

FINANCIAL SURPLUS AS A SOURCE OF FINANCING IN POLISH AND SELECTED MULTINATIONAL ENERGY COMPANIES. A COMAPRISON

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Purpose: The paper aims at a comparative analysis of the ways in which Polish energy companies and selected international corporations manage their financial surplus.

Design/methodology/approach: The paper is theoretical and analytical. It presents a critique of pertinent literature dealing with the essence of the financial surplus and its place in the theory of capital structure determinants. The empirical data used in the calculations were taken from a Reuters database. Based on data for the years 2010-2021, relationships were calculated showing the specificity of the energy industry and the use of financial surplus to finance operating activities, investments in tangible fixed assets and the possibility of debt repayment.

Findings: The research led to the conclusion that Polish energy companies and their international counterparts are characterized by a high share of long-term assets in their total assets, which means that the rate of return on assets is relatively low. Polish energy companies manage their financial surplus employing methods that are not fundamentally different from the same in their international counterparts. Only the ability to repay debt from the surplus is higher in Polish companies than in the corporations used for comparison. This is due to the lower level of Polish companies indebtedness, which results from Poland's interest rates which are higher than in the economies of the corporations selected for the comparison. In addition, foreign companies used the surplus to finance development to a greater extent than the Polish companies.

Research limitations/implications: The energy transformation of the Polish economy is going to need large investments. Further research should determine the extent to which they can be covered from the financial surplus, and to what extent from capital raised on the financial market. The research presented in the paper is based on historical published data. Future research can attempt to compare forecast values. Polish companies have to implement a number of investments in the area of renewable energy sources, modernization of transmission lines and construction of nuclear power plants. In order to meet the needs, they must select rational financing sources. To finance these investments they should use their surplus more extensively, while at the same time limiting its use to finance operating activities.

Practical implications: The results of the research can be used by the managerial staff of Polish energy companies to take action and use their surplus to finance various areas of activity based on patterns positively tested in international corporations. The results of the research can also be used by doctoral students and students conducting their own research and writing papers.

Social implications: The results of the research may increase awareness of the need for energy transformation and rational selection of financing sources.

Originality/value: The results of the research show stakeholders interested in the industry how Polish energy companies used the financial surplus. The value of the surplus reflects the company's ability to repay its debt, and thus its ability to raise external capital to finance its investment. It also shows whether Polish energy companies will be able to finance the implementation of the energy mix and cope with challenges arising from the Fit for 55 package.

Keywords: specificity of the energy sector, financial surplus, growth financing.

Category of the paper: Research paper.

1. Introduction

In the free market economy, companies aim mainly to increase shareholder value. In the case of a joint-stock company, it is usually assumed that its long-term aim is to increase its market capitalisation. This formulation of the company's aim clearly puts a premium on long-termism and consequently the need to analyse the impact of time and risk on the decision-making process and the need to use appropriate decision-making methods. This creates the need to formulate a long-term action strategy and to seek a compromise between short-term and long-term goals (Jajuga, Jajuga, 2015). The above is of extreme importance in energy companies which are undergoing transformation to address climate protection needs. While defining financial management objectives, it is now emphasised that an increase in a company's value as a shareholder-oriented objective must balance the objectives of all stakeholders: employees and trade unions, suppliers and customers, budgets as well as the natural environment. The achievement of the company's objectives depends on a rational choice of financing sources. To finance operating and development activities companies use equity and debt capital. Equity capital offers a stable basis for the operation of enterprises. It has a critical impact not only on liquidity, but above all on the very development of business entities. It is basically the use of financial surplus (sum of net profit and depreciation/amortization) that facilitates tapping external capital. Indeed, capital providers pay attention to the capital structure and the share of equity in the structure. In order to determine to what extent financial surplus is used to finance company activities, an empirical study was conducted, and an attempt was made to verify three research hypotheses.

In order to determine to what extent financial surplus is used to finance corporate activities, an empirical study was conducted in ten energy entities, four of which are Polish and six are foreign. The research used economic relationships based on financial surplus and compared the performance of Polish entities to that of foreign entities. The aim of the comparison was to determine to what extent the use of financial surplus in Polish companies differs from the approach in foreign companies whose energy production has been undergoing transformation

over the last few years. Polish companies need to move in a similar direction, they need to restructure their operations, move away from coal-based power generation to nuclear power, power generation from gas, hydrogen and to greater use of renewable energy sources. This means that they should use their financial surplus mainly to finance investments and to a lesser extent to finance their operations.

Based on the research carried out, an attempt was made to verify three research hypotheses.

H1. In energy companies, part of the generated financial surplus is used to finance operations.

H2. The degree of debt coverage by financial surplus is higher in Polish companies than in foreign companies.

H3. The degree of coverage of capital expenditure on tangible assets by means of financial surplus in Polish companies varies in a way which is similar to the same in foreign companies.

To date, there are no studies showing whether the use of surplus funds in Polish energy companies is similar to the same in multinational corporations. It is also important to determine whether the surplus generated can be used to a similar extent to implement the energy transition in the same way as in multinational corporations.

2. Literature Review – the Shape of Financial Surplus and Its Impact on Capital Structure

Companies' objectives can be achieved by using internal sources of finance or by raising external funds. Internal financing sources include financial surplus, funds generated by the transformation of assets into cash or disposal of redundant long-term assets, acceleration of the circulation of capital or the management of reserves and funds. To ensure stability of the financial situation in the short term, i.e., the ability to settle liabilities on time and ensure growth in the long term, enterprises should make extensive use of financial surplus. For companies, it is the most readily available source of financing. At its narrowest, financial surplus is the sum of retained earnings and depreciation/amortization. Each year the owners decide at the Annual General Meeting what percentage of the generated net profit will remain in the company and how much will be consumed by way of management and supervisory board remuneration, staff bonuses, social benefits fund contributions or other allocations. The level of retained earnings shapes the size and structure of equity in companies. In broader terms, financial surplus is the sum of net profit and depreciation/amortization.

A company's retained earnings represent the owners' contribution to the growth of equity, thereby increasing the profit potential of business entities. Such actions promote companies' financial standing, supporting future profitability growth. Additionally, retained earnings can

be used as a financing source whenever a company generates a financial surplus (Mądra-Sawicka, 2017). In countries with developed market economies, the level of self-financing is considered to be high if the share of an entrepreneurial company's own funds in financing its needs reaches 70% or more (Baranski, 2018). Retained earnings can be used to finance companies' operating and development activities. Indeed, they can feed into net working capital and prevent the loss of short-term financial equilibrium, or they can be used to finance investment projects.

Reserves created by an organization may be the source of their internal funds. They represent retained earnings at the balance sheet date and are intended to settle future liabilities. Reserves are charged to other operating expenses or financing cost. Funds originating in reserves remain at the company's disposal only during the time between the creation and release of the reserve. In the event of a contingency, reserves offer a liquidity cushion to the company. Of all long-term reserves, reserves for employee pensions are of particular importance. They offer a double benefit to the company. On the one hand, they are treated as a tax-deductible expense that reduces the tax base, and on the other, they are available to the company for the entire period of the employee's employment (Sierpińska, 2016).

In addition to retained earnings and reserves, sources of internal funds include depreciation/amortization. Depreciation/amortization is an expense, but it does not result in a current cash outflow from the company. It reduces the tax base and tax payables as a non-interest tax shield. Depreciation funds are not just an expense, they are also capital used to finance the purchase of long-term assets. The funds released from long-term assets return to the company and increase the value of its tangible assets. Consequently, funds originating in accumulated depreciation are funds from the transformation of assets. Depreciation capital can be reinvested in fixed assets or accumulated to finance investments. Financing from the released depreciation capital is called the capital return effect or the capital release effect (Iwin-Garzyńska, Adamczyk, 2009).

The Accounting Act governs the way in which depreciation/amortization is accounted for in the balance sheet and profit and loss account. It allows business entities to autonomously determine depreciation rates and choose the depreciation method. The Income Tax Act determines the rules underlying determination of depreciation for the purpose of calculating income tax more restrictively, as it introduces, inter alia, restrictions on setting individual depreciation rates and making the depreciation period dependent on the initial value of fixed assets. The tax cost of depreciation must also meet the condition of a cause-and-effect relationship between the depreciation cost of a given fixed asset and the income derived from its use. The separation of accounting and tax depreciation is due to the fact that the rules for determining tax income are determined solely by the provisions of tax law (Iwin-Garzyńska, 2018).

The financial surplus generated has numerous advantages as a source of financing of the company's operations:

- in times of an economic downturn and tight money, it can be used to finance day-to-day business operations and help maintain liquidity,
- it increases the company's debt capacity and improves its creditworthiness,
- it reduces the risk of changes in ownership structure, as in the event of a shortage of funds there arises the need for a new share issue,
- it reduces financial risk.

However, drawing on funds originating from financial surplus has disadvantages:

- the high volatility of the financial surplus can limit access to debt capital,
- lower return on equity against an increase in this capital originating from retained earnings,
- higher cost of capital in the absence of a tax shield,
- limited effect of leverage and tax shield.

The process of financing companies' economic activities is extraordinarily complex in nature, and the capital used for this purpose has a specific origin, as it can be generated by the company or obtained from other sources. The main types of financing sources utilized by an economic entity are its net profit, depreciation and amortization (Kowalik, 2021).

According to the theory of the hierarchy of financing sources, companies should first reach for internal sources of financing, i.e., the financial surplus, as it is more easily accessible than external sources. If companies primarily finance their activities using internal resources, the share of debt in the financing structure may decrease in conditions of increased liquidity levels (Aydin, Kiraci, 2018). The positive impact of the liquidity indicator on the debt level and the wider use of retained earnings are also presented, *inter alia*, in the research conducted by Sibindi (2016).

According to theory of the hierarchy of financing sources, higher profitability presupposes lower debt, as investment projects can be financed from the profit generated by the entity. This is confirmed by a study conducted by Barowicz (2013) on a group of 39 joint-stock companies covering years 2000-2006. On the other hand, according to the signalling theory, a high share of debt in companies' capital structure indicates their good financial health. In pertinent literature, one can encounter the approach proposing that earnings volatility is linked to the size of financial leverage. Research has confirmed that when profits are above or below average, financial leverage imitates the movements. Thus, companies with stable profits should have lower financial leverage volatility (Jerzemowska, 1999). It follows from the research carried out by DeAngelo and Masulis (1980) that a company which is able to establish higher depreciation/amortization provisions should use less external capital to finance its operations. External capital is replaced by depreciation capital. Hence, the optimal capital structure arises because of the adopted system solutions governing the depreciation of fixed assets, which shape the tax depreciation capital (Gay, Hatfield et al.).

The extent to which financial surplus is used to finance business activities is undoubtedly industry specific. This is due to the company's asset structure. This is because depreciation is linked to the specific nature of the industry in which the company operates and the size of its assets and their structure. The higher the share of depreciable tangible and intangible assets in the company's long-term assets, the higher the value of depreciation/amortization. In her research conducted in companies from 70 countries belonging to the commodity industry, Kurronen (2018) presents evidence that this industry has less debt than other non-financial companies. The research also shows that debt levels in the surveyed companies do not increase with company size, as is the case for business entities in other sectors, and that high profitability does not depress debt ratios. The higher the level of depreciable assets, the higher the financial surplus and the higher the level of cash flow generated.

Internal funds generated by companies do not suffice to finance their development. Companies must resort to external funds by issuing new shares or taking loans, making bond issues or using leasing. However, any change in the capital structure carries a risk. Before taking any decision in this area, the financial situation of the economic entity should be closely analysed and the long-term effects of a change in the capital structure should be determined.

3. Information Sources and Research Methods

Four Polish corporates and six large international groups operating in different markets were selected for the study of the structure of financing sources of energy companies. The Polish corporates Energa, Enea, PGE and Tauron are listed on the Warsaw Stock Exchange. The financial statements of these companies for the years 2010 to 2021 retrieved from a Reuters database were used to calculate the application of financial surplus to finance operating and investing activities. The data contained therein are comparable as they are prepared in accordance with IAS and IFRS. The comparability and uniformity of the economic relationships facilitates the inference and positioning of companies according to a specific relationship. At PGE, the level of depreciation/amortization reported for the needs of global statistics also included impairment losses on assets. Between 2016 and 2019, large write-downs were made to reevaluate assets in use, which distorted the comparability of the analysed relationships. To ensure data comparability, this amount was excluded from calculations. Depreciation/amortization was adjusted for impairment losses on long-term assets and the adjusted figure was used to calculate its contribution to operating cash flows.

The Polish companies selected for the study generate and supply energy to consumers throughout Poland. A small percentage of consumers, mainly in Warsaw, use energy supplied by Innogy. Iberdrola S.A. is a Spanish energy group that is now a global energy leader, a leading producer of wind energy and one of the largest energy companies in the world. It is firmly

committed to energy transformation through its sustainable business model based on renewable energy, smart grids, large-scale energy storage and digital transformation (www.iberdrola). SSE PLC is an energy company that operates and invests in the UK and Ireland. It invests in renewables and modern energy infrastructure. Tokyo Electric Power Company Holdings Incorporated (Tokyo Inc.) is a Japanese energy holding company that produces wind, hydro and thermal power (oil, coal, geothermal) and distributes it to consumers with international offices in Washington DC and London. It is a founder and member of strategic energy innovation consortia (www.tepco).

The American NextEra Energy, Inc. is an energy company operating in the United States and Canada. It is the largest energy holding company by market capitalisation. It invests in modern energy infrastructure and renewable alternatives to coal-fired power. Valero Energy Corp. is the largest US producer of renewable fuels, producer of energy from renewable sources promoting a sustainable energy future. Xcel Energy Inc. provides energy to millions of homes and businesses in eight states in the western and midwestern United States (Johnstone, 2023).

Several indicators were used to verify the hypotheses formulated in the introduction. The first two relationships were used to show the specificity of the energy industry, the structure of assets and the return on assets calculated based on financial surplus. These are:

- the share of long-term assets in the total assets of the companies,
- the ratio of the financial surplus to the value of assets – this indicates the rate of return on the company's assets financed, among others, with the generated net profit and depreciation/ amortization.

The following three ratios provide information on the application of financial surplus:

- the ratio of financial surplus to operating cash flow. It shows the extent to which the financial surplus generated was used to finance companies' operating activities,
- the ratio of financial surplus to total debt – this shows how much of the debt the company could repay from the financial surplus generated in a given year,
- degree of coverage of investment outlays from the amount of financial surplus established as a relationship of the sum of net profit and depreciation/amortization to investment outlays on tangible fixed assets incurred in a given year.

The data used to calculate the above ratios were mainly taken from the companies' balance sheets and cash flow statements. The total capital expenditure in a given accounting year was sourced out from their cash flow statements.

4. Specificity of Companies from the Energy Industry

The electricity industry is highly capital-intensive. The investment cycle takes an average of three to five years. The production and distribution of electricity requires a large commitment of capital on tangible fixed assets. Table 1 shows the structure of the assets used by the energy companies.

Table 1.

Asset structure of the surveyed energy companies in 2010-2021, %

Company name		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Energa S.A.	FA	70.9	71.0	71.7	74.0	73.1	75.2	77.7	70.9	74.9	77.6	82.6	86.0
	CU	29.1	29.0	28.3	26.0	26.9	24.8	22.5	29.1	25.1	22.4	17.4	14.0
Enea S.A.	FA	68.1	71.7	74.9	75.8	79.2	79.2	79.4	78.0	76.9	81.6	72.8	64.6
	CU	31.9	28.3	25.1	24.2	20.8	20.8	20.6	22.0	23.1	18.4	27.2	35.4
PGE	FA	85.8	75.6	77.0	78.6	78.8	80.9	80.1	86.8	78.0	83.8	81.5	74.5
	CU	14.2	24.4	23.0	21.4	21.2	19.1	19.9	13.2	12.0	16.2	18.5	25.5
Tauron Polska Energia	FA	70.9	81.9	81.6	85.3	81.5	87.7	87.1	86.5	87.7	83.6	80.5	84.5
	CU	19.1	18.1	18.4	14.7	18.5	12.3	12.9	13.5	12.3	16.4	19.5	15.5
Iberdrola	FA	80.5	83.7	83.5	88.0	87.9	88.6	90.0	87.5	88.2	88.9	87.8	84.2
	CU	19.5	16.3	16.5	12.0	12.1	11.4	10.0	12.5	11.8	11.1	12.2	15.8
NextEra Energy Inc.	FA	90.1	90.8	91.9	91.6	90.7	91.8	91.8	92.7	93.7	93.7	94.2	93.4
	CU	9.9	9.2	8.1	8.4	9.3	8.2	8.2	7.3	6.2	6.3	5.8	6.6
SSE PLC	FA	60.1	58.6	64.6	65.6	66.1	61.7	72.5	69.2	70.2	68.7	83.4	79.1
	CU	39.9	41.4	35.4	34.4	33.9	38.3	27.5	30.8	29.8	31.3	16.6	20.9
Tokyo Inc.	FA	92.6	80.3	85.3	81.7	82.0	83.0	82.9	83.8	82.3	83.5	85.0	87.0
	CU	7.4	19.7	14.7	18.3	18.0	17.0	17.1	16.2	16.2	16.5	15.0	13.0
Valero Energy Corp	FA	64.1	62.7	63.0	59.2	63.5	66.2	63.6	61.5	64.7	64.8	69.4	63.4
	CU	35.9	37.3	37.0	40.8	36.5	33.8	36.4	38.5	35.3	35.2	30.6	36.6
Xcel Energy Inc.	FA	90.0	89.9	91.6	90.5	90.9	92.5	93.1	93.1	93.3	93.8	93.9	92.7
	CU	10.0	10.1	8.4	9.5	9.1	7.5	6.9	6.9	6.7	6.2	6.1	7.3

Note: SSE PLC balance sheets and Tokyo Inc. are prepared as at 31 March, hence the data for each year covers the period starting on 1 April of the relevant year until 31 March of the following year.

FA – long-term assets; CA – current assets.

Source: own calculations based on data retrieved from surveyed companies' balance sheets on Reuters database.

Energy companies are characterized by a remarkably high share of long-term assets in total assets, with this share trending to be on the increase. At Energa, the share of long-term assets increased between 2010 and 2021 from 71% to 86%, with a similar trend notable at Tauron. Such large increases in long-terms assets were not ascertained at Enea and PGE. The Spanish company Iberdrola and the Japanese company Tokyo Energy had an asset structure like that of the Polish companies Enea and Tauron. The US company Valero had a relatively stable asset structure in the period under review, with the share of long-term assets oscillating around 65%. NextEra and Xcel Energy on the other hand had an exceptionally high share of long-terms assets at over 90%.

In most of the companies, an increase in the share of long-term assets in total assets is conspicuous. However, it should be borne in mind that with the ongoing processes of financialization of companies and globalisation of national economies, the share of financial investments in long-terms assets is on the increase. In corporates, these are shares in

subsidiaries. The increase in long-term assets necessitates long-term sources of financing, most often in the form of equity. Due to the high volatility of value occasioned by market factors, shares have a lower pledge value than the tangible assets which are needed for bank borrowing. However, corporates are better positioned to place corporate bonds on the debt market. The Polish market is characterised by a significant potential for the increase in green corporate and municipal bond issuance, mainly in the energy and transport sectors (Supernak, 2023). The key barriers to the development of this market are currently the additional costs of organising the issue related to the preparation of the green bond framework and external verification, as well as challenges of an operational nature. Additionally, the question of a lower cost of capital for green issues is not so clear cut.

Table 2 presents returns on energy companies assets based on financial surplus, which show the return on assets used to generate current profit. The return on profit invested in tangible and intangible assets in past periods is through depreciation/amortization. Rates of return on assets illustrate the role of financial surplus in running a business. The higher the level of this indicator, the more efficient the company is because of the reinvestment of funds originating in internal financing sources. The preference for these sources over external capital is driven by the need to maintain a rational debt level and reduce debt service expenses. This approach improves the liquidity of business entities.

Table 2

Return on assets based on financial surplus in the surveyed companies from 2010 to 2021, %

Company name	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Avg
Energa S.A.	11.0	11.4	9.0	10.2	11.6	10.7	16.1	9.4	8.9	1.5	4.2	11.1	9.6
Enea S.A.	10.1	11.0	9.9	9.0	9.0	1.7	8.0	8.3	7.3	6.4	(2.1)	9.6	7.4
PGE S.A.	13.5	15.1	12.1	13.2	11.5	13.2	10.6	10.2	8.0	8.5	6.0	10.4	11.0
Tauron Polska Energia	11.2	10.5	11.6	10.5	9.5	(1.1)	6.5	9.8	6.0	4.7	(1.1)	6.9	7.1
Iberdrola	7.2	6.9	7.0	7.0	7.1	7.2	6.7	6.3	7.5	7.6	7.9	8.0	7.2
NextEra Energy Inc.	7.1	6.1	5.3	6.5	7.2	7.2	7.1	8.1	9.6	6.7	5.2	5.0	6.8
SSE PLC	9.0	9.3	4.3	5.1	5.0	5.7	5.7	12.9	10.4	9.6	9.1	15.7	8.5
Tokyo Inc.	7.7	(0.2)	(0.4)	(0.2)	7.5	7.8	5.9	5.8	7.1	6.3	4.1	5.0	4.7
Valero Energy Corp	12.5	8.5	8.2	9.4	11.9	13.4	9.3	12.2	10.8	9.3	2.4	6.4	9.5
Xcel Energy Inc.	5.9	5.9	5.9	6.0	5.9	5.7	6.2	6.4	6.6	6.5	6.6	6.7	6.2

Note: AVG-Average.

Source: own calculations based on data retrieved from surveyed companies' balance sheets on Reuters database.

In Polish energy companies, just like in their foreign counterparts, the rate of return on total assets varied significantly in the years under review. In 2010, the highest rate of return on assets was reported by the Polish company PGE. Prior to 2017, Polish companies achieved higher rates of return than their foreign counterparts. In 2018-2020, there was a significant deterioration in performance because of rising energy prices. In 2021, rates of return improved significantly in nearly all companies (except NextEra), with the highest rate of 15.7% reported

by the UK company SSE PLC. Over the twelve-year period, the highest average rate of return on assets was achieved by Polish companies PGE, Energa and US company Valero. Returns at Xcel Energy showed the lowest volatility.

Given the high capital intensity of the energy sector and the higher level of accrued depreciation than in other sectors, it can be concluded that rates of return are relatively low. This confirms the correlation highlighted in the pertinent literature which asserts that highly capital-intensive industries have lower rates of return on assets employed.

5. Study Results

Financial surplus can be used during operations to maintain liquidity, repay debts and as a source covering capital expenditure. The extent to which financial surplus is used in the above areas is shown in the subsequent tables. Table 3 shows the relationship between the amount of financial surplus and operating cash flow. This relationship indicates what level of funds generated in the form of net profit and depreciation/amortization was used to finance operating activities, with the remainder being used to finance the company's growth. Ratios higher than 100% indicate that the sum of net profit and depreciation/amortization was higher than the cash generated through operating activities, meaning that part of this surplus was used to finance operating activities, to cover the need for additional net working capital. Ratios lower than 100% indicate that the financial surplus was augmented by funds released from current assets either through a decrease in inventories and receivables or by an increase in current liabilities (excluding short-term borrowings).

Table 3

Ratio of financial surplus to operating cash flow in the surveyed companies from 2010 to 2021, %

Company name	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Energa S.A.	117.6	105.0	101.1	86.8	108.0	122.7	168.7	90.5	103.3	25.5	44.0	64.2
Enea S.A.	101.3	106.7	117.6	87.2	146.8	17.7	80.8	91.5	90.2	97.4	(20.1)	60.6
PGE S.A.	104.8	127.9	102.6	100.9	120.6	118.9	111.7	92.3	119.3	97.0	47.5	124.5
Tauron Polska Energia	103.8	134.5	103.2	83.6	125.9	(10.5)	70.0	97.0	108.2	90.1	(10.4)	55.5
Iberdrola	85.4	109.9	96.5	109.7	97.8	108.4	105.8	123.0	111.1	134.8	116.2	140.5
NextEra Energy Inc.	98.2	85.7	85.9	88.3	97.5	97.5	100.7	123.9	150.5	96.4	83.7	93.2
SSE PLC	96.5	116.4	48.3	53.6	43.7	67.5	58.4	119.1	139.7	207.4	146.9	186.1
Tokyo Inc.	103.2	(2.5)	(19.0)	(12.2)	173.9	126.4	76.0	103.5	118.2	158.9	160.0	251.1
Valero Energy Corp	154.8	89.7	69.3	79.9	127.4	105.9	89.4	112.0	124.0	91.1	131.2	63.0
Xcel Energy Inc.	90.2	72.7	92.2	79.3	82.0	73.8	83.8	88.2	97.4	100.4	124.8	176.0

Source: own calculations based on data retrieved from surveyed companies' balance sheets on Reuters database.

Prior to 2016, the funds generated in the form of net profit and depreciation/amortization by the Polish companies were mostly used to finance current operations. Between 2017 and 2021, the Polish energy companies generated cash flows exceeding their financial surplus. In 2021, only PGE consumed the entire surplus through operating activities, and the financing needs in these activities were more than 24% higher than the funds generated.

In most of the global companies surveyed, the opposite trend occurred. Prior to 2016, with a few exceptions, these companies had a financial surplus lower than their cash flow from operating activities and therefore part of this cash flow was covered from funds released from inventories and receivables and from an increase in current liabilities. In the subsequent period covering 2017 -2021, their financial surplus was higher than the operating cash flow, except in NextEra. At SSE PLC, surplus was more than twice as high as cash flows. This means that the global companies had no need to inject external funds to finance operating activities and could use part of the surplus to repay debts and invest.

A different approach to the management of funds originating in financial surplus manifests itself in the relationship of this surplus to the debt levels of foreign energy companies as illustrated by the data in Table 4.

Table 4

Ratio of financial surplus to total debt in the surveyed companies from 2010 to 2021, %

Company name	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Energa S.A.	24.7	26.6	18.6	19.8	22.0	20.3	30.2	16.9	17.0	2.7	7.6	20.9
Enea S.A.	43.3	43.3	38.5	30.3	26.9	3.4	15.9	15.5	13.8	11.4	(3.6)	16.1
PGE S.A.	48.2	49.3	39.3	46.1	35.6	38.4	28.8	27.2	20.8	18.7	12.5	22.4
Tauron Polska Energia	30.0	23.4	24.2	22.7	19.8	(2.2)	12.9	19.4	11.8	8.3	(1.8)	11.8
Iberdrola	10.5	10.5	10.7	11.3	11.4	10.1	10.2	9.5	11.3	11.0	11.1	11.2
NextEra Energy Inc.	9.8	8.3	7.1	8.8	9.7	10.0	9.7	11.4	14.3	8.3	7.3	6.8
SSE PLC	10.9	12.3	5.5	7.0	6.7	7.7	7.4	17.4	13.4	12.5	11.7	22.7
Tokyo Electric Power	9.5	(0.2)	(0.4)	(0.2)	8.4	9.1	7.1	72	8.9	8.1	5.4	6.7
Valero Energy Corp	20.9	13.7	13.8	16.0	21.7	24.9	16.5	21.8	19.0	15.7	3.8	9.4
Xcel Energy Inc.	8.5	8.7	8.3	8.4	8.1	7.8	8.5	8.7	9.0	8.8	9.0	9.1

Source: own calculations based on data retrieved from surveyed companies' balance sheets on Reuters database.

Between 2010 and 2014, Polish energy companies were very well positioned to repay their debts from their financial surplus. PGE and Enea were able to repay their debt within 2-3 years, while Energa and Tauron were able to do so within a slightly longer period of 3-5 years. The ability of Polish companies to repay their debts deteriorated significantly between 2015 and 2021. In 2020, Enea and Tauron generated losses exceeding the value of their depreciation/amortization. At Tauron, for example, the loss totalled PLN 2 374 million and depreciation/amortization stood at PLN 1 954 million. In 2021, Tauron's net profit totalled PLN 675 million and depreciation/amortization stood at PLN 2,100 million. At Enea, the net

loss in 2020 amounted to PLN 2,234 million. In 2021, the performance of the Polish energy companies improved, which increased their ability to repay debts from the financial surplus. Energa and PGE were able to repay their debts from financial surplus in less than five years. Only the UK company SSE PLC had a ratio of financial surplus to total debt like that of the Polish companies. The other international energy companies were able to settle 6-9% of their debt in 2021, meaning that they would have been repaying this debt over a period of 11-17 years.

The data in Table 5 show the extent to which energy companies were able to cover shortfalls in investing activities with funds generated from financial surplus.

Table 5.

Ratio of financial surplus to capital expenditure on tangible assets in the surveyed companies in 2010-2021

Company name	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Energa S.A.	129.4	105.9	74.3	110.2	143.5	122.8	73.5	154.3	117.2	x	51.6	87.8
Enea S.A.	151.6	128.5	81.7	73.2	63.9	13.7	72.9	114.6	111.0	100.6	x	174.9
PGE S.A.	153.3	196.4	159.6	173.5	119.8	93.7	90.0	120.6	111.6	95.7	82.2	198.3
Tauron Polska Energia	91.8	129.3	109.7	86.7	95.1	8.9	58.6	102.5	63.0	55.6	x	105.9
Iberdrola	121.9	147.7	150.4	160.4	186.5	165.9	141.7	109.3	132.7	167.0	165.9	164.6
NextEra Energy Inc.	127.7	86.7	70.4	137.2	153.1	154.0	150.5	146.0	165.1	33.1	99.1	100.0
SSE PLC	159.3	178.8	43.4	65.4	57.8	83.2	65.0	138.7	155.0	155.1	157.8	287.2
Tokyo Electric Power	161.0	x	x	x	184.9	194.4	125.0	126.4	158.2	129.2	88.6	100.4
Valero Energy Corp	103.9	153.8	124.7	209.7	250.9	367.3	337.3	445.4	309.5	252.7	69.6	221.8
Xcel Energy Inc.	73.4	79.3	71.9	60.3	67.9	60.6	78.6	83.1	76.9	77.5	66.2	90.8

x - negative financial surplus, depreciation/amortisation lower than net losses.

Source: own calculations based on data retrieved from surveyed companies' balance sheets on Reuters database.

In Polish capital groups from the energy industry, the level of coverage of capital expenditure from financial surplus varies due to fluctuations in the profit/loss and the method of calculating depreciation/appreciation. In 2012 -2016, Enea used external funds to finance its growth. In the next years, its financial surplus was higher than the level of capital expenditure. It did not generate a financial surplus in 2020 as a result of losses incurred, as did the Tauron group and Enea itself in 2019.

1 January 2019 saw changes to the method of calculating depreciation under IFRS16. In accordance with the legal solutions in the energy companies, resources used by the companies under operating leases are accounted for in the balance sheet and in the calculation of depreciation. In addition, leases came to include (Sierpińska, 2021, p. 101):

- perpetual usufruct of land - both purchased and received in kind, or received free of charge on the basis of an administrative decision,
- land and transmission easements,

- lease and hire agreements, etc. related to the location of line and technical infrastructure (heating nodes, transformers),
- hire and lease agreements, etc. of office premises,
- hire and lease agreements etc. of buildings, structures and technical equipment.

The value of assets was most significantly affected by the recognition of perpetual usufruct of land and land rental/lease agreements, which, prior to the entry into force of IFRS 16, were reported as operating leases not recognised in the balance sheet. Not all agreements though were treated as subject to the provisions of IFRS 16. For example, following an analysis, PGE decided that agreements for the occupation of the roadside for the placement of energy infrastructure, for which a significant right of substitution was established, and agreements for the lease of lines/fibres/cable ducts were outside the scope of IFRS 16. (PGE Consolidated Financial Statements, 2021, p. 38).

In 2021, capital expenditure in Polish energy companies was lower than the financial surplus they generated. At PGE, the financial surplus totalled PLN 9,283 million and capital expenditure stood at PLN 4,682 million. The relationship between financial surplus and capital expenditure in the global companies selected for the study varied, just like in Polish energy companies. In the Spanish company Iberdrola, capital expenditure was lower than the level of financial surplus throughout the entire period under study. This means that part of this surplus was either used to repay debts or to cover other net working capital requirements arising from financing of the company's operating activities. At NextEra, in only four years of the period under review was capital expenditure higher than the financial surplus and in 2020-2021 the entire financial surplus was spent on investment. At Tokyo Electric Power, capital expenditure did not show much changeability over the period under review and was in the range of 550-650 million yen. The varying share of financial surplus in capital expenditure resulted from changing bottom line. In 2011-2013, the company generated losses exceeding depreciation/amortization, which resulted in a negative financial surplus. In 2015, its net profit was 479 million yen versus 69.3 million yen in 2020, which is seven times less. Valero made a loss in 2020, but it was less than the accrued depreciation. Capital expenditure was similar to that of the previous year, but the level of financial surplus was four times lower than in the previous year. In 2019, the company reported a net profit of \$2,784 million followed by a loss of \$1,107 million the following year. While in 2017 Valero's financial surplus was 4.5 times higher than its capital expenditure, in 2020 the shortfall in surplus funds needed to cover capital expenditure equalled 30%. The only company among those surveyed in which each year's capital expenditure exceeded the financial surplus was Xcel Energy. During the period under review, Xcel's surplus covered an average of 74% of its capital expenditure. The remaining expenditure was covered by share and bond issues as well as loans (data taken from the financial statements).

6. Discussion and Conclusion

In summary, the results of the theoretical and empirical considerations show that the energy industry ranks among highly capital-intensive sectors of the economy. The share of long-term assets in total assets exceeds as much as 90% in some of the entities studied. In Polish energy companies, this share averages 80%. The increase in the share of long-term assets in total assets continues to show. Indeed, globalization is giving rise to large, diversified business entities. Following series of mergers and acquisitions, financial investments in the form of shares in subsidiaries appear in the long-term assets portfolio. This leads to an increase in the share of long-term assets in total assets, which determines the choice of financing sources. Polish energy companies have less diversified business activities than the foreign entities studied.

Rates of return based on financial surplus are relatively low and show considerable fluctuations over time, reflecting changes in the level of profit/loss due to market changes affecting energy carriers and the increase in amortization/depreciation. In Polish energy companies, changes in the rules for calculating depreciation/amortization and the increase of the same led to an increase in the financial surplus, which had an impact on the increase in rates of return on total assets.

Company managers adapt the sources of financing of operations to the internal circumstances of the company and to the signals from the environment. One of the most readily available sources of financing is financial surplus. The way in which it is used in business entities is truly varied.

As part of procedure aimed at verifying hypothesis one, the research period 2010 -2021 was divided into two sub-periods. In the 2010 – 2016 period, the financial surplus in Polish companies was used to finance current operations. In their foreign counterparties, financial surplus was used for investment and debt repayment. Energy transition processes started there much earlier than in the Polish companies studied. In 2017 -2021, funds generated by Polish energy companies from operating activities exceeded their financial surplus, which allowed them to use the funds for investment purposes. The same trend occurred in most of the foreign companies studied. Hence, hypothesis one was confirmed. In energy companies, part of the financial surplus generated is periodically used to finance operating activities. In Polish energy companies, however, the degree of utilization of financial surplus to finance operating activities was higher than in their multinational counterparts.

The results of the research allowed confirming the second hypothesis. The degree of debt coverage by financial surplus is higher in Polish companies than in their foreign counterparties. Polish energy companies were able to repay debt using from their financial surplus in up to five years, compared to over ten years in the foreign companies.

Throughout the period under review, foreign companies revealed much lower ability to repay debt out of their surplus than their Polish counterparts. Foreign companies are able to use debt financing more widely than their Polish counterparts thanks to lower interest rates on loans than in Poland and they are also more able to tap the debt market. In April 2023, the interest rate in the euro area stood at 3.75%, in Switzerland at 1.50%, the UK at 4.25%, the US 5.25%, Norway 3.25%, Japan 0.10%, the Czech Republic 7.0 % and Poland 6.75% (Kozieł, 2023). Polish companies are less indebted than their foreign counterparties (Kowalik, 2021). This is on the one hand due to the higher cost of debt, and on the other to the limited possibility of obtaining loans under the restrictive credit policy of Polish banks. There are also fewer opportunities to place bond issues on the debt markets. The capacity of the Polish debt market is limited and limited opportunities to use foreign debt markets result from exchange rate risk. In conditions of lower interest rates, foreign companies generate lower costs of debt financing, which increases their net profit.

However, the investment needs of Polish energy companies are much greater than those of the foreign companies. In Poland, electricity produced from coal increases CO₂ emissions into the atmosphere. Restructuring the energy sector and the economy towards a change in the structure of consumption of energy carriers and a reduction in energy consumption will require huge outlays. It is estimated that by 2040, expenditure on power generation capacity alone will amount to PLN 726.4 billion. This is related to Poland's need to adapt to the EU's energy and climate policy. Investments in renewable and nuclear energy sources, as well as gas sources accounts for 86% of that amount. An update of Poland's Energy Policy until 2040 shows that within 17 years Poland's coal-fired electricity generation will be reduced from the current 77% to just 8%. Hard coal would account for 7.5% and lignite for 0.8% of the foregoing. Instead, energy production from so-called renewable sources will increase sharply. In 2040, RES are expected to cover almost 51% of Poland's electricity needs and nuclear power 23%. Gas is expected to generate 15% of Poland's electricity (Cukiernik, 2023). Poland's energy policy until 2040 assumes the construction of three nuclear power plants. It is estimated that a total investment outlay of PLN 1.5-2.0 trillion is needed for the transformation of Poland's energy sector and elimination of obsolete coal blocks. Some of the funds will come from various types of funds including the Modernisation Fund, the Energy Transformation Fund, the Innovation Fund, the EnIKS Fund, ReactEU and funds from the National Reconstruction Fund (Sklódowska, 2021). Energy companies will use their financial surplus as well as bank loans and green bond issues to finance this transformation.

The third hypothesis was also positively verified. The degree to which expenditure on tangible assets was financed varied, in both Polish and foreign companies. However, foreign companies used their surpluses more extensively to finance growth than their Polish counterparts. The varying share of financial surplus in capital expenditure resulted from fluctuating profit/loss. Such changes are influenced by a number of macroeconomic factors, including the economic situation, fluctuations in the price of energy carriers and their

availability. The size of the financial result is also significantly affected by internal factors, including changes in energy carriers, the level of indebtedness of companies and the burden of interest on the companies' profit/loss, the structure of long-term assets and the share of depreciable components therein, the rate of implementation of innovations reducing costs of energy production, etc.

In conclusion, it should be noted that the results of this study may be a seed for further research and an attempt to answer the question of the extent to which the surplus will finance the energy industry's restructuring processes and further what part of the funds must be raised on the domestic and international debt market. The way in which the financial surplus is used by international companies and the pace of restructuring can provide a benchmark for Polish energy companies helping them to minimize erroneous decisions in the area of using the financial surplus.

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