ANALYSIS OF THE ECONOMIC DIMENSION IN THE PROCESS OF SUSTAINABLE DEVELOPMENT

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Abstract

This research paper analyzes the economic dimension of sustainable development. The idea behind this study is that in order to protect the environment we need to ensure the economic and technological development through which capital is used more and more efficiently. The paper contains a part of financial analysis where we studied financial position and performance of Samsung Electronics compared to its competitor Intel Corporations.

Keyword: *natural capital, resource efficiency, sustainable development.*

JEL Classification: M41, M49, G20, G21

I.   Introduction

Through this research we aim to explain the importance of economic dimensions for the sustainable development process. What we want to emphasize in this paper is that the pursuit of economic growth contributes to the protection of the environment. We also want to highlight the fact that economic mechanisms can protect the natural dimension, facilitating sustainable development of the society. The foundation of sustainable development consists in an efficient economic growth, decoupled from environmental pollution, where consumption of resources and their capacity of reproduction are balanced (Bostan & Grosu, 2013).

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It must be recognized that in our society, multinational corporations became a major consumer of resources. In the context of globalization and complex governance systems, the influence of multinational corporations and, subsequently, their role in the sustainable development process has increased significantly (Mihalciuc & Apetri, 2017). With a growing globe population striving to improve their living standards in the context of a planet with limited resources, companies need to anticipate global change and adapt their operating mode to keep up with these transformations (Shaker, 2015).

Through our study, we aim to analyze the economic dimension of sustainable corporate development. As a target of our analysis we selected Samsung Electronics, which we compared with Intel Corporations as the main competitor in the field of semiconductors. In the analysis we determined a series of indicators about profitability and liquidity ratio of the companies. We believe that a profitable and highly liquid enterprise can effectively contribute to the sustainable development process because it has resources that can be used either for in-house innovation that would make capital use more efficient or to promote sustainable development actions in an external environment.

II.   Literature review

The approach that economic growth can contribute to environmental protection has been supported by diverse economists (Grosu & Mihalciuc, 2013).   In the following, we will discuss the author's views on this approach.

In the early 1970s, in his eloquent critique of the Meadows report (1972), economist Wilfred Beckerman presented a rather optimistic view of the ability of contemporary economies to adequately manage environmental issues. He specifically referred to the process by which So2 pollution was reduced in many US states, even if USA was in a continuous process of economic development (Shaker, 2015).

An interesting approach on how economic growth can contribute to environmental protection can be find in the researches of Nordhaus (1973), which described the existence of a "backstop technology," that is, a technical solution to the depletion of a natural resource. As determined by the law of supply and demand, the price increase of this resource, as it becomes increasingly scarce, leads to the cost-effectiveness and marketing of this "contingency technique" (https://www.investopedia.com).

In 1977, John Hartwick identified a theoretical interconnection between resource rent and economic sustainability in the case of depleting resources. Hartwick's rule shows

that a nation will invest the rent earned from the current use of the depleting resource, in a way that will maximize the benefit of the owner (Hartwick, 1977).

In the nineteenth decade of the 20th century, Beckerman's arguments were generalized, and his message was addressed to developing countries: "... there is clear evidence," wrote Beckerman (1992), that although economic growth leads to environmental deterioration in the early stages of the process, in the end, the best and probably the only way to achieve a decent environment in most countries is to become rich. "

The debate on the topic of economic growth and environmental protection took a new round after the publication of the articles by Grossman & Krueger (1993, 1995), where the authors wanted to provide empirical evidence. The authors sought to establish a correlation between economic growth and environmental change by establishing a link between per capita income and the degree of water and air pollution by making a number of specific measurements. The results of these econometric studies have shown that pollutant emissions increase with revenue up to a certain limit, then begin to decrease, representing a "reversed U curve", also known as the "Kuznets Curve".

Based on the conducted studies, it was determined that with SO2 pollution, the reversal point of this relationship takes place for average per capita income of approximately 4000-5000 USD, being higher for other pollutants but generally in area of 8000 USD / per capita of income. The authors explained these results, mentioning that by initially, there are few pollutant emissions due to low production activity, but because of the poor control in the early stages of industrialization there is an excessive increase in pollution. However, the financial resources generated by rising wealth, the growing impact of services (the dematerialization thesis) and the changing of individual preferences (aimed at a better quality of life as revenue is increasing) contribute in reducing pollutant emissions. Therefore, revenue growth contributes to changing individual aspirations, which are more likely to exert pressure on governments in order to implement environmental policies.

However, in order for economic growth to contribute to the protection of the environment, we need a specific approach through which the capital produced will be used efficiently so we can make it available for the future generations. This perspective is also found in the approach of the authors Suciu & Suciu (2007), who believe that the transition to a sustainable society requires not only a change in the way resources are managed but also a change of attitudes from the *me, now* specific to the traditional

economy, to considerations like, *now and later* ". Some authors believe that through stable economic growth, we can ensure responsible production and consumption, good governance and reasonable levels of external debt.

As a result, a sustainable economy means a rational use of resources, financial investment in technology, and a balance between resource use and natural reproduction of them. The underlying idea of the sustainable economy is how we should use resources in order to create efficient long-term benefits (https://www.investopedia.com).

III.   The importance of the economic dimension in the process of sustainable corporate development

In our view, the objective of sustainable development should reflect the need for societies to maintain their ability to generate economic benefits over time and to ensure that future generations have access to the same level of well-being as current generations (Mihalciuc & Apetri, 2016). This vision coincides, to a certain extent, with neoclassical theories on economic growth and development consistent with environmental protection. In this case, sustainability can be defined as "nondecline" over time, of individual and collective welfare, which can be measured, depending on the type of analysis, individual income and consumption, and the level of satisfaction of society's needs (Mihalciuc, 2016). To achieve this goal, it is important that savings rates are high enough to ensure that the stock of capital available to companies remains stable from one generation to the next, thus allowing a constant flow of wealth over time.

At the level of multinational corporations, this approach would require efficient resource use in their operations and technological innovation to ensure more efficient capital production and compensation for falling natural capital. Also, a profitable business activity would mean financial resources that can be used later to promote the concept of sustainable development in society. This can be traced to various corporations, including Samsung, through various sponsorships of research institutes, organic farms, tree planting organizations, companies on decarbonisation technologies, etc. (https://www.worldeconomics.com). In the following, we will present the financial analysis of Samsung Electronics Corporation to highlight how the company ensures high performance and consequently contributes to the sustainable development process of the company.

IV.   Comparative analysis of financial position and performance indicators between Samsung Electronics and Intel Corporations.

In recent years, Samsung's response to customer needs has been characterized by quality and emphasized by the desire to create an unmatched market in availability of different products. The company was at the forefront of achieving global competitiveness by improving financial performance and profitability. Through our research, we have found that Samsung has made many efforts in terms of reducing production costs, offering superior quality products and improving brand image. In this paragraph, we will research the indicators which show the financial position and performance of Samsung in comparison with the results of Intel Corporation as main competitor of Samsung in the field of semiconductors. In our analysis, we will focus on determining and studying key financial position indicators as well as those related to the overall performance of the enterprise in areas such as liquidity and profitability. The analysis of performance indicators has helped us to obtain a clear assessment of both the financial position and the performance achieved by Samsung in relation to the Intel competitor.

Table 1- Elements of the financial position of the companies Samsung Electronics and Intel Corporations   - bilion USD

		2011	2012	2013	2014	2015	2016	2017
Total assets (TA)	Samsung	134,94	169,05	202,86	218,89	214,07	226,04	266,78
	Intel	71,12	84,35	92,36	91,96	101,46	113,33	123,25
Current assets (CA)	Samsung	62,00	81,48	104,96	109,38	110,3	121,94	129,95
	Intel	25,87	31,36	32,08	27,73	40,36	35,50	29,50
Non-current assets (NCA)	Samsung	72,95	87,8	97,90	109,51	103,74	104,10	136,83
	Intel	45,25	52,99	60,28	64,23	62,71	77,83	93,75
Current liabilities (CL)	Samsung	38,43	43,82	48,63	49,41	44,64	47,17	59,40
	Intel	12,03	12,90	13,57	16,02	15,67	20,30	17,42
Total equity (TE)	Samsung	88,31	113,42	142,15	159,67	158,278	166,37	189,63
	Intel	45,91	51,20	58,26	55,87	61,09	66,23	69,02
Inventories (I)	Samsung	13,63	14,38	17,54	18,38	17,38	15,60	18,93
	Intel	4,1	4,74	4,17	4,27	5,17	5,55	6,98

Source: Samsung annual reports; Intel annual reports

In the tables, Table 1, Table 2 and Table 3 are shown the elements related to the financial statements of the companies. Based on the data presented in these tables, we have calculated the key indicators of financial position and performance of the companies. Also, we have studied the evolution of these indicators and provided some key conclusions.

Table 2- Main indicators of income statemens of Samsung Electronics and Intel Corporations   -   bilion USD

		2011	2012	2013	2014	2015	2016	2017
Net revenue (Nr)	Samsung	143,07	187,75	216,71	195,88	177,37	174,05	211,81
	Intel	54,00	53,34	52,71	55,87	55,36	59,39	62,76
Gross profit (Gp)	Samsung	45,83	69,51	86,23	74,03	68,22	70,35	97,50
	Intel	33,76	33,15	31,52	35,61	34,68	36,19	39,07
Operating profit (Op)	Samsung	14,09	27,12	34,86	23,77	23,35	25,21	47,43
	Intel	17,48	14,64	12,29	15,35	14,00	12,87	17,94
Profit before income tax (Pbit)	Samsung	14,88	27,93	36,35	26,48	22,95	26,48	49,68
	Intel	17,78	14,87	12,61	15,80	14,21	12,87	17,94
Net profit (Np)	Samsung	11,91	22,26	28,88	22,22	16,85	19,59	37,30
	Intel	12,94	11,00	9,62	11,70	11,42	10,32	9,60

Source: Samsung annual reports; Intel annual reports

V.   Financial Analysis

Return on assets (ROA) is one of the company's main profitability ratios. This indicator measures the efficiency of asset use, taking into account the profit obtained, and shows the number of monetary units earned at a monetary unit invested in assets. ROA can be defined as the percentage ratio between the net result of the exercise and the balance sheet total assets.

Table 3- Key Performance Indicators of Samsung Electronics and Intel Corporations
- bilion USD

Profitability		2011	2012	2013	2014	2015	2016	2017
Return on assets $ROA = \frac{Np}{TA} x\ 100$, %	Samsung	8,83	13,17	14,24	10,15	7,87	8,67	13,98
	Intel	18,19	13,04	10,42	12,72	11,26	9,11	7,79
Return on equity $ROE = \frac{Np}{Te} x\ 100$, %	Samsung	13,49	19,63	20,32	13,92	10,65	11,77	19,67
	Intel	28,19	21,48	16,51	20,94	18,69	15,58	13,91

Table 3- *Cont.*

Profitability		2011	2012	2013	2014	2015	2016	2017
Return on capital employed $$ROCE = \frac{Op}{TA-CL} \; x \; 100,$$ %	Samsung	14,60	21,66	22,60	14,03	13,78	14,09	22,87
	Intel	29,58	20,49	15,60	20,21	16,32	13,83	16,95
Operating profit margin $$Opm = \frac{Op}{Nr} x \; 100, \%$$	Samsung	9,85	14,44	16,09	12,13	13,16	14,48	22,39
	Intel	32,37	27,45	23,32	27,47	25,29	21,67	28,59
Net profit margin $$Npm = \frac{Np}{Nr} x \; 100, \%$$	Samsung	8,32	11,86	13,33	11,34	9,50	11,26	17,61
	Intel	23,96	20,62	18,25	20,94	20,63	17,38	15,30

Source: calculated by the authors based on the information contained in the annual financial reports of Samsung Electronics sustainability reports and annual reports and Intel Corporations annual reports

The Figure 1 shows the evolution of the "Return on Asset " indicator at Samsung and Intel for the period 2011-2017.

Figure 1- Return on Assets ratio at Samsung and Intel in the period 2011-2017
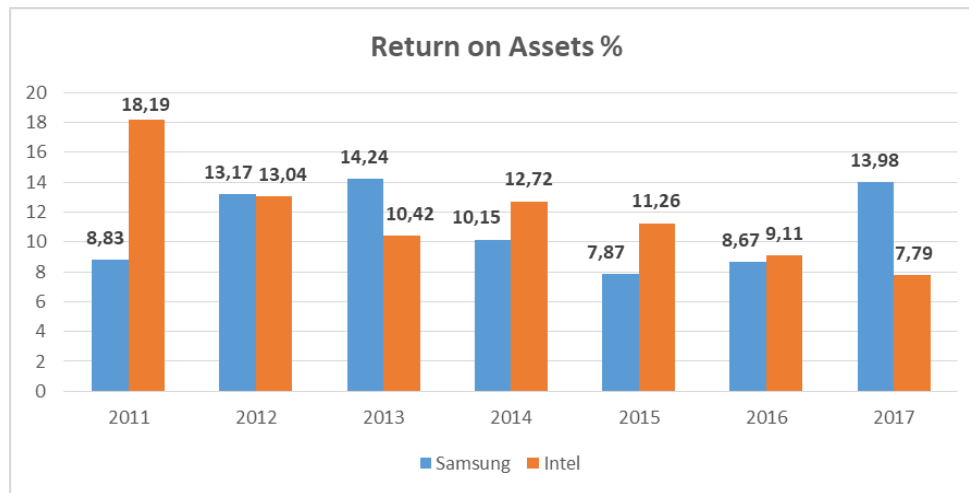
Source: made by the authors; based on data from Table 3

Between 2011-2013, Samsung recorded a significant increase of return on assets, from 0.08 to 0.14 usd net profit / 1 usd assets. In 2014-2015, facing some dificulties in China, Samsung's net profit decreased, even if the value of its assets rose. This evolution

led to a lower ROA, reaching its figure minimum of 0.078 in 2015. At the end of the analyzed period, the company recorded a positive trend and increased its ROA as a result of a higher increase in net profit compared to total assets.

At Intel, we can observe a different evolution of the ROA. Unlike Samsung, at the beginning of the period, Intel records a very good value of return on assets, equal to 0.1819 usd net profit / 1 usd assets. Unfortunately, the company failed to maintain this performance and in the following years, the company has suffered a significant drop of the return on assets, going down to 0.1042 in the 2013. In 2014, Intel reached a higher value of ROA, equal to 12,72.

Between 2015-2017, Intel's ROA has entered a downward trend because of the stagnation of net profit around 9-12 bilion USD compared to total assets value which increased in this period. After studying the main reasons why Intel stopped to increase its profits, we concluded that the company was in an active process of transition to a new structure that forms its net revenue. The company has increased operating and R & D spending, focusing on the development of new technologies to be used for one of the main revenue-generating industries, namely Data Center Business, where Intel holds a monopoly on the market. Even if the company underwent a decrease in the asset's profitability during the analyzed period, it can be assumed in the future that the value of this indicator could potentially increase.

Return on equity (ROE) is an indicator that measures the financial performance of an enterprise and is obtained by dividing net income to total equity. Because total equity is equal to the company's assets – liabilities, ROE may be considered as net assets return.

The return on equity ratio has evolved similarly to the return on total assets. Samsung is showing an increase between 2011-2013 and 2015-2017, with a significant correction during 2013-2015. Intel had a very good value of ROE at the beginning of the period, but, between 2011-2013, went down from 28,19% to 16,41%. In the 2014 we can see an increase of 4,53% in ROE, but after that, Intel's ROE entered a long correction wave which did not finish during the analyzed period, with a ROE ratio equal to 13,91% in the 2017. We can conclude that at the beginning of the perioad Intel had a better return on equity, while Samsung leading at the end of the analyzed period.

The following figure (Figure 2) shows the evolution of the „Return on equity'' at Samsung and Intel during 2011-2017.

Figure 2- Return on equity ratio at Samsung and Intel during 2011-2017
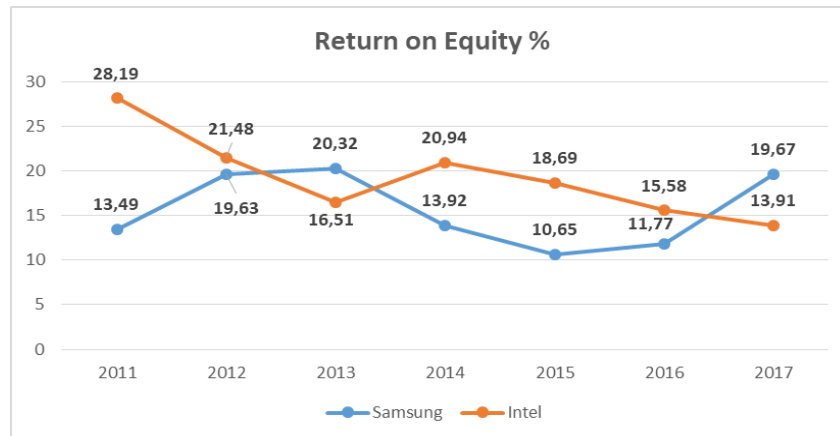
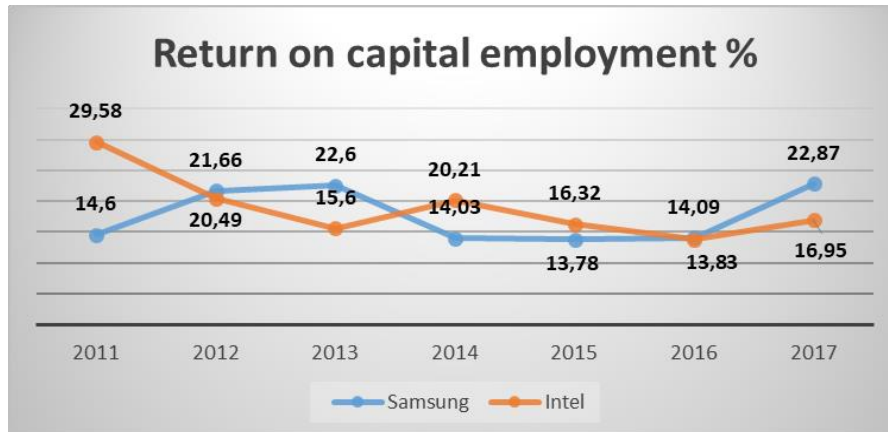*Source:* made by the authors; based on data from Table 3

Return on capital employed (ROCE) ratio is another useful indicator for comparing returns between companies based on the value of the capital they use. To determine its value, we need to know 2 indicators: the earnings before interest and taxes and the capital employed. The result before interest and taxes, also known as operating income, shows how much a company earns from its operations without taking into account interest or taxes. Employed capital is the total amount of capital a company has used to generate profits and represents the difference between total assets and current liabilities.

As can be seen from the below, at the beginning of the analyzed period, Intel had a much better ROCE ratio than Samsung. We can observe that the companies have evolved completely different in the first years of analyzed period: Intel was in a correction that reached a minimum of 15.6 in 2013, Samsung was in an upward trend until the same year when it recorded a ROCE value higher than Intel's value by 7%. In the next period we can notice that this indicator had some fluctuations at both companies, which decrease in intensity during 2014-2016. By the end of the analyzed period, Samsung had a return on capital employed of 22.87% while Intel recorded a 16.95% of ROCE. The faster growth of total assets compared to operating profit is the main reason why Intel has seen a decline. At the same time, we could observe a reverse situation at Samsung.

The figure below (Figure 3) shows the evolution of the return on capital employed at Samsung and Intel:

Figure 3- Return on capital employment ratio at Samsung and Intel during 2011-2017

Source: made by the authors; based on data from Table 3

The operating profit margin is the ratio between operating profit and net revenue. This indicator expresses the profitability of the production process over a given period. In the following figure (Figure no. 4) we have represented the dynamics of operating profit margin at both companies.

Figure 4- Operating profit margin at Samsung and Intel during 2011-2017
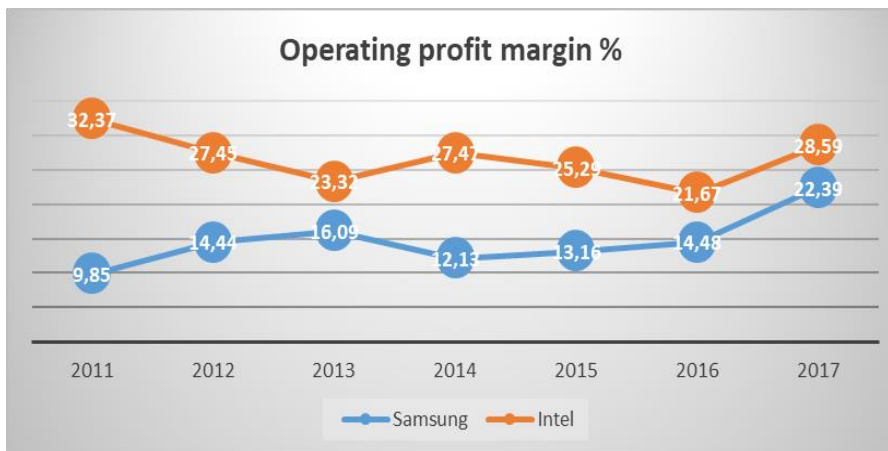
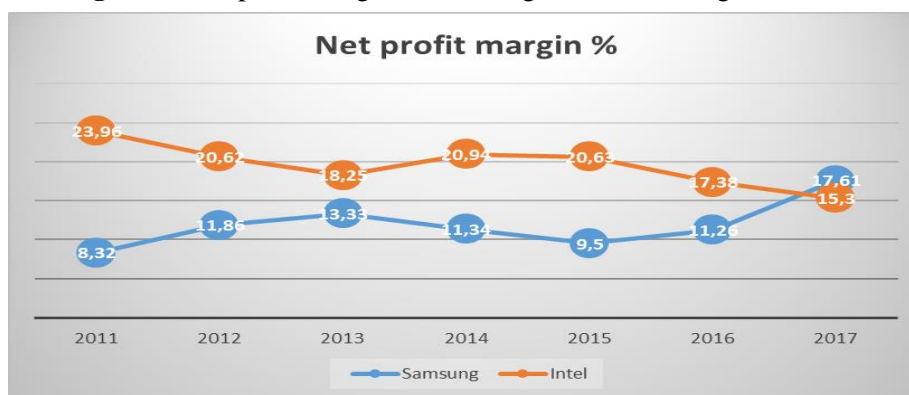*Source:* made by the authors; based on data from Table 3

The results presented in the figure above show a downward trend at Intel, with the main negative trends recorded in 2011-2013 and 2014-2016. The increase in operating profit can be observed in 2014 and 2017. Samsung saw a single correction that lasted about one year between 2013 and 2014, while in the rest of the time, the company continued to grow its operating profit margin, reaching 22,39% in the 2017.

The impossibility of companies to ensure a steady increase in operating profit is primarily caused by the cyclical nature of the industrial sector in which they operate. The field of semiconductors is a cyclic one. This is due to the fact that there may be rapid and sudden drops in demand on the market. This cycle coincides with the evolution of demand for various electronic products, such as PCs and smartphones, which is directly connected to the population's consumption pattern. In other words, when the global economy is growing, semiconductor companies produce at the maximum capacity. However, when the economy is in a shrinking phase and computer sales are slow, companies can no longer produce at their actual production capacity, which has conditioned the decline in operating profit over the period under review.

Much longer Intel's correction can be explained by a stronger grounding in semiconductor activity, with Samsung having a more diversified activity in terms of industry fields and production sectors.

The net profit margin is another financial indicator of profitability, which shows how profitable a company's total activity is (Figure 5). The higher the percentage, the more stable the company in terms of profitability.

Figure 5- Net profit margin at Samsung and Intel during 2011-2017

Source: made by the authors; based on data from Table 3

We considered important to bring into discussion the main issues that have conditioned different company developments in net profits. Although Intel exceeded Samsung's net profit in 2011, in 2017 Intel earned only 26% of Samsung's profit in that year. Samsung's success is primarily due to the expansion of the business and conquering of new markets, diversification of products, growth of profits including other fields than the semiconductors. Consolidation of a strong brand image contributed in securing a loyal customer segment and ensuring a high volume of sale, which with an effective management of expenses, transformed into a strong growth of net profits. Intel's stagnation of profits was conditioned by increased competition and higher expenses on research and innovation, endowment and maintenance of Data Business Center, cyclicality of business, etc. We noticed that even if Intel had bigger expenses in some areas, they also opened up new opportunities for business, which may later lead to increased business performance.

A further part of our analysis is the study of companies' liquidity indicators, presented in the table below (Table no. 4):

Table 4- Evolution of liquidity indicators at Samsung Electronics and Intel Corporations

Liquidity		**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Current ratio $Cr = \frac{CA}{CL}$	Samsung	1,61	1,86	2,16	2,21	2,47	2,59	2,19
	Intel	2,15	2,43	2,36	1,73	2,58	1,75	1,69
Qucik ratio or acid test $Qr = \frac{CA-I}{CL}$	Samsung	1,26	1,53	1,80	1,84	2,08	2,25	1,87
	Intel	1,81	2,06	2,06	1,46	2,25	1,48	1,29

Source: calculated by the authors based on the information contained in the annual financial reports of Samsung Electronics sustainability reports and annual reports; Intel Corporations annual reports

Current or global liquidity - reflects the ratio of current assets to current liabilities. It is an indicator commonly used in testing a company's liquidity.

As can be seen from Figure 6, between 2011 and 2016, Samsung has seen a steady increase in current liquidity, from a low of 1.61 in 2011 to a peak of 2.59 in 2016, then falling to 2.19 in 2017. Intel had also an increased capacity to pay out short-term liabilities, with a minimum ratio of 1.73 in 2014 and a maximum of 2.58 in 2015. Overall, over the period considered, we can conclude that both companies have sufficient financial

resources to honor their payment obligations in the event that the need to pay all short-term debts suddenly arises.

Figure 6- Current or Global Liquidity at Samsung and Intel (2011-2017)
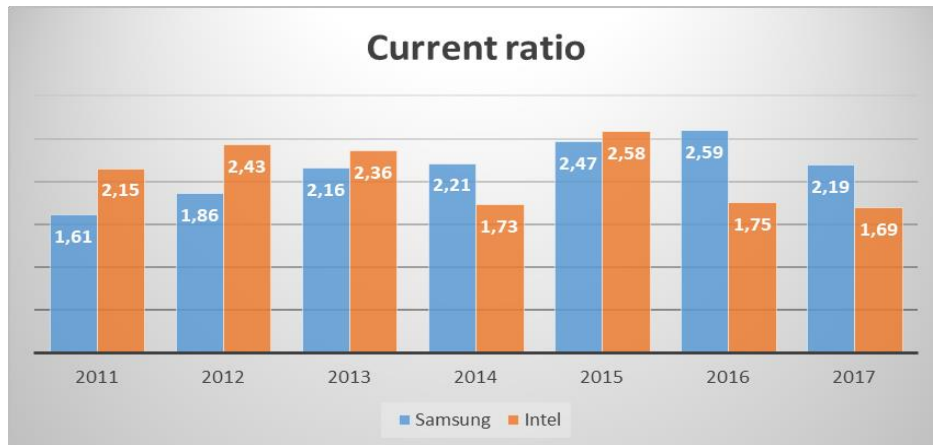
Source: made by the authors; based on data from Table 3

At Intel, a downward trend in liquidity can be seen over the past two years, and at Samsung in the last year. Such a course of things should be avoided, as this points to a decline in the business, causing creditors and suppliers to become a circumspect in terms of according bank credits and establish new supply chains.

It can be concluded that the level of current liquidity is around the maximum acceptable (2), which shows that during the period under review, the companies were able to cover their current liabilities with circulating assets.

Quick ratio or acid test - is calculated using only a portion of the current assets (cash, cash equivalents and receivables) that are divided by current debts.

As can be seen from Figure 7, for Samsung, the indicator values have grown in 2011-2016 from a low of 1.26 in 2011 to 2.25 in 2016, followed by a fall to the 1,87 in 2017. The indicator values for Intel had a more fluctuating course, starting from the ratio of 1.81 in 2011, it reached a constant value of 2.06 in the next 2 years, and then suffered a decrease of 0.60, down to 1.46. In 2015, it hit a maximum of 2.25, and in the next years fell to 1.48 in 2016 and 1.29 in 2017, respectively.

Figure 7- Quick ratio at Samsung and Intel (2011-2017)
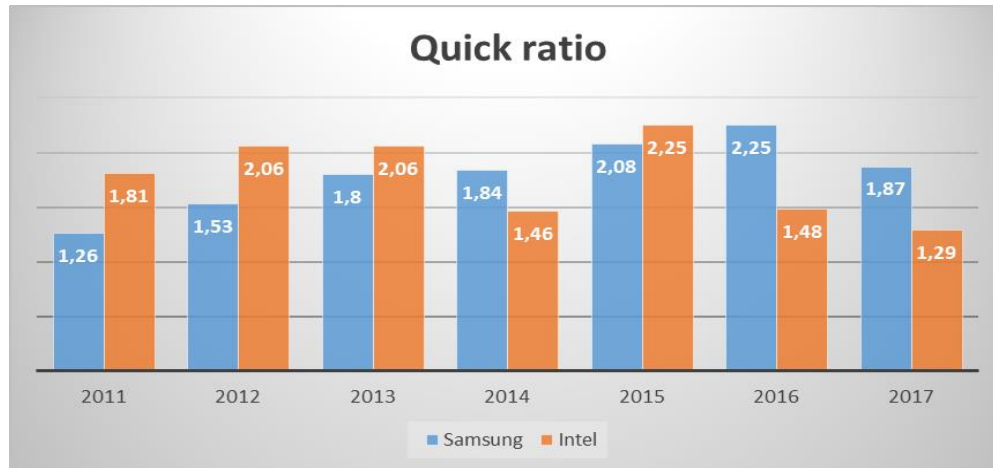
Source: made by the authors; based on data from Table 4

For both Samsung and Intel, the value of this indicator exceeds the safety margin, considered in practice to be 0.8-1. Intel is recording a better rate of quick liquidity over the first three years (2011-2013) and in 2015. In 2014, 2016 and 2017, Samsung recorded a higher value of the indicator. Such an evolution points to the fact that Intel had more capacity to pay its current payment obligations at the beginning of the period under review, while Samsung had more resources at the end of this period.

During the analyzed period, none of the companies registered any values indicating a possible default of current debts. The level of quick liquidity represents an assurance that the analyzed firms are able to cover their short-term debts with current assets which can be rapidly converted to cash.

VI.   Conclusion

Following the comparative analysis of the economic performance of Samsung Electronics and Intel Corporation, we came to the conclusion that Samsung had a much more stable evolution at the most of the analyzed indicators. Although the ROI values at the beginning of the analyzed period were much more favorable for Intel, we could see how Samsung had the supremacy by the end of the period.

Overall, Samsung has shown a more competitive activity in terms of increasing turnover and ensuring profitability. On the liquidity side, it was found that during the

analyzed period, both companies had sufficient current assets to liquidate current liabilities.

References

Chapter from the book

1. Grosu, M. & Mihalciuc, C. (2013). SMEs and CSR in emerging economies of European union, In Hlaciuc, E. Bostan, I., European Research in Horisont 2020, Lumen Media LTD, Publishing in Marea Britanie, pp. 231-241.
2. Mihalciuc, C.C. & Apetri, A. (2017). The Role of Social and Environmental Information in Assessing the Overall Performance of the Enterprise, In Sustainable Economic Development, Part of the series World Sustainability Series, Publisher Springer International Publishing, Copyright Holder Springer International Publishing Switzerland, pp. 213-231.

Article from journals/article found online

3. Bostan, I. & Grosu, V. (2013). Legislative and financial perspectives on the environmental policies of Romania. *Journal of Food, Agriculture & Environment*, 11(2), 918-921. Retrieved May 17, 2018 from: https://www.wflpublisher.com/Abstract/4469.
4. Hartwick, J. M. (1977). Intergenerational Equity and the Investment of Rents from Exhaustible Resources. *American Economic Review*. 67(5), 972-74.
5. Suciu, M. C. & Suciu, N. (2007). Sustainable Development, Key Issue of the 21st Centur, General Association of Engineers in Romania, *Bulletin No.1*.

Article from conference volume

6. Mihalciuc, C.C. (2016, September 14-15). Given role of corporate social responsability (CSR) in sustenable development. Probleme ecologice şi geografice în contextul dezvoltării durabile a Republicii Moldova: Realizări şi perspective: section Probleme actuale ale economiei şi mediului, Chişinău, R. Moldova. 689 -695.
7. Mihalciuc, C.C. & Apetri, A. N. (2016, September 14-15). Măsurarea şi comunicarea performanţei globale a entităţii prin raportarea sustenabilă. *Probleme ecologice şi geografice în contextul dezvoltării durabile a Republicii Moldova: Realizări şi perspective:* section Probleme actuale ale economiei şi mediului, Chişinău, R. Moldova, 696 -703.

Internet source

8. Shaker, R.R. (2015). The spatial distribution of development in Europe and its underlying sustainability   correlations.   Retrieved   May   17,   2018   from: https://www.sciencedirect.com/science/article/pii/S0143622815001745?via%3Dihub.
9. Samsung Electronics sustainability reports and annual reports. Retrieved May 17, 2018 from https://www.samsung.com/us/aboutsamsung/sustainability/report-and-policy/.
10. Intel Corporations annual reports. Retrieved May 17, 2018 from: https://www.intc.com/investor-relations/financials-and-filings/annual-reports-andproxy/default.aspx.

11. Global performance of the enterprise. Retrieved May 17, 2018 from: https://www.investopedia.com.
12. Economic interpretation examples. Retrieved May 17, 2018 from: https://www.worldeconomics.com.