

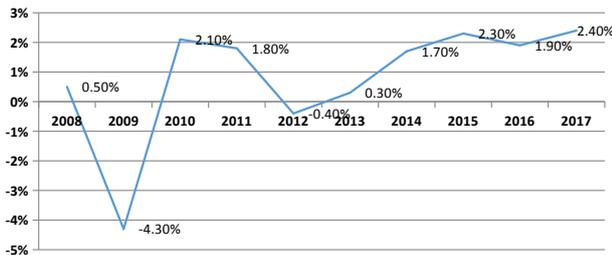


Figure 1. Real GDP Growth Rate % EU-28

Source: Eurostat [13]

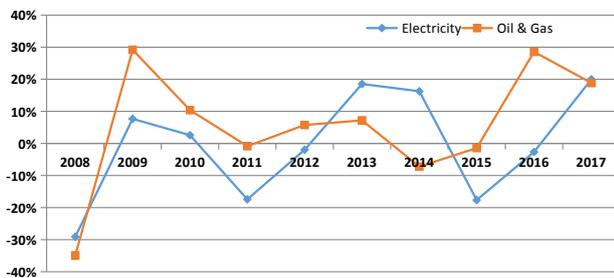


Figure 2. Average Share Performance 2008-2017

Source: Own calculations

3. Methodology - Financial Analysis

This section includes the methodology, as well as the results of the financial analysis. The analysis concerns four areas: profitability, operating performance, liquidity and debt/capital structure analysis.

3.1. Profitability Analysis

The profitability analysis, includes several indicators/ratios, providing evidence on the profits/losses of the company, such as Gross profit indicator:

$$\text{Gross Profit} = \frac{\text{Net Sales} - \text{Cost of Sales}}{\text{Sales(Net)}} \quad (1)$$

Figure 3 shows the average gross profit margin for the examined European energy companies. The high profitability of renewables is obvious, while gas/oil companies are slightly more profitable compared to power companies.

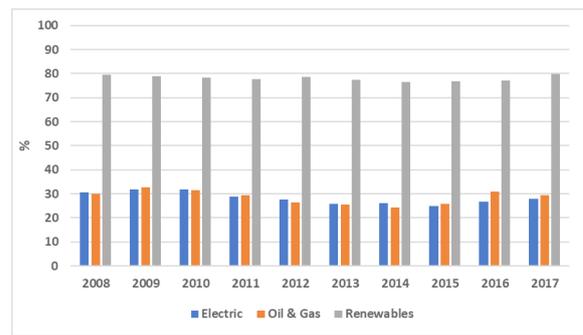


Figure 3. Evolution of the Gross Profit indicator (in %)

Source: Own calculations

Profitability is affected by several factors, including cost of sales. An import indicator is Operating profit margin indicator, estimated by the following formula, showing the profitability after all costs. Figure 4 shows the evolution of operating profit margin indicator for the three energy subsectors over the period 2008-2017.

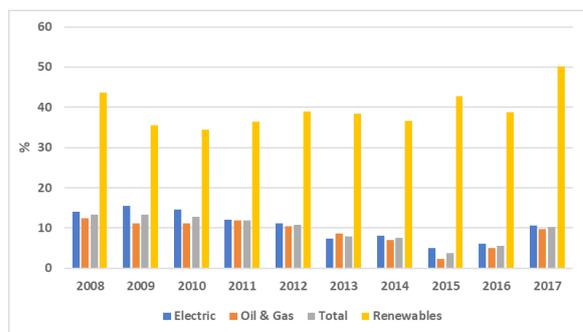


Figure 4. Evolution of the Operating Profit margin indicator (in %)

Source: Own calculations

Figure 4 shows that operating profit margin has been gradually decreasing over the examined period, for the oil/gas and power companies. Only in year 2017, this indicator is increased. The evolution of this indicator shows that gas/oil and power companies did not manage to adjust operating expenses, which is probably attributed to their inelastic nature. These expenses concern salaries, insurance costs, depreciation charges, administration costs, advertising and other expenses. The next step in our analysis is to consider the debt costs, which leads to the estimation of the pretax profit margin. Pretax profit margin indicator, as shown in the following formula. Figure 5 provides the evolution of the Pretax profit margin indicator for the aggregate energy subsectors.

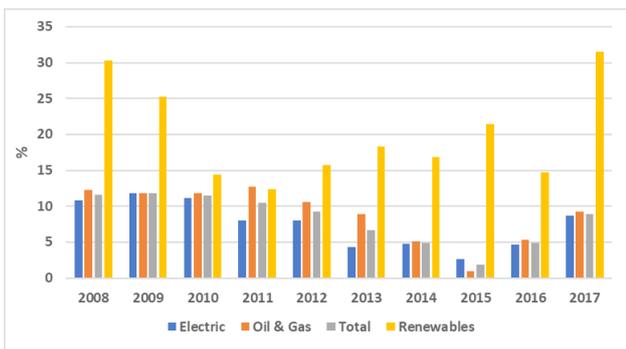


Figure 5. Evolution of the Pretax Profit Margin indicator (in %)

Source: Own calculations

Figure 6 shows that the financial performance of European energy companies is not good, as it even leads to net profit losses for some years i.e. 2015 and 2016. As noticed in previous indicators, a considerable change occurs in year 2017, leading to a 7% net profit margin on average for oil/gas and electricity companies. Electricity companies have a worse performance, attributed to the high competition, market reforms, evolution of renewables in the energy mix, as well as other factors, such as emission allowances. On the other hand, Renewables, provide exceptionally high net profits. However, this outcome is based on only one company, so we are reluctant to generalize that net profits margin of the renewables sector is more than 15% in Europe.

The following step of our analysis is the consideration of the taxation and the interest charges, which might deviate from country to country, leading to estimation of the Net profit margin indicator, as shown in the following formula:

$$\text{Net Profit Margin} = \frac{\text{Net Profit}}{\text{Sales(Net)}} \quad (4)$$

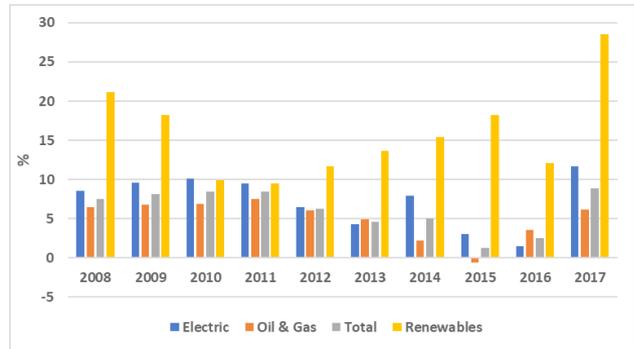


Figure 6. Evolution of the Net Profit Margin indicator (in %)

Source: Own calculations

The financial analysis is finalized with the estimation of two key financial indicators, namely Return on Assets (ROA) and Return on Equity (ROE). The first, provided by the following formula, shows the ratio of the net profits of the energy company to its total assets. On the other hand, ROE concerns the ratio of the net profits of a company to the shareholders' equity. The evolution of the ROA and ROE indicators for the aggregate subsectors are provided in Figures 7 and 8 respectively. For both indicators, negative returns occur in years 2015 and 2016, which is reversed in year 2017. ROE returns are higher than ROA returns, as expected, as this indicator concerns only equity holders.

$$\text{Return on Assets} = \frac{\text{Net Profit}}{\text{Total Assets}} \quad (5)$$

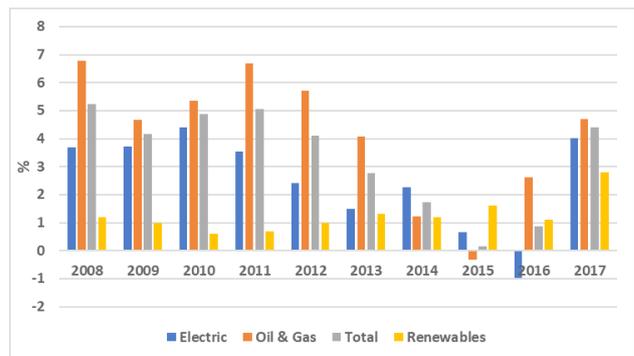


Figure 7. Evolution of the Return on Assets (ROA) indicator (in %)

Source: Own calculations

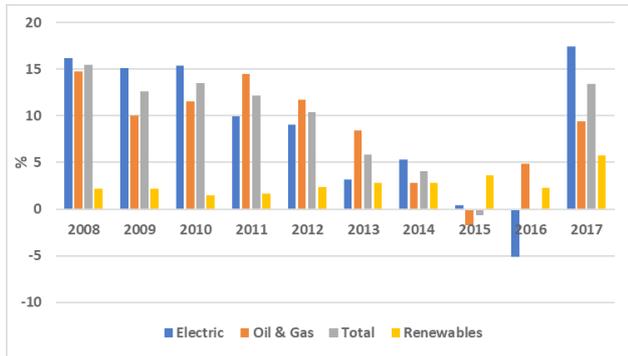


Figure 8. Evolution of the Return on Equity (ROE) indicator (in %)

Source: Own calculations

Although the equity returns are not very high, the estimated values are comparable and slightly higher than equity premiums from several European countries [15]. Therefore, the European energy sector remains an attractive opportunity, especially for investments on the renewables sector.

There exist power companies with vertical structure that own profitable assets in other operations or networks, which provide high revenues due to monopolistic nature or to the derogation from EU regulation, providing free emission allowances to several Eastern European countries. Such an example is the Polish PGE, which has exceptionally high financial income from dividends from subsidiaries, as well as interest income that is related mainly to bonds issued by subsidiaries and cash deposits. For example, in year 2017, PGE reported financial income of PLN 4594 million, compared to total sale revenues of PLN 9185 million. The financial income was mainly attributed to dividend income from the mining PGE GiEK S.A. (PLN 2,019 million) company and the PGE Dystrybucja S.A. (PLN 808 million) distribution company.

3.2. Liquidity Analysis

Liquidity analysis concerns the company’s capability to address its short-term liabilities, which is a crucial indicator for its operation. The Current ratio indicator divides the assets with liabilities of a company, as shown in the following formula. An acceptable value for this ratio is at the levels of 150%, to have some flexibility/tolerance on covering the liabilities. Figure 9 provides the evolution of the Current ratio indicator over the period 2008-2017 for the aggregate energy subsectors, showing that European energy companies do not manage to meet successfully this tolerance level.

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}} * 100 \quad (6)$$

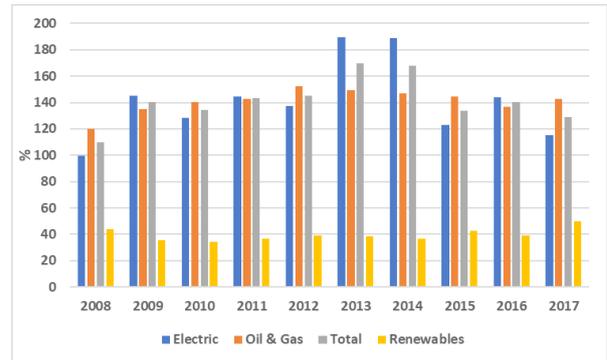


Figure 9. Evolution of the Current Ratio indicator (in %)

Source: Own calculations

Gas/oil companies are in better position, having adequate current assets at the level of 130% to meet their short-term liabilities, while electricity companies are at the levels of 100%, namely not having tolerance/flexibility for their liabilities. This might lead to short term debt, addressed usually by extra bank credit. This stands as one important factor, explaining the worse performance of electricity companies to oil/gas companies, as noted in the financial analysis section. The renewables sector, although it has exceptionally high net profits, it also has considerable needs for short-term credit, attributed mainly to incapability of gathering all needed cash flows for reimbursements high feed-in-tariffs.

Another liquidity indicator is the Quick ratio indicator, which excludes inventories from current assets, as they are not considered liquid current assets. Figure 10 provides the evolution of the Quick ratio indicator over the period 2008-2017 for the aggregate energy subsectors. The exclusion of inventories reveals that electricity companies’ liquid assets cannot meet current liabilities, while gas/oil companies marginally do.

$$\text{Quick Ratio} = \frac{\text{Current Assets} - \text{Inventories}}{\text{Current Liabilities}} \quad (7)$$

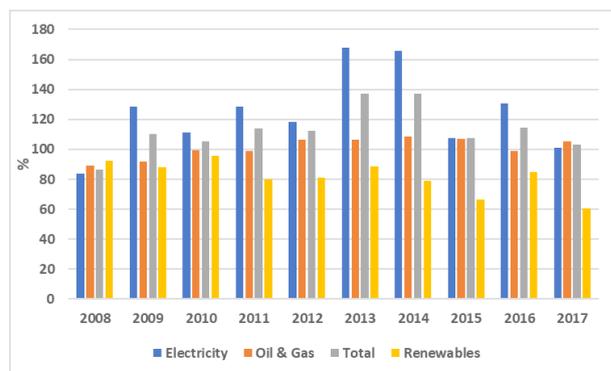


Figure 10. Evolution of the Quick Ratio indicator (in %)

Source: Own calculations

Finally, another liquidity indicator is the Cash ratio indicator, which divides the cash (and cash equivalents) with the liabilities is a company. that can immediately be paid using cash and cash equivalents. Figure 11 shows the evolution of the cash ratio indicator for the aggregate energy subsectors over the period 2008-2017.

$$\text{Cash Ratio} = \frac{\text{Cash and Cash Equivalents}}{\text{Current Liabilities}} \quad (8)$$

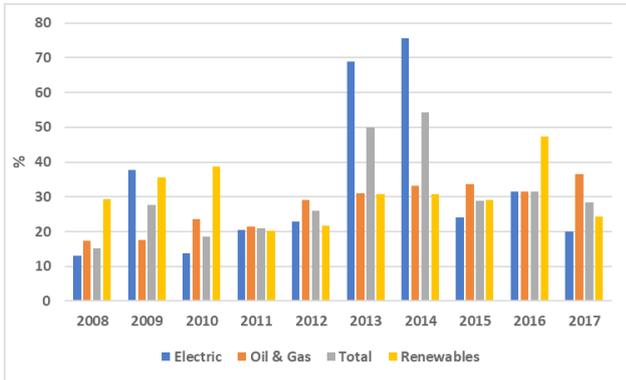


Figure 11. Evolution of the Cash Ratio indicator (in %)

Source: Own calculations

Figure 11 shows that electricity companies have cash reserves at the level of 15% of their current liabilities, while gas/oil companies, managed to increase their cash reserves at the level of 35%, which is satisfactory.

Another important liquidity indicator is the “Cash Conversion Cycle” indicator, estimated by the following formula as the sum of days required have cash from inventories and the days required have cash from trade sales, minus the days required have cash from trade payables receivables. If this indicator has small value financing needs are small. Figure 12 shows the evolution of the Cash Conversion Cycle indicator for the aggregate energy subsectors over the period 2008-2017, showing that electricity companies match payables with sales. This practically means that although facing liquidity problems, they schedule payments to meet their receivables timing. Gas/oil companies have cash conversion cycle at the levels of 35 days, which is steadily reduced. Renewables show very high fluctuations on this indicator, so therefore excluded from the analysis.

$$\text{Cash Conversion Cycle} = \text{Days Inventory Outstanding} + \text{Days Sales Outstanding} - \text{Days Payables Outstanding} \quad (9)$$

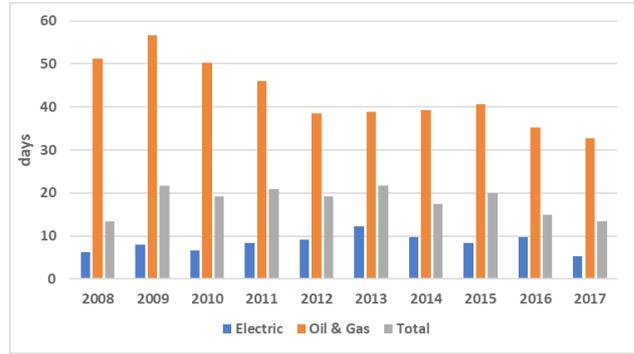


Figure 12. Evolution of the Cash Conversion Cycle indicator (in number of days)

Source: Own calculations

3.3. Debt-capital Structure Analysis

Debt-capital structure analysis considers both equity and debt towards financing decision making. There can be cases, such as perfect competition, where financing might not affect the market value of a company^[16]. However, the reality shows that perfect competition very rarely is evident. Therefore, both debt and equity should be considered. The difference among debt and equity lenders is that debt should be paid specific installments and time intervals while equity lenders’ payments are linked to the financial performance of the company. The risk that the equity lenders undertake, leads to requests for higher rates of return^[17] compared to the debt requests.

For our debt/capital structure analysis we consider three indicators: debt to equity indicator, capitalization ratio indicator and interest coverage ratio indicator. Debt to equity indicator is provided by the following formula. Figure 13 shows the evolution of the Debt to Equity ratio indicator for the aggregate energy subsectors over the period 2008-2017. Electricity companies show high dependence on debt, which leads to high interest payments, affecting their cash flows and their profitability. On the other hand, Gas/oil companies show similar performance with the Renewables sector.

$$\text{Debt to Equity} = \frac{\text{Debt}}{\text{Equity}} \quad (10)$$

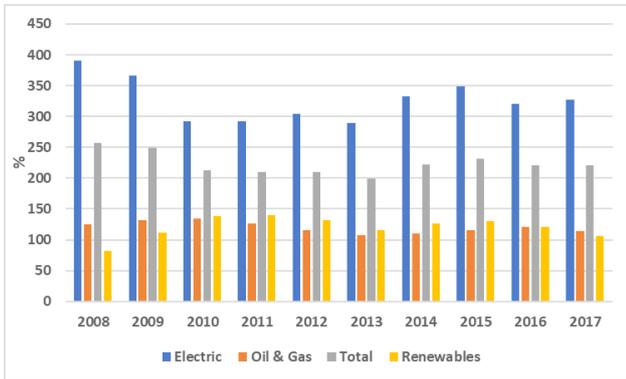


Figure 13. Evolution of the Debt to Equity ratio indicator (in %)

Source: Own calculations

The Capitalization ratio indicator, provided with the following formula, divides the total debt to the total assets. Figure 14 shows the evolution of the Capitalization ratio indicator for the aggregate energy subsectors over the period 2008-2017. The energy sector, being capital intensive, show high values at the level of 65% of capitalization ratio. Debt demands are considerably higher for the electricity companies.

$$\text{Capitalization Ratio} = \frac{\text{Total Debt}}{\text{Total Assets}} \quad (11)$$

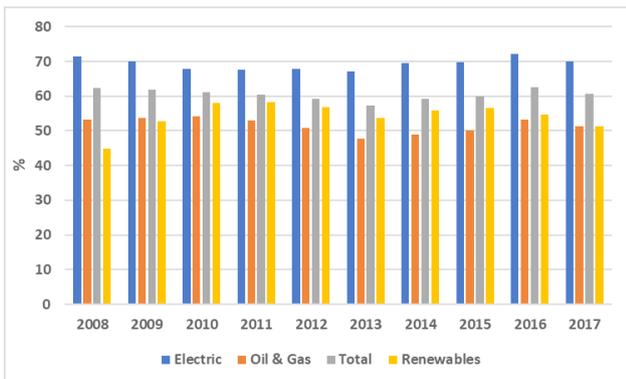


Figure 14. Evolution of the Capitalization ratio indicator (in %)

Source: Own calculations

The Interest coverage ratio indicator, provided with the following formula, divides the Earnings Before Interest and Taxes (EBIT) to the interest payments. Figure 15 shows the evolution of the Interest coverage ratio indicator for the aggregate energy subsectors over the period 2008-2017. There is decreasing trend on the evolution of this indicator, which is attributed to the decreasing EBIT trend rather than on the evolution of the interest payments, which remain almost stable for most companies. The estimated values are very low for the electricity companies,

at the level of 2 to 3 times, attributed to the high debt. On the other hand, Renewables sector shows high values for the Interest coverage ratio indicator, which is attributed to its high profitability.

$$\text{Interest Coverage} = \frac{\text{Earnings Before Interest and tax(EBIT)}}{\text{Interest Payments}} \quad (12)$$

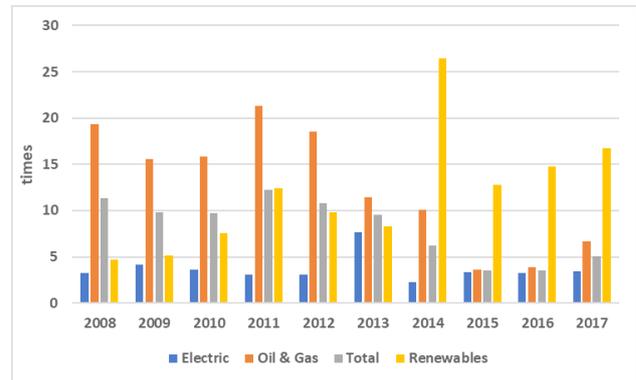


Figure 15. Evolution of the Interest coverage ratio indicator (in number of times)

Source: Own calculations

As a general conclusion from this analysis, electricity companies require substantial debt for supporting their operation, while gas/oil and renewables companies have adequate earning to cover their debt. However, leaving in an era with low interest rates, due to the relevant policy by the European Central Bank^[18], the interest burden is eliminated for European companies, including the electricity sector.

3.4. Operating Performance Analysis

The operating performance analysis considers three indicators: the Fixed Asset Turnover indicator, the Operating Cash Flow to Sales indicator and the Operating Cash Flow to Current Liabilities indicator. The Fixed Asset Turnover indicator, provided by the following formula, divides sales to the fixed asset of a company. Figure 16 provides the evolution of the Fixed Asset Turnover indicator, for the aggregate energy subsectors over the period 2008-2017. Energy companies show an average value of 1.2, concerning the ration of their sales to their fixed assets. Higher values than 1 are satisfactory, but the trend is clearly decreasing.

$$\text{Fixed Asset Turnover} = \frac{\text{Sales(Net)}}{\text{Fixed Assets}} \quad (13)$$

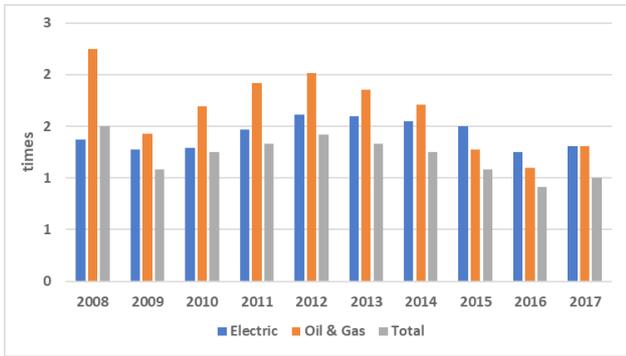


Figure 16. Evolution of the Fixed to Total Assets indicator (in times)

Source: Own calculations

Operational Cash Flow to Sales indicator is estimated by the division of Cash from Operating Activities to sales. Figure 17 provides the evolution of the Operational Cash Flow to Sales indicator, for the aggregate energy subsectors over the period 2008-2017. Gas/oil and electricity companies have similar values of this indicator, at the levels of 15%.

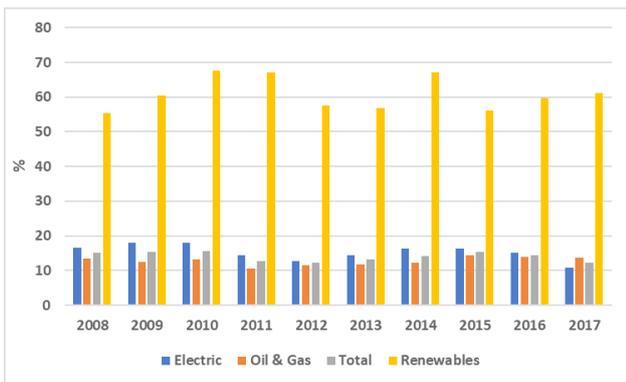


Figure 17. Evolution of the Operational Cash Flow to Sales indicator (in %)

Source: Own calculations

The Operational Cash Flow to Current Liabilities indicator, shows the capability of energy companies to meet their liabilities. Figure 18 provides the evolution of the Operational Cash Flow to Current Liabilities indicator, for the aggregate energy subsectors over the period 2008-2017. Contrary to the previous indicator, the two subsectors present significant differences. Gas/oil and electricity companies show different performance for this indicator, as electricity companies are below 30% while oil/gas companies are above 50%. Although electricity companies face high problem on meeting their liabilities, there is decreasing trend in both subsectors, implying a trend for increasing debt to meet short term liabilities. Renewables show high capability to meet their liabilities, although this indicator took values even at 30% in year 2009.

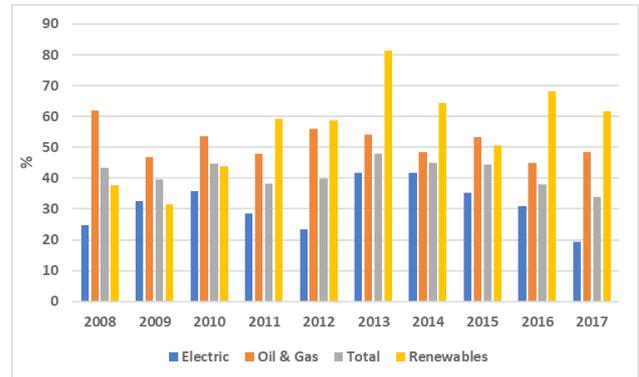


Figure 18. Evolution of the Operational Cash Flow to Current Liabilities indicator (%)

Source: Own calculations

3.5. Intra-sector Differences

This section aims at providing some evidence on the performance of the energy companies based on their country. The Gross profit margin indicator has been used to show the difference among countries, for the electricity and oil/gas sectors, as shown in Figures 19 and 20 respectively. Market structure and energy mix affect considerably the performance of companies. In France, where EDF has a dominant position, provided high gross profit margins, while in Germany the competition and the penetration of renewables create pressure on the viability of thermal plant owners. Concerning the gas/oil companies, Gazprom and Lukoil from Russia shows high profitability, however this is gradually decreasing to sectoral average. This can be attributed to crude oil price evolution and/or to enhanced competition domestically, i.e. from Novatek, as well as abroad from LNG suppliers. It should also be noted, that Gazprom had adopted domestic and not international accounting principles for the years of high profitability, which might affect the overall performance and comparison.

The profitability of companies is strongly related to the portfolios and the market position. EDF is having good financial performance compared to other Western European companies, attributed mainly to its dominant position in the French market, as well as its nuclear capacity with low operational costs. However, as the nuclear assets are close to their decommissioning, and the French domestic nuclear sector seem not be so competitive to the Russian, South Korean and Chinese reactors, the competitive financial performance of French companies are expected to be eliminated. Companies with regulated profitability, such as the National Grid in the UK, being the transmission system operator with regulated tariffs, are expected to continue to provide a

competitive margin in the future, without being affected by the rapid technological developments. Companies with increased share in renewables but as well as on low operational cost units such as hydroelectric and nuclear plants, such as the Spanish Iberdrola, showed higher net profit margin, at the level of 9.5% on average, compared to all other European power companies, except for Eastern European companies. Iberdrola has been also active in other regions, as also ENEL did. On the other hand, companies that operate on countries that have an ambitious renewables policy, such as the Energiewende in Germany, but as well have high dependence on fossil fuels, such as RWE and EON, showed even considerable profit losses such as in year 2016, which led to power assets selling for improving the balance sheet. The average net profit margin of several companies, such as RWE, EnBw, Engie, VATTENFALL and SSE are at the level of 0-3.5% on average, while EON has negative average net profitability over the examined period. Those companies did not extent their portfolio from the beginning of the reforms and do not own assets with very low operating costs, so as to have revenues in the very competitive wholesale markets. Market fundamentals created a bad environment for power producers in Europe, as the capacity availability, together with low demand growth, affected by the low European economic growth, have led to low wholesale prices. This led to companies, which have even invested in natural gas and renewables, such as Engie to show moderate financial performance. On the other hand, the Italian ENEL company, which has high diversification of operation in several countries and regions, as well as considerable investments in the renewables, have shown higher profitability at the level of 6% on average. Eastern European countries show comparable gross profit margin to other European countries, besides France. However, their net profit margin is much higher than that of Western European countries, as at the level of 20% on average, while for rest European power companies it is lower than 10% on average and even negative for some years. This net profitability is attributed to favorable regulatory conditions, such as the derogation from the Article 10c of the EU ETS Directive which allows them to give a decreasing number of free allowances to existing power plants, do not show considerable profitability.

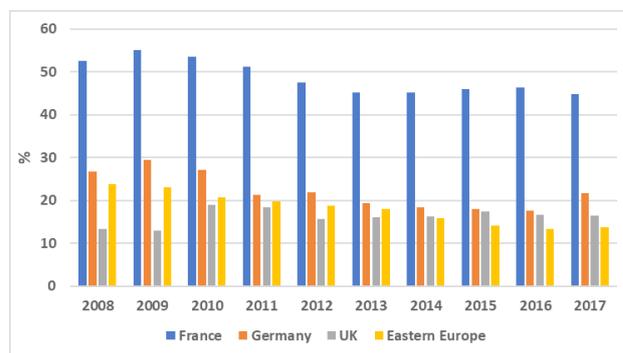


Figure 19. Evolution of the Gross Profit Margin indicator for electricity companies (%)

Source: Own calculations

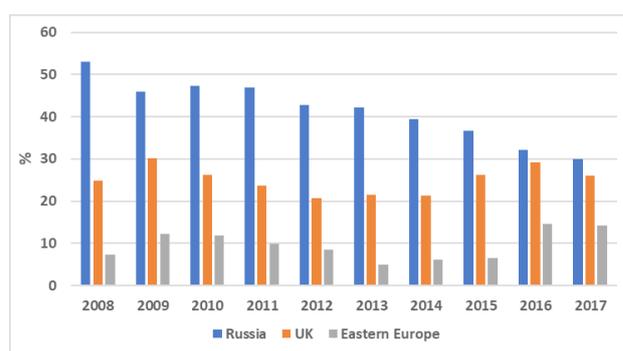


Figure 20. Evolution of the Gross Profit Margin indicator for oil/gas companies (in %)

Source: Own calculations

4. Conclusions

The energy sector is an important sector for European economy, affecting its competitiveness. Europe has prioritized Energy Union as one of its key priorities, towards providing secure, environmentally friendly and low-cost energy to its consumers. The implemented regional and national energy policies over the last two decades have reformed and re-regulated energy markets, which required also structural changes such ownership unbundling of energy companies. Moreover, the weak macro-economic environment in Europe, following the 2008 financial crisis, has challenged the profitability of energy companies. Energy companies are not any more centrally controlled companies within a secure monopolistic environment but require dynamic management to the rapid developments. Energy companies are expanding and diversifying their activities to other energy or other economic sectors. Therefore, the assessment of the European energy sector is an interesting issue.

This paper examines the financial performance of key energy companies in Europe over the period 2008-2017. The analysis focuses on the liquidity, profitability, oper-

ational performance and capital structure of the energy companies. The analysis is carried out in key energy companies, selected to have an extended geographical and sectoral representation. Energy companies are classified in three groups: electricity, gas/oil and renewables. The last sector is underrepresented, since financial data were not available for the whole examined period, as well as to the fact that it is indirectly captured by the first sector, where most of the companies have invested in the renewables sector.

The financial performance analysis of the energy companies was conducted through the evaluation of key indicators on their profitability, which provides evidence on the profits/losses of the companies, on their operating performance, which assess the companies' cash flows, on their liquidity, which provides evidence on the companies' capability to address their short-term liabilities, and on their debt/capital structure analysis, which assess both equity and debt towards companies' financing decision making. Overall results indicate that gas and oil companies have less risk compared to power companies, attributed mainly to their debt exposure. The renewable sector, although underrepresented in the examined sample, implies potential for high profitability. Moreover, companies with diversified portfolios and activities in other energy sectors show better performance. Finally, companies with ownership rights on regulated network operations improve their indicators, due to the risk-free operations.

The evolution of gross profit margin shows a decline for electricity and oil/gas companies, although their sales might have been increased. This means that inelastic expenses such as personnel and administrative costs or additional expenses such as emission allowances have pressured the net profits, especially for the electricity sector. The increased competition, as well as the penetration of renewables with secured feed-in-tariff schemes, have created pressure on their net profits, leading to need for short-term debt in order to capture short-term liabilities. The average net profit margin of the energy sector, consisting of the examined electricity and gas/oil companies, is at the level of 7%, which is comparable to equity premium returns from European member states. Therefore, the European energy sector and especially the renewables sector seems to remain an attractive sector for further investments.

The performed liquidity analysis showed that electricity companies face considerable cash flow challenges to meet their obligations, while gas/oil companies have adequate cash reserves at the levels of 35%. Besides their liquidity problems, electricity companies manage

to tackle them, by stretching credit to their suppliers, as well as rescheduling the timing of their payments. Debt/capital structure analysis reveals that electricity companies are heavily exposed to debt, exceeding the levels of 70%. This leads to increased interest payments, eliminating net profits. However, the reduced rates by the relevant ECB policy, eliminates this problem. Gas/oil companies have reduced needs for financing debt. The operational performance indicators revealed the importance of fixed assets. Comparing operational cash flow to current liabilities revealed that gas/oil companies easily exceed 50% of their current liabilities that they do not face liquidity problems. On the other hand, electricity companies are usually below 30%, which however is even lower if companies with diversified operations are excluded, such as the Polish PGE which has considerable dividends from the mining and distribution companies.

The profitability of power companies is affected by the diversification of their portfolio, their operations as well as the market power. The most crucial parameter for their profitability is the ownership of assets with low operating costs, such as renewables, hydroelectric and nuclear plants. Another important factor is the extension of operations in other regions and markets. The Spanish Iberdrola and the Italian ENEL proved to be more competitive compared to other European power companies, except to companies that operate in regulated environment such as National Grid with transmission system operation activity and Eastern European power companies. EDF with high market power in the French market and ownership of nuclear assets with low operating costs had better net profitability compared to companies operating in Central Europe and/or in Nordic region where the high competition and the penetration of renewables have reduced wholesale prices and challenges the profitability of power utilities, leading even to profit losses for some years.

The profitability of Eastern European power companies is mainly attributed to the favorable regulatory environment, implementing derogation under Article 10c of the EU ETS Directive which allows them to give a decreasing number of free allowances to existing power plants for a transitional period until 2019. Therefore, companies owning coal mines and coal units showed good financial performance, compared to assets in other European countries, that must even sell power units to eliminate profit losses in their balance sheets. However, European energy policy aims at decarbonization of its power sector and enhancing investments on renewables and energy efficiency projects. Under the ongoing revision of the EU ETS for phase 4 for the period 2021-

2030, an optional transitional free allocation under Article 10c of the EU ETS Directive will continue to be available to modernize the energy sector in lower-income Member States. The Modernization Fund of the European Trading System is expected to support 10 low-income Eastern European nations: Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania and Slovakia. Therefore, coal plants will gradually phase out and Eastern European power companies' profitability is expected to be eliminated over the next decade.

European power companies relying on fossil fuels will face problems, unless they diversify their portfolio towards renewables and regulated distribution operations. Moreover, extending their presence in several countries and regions hedge risk from operation in a single country. On the other hand, power companies with active participation in interconnections trading, such as CEZ, are expected to eliminate their revenues from this operation, due to the implementation of implicit trading in wholesale market coupling procedure. Power companies must become very flexible in the ongoing European energy market reforms, putting more emphasis on demand side and on climate friendly technologies. The active participation of demand is the major challenge that power companies should focus, as this will eliminate needs for additional capital-intensive capacity and increase their profitability.

On the other hand, oil/gas companies will also face challenges, besides their good financial performance, attributed mainly to technological developments. The oil sector will be strongly challenged by the penetration of electric vehicles and the enhancement of environmental awareness. The gas sector, although seems to be the preferable transitionally energy carrier towards the implementation of a low carbon economy, potential rapid evolution of electric storage, facilitated by the ongoing research on electric vehicles, might eliminate the natural gas potential. Moreover, natural gas companies with dependence on pipelines and oil-linked contracts, such as Gazprom, are expected to be challenged by the de-linking of oil and gas markets and the penetration of competitive liquefied natural gas. Diversification and extension of operations seems again to be the solution in order to sustain profitability for the oil/gas companies. This is expected to transform their nature.

The performed analysis provides useful insights on the assessment and comparison of key European energy companies, concerning their financial performance. However, this analysis does not provide evidence on the drivers of the financial performance of the energy com-

panies. This would require a more extended dataset, as applying a regression analysis would not provide statistically significant results on a limited time period. Alternatively, a potential extension of our analysis would be the implementation of a panel analysis, which would require the formation of homogenous groups and gathering of extensive datasets. More focus would also be required to evaluate the regulatory environment, as it would be expected to be an important driver of energy companies' profitability.

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