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A szakmai folyóirat a Menedzsment és Controlling Egyesület, valamint a NOKKA alapítvány támogatásával készült



MENEDZSMENT ÉS CONTROLLING
EGYESÜLET

Dr. Elvira Böcskei – Gábor Földes

Risk and rewards versus right of use: financial performance evaluation in the telecommunication sector, focusing on leases

This paper provides an assessment on the adoption of IFRS 16 lease standard for enterprise performance management in European telecommunication industry, focusing to lessee side.

ABSTRACT

This paper provides an assessment on the adoption of IFRS 16 lease standard for enterprise performance management in European telecommunication industry, focusing to lessee side. The main finding based on annual reports and investor relation communications shows that despite all leases reported under IFRS 16 in the statement of financial positions based on right of use principle, for performance measurement purpose “after lease” proforma adjustments introduced in financial KPIs to correct back principally the capitalisation impacts of non-finance (operating) leases.

INTRODUCTION

This paper covers the international financial standards on lease contracts. Leases has received a considerable critical attention, when International Accounting Standard Board (IASB) introduced a unified lease modelling in International Financial Reporting Standards (IFRS) 16 standard for lessees, requiring all leases (including “off-balance sheet” operating items) to be recognized in the statement of financial position (Balance Sheet, BS) in form of right-of use (ROU) asset on asset side and lease liability on liabilities side. This is a remarkable deviation from predecessor IAS 17 that made a difference between operating and finance leases. Based on IFRS 16 requirements lessees have to recognize all types of leases in the statement of financial positions, therefore right of use on the underlying assets for contracted time period on asset side and leases on liabilities side. All leases have to be measured on estimated lifetime, taking into account potential extension options, if lessee able to exercise the option right. (Pwc, 2016a)

The new IFRS 16 standard came into force from 2019 financial data for companies entitled to report under IFRS. The goal of the research was to identify those activities and sectors that are the most impacted by the change of international accounting standard requirements (European commission regulation, 2017). Out of impacted sectors this paper focus on telecommunication industry to present relevant differences between IFRS 16 and IAS 17 in financial statements and related investor relation communication.

The harmonization of financial accounting and manageri-

al accounting is crucial. The main goal of IFRS is to provide not only reliable, stable and comparable, but also a meaningful financial information, however Enterprise Performance Management (EPM) – covering principally controlling – might adjust raw accounting data for performance measurement purpose. Even if corporates report their raw financial figures in accordance with IFRS standards, financial management might decide to apply special adjustments in both internal and external communication to reflect better real causal based financial performance.

IASB acknowledged that many commonly used financial performance measures from leverage, liquidity, market value and profitability Key-Performance Indicators (KPIs) could be impacted, influencing stakeholders’ perception on financial performance, but has not issued any interpretations in terms of performance measurement, just only an impact expectation.

RESEARCH METHODOLOGY

This paper is limited to assess IFRS 16 impacts for lessees (operators) side and profitability financial performance metrics in telecommunication industry.

This empirical study built on the impact analysis of financial KPIs from performance management point of view. In telecommunication both internal management and external investor related performance assessments take place in form of so called proforma, non-GAAP metrics. The following for telecommunication highly relevant nominal and revenue based relative performance measures selected for IFRS 16 adoption impact analysis:

Profit or loss statement (P&L) related KPIs:

EBIT (Earnings Before Interest and Taxes): operating profit, as shows the result before interest and tax payments are deducted.

EBITDA (Earnings Before Interest, Taxes, Depreciation and Amortization): a special, future decision variable part of the operating profit, as shows the result before interest, tax payments, depreciation and amortization are deducted, so EBIT corrected by past decision related backward-looking depreciation.

OPEX (Operational Expenditure): covers personnel and material type of operational costs.

CAPEX (Capital Expenditure): capital investment into new tangible and nontangible fixed asset, or their upgrades that extend the assets useful lifetime.

Statement of financial position and cash flows related KPIs:

Total asset: the sum of non-current (fixed) and current assets, the total amount of left side of the BS.

Cash Flow: calculated operative (taxed EBITDA based), investment (CAPEX) and financing related Cash Flow parts, or by the more simple formula: EBITDA minus CAPEX.

RoCE (Return on Capital Employed): asset based profitability (RoCE), where return (EBIT) compared to capital employed (Total asset).

The research focus is on the assessment of performance management internationally most accepted EBIT, EBITDA, OPEX and CAPEX KPI figures, presenting the impact of IFRS standards change, its effect on performance KPIs evaluations and takeaways from financial insights. In the assessment two kind of quantitative approaches were employed related to KPIs:

- nominal financial KPI (eg.: EBITDA) impact analysis covered in form of IFRS 16 impact divided by financial KPI, presented in %, and
- revenues based relative financial KPI (eg.: EBITDA/Sales) impact analysis included in form of difference between financial KPI with IFRS 16 and without IFRS 16, presented in %point.

As telecommunication industry is an infrastructure heavy industry and several hardware-software related assets were optimized in OPEX-CAPEX shift approach, therefore many rental or operating lease type contracts were in force in IAS 17 area. The most affected areas were Mobile base station site, fiber/optic cable (leased lines), real estate (offices, point of sales, technical buildings) and car (benefit, technical) rentals.

The scope of the analysis is the revenue based TOP4 European integrated telecommunications groups – Deutsche Telekom (DE); Vodafone (UK); Telefonica (SP); Orange (FR) – and Magyar Telekom (HU), who are listed on stock-exchanges and disclosed detailed investor relation communication on IFRS 16 in the adoption year.

The analysis based on annual reports of financial years 2019 (IFRS adoption year) and 2020 and related investor relation communications. Besides quantitative methods, qualitative analysis of investor relation communication was also employed to assess IFRS 16 adoption.

IFRS 16 LEASES IMPACT ON FINANCIAL KPIs

Overall IFRS 16 replaces the “risk and rewards” principal to “right of use” model, that requires lessees to recognize ROU as asset and leases as liability, based on the discounted future cash flow during the lease term.

In terms of P&L, IFRS 16 leads to a decrease in EBITDA relevant costs, namely in Cost of Sales (CoS), if any and OPEX, as operating leases were previously recognized as material cost (eg.: rental fee, etc.). This is just partly offset by the increase of depreciation from higher asset value. Therefore EBITDA proforma financial KPI definitely increases, however EBIT increase is more modest, as increase from

EBITDA is partly offset by increase in depreciation. Interest expenses related lease liabilities also has an effect that should be cleaned.

In terms of BS on Asset side under non-current (fixed) assets, IFRS 16 impact recognized in a separate ROU asset line or in underlaying asset type (Tangible or Intangible Asset) based on the Net Present Value (NPV) of ROU asset, parallel on Liability side major part under Non-current (long term) Liabilities with equal value. CAPEX is also impacted due to new lease contracts continuously capitalized at NPV value, previously in IAS 17 stated in P&L OPEX material line.

IASB acknowledged that proforma KPIs will be impacted and published a comprehensive study on most realistic expected impacts on metrics and differences (IASB, 2016), as following tables shows.

The table confirms that profitability KPIs and TOTAL assets were expected to increase, while in case of ROCE and Cash Flow metrics minor or no impact assumed. Therefore the research focus on EBIT, EBITDA (and relevant cost items as OPEX, CAPEX) as well as Total Asset.

IASB published study also made an estimation for IFRS 16 impact on relevant financial KPIs per sector.

Tables revealed that the telecommunication sector is medium impacted both in BS and P&L, compared with other sectors.

Total Asset expected to increase by 6.1% and increase of EBIT estimated to be 0.62%point. In relation to EBIT impact, IASB also disclosed the estimated split of telecom operators among impact grades: the average 0.62%point increase is coming from that one third of companies belongs to 0.2-0.5%point grade and almost one third to the 1.0-1.5%point grade.

Even though disclosing these estimations, IASB did not put a special stress on interpretation of IFRS 16 impacts on business insight and enterprise performance management aspects, which is the root cause of current uncertainty in acceptance of IFRS 16, as real performance measure.

Big audit and consultancy firms also revealed their own estimations on potential impact of IFRS 16 adoption, summarized in the following table from PricewaterhouseCoopers.

PWC estimated for the telecommunication sector 8% median impact at EBITDA level that is the lowest impact among sectors, however it is still remarkable.

These studies remained rather at general level during assessing the difference of financial and management accounting, and containing less quantitative and qualitative metrics for a special industry, like telecommunication. In literature very few

Table I.: Overview on IFRS 16 impacts of key metrics

Metric	Expected Effect	Explanation
EBITDA	increase	expenses for off balance sheet leases excluded
EBIT	increase	depreciation charge is lower, than expenses for off balance sheet leases excluded
Total asset	increase	off-balance sheet leases reported as ROU
Net Cash Flow	no change	cash will be not affected
ROCE	depends	EBIT and Asset (Liabilities) is increasing, depends on their ratio

Source: Authors' summary based on based on IASB, 2016

Table II.: Overview EBIT/Sales margin related IFRS 16 impacts by sector

Industry sector	No. of Companies	EBIT (%) (IAS 17)	EBIT (%) (IFRS 16)	EBIT (% point difference)
Airlines	50	6.33%	7.69%	1.36%point
Retailers	204	6.01%	6.66%	0.65%point
Travel and leisure	69	11.80%	13.15%	1.35%point
Transport	51	10.00%	10.70%	0.70%point
Telecommunications	56	13.18%	13.80%	0.62%point
Energy	99	8.11%	8.42%	0.31%point
Media	48	17.70%	18.29%	0.59%point
Distributors	26	3.70%	3.94%	0.24%point
Information Technology	58	18.28%	18.50%	0.22%point
Healthcare	55	15.41%	15.63%	0.22%point
Others	306	10.63%	10.83%	0.20%point
TOTAL	1022	10.19%	10.58%	0.39%point
Industry sector	Present value of Future payments for off balance sheet leases / Total assets			
Airlines	22.7			
Retailers	21.4			
Travel and leisure	20.7			
Transport	11.6			
Telecommunications	6.1			
Energy	5.5			
Media	5.5			
Distributors	4.3			
Information Technology	3.0			
Healthcare	2.9			
Others	2.2			
TOTAL	22.7			

Source: Authors' summary based on IASB, 2016

Table III.: Summary of PWC Global leases capitalization study

Industry sector	Median increase in debt	Median increase in EBITDA
Airlines	47%	33%
Retailers	98%	41%
Transport & logistic	24%	20%
Telecommunication	21%	8%
Entertainment	23%	15%
Health care	36%	24%
Wholesale	28%	17%
Professional services	42%	15%
TOTAL	22%	13%

Source: Authors' summary based on Pwc, 2016b, Pwc 2016c

industry specific studies available, and they focused on highly impacted sectors, like airline industry (Tóth, 2019).

What is interesting that surprisingly few papers deal with the assessment of after IFRS 16 introduction related actual impact comparison to expected deviation and analysis of corporate behaviour. The potential reason might be that the change is relatively new, as IFRS 16 came into force in 2019, therefore just a very short time serial empirical actual data available. The real novelty of this paper is that besides compare actual impact of

financial accounting standard change to expected effects (eg. IASB or PWC estimation), also assess the impact from performance management (management accounting) and investor relation communication point of view for the telecommunication sector.

IFRS 16 on one side brings a clear standardization from financial accounting point of view into Financial statement raw numbers, however on the other side it poses a challenge on transparency and comparability at management accounting proforma figure level.

FINANCIAL KPIs OF MAGYAR TELEKOM

Magyar Telekom (MT) had the most matured and transparent investor relation communication regarding IFRS 16 impact, therefore the broader analysis is presented on MT's figures (Magyar Telekom, 2020), and the most relevant methodologies will be extended to the comparison of key industry players.

In the first implementation year, in 2019 *bottom-up approach* was disclosed regarding IFRS 16 impact in MT in Financial Statements that contained in P&L the OPEX reduction due to capitalization of ROU, the depreciation increase from ROU Assets and interest increase from growth of lease liabilities. In BS

a separated ROU asset line appeared in non-current assets and a lease liabilities in both current and non-current liabilities. In CAPEX report IFRS 16 impact was also set aside. Besides name of “IFRS 16 impact” Magyar Telekom also introduced for the adjusted most important KPIs, the name of “*After Lease (AL)*”, for example “EBITDA AL”.

From the next reported financial year, 2020 MT has followed the *top-down approach* in IFRS 16 impact reporting, as OPEX indirect cost related decrease from second year can not be followed from a bottom-up approach. The top-down AL report focused on adjustment of depreciation and interest increases in P&L to reach EBITDA AL from EBITDA on Earnings before logic, and separate lines was continuously used in BS and CAPEX reported in AL form also.

The following table summing up the key impacts at nominal KPI level.

In 2019 Magyar Telekom reported in Financial Statements the following AL impacts:

- At EBIT level a 2.6% artificial performance improvement reported.
- At EBITDA level it amounted almost 9% increase that MT financial management did not assess a real performance improvement, thus this became a correction item.
- At OPEX (EBITDA relevant part, without depreciation) MT reported a 19.6 Bn HUF, 4.4% decrease due to capitalization of operating lease and rental contracts.
- At CAPEX (excluded one-off spectrum acquisition cost from auctions) the IFRS 16 impact is remarkable, exceeding 20% adjustment.

Altogether IFRS 16 caused substantial impacts in performance metrics.

Based on MT financial statements and investor relation communication, the introduction of new IFRS 16 standard for lease contracts on one hand brought real standardization in financial accounting, eliminating difference of operating-finance leases and promoting transparency in accounting reports. On the other hand from management accounting perspective, it caused up to 20% deviation in various proforma non-GAAP financial performance measures, in line with IASB estimation on potential impact.

The next table show key performance metrics in IAS 17, IFRS 16 and IFRS 16 AL levels.

The table although contains performance related difference between financial years 2018-2019, clearly displays that IFRS 16 has remarkable non-performance related impact on selected KPIs. The After Lease correction allows to make an adjustment towards the previous IAS 17 view in order to preserve trend analysis and more transparent performance communication both for internal and external stakeholders.

Besides nominal financial KPI comparison, the revenue-based industry performance metrics, like EBITDA/sales, EBIT/Sales and CAPEX/Sales margins provide relevant information on IFRS 16 impact. The next table shows

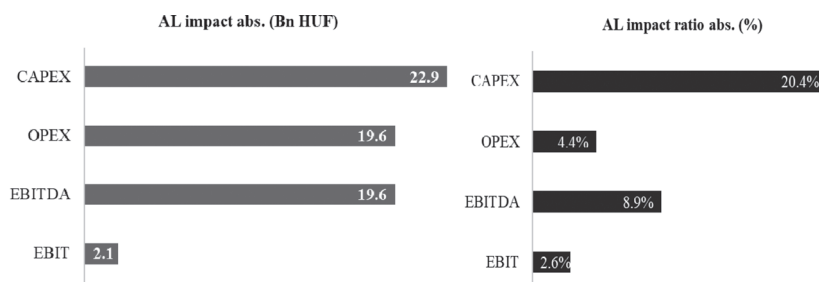
the key revenue-based performance metrics in IAS 17, IFRS 16 and IFRS 16 AL levels.

Based on Magyar Telekom’s Financial Statements reported for 2018 and 2019 besides performance related impacts, the following non-performance related IFRS 16 impacts are visible:

- The EBIT / Sales margin is around 12% and IFRS 16 caused no significant impact, in line with IASB estimation. (MT: 0.3%point, IASB telco industry: 0.62%point)
- The EBITDA / Sales margin exceeding 30% and IFRS 16 responsible for a higher deviation, in line with PWC estimation (MT: 2.9%point, PWC: 8%point)
- The CAPEX / Sales margin is around 15% and IFRS 16 has also a remarkable impact with more than 3.4%point deviation.

Table IV.: Overview on IFRS 16 / AL impact in Magyar Telekom figures in 2019

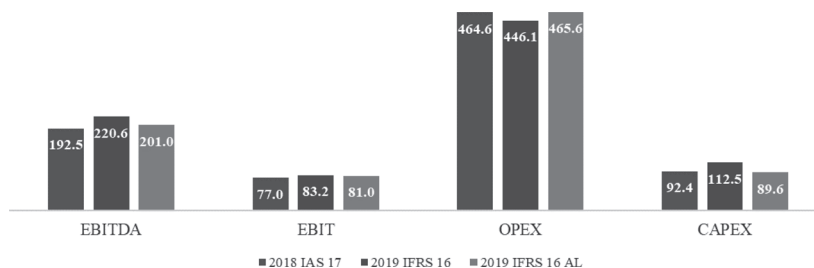
Magyar Telekom	EBIT	EBITDA	OPEX w/o D&A	CAPEX
IFRS 16 (Bn HUF)	83.2	220.6	–446.1	–112.5
AL impact (Bn HUF)	2.1	19.6	19.6	–22.9
AL impact ratio (%)	2.6 %	8.9 %	4.4 %	–20.4%



Source: Authors’ analysis based on MT’s Annual reports

Table V.: Overview on IAS 17 (2018), IFRS 16 / IFRS 16 AL (2019) in MT figures

Magyar Telekom (Bn HUF)	EBIT	EBITDA	OPEX w/o D&A	CAPEX
2018: IAS 17	77.0	192.5	–464.6	–92.4
2019: IFRS 16	83.2	220.6	–446.1	–112.5
2019: IFRS 16 AL	81.0	201.0	–465.6	–89.6



Source: Authors analysis based on MT’s Annual reports

Table VI.: Overview on IFRS 26 related impact on MT revenue based KPIs

Magyar Telekom (%)	EBIT /Sales	EBITDA / Sales	CAPEX / Sales
2018: IAS 17	11.7%	29.3%	14.1%
2019: IFRS 16	12.5%	33.1%	16.9%
2019: IFRS 16 AL	12.2%	30.2%	13.4%
2019 AL impact (%point)	0.3 %point	2.9 %point	–3.4%point

Source: Authors analysis based on MT’s Annual reports

Table VII. summing up industry standard margin levels of leading KPIs and adding MT's IFRS16 AL impact, demonstrating that IFRS 16 causes a non-performance related deviation compared to previous ranges and trends that might lead to an improper interpretation of financial performance.

FINANCIAL KPIs OF TOP4 EUROPEAN INTEGRATED TELCO GROUP

Magyar Telekom followed the international trend in telco sector, where since IFRS 16 came into force in reported figures, After Lease version of financial KPIs are introduced for EBIT, EBITDA, OPEX and CAPEX metrics that principally try to adjust back the figures to the old IAS 17 like view. Unfortunately, the correction and in particular the related communication is not standardized among players, therefore difficult to identify the accurate correction effects, that decreases transparency and makes more difficult to do a real peer to peer performance comparison among companies.

Decreased transparency firstly roots in the lack of unified signing of correction. The most widespread name is "After Lease" (AL), but Vodafone refers just as adjusted number (sometimes together with other factors), while Telefonica continued the reporting under the same expression (eg.: EBITDA), without any differentiation mark referring it is not the official statutory IFRS 16 figure (Telefonica, 2020).

Secondly the accurate content of AL also not specified in details in public reports. Definite top-down adjustments are filtering ROU related depreciations and interest expenses related to lease liabilities in P&L and ROU assets from BS Assets.

Vodafone CFO stated explicitly and most clearly already before adoption of IFRS 16 that: "For FY20 we will adopt IFRS 16 for our statutory reporting. However, from a management reporting perspective we intend to adjust for the benefit to EBITDA and FCF arising from the capitalization of operating leases as finance leases under IFRS 16. This is because we believe that considering our cash generation after leases is more representative of our underlying cost structure". (Vodafone, 2019)

The most transparent handling is the parallel reporting, containing both IFRS 16 and IFRS 16 AL figures that practice is followed by German owned companies (Deutsche Telekom, Magyar Telekom). In line with IFRS reporting requirement, the year of adoption (2019) contains the broadest information-set in all companies (Deutsche Telekom, 2020). The less transparent and unmaturing communication and reporting produced by Vodafone, that introduced AL expression only in 2020 (Financial Year 2020/21) very limitedly. The most transparent reporting performed by Magyar Telekom in both years.

Based on the unmaturing handling of IFRS 16 AL adjustments in TOP4 European telecommunication groups it is highly limited to make comprehensive performance KPI list for the operators as one or in majority cases many AL data missing or

Table VII.: Overview on telco financial KPI ranges and empirical distortions

Telco industry standards	Normal Range	MT IFRS 16
EBIT/Sales %	10% – 15%	< 1%point
EBITDA/Sales %	30% – 40%	< 3%point
CAPEX/Sales %	10% – 15%	> 3%point

Source: Authors analysis

Table VIII.: Overview on IFRS 16 impact on financial KPIs in TOP4 European telcos

Financial KPIs	Profit impact	Impact size	Impact range
EBITDA	improved	high	10% – 15%
EBIT	unchanged	moderate	–3% – +7%
CAPEX	worsened	heavy	20% – 25%

Source: Authors analysis based on operators' financial statement

Table IX.: Overview on IFRS 16 impact on Total Asset in TOP4 European telcos

FY 2019, m EUR	Deutsche Telekom	Vodafone	Orange	Telefonica	Magyar Telekom
Total Asset IFRS 16	170 672	168 168	106 741	118 877	3 414
Total Asset IFRS 16 AL	152 674	158 530	100 041	111 938	3 117
ROU Asset (AL impact)	17 998	9 638	6 700	6 939	296
AL impact ratio (%)	10.5%	5.7%	6.3%	5.8%	8.7%

Source: Authors analysis based on operators' financial statement

content is not cleared. Therefore the overall results on selected data can summed up only in the following table.

The telco industry's number one financial performance indicator EBITDA is impacted highly, as operating leases related OPEX items transformed from P&L to BS, therefore w/o AL it would indicate an artificial performance improvement. The EBIT impact is quite modest as OPEX decrease and ROU depreciation increase partly offset each other. The investment indicator CAPEX also heavily impacted as all new lease contracts are capitalized at first.

The Total Asset is the solely financial indicator, where IFRS 16 impact are comparable among TOP4 European telecommunications groups and Magyar Telekom due to the separate report of ROU asset line, summarized in the next table.

TOTAL Asset displays the best way the IFRS 16 impact and all leases at NPV based value have to be recognized in the BS under ROU Asset category. Among European Telecommunication groups IFRS 16 caused 5-10% increase in total assets that influence further KPIs, like capital employed part of RoCE.

Summing up the international research, two main findings are visible related to IFRS 16 transition in telco industry. First despite operators report under IFRS 16, they apply AL adjustments for performance measurement purpose both for internal and external communication. Secondly, although the aim of IFRS 16 to standardize finance and non-finance (operating) leases and exclude off-balance sheet items, due to not clearly communicated AL adjustments the transparency and comparability of pro forma performance measurement KPI levels not improved.

CONCLUSION

The introduction of new IFRS 16 standard for lease contracts brought real standardization in financial accounting, eliminating difference of operating-finance leases and promoting transparency in pure accounting reports. However, from management accounting perspective it caused 0-20% deviation in various proforma non-GAAP financial performance measures, in line with estimation in literature.

The originality of this paper is that, besides validating previous impact estimations, it extends the analysis for all telecom sector relevant KPIs and points to the financial challenges raised by new IFRS 16 figures from enterprise performance management view in both internal as external stakeholder management. In telecommunication industry in spite of financial statements reported under IFRS 16, new After Lease financial KPIs are introduced for EBITDA, EBIT, OPEX and CAPEX metrics that principally adjust back the figures to the old IAS 17 view. Although the aim of IFRS 16 introduction was to promote clarity via standardization of all kind of leases, unfortunately the AL adjustment and in particular the communication on pro-forma measures is not standardized among player that decreases transparency and the real peer to peer comparability of companies.

Potential future study scope could be the analysis of other industries' experience on IFRS 16 handling, or even evaluate the opportunity to standardize currently proforma non-GAAP performance metrics to promote real financial performance transparency. The compelling need for standardized OPEX, CAPEX and IFRS 16 adjustment handling is increased by EU taxonomy regulation, requiring clear reporting of sustainability related activities out of OPEX and CAPEX.

REFERENCES

- DEUTSCHE TELEKOM (2020): *Deutsche Telekom, The 2019 financial year*, <https://report.telekom.com/annual-report-2019/servicepages/downloads.html> (accessed: 01.08.2022)
- EUROPEAN COMMISSION REGULATION (2017): *European commission regulation (EU) 2017/1986 of 31 October 2017 amending Regulation (EC) No 1126/2008 adopting certain international accounting standards in accordance with Regulation (EC) No 1606/2002 of the European Parliament and of the Council as regards International Financial Reporting Standard 16* <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017R1986&from=HU> (accessed: 01.08.2022)
- IASB (2016): *Effects Analysis, IFRS 16 Leases*. <https://www.ifrs.org/-/media/project/leases/ifrs/published-documents/ifrs16-effects-analysis.pdf> (accessed: 01.08.2022)
- MAGYAR TELEKOM (2020): *Consolidated Annual Report of Magyar Telekom 2019*, https://www.telekom.hu/static-tr/sw/file/IFRS_Group_20191231_AGM.pdf (accessed: 01.08.2022)
- ORANGE (2020): *Consolidated financial statements Year ended December 31, 2020*, <https://www.orange.com/sites/orangecom/files/documents/2021-02/Consolidated%20financial%20statements%202020.pdf> (accessed: 01.08.2022)
- PWC (2016a): *Introduction of new leasing standard (IFRS16)*. https://www.pwc.com/hu/hu/szolgaltatasok/ifrs/ifrs_16/kiadvanyok/lizingstandard.pdf (accessed: 01.08.2022)
- PWC (2016b): *IFRS 16: The leases standard is changing Are you ready? – PwC*, p8. <https://www.pwc.com/gx/en/services/audit-assurance/assets/ifrs-16-new-leases.pdf> (accessed: 01.08.2022)
- PWC (2016c): *A study on the impact of lease capitalisation IFRS 16: the new leases standard* <https://www.pwc.com/gx/en/audit-services/publications/assets/a-study-on-the-impact-of-lease-capitalisation.pdf> (accessed: 01.08.2022)
- TELEFONICA (2020): *Telefónica Group Consolidated Annual Accounts and Management report 2019*, <https://statics.telefonica.com/en/financial-reports/2020/Consolidated-Annual-Report/> (accessed: 01.08.2022)
- TÓTH, Á. (2019): *Measuring the capitalisation impact of off-balance sheet items under the new IFRS 16-based lease accounting in Hungary*. Hungarian Statistical review, volume 1, number 1, pp. 91–108. 2019. https://www.ksh.hu/docs/hun/xftp/statszemle/2018/08_toth.pdf (accessed: 01.12.2021)
- VODAFONE (2020): *Vodafone Group Plc Annual Report 2020*, <https://investors.vodafone.com/sites/vodafone-ir/files/vodafone/annual-report/vodafone-annual-report-2020.pdf> (accessed: 01.12.2021)
- VODAFONE (2019): *Vodafone Group Plc Annual Report 2019*, p. 27, <https://investors.vodafone.com/sites/vodafone-ir/files/vodafone/annual-report/vodafone-full-annual-report-2019.pdf> (accessed: 01.12.2021)

Dr. Zsolt Téglá – Dóra Kinga Gulyás – Dr. István Zsombor Hágén

Controlling and Logistics Objectives for Commercial Enterprises

The most important task of controlling and logistics is precisely to strengthen, coordinate and manage the link between strategy and logistics in order to enable actively contribute to the company's effectiveness and success.

ABSTRACT

Recent years and the COVID 19 crisis have clearly demonstrated the fundamental fact that only businesses that have an information surplus, a diversified management portfolio, are modularly integrated into larger enterprise systems, adaptable, and make prudent and considered economic decisions can survive. For a company to be able to meet these conditions in logistical terms, it must have a well-defined strategy. At the top strategic level is the level at which the company should concentrate on the dimensions of logistics service quality and set targets within these dimensions. To answer this question, it is necessary to have a good understanding of the existing logistics system and logistics capabilities, as well as of customer needs. The actuality of researching topic is verifying the conformity of economic environment impression, which is the condition of the competitive entrepreneurial activity. While we were performing the research we explored the goals of strategy and the harmony of controlling and logistics works with the controlling system supporting items. In our study cases we made several qualitative interviews and analyzed the value creation processes of a commercial enterprises and we made an index to the all items. The most important task of controlling and logistics is precisely to strengthen, coordinate and manage the link between strategy and logistics in order to enable logistics to actively contribute to the company's effectiveness and success. We undertook that we composed our findings in „Best Practice” approach. We took several general conclusions which will be good practical guides to the employee of the company for the problems of all days. In the results of our research we made a „Balanced Scorecard” model (with four view points), which is going to create some possibility of competitiveness increasing for the sector of commercial companies.

INTRODUCTION

Our goal is to help businesses perform more efficiently. The focus of our research is on analysing the business environment of businesses and their controlling and logistics activities. Large corporations and software developers offer – controlling and logistics – Business Intelligence solutions. Domestic SME's can not afford to buy the necessary software or employ the appropriate specialist for their application. Because of their complexity software designed to support decision making are unsuitable for smaller enterprises. We have been able to reveal the

concordance of strategic-operational work with the support of the controlling and logistics system. We conducted qualitative data collection through in-depth interviews.

Our case study: the value creation processes of a commercial company is examined from a controlling and logistics point of view by means of BSC. “Best practice” helps to increase the performance of commercial enterprises. We have developed a system of controlling approaches for commercial businesses “Best Practice” so as to help improve their performance.

It is not possible to recommend one single solution for the creation of controlling as, on one hand, the external and internal environmental factors of the enterprises differ and, on the other hand, the principle of cost-profit also plays an important role in decision-making. (ZÉMAN Z. (1998, ZEMAN et.al 2018)

To create a well-functioning logistics system, you need:

- a clear definition of service standards,
- a supply chain structure and an appropriate network strategy,
- the appropriate design of logistics functions (transport, warehousing, materials management, etc.), and
- appropriate information technology, decision and operational mechanisms, effective organisation and change management. (GRITSCH, 2006)

„Performance indicators are essential tools which will tell you if your business is on target or veering off course. Using the right indicators will help you deliver the right results.” BERNARD M. (2011)

It is important for the companies to be open to the new innovative systems and they have to build them into their everyday decision-making mechanisms. Effective and rational way of thinking is essential in the decision-making processes of the managers of small enterprises, which can be assisted by creating a controlling approach and implementing controlling functions.

“Controlling is a subsystem of leadership, which coordinates planning, supervision, and information delivery.” HORVÁTH (2004)

“Controlling is a tool of leadership which fosters adaptation to the dynamic changes of the environment.” ZÉMAN-TÓTH (2006)

KAPLAN-NORTON (1998): “Companies achieve outstanding performance with BSC, which can be used to convey the new strategy.”

In our opinion: Controlling and logistics is a decision-sup-

port system that helps management. It analyses and develops processes as well as provides information for the future in order to achieve better efficiency and productivity. It highlights the critical points for intervention.

MATERIAL AND METHODS

During our research we carried out qualitative data collection and interview making to get the necessary amount of information to identify the problems. The interviews consisted of formal ones that means although the process is flexible and adaptive, it is also planned beforehand. It is not suitable for collecting objective numerical data but perfect for handling complex questions. We applied report as a research method in the initial phases of our empiric research to identify the problems as well as in the final part to check on the reliability of the results.

Part of the recorded text could be transformed into quantitative data but from the parts that cannot be quantified quantitative conclusions can be drawn by content analysis. Besides content analysis it is worth examining the reasons for similarities and differences.

Objective: to collect a sufficient amount of high quality information to examine the controlling and logistics activity of commercial enterprises. Our interviews helped to identify problems and formulate our hypotheses. It is not suitable for gathering objective data, but it can be used to analyse complex issues. The interviews were informal conversations (advantages: spontaneity, flexibility). Interview duration: 60 minutes. The activities of the interviewees (30 people) are related to the examined processes. In my case study the results of my interviews were used and the effects of different factors on each other were also examined.

RESULTS

The company needs to think about which activities it needs to supply its customers, how the activities should be linked and how the supply chain should be structured. It also needs to determine the channels through which the product is to be produced and delivered to the consumer, the companies involved, and how the necessary activities can be optimally shared between the companies involved (e.g. "buy or make" issues). The supply chain encompasses the flow of materials from raw material sources to final consumption. For today's companies, one of the key issues is how to manage the chain of activities necessary to supply consumers. Supply chain management integrates supply chain activities to meet the needs of the end user in a competitive way.

Objective: to develop a commercial – functional – controlling model, to introduce an innovative system, to restructure processes. (BSC) The characteristics of business functions were reviewed from the point of view of planning, decision support, data supply, turnover statements, and performance measurement. In the organization controlling was not complete, lack of necessary approach. The sales, performance and value creation process of the trading company is: procurement, stockpiling and sales.

With the help of the controlling model information sets were created, the data were grouped, and a general index system was created. The information was systematized according to

content and points of connections, they were transformed into quantitative data. Plan-fact data were examined for buyers, suppliers and items. Categories (article, group, main group, partner group).

Objective: to determine the ratio of 1 product, the turnover of 1 customer compared to the group and total turnover (weight, net and margin/gross weight). It is necessary to examine the price range, orders, and the ratio of supplied goods.

Action analysis is a must and the return process has to be reviewed. Inventory deviation and scrap inventory must be shown in weight and value by items. The amount of stocks and receivables must be minimized.

For example, how to optimise the transport function, how to plan more efficient transport routes, and whether transport costs can be reduced, for example by better choice of means of transport. The identification of logistic strategies followed by companies has been addressed by several authors, but there is little empirical evidence of a robust categorisation system. In one of the earliest works, SHAPIRO AND HESKETT (1985) distinguish between three potential competitive strategies in logistics: the innovation strategy, the service quality strategy and the cost leadership strategy.

The introduction of the Balanced Scorecard model improved the financial performance of the company's operational processes and the degree of satisfaction of partners and employees. The modern controlling system led to the establishment and restructuring of a firm with stable financial background and loyal customer relations.

The Balanced Scorecard (next 4 tables) gives a frame to break down the strategy to operative objectives. It helps to implement the strategy.

It is based on Robert Kaplan and David Norton research project from the 90's. Prototype for the BSC doesn't exist, but we can create a general model for different type of companies.

As a primary step in developing the BSC model, we defined financial targets and indicators. We considered it necessary to start with this, as its creation determines the direction of the other viewpoints. In the model, we have formulated goals and assigned ex-post and predictive indicators, as well as measures at a level that supports and assists the processes.

We consider it an important goal to increase sales revenue, margin weight and profit, which can be achieved even by increasing the value of delivery notes and promoting sales. Special attention must be paid to margin weight, as has been mentioned several times. The ex-post indicator is the value itself, but the % of the margin and its comparison with the plan and the base can also be used as a forecast. If the level of margin production decreases, sales prices must be adjusted and purchase values revised.

At the beginning of the year, the owners determine the amount of profit they want to make from the business that year. This ownership expectation should be monitored at least weekly, as a result of which the factors affecting the margin weight and the level and proportion of expenses should be reviewed. The costs must be analyzed item by item, the cause of the outliers must be determined. The elimination of unprofitable customers, the minimization of overdue receivables, cost-effective delivery and compliance with the minimum value also contribute to profitability.

Table 1: BSC Financial Indicators

FINANCIAL PERSPECTIVE				
	Objectives	Subsequent index	Forecast indicator	Measures
1	Increase revenue	ROS	Plan-fact analysis	Promotion
2	Increase profit margin	Gross profit	Profit margin %	Price correction, review of purchase prices
3	Increase profits	Profit	Profit/kg	Review of factors and affecting the margin, revision of expenditure
4	Increase the value of the consignment note	Total value/delivery note	Base rate for fact data	Increase average weight and value for each outlet
5	Unprofitable customers	Cost-to-partner ratio for the gross margin	Loss/customer	Reconsidered whether it is worth serving the customer
6	Reduce costs	Value of itemized costs	Plan-fact analysis	More efficient organization of delivery
7	Minimize Receivables Overdue Amount	Value of overdue receivables, % distribution	Overdue receivables/turnover ration	To post Deferred Loan, Payment Letter Notice, Court Execution
8	Observe the minimum delivery value	Daily selection of partners below value	Transport cost/margin (%)	Increase customer basket average
9	Safe financial stability	Confirmation of financial stability	Cash-flow plan	Increase turnover, reduce costs

Source: Own edition on the basis of the case study practices, (2020)

Taking this information into account, we determined the financial metrics, which are illustrated in Table 1.

In operational processes, we have defined metrics that play a critical role in achieving customer and financial objectives. In the perspective, we focused on improving and controlling activities. The results highlight the areas where innovation is needed as soon as possible to maintain efficiency.

It is important that there is an efficient flow of information between sales and purchasing so that operational processes are not compromised. During ordering, you need to find the middle way by which the goods will not be conspicuously less or unsellably more. After all, both have an impact on further processes. The shortage of goods arises from unserved items, which contributes to increasing customer dissatisfaction. In the case of a sharp surplus, the inventory management process is deteriorating, and the number and value of scrap inventory and short-lived products are likely to increase. Scrap inventory is generated from obsolete unsold products, the value of which is not one of the negligible cost categories. That is why special attention must be paid to the mapping and inspection of products with a short warranty period during the inventory.

Accurate warehouse service and efficient, fast delivery are necessary and even essential for the operational process. The process should be measured by determining the number of warehouse and driver errors, which should be proportional to all services.

The company has created its own branded product line of butcher's products, which is expected to increase sales as a result of the innovation process. It creates value for customers with a good value for money product that has a positive impact on the operating process.

In the learning and development processes, we examined

the background that enables the efficiency of financial, customer, and operational processes. Within the company, efforts should be made to align individual goals with corporate goals. Attention should be paid to human satisfaction, which should be continuously assessed, for example, by filling in questionnaires. The results should be compared with the figures for the base period and, where there is a decrease, management should improve the processes in place to retain the workforce. It is important to keep the fluctuation rate as low as possible, as it impairs productivity. It can be made more motivated by building incentive systems for employees, company events and continuous training, which is important for internal satisfaction. Table 3 illustrates the metrics we have developed for this process.

We focused on the partner in developing metrics from a customer perspective. Through this, we have formulated goals that measure customer satisfaction, loyalty, retention, acquisition, and profitability.

Acquisition of customers is determined by their number as an ex-post indicator. Data relative to the plan as a forecast. In case of failure, the task should be to visit a new partner "x" per week. Importing a new partner is just as important as retaining customers and giving back unpurchased customers.

The pareto principle also applies to trade, which means that 20% of customers account for 80% of turnover. Therefore, the TOP 20 categories need to be prioritized and their purchases monitored. In the event of a drop, a personal visit is required to find out the reason for the drop in traffic. If the value of the purchase has fallen as a result of competition, it is worth giving an individual price offer for one of the volume products in order to retain customer turnover and crowd out the competitor. Customer satisfaction is enhanced by punctual delivery and a minimum rate of complaints.

Table 2: BSC Operational Indicators

OPERATIONAL PERSPECTIVE				
	Objectives	Subsequent index	Forecast indicator	Measures
1	Increase own brand (SM) proliferation	Weight sold from own brand	Article ratio of own brand group	Providing samples and organizing tasting programs
2	Reduce products with short expiry date	List products by item name and quantity	Products with short expiry date/all product in stock	List of daily tasks for sales representatives
3	Minimize waste stock	Value of waste stock	Value of the waste compared to total turnover	Careful monitoring of products with short expiry date
4	Improve inventory management	Inventory monitoring	Rotation speed monitoring compared to goods in stock	Daily tasks for slow moving consumer goods
5		Unserved items	Ordered/unserved value	
6	Improve service in the warehouse	Number of errors	Ratio of errors to total performance	Investigating the cause of errors
7	Handle seasonality	Unserved items	Consideration of base and plan data	Negotiate sales with stock controllers prior to season
8	Increase quality of delivery	Determine and categorise number of errors for each driver	Percentage of error per 1 driver	Review processes for drivers
9		Return goods typology	Ratio of waste or faulty orders	Return goods analysis

Source: Own edition on the basis of the case study practices, (2020)

Table 3: BSC Learning and Development Indicators

LEARNING AND DEVELOPMENT PERSPECTIVE				
	Objectives	Subsequent index	Forecast indicator	Measures
1	Consistency between individual and corporate goals	Define personal objectives	Fulfilment of personal objectives	Exploration of causes of being stuck, assistance
2	Internal satisfaction of employees	NPS survey at company and department level	Comparison of results to base period	Creating tasks for badly performing areas or for those that are changing in the wrong direction
3	Continuous training	Needs assessment	Comparison of the number of courses to the base period	Grab application opportunities
4		Number of participants in further training	Number of participants in proportion of all employees	Reviewing corporate resources and the workload of employees
5	Professional qualification of employees	Collecting professional qualifications	The ratio of people working in their profession to overall employees	Organisation of courses
6	Motivated employees	Number of new ideas	Number of new ideas compared to last year	Utilisation of ideas during working
7		Questionnaire survey	Rate of responses to questionnaire	Development and review of an incentive system, more corporate events
8	Retain workforce	Number of workers leaving	Rate of leaving workers to all employees	Exploration of the causes of fluctuation

Source: Own edition on the basis of the case study practices, (2020)

SUMMARY

With the help of empirical observation, in-depth interviews and the analysis of the case study, we tried to formulate conclusions and suggestions that would improve the possible practical reasons.

In the course of the research, we examined the primary value-creating processes of the examined company, from which

we created metrics. According to the opinions expressed in the case study and the interviews, the controlling system is good, but it is not enough to focus only on these processes. During the conversation, the leaders explained that in case of unsuccessful operation of the support processes, the activity cannot perform the function of a facilitator, which violates the primary value creation process. Even if sales, stocking and purchas-

Table 4: BSC Customers Indicators

CUSTOMERS				
	Objectives	Subsequent index	Forecast indicator	Measures
1	Acquisition of new customers	Number of new customers	Turnover by new customers compared to new partner plan	Daily visit of a given number of new partners
2	Consideration of the TOP 20 partners	Turnover of TOP 20 partners	Ratio of TOP 20 turnover to total turnover	Personal visit, unique price quotation
3	Customer retention	Number of customers placing an order	Ratio of active buyers to all buyers	Personal visit, unique price quotation
4	Reducing complaints	Number of complaints	Complaint rate to all sales	Visit manufacturer about frequently complained products
5	Feedback from existing customers	Number of partners not placing an order last month, last quarter	Ratio of inactive partners to the total number of partners	Call by telephone, enquire about unfulfilled purchase, proposing a special offer
6	Time accuracy of deliveries	Customer satisfaction questionnaire	Proportion of delivery on time	Exploration of causes, process improvement
7	Increased share of networks	Number of shops in the network	Number of potential stores / existing stores	Negotiation by sales manager

Source: Own edition on the basis of the case study practices, (2020)

ing work most efficiently, if transportation and warehousing are not cost-effective, their processes are not controlled, or if there is no financial coverage, the business is inoperable.

We consider the organizational goals of the company to be extremely important. It is necessary to define the mission, vision and core values of the company. The strategy needs to be kept under review to keep pace with dynamic market changes. At the operational level, goals should be divided into classes and tasks within them. Employees need to know the direction, as a result of which they will do their job much more consciously. However, efficient work is greatly supported by controlling. It helps the process by defining vital goals, personalizing the scorecard and updating it with weekly, monthly data and identifying errors. This allows departments to accurately track their results.

We developed the indicator system according to 4 points of view. In the model, we have formulated goals and assigned ex-post and predictive indicators, as well as measures at a level that supports and assists the processes. During our research and confirmations, we made the following statement about the introduction of the Balanced Scorecard model:

The introduction of the Balanced Scorecard model would improve the financial performance of the company's operational processes and, in parallel, the degree of satisfaction of partners and employees. The modern controlling system leads to the establishment and restructuring of a company with a more stable financial background and loyal customer relationships, during which the company's tasks are performed by several motivated and satisfied employees.

The actual logistical functions, transport, stocking, warehousing, materials management, must be assigned to the planned structure. This is the functional level. The issues will determine the actual functioning of each function. What material management or inventory management logic can support the defined service level targets, how the warehousing (storage

mode, technology, etc.) should work. It is here that decisions need to be taken, for example, on the logic and stockholding mechanism to be used, the way in which stocks are recorded and how they are valued.

REFERENCES

- BERNARD, M. (2011): Key Performance Indicators, The 75 measures every manager needs to know. Always learning Pearson Ltd.
- BÖCSKEI, E. (2013): Stratégiai vezetői számvitel, mint a kis- és középvállalkozói szektor lehetséges útja. CONTROLLER INFO 11: pp. 9-14. (2013).
- BÖCSKEI, E. (2015): Üzleti jelentés versus társadalmi felelősség – I-II. rész SZÁMVITEL ADÓ KÖNYVVIZSGÁLAT: SZAKMA 57:(4) pp. 179-181. (2015)
- GRITSCH, M. (2006) A logisztikai stratégia elmélete és legfontosabb kérdései in. Vezetéstudomány, XXXVII. ÉVF. 2006. 6. SZÁM
- HÁGEN, I. ZS. (2005): Controlling szemlélet AVA Konferencia Debrecen CD p. 70 – 75
- HÁGEN, I. ZS (2005): The benefits of applying controlling in Hungarian small and medium enterprises Gazdálkodás folyóirat 53. évf. 23. sz. külökiadása ISSN 0046-5518 p. 103-108. p. 64 – 70
- HÁGEN, I. ZS. (2005): With Controlling to enhance the performance of the agricultural enterprises poster presented the XI TH Congress of the European Association of Agricultural Enterprises Copenhagen august 24 to 27.
- HÁGEN, I. ZS. – TÉGLA, ZS. – VARGA, E.(2008): The income generating capacity of vegetable forcing model farms Gazdálkodás folyóirat 52. évf. 22. külökiadása p. 103-108. ISSN 0046 – 5518
- HORVATH & PARTNER (1997): Controlling: Út egy hatékony controlling rendszerhez Közgazdasági és Jogi Könyvkiadó, Budapest

- KAPLAN, ROBERT S. – NORTON, DAVID P. (1998): Balanced Scorecard. Közgazdasági és Jogi Könyvkiadó, Budapest
- KONDOROSI F-NÉ (1997): Egy vezetői döntést segítő módszer az élelmiszeripari vállalkozásoknál Számvitel és Könyvvizsgálat, Budapest, 1997/9. 388-391.p.
- KOVÁCS, E. – MILLER, GY. – TÉGLA, ZS. (2008): A versenyképesség javításának lehetőségei a tüzeléshasznosítású biomasszára alapozott energiaklaszter ellátási logisztikai rendszerénél. Budapest Gazdálkodás 2008. 4. sz.
- MANN – MAYER (1993): Controlling for beginners. SALDO Budapest 11.p.164
- SHAPIRO, ROY D. – JAMES, L. HESKETT (1985): Logistics Strategy; West Publishing
- SINKOVICS, A. (2002): Pénzügyi kontrolling Közgazdasági és Jogi Könyvkiadó Budapest
- SEURING, STEFAN (2001): Supply Chain Costing. Controlling Praxis, VAHLEN Verlag, München
- VÉRY, ZOLTÁN (2004): Ágazati és funkcionális kontrolling I. SALDO Rt. Budapest
- ZÉMAN, Z. (1998): Controlling szerepe a magyar vállalkozásokban. GATE, Ph.D értekezés, Gödöllő
- ZÉMAN, Z. –TÓTH, A. (2018): A stratégiai pénzügyi kontrolling és menedzsment Budapest: Akadémiai Kiadó, 211 p.

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Outlook of the world of cryptocurrency

The research is significant to analyze the implications of cryptocurrency, concerning the various parameters that affect the market of cryptocurrency, and influence consumer buying behaviour, including factors such as advantages, and disadvantages which predict changing behaviour of consumers in the market.

ABSTRACT

Financial sustainability is one of the most predominant factors, that has played a significant role in controlling the socio-economic and socio-political paradigms of the world since all social and political factors are explicitly related to the economy. Hence, it is given special significance, which is demonstrated by the incorporation of new models, and the adoption of new strategies to attain economic sustainability. One such strategy is the deployment of technology in finance, which has introduced new modes of payment, primarily called digital currency. The digital currency, principally cryptocurrency has changed the complete dynamics of the economy, completely revolutionizing the world of currency. Cryptocurrency is different from fiat currency in that it is not regulated by any third party or intermediary in the form of banks or other financial institutions. But yet, it offers increased transparency, privacy, protection, and regulation of the financial system though it might be vulnerable to some breaches.

INTRODUCTION

With the increasing technological revolution, all the bureaus of human life including society, economy, politics, and environment are incorporated with the technology, whether it's artificial intelligence, big data, data-driven databases, the internet of things, machine learning, cloud computing systems, robotics, and various other forms, have entirely changed the conventional methods used for executing various operations. This technology has primarily worked by replacing the older structural hierarchies and strategies with new techniques, which are more secure, transparent, automated, and efficient.

And since economic sustainability is directly associated with social development, political stability, and environmental advancement, therefore, it is considered critical, giving it the most important among all bureaus. That's why technology has been mostly deployed to the mechanisms that are either directly or indirectly associated with economic development. Hence, as a result, new and digitalized methods of the economy have been introduced, which have largely influenced the systematic mechanism of the international, national, as well as organizational structures of finance, and monetary policy. And though there have been numerous new inventions in the economic world, a recent invention of cryptocurrency, a form of digital currency has entirely revolutionized economics (Dwyer, 2015).

DIGITAL CURRENCIES

Digital currencies as evaluated by JS Hans are a form of currency that is only available and operated in the electronic or digital form and is also regarded as digital money, electronic

currency, electronic money, and cyber-cash. Primarily these currencies can only be accessible through the internet by using a computer, mobile, or laptop since these types of currencies are only available in electronic form. It has been asserted by R Grinberg that digital currencies primarily lack physical attributes, or material existence, which is the principal difference between the federally generated currency or paper money and digital currency.

Paper money is used nearly everywhere, for the exchange of goods and services at international, national, and provincial markets, whereas digital currency is primarily used for the specified markets, which conventionally use an electronic wallet, which can easily access the internet or other networks related to the internet. In other words, physical currencies such as minted money or banknotes are real and definite, showing their physical presence. Moreover, the transactions involving the exchange of these currencies are only possible as both parties involved in the exchange have physical ownership of this paper money. And though the use of digital currency is the same, since both are used to buy various goods and services, the mechanism of how these currencies operate is entirely different from each other. Besides, physical appearance or physical attributes, another predominant distinction between paper money and digital money is that digital money can be used to avail services and purchase goods not only across cities, countries but also continents, which makes it the most seamless invention of technology (Hogan, 2012).

There are two primary forms of digital currencies, including centralized digital currency and decentralized digital currency, which are primarily different from each other based on their regulatory mechanisms. The centralized digital currency as evaluated by MD Brodo and AT Levin is a type of digital token, which is essentially issued by the federal bank, and is pegged to the equivalent value of a federal currency. Furthermore, this type of digital currency is regulated and administered as per the federal monetary policies, which are imposed by the federal bank. This form of digital currency has been established to impose regulations on digital currencies and to ensure that there is a provisional authorization of the government over the digital currency. Consequently, this currency offers financial inclusion and economic transparency. Digital currency hence is a preliminary strategy to endure financial sustainability, without impugning the currency with corruption and black money. Digital currencies are increasingly implemented by many countries all across the world including India, China, Russia, Sweden, and various other states.

ADVANTAGES OF DIGITAL CURRENCY

The major advantages of digital currency as asserted by W Engert and BSC Fung are that it offers cross-border payment, allowing people to avail of services and products throughout the world. Moreover, centralized digital currency is free from credit and liquidity risks, which makes it comparatively more secured and transparent, allowing financial sustainability. Moreover, centralized digital currency, through a retained administration by the federal bank and federal monetary policies supports the international role of federal currency since it is quite sustained and secured. Moreover, centralized digital currency expands access to the general public, allowing them to use it without any external assistance, and at all places, which has largely facilitated people (Kshetri, 2021).

However, a decentralized digital currency which is also referred to as peer-to-peer money, on the other hand, is a bank-free method, that does not depend on any bank or any intermediary to transfer goods and services. Primarily, decentralized currency is used in the virtual markets, and is not regulated by the federal banks, since these currencies are not coherent with the financial regulations as implemented by the government. Furthermore, decentralized currency is cheaper and more economical as compared to centralized digital currency, since there's no intermediary party, which results in lower transaction costs. Moreover, it is asserted by Steve Gilbert and H Lol that decentralized digital currency is more beneficial for the parties involved in the exchange of goods and services, since it allows increased transparency and increased security among them, leading to increased confidence, though it may not be favourable for stabilization of the economic structure of a state. And since the decentralized currency doesn't function according to the financial regulatory system, therefore, it is assumed that decentralized digital currency relatively offers more freedom and more independence. However, the lack of financial inclusion poses a threat to the economic structure of a country, which results from the lack of administrative control over decentralized currency, allowing it to be used for illegal purposes, and corruption. Hence, decentralized digital currency can disrupt the financial structure, leading to the imbalance between economic growth and monetary regulations, as imposed by the federal banks (Rolnick, 2010).

TYPES OF DIGITAL CURRENCY

Similarly, there are three prevalent types of digital currency, which are widely used, and include virtual currency, cryptocurrency, and central bank digital currency. These all are of prime importance since each of these plays a pivotal role in driving the complete technological framework of digital currencies. Virtual currency is an unregulated and unadministered type of digital currency that is fundamentally monitored by either a founding company or a developer, and incorporates miscellaneous stakeholders. However, to control digital currency, a developer is not a requisite, since these currencies can be easily controlled through the use of complicated datasets known as algorithmic combinations based on a definitive protocol. This type of currency is both stored and transacted by the use of software, connected to the internet, and offers a dedicated and secured exchange of goods and services.

Virtual currencies primarily offer faster transactions through automation, increased security through the use of complicated

datasets and algorithmic combinations, increased transparency, and increased convenience. Central bank digital currency, on the other hand, is a type of digital currency that is regulated and monitored and is issued by either a federal bank or a federal organization controlling the financial state of the system. A central bank digital currency can easily replace a traditional currency, conventionally used in a country, and can be used as a medium of exchange between various parties with the consent of the government. However, unlike fiat currency, which is present in both physical and digital forms, centralized digital currency is available only in digital form. And as a result of national regulation, it offers financial inclusion and economic transparency, leading to financial sustainability, therefore it has been accepted by various countries, implementing in the markets as a medium of exchange. Some of these areas include India, England, Uruguay, and others (Berentsen, 2006).

CRYPTOCURRENCY AND ITS IMPLICATIONS

Similarly, Cryptocurrency, the most significant and supreme type of digital currency, is quite similar to virtual currency and is based on a cryptographic framework, which makes it highly secured, and highly protected. Cryptocurrency is primarily a decentralized digital currency since it does not depend on a third party or an intermediary and does not follow any provisions implied by the federal government. Cryptocurrencies are these digital or virtual currencies that depend on cryptographic systems, and allow the users to execute online payments without using any external source, or third-party intermediary. The word crypto is regarded as the various encryption datasets that are based on cryptographic techniques, which safeguard data entries including public-private key pairs, elliptical curve encryption, and hashing functions. It is asserted by R Auer and R Bohme that cryptocurrency uses cryptographic techniques, which principally include blockchain and distributed ledger technology, make it nearly impossible for hackers to hack the system, or counterfeit or double-spending the system, since these technologies incorporate a disparate and extensive network, which makes it immune from external threats.

Besides the mechanism of cryptocurrency, since is based on a decentralized digital economy, therefore it is also immune to the interference of the government and hence immune to governmental manipulation. Hence, the protection that cryptocurrency offers to users, from both sides, makes it a very reliable and secured type of digital currency, making it preferable. Normally, users access the cryptocurrency by buying it from cryptocurrency exchanges, and cryptocurrency mines, and can be used for various functions including sales, retail, gaming, trading, and others (Townsend, 1989).

BITCOIN AND ITS SIGNIFICANCE

Bitcoin is a very important form of decentralized digital currency, which works by use of verified transaction networks, principally using cryptographic nodes to store and retrieve data using blockchain, a form of distributed ledger technology. Bitcoin though is a highly secured system and a highly protected strategy since it is immune from governmental interference, as well as third intermediaries, which gives the users confidence and trust to use the digital currency. Furthermore, digital currency is very easy to use, since it was released as open-source software, offering increased transparency (Andolfatto, 2018).

FORMS OF CRYPTOCURRENCY

Evaluating the various forms of cryptocurrency, T Keister and Dr Sanches, have listed 20 primary types of cryptocurrencies, which are widely used as a medium of exchange. These types include bitcoin, stable coin, lite coins, Ethereum, Cardano, EOS, and various others. The word alternative coins, which is also simplified as altcoins, is collectively used for token cryptocurrencies, which are not included under the tag of the bitcoin. The altcoin is also disparagingly referred to as the shitcoins or alternative versions of bitcoin. It has been asserted by MJ Kiff and J Alwazir, that the term altcoin has been proposed to include all types of cryptocurrency tokens that have been proposed after the bitcoins. The primary difference between bitcoin and altcoin is that altcoin uses smart contracts rather than blockchain cryptography, which is equally transparent and is equally protected like cryptography but is more automated since it allows to perform various transactions through systematic databases (Schreger et. al, 2021).

ADVANTAGES OF CRYPTOCURRENCY TO THE ECONOMIC WORLD

Considering the various advantages offered by cryptocurrency, it has entirely revolutionized the complete infrastructure of economics, offering numerous benefits to the financial paradigms, leading to the stabilization of the financial structure of the world. Cryptocurrency offers a very unique, yet sustainable paradigm for the increased transparency and increased security of the economic system, using a decentralized system of economy. The significance of cryptocurrency primarily lies in the independence of the mechanism that it uses for the transaction of money, primarily independent of the centralized intermediaries including financial institutions, independent of these institutions to implement regulations that somehow impede the autonomy and sovereignty of the users. This results in increased confidence and trust of users, which operate the entire system with the assistance of developers, and algorithmic combinations using the system to execute the operation by themselves, through increased automation.

Moreover, the system of cryptocurrency eliminates the possibility of a single point of failure, which is very common in banks and a leading cause of disruption of financial systems, leading to economic regression. Hence use of cryptocurrency is comparatively safer, as it eliminates the possibility of financial breakdown and fosters the process of economic sustainability (SÖNMEZ, 2020).

Furthermore, cryptocurrency facilitates the process of sending and receiving funds between two various parties, by using algorithms, and blockchain, without the need for physical presence or any meeting, but all the matters can be resolved virtually, without the assistance of third parties and banks. Hence, this has largely increased the efficacy and effectiveness of online transactions, which are not only highly effective but also highly secured, through the use of public keys and private keys, and various other forms of incentives including proof of work which is also typically known as proof of stake. And since cryptocurrency explicitly operates between two parties, therefore it is much faster compared to the transfer of fiat currency, which primarily incorporates three parties, and hence takes more time. For instance, flash loans, a type of cryptocurrency, primarily a decentralized form of finance, can be processed with-

in seconds, without backing collateral, and hence are extensively used in trading. Therefore, because of convenience and time-saving, cryptocurrency has the optimal potential to serve as a very productive form of currency in the trading, and other transfers of funds (Perugini and Maioli, 2014).

Furthermore, cryptocurrency can be highly useful for generating profits, and large sums of revenue since cryptocurrency markets have been flourishing over the last two decades, rising constantly over the past years, and consequently is attracting the attention of investors. Hence, cryptocurrency withholds numerous opportunities for both stakeholders, businesspersons, and investors, allowing them to earn huge profits as per the demand of the market. This is also evident from the fact that the market of cryptocurrency has been constantly growing since its inception in early 2008.

The total revenue generated by the cryptocurrency market in 2010 was less than 1 billion USD, however, in 2015, it increased to more than 4.59 billion USD, which further increased to more than 773 billion USD in 2018, 2555 billion USD in May 2021, which rapidly rose to 3048 billion USD in November 2021, which depicts the continuously and increasingly increasing growth of the cryptocurrency market, demonstrating the large potential that the industry holds in the future. And besides the growth of the collective cryptocurrency market, the individual types of cryptocurrencies are also gaining momentum, receiving attention all across the world. This can be demonstrated by the fact that Bitcoin is valued at more than 862 billion USD in the crypto market, which is considered the beginning of the era of digital currency (YAO, 2017).

Similarly, another significant advantage offered by cryptocurrency is that it is currently integrated into the fiat currency as an intermediary currency, streamlining money transactions across borders. This system has been primarily incorporated by the remittance economy and has been referred to as the most significant and provisional use of cryptocurrency as asserted by economists. In this process, the fiat currency is transformed into a cryptocurrency, principally a bitcoin, and then is later transacted across borders, and then is again converted into the fiat currency of the place of arrival. This method has been very significant since it allows the users to receive and send money effectively, with increased reliability, security, transparency, and convenience, streamlining the entire process of money transfer, and achieving the whole process economically (Goldfarb, Greenstein, and Tucker, 2015).

The easy transaction associated with cryptocurrency is highly pivotal, as crypto transactions can be executed easily at a low operational cost, thereby using a simple setup, constituting smartphone applications, exchange wallets, or hardware wallets, allowing all people to virtually execute their transactions. This convenience of the cryptocurrency has been regarded as the biggest advantage, allowing the users to execute and administer their financial transactions on their own, without any intervention or assistance from third-party or federal institutions. Some of the cryptocurrencies including Ethereum, Litecoin, and Bitcoin can be easily purchased with fiat currency or cash, at a Bitcoin ATM, and can be used without having a bank account. However, it can also be purchased online. These all facets collectively result in easy transactions and increased independence of the consumers.

Similarly, increased security is also a fundamental benefit of

ferred by the market of cryptocurrency, which is based on blockchain technology and cryptographic mechanisms, making it a comparatively secured form of payment. This security is largely based on the hash rate, as the higher, the hash rate is, the higher the computing power and algorithmic complexity, which in turn means higher security. Bitcoin has the highest hash rate and therefore is more secure, which is the primary reason for the increased demand and popularity of bitcoin. However, this security is only possible if the algorithmic combinations are constantly changed, and altered so that the specified combination cannot be hacked. If it is not administered properly, it can lead to the stealing of private information.

Furthermore, increased consensus and reduced cost are other property, which makes cryptocurrency a comparatively preferable medium of payment. And though some people invest in cryptocurrency for price appreciation, for others it is an acceptable and regulated medium of payment, allowing them to make quick settlements at comparatively lower fees. For instance, Bitcoin and either transaction can cost anywhere from nickels and dimes to dollars and more, portraying the maximal payment mode of the currency. Whereas Litecoin and XRP can cost pennies or less, showing the minimal payment mode of the currency. This offers users to choose the right kind of currency for their transactions. Moreover, these transactions can be executed within seconds, and minutes, even for cross-border transactions. However, currencies involving banks are comparatively slower and usually take three to five business days to be administered and settled.

Similarly, the industry of cryptocurrency is exponentially growing and is becoming the fastest growing industry in the world. And as a result, the major multinational companies are investing in it, and are accepting thereby incorporating it as a medium of payment. This is evident from the fact that the net market cap of cryptocurrency was nearly 1.6 billion USD in 2013, a few months after its launching, which gradually increased to 4.86 billion USD in 2015, 773.23 billion USD in 2018, and 3048 billion USD in 2021. This exponential growth of cryptocurrency despite the pandemic shows the significance of the industry and the prospective potential it withholds.

Similarly, outsized returns are also a significant advantage of cryptocurrency, contributing tremendously to the strengthening of the economic structure of individuals, businesses, and countries. Cryptocurrency specifically bitcoin results in large outsized returns, representing millions of points on the stock exchange market, worth millions of dollars. Hence, cryptocurrency offers numerous advantages for day traders and investors, allowing them to earn large outsized returns through the investment of this digitized currency.

Moreover, privacy and the execution of private transactions are also highly significant, implicated by blockchain technology, and distributed ledger technology. The blockchain technology incorporated by cryptocurrency results in increased security, by creating a distributed ledger that analyzes and records all transactional data. And each block only shows the wallet address of the user, keeping him/her anonymous, thereby leading to increased privacy. However, if the wallet address is somehow hacked, and is connected to the user's identity, then tracking of transactions becomes easy, and the identity of the user is vulnerable, but that's rare. However, besides blockchain technology, there are other mechanisms to integrate crypto-

currency, thereby integrating the transactions, and keeping them private. One such mechanism is coin mixing services group transactions results in the opaqueness of digital transactions, making it impossible for the hackers to hack the system. It has been asserted by researchers, that despite minor security breaches, cryptocurrency is relatively private and secure from transactions involving third groups and other regulatory bodies.

Furthermore, portfolio diversification is also a well-known advantage of cryptocurrency, becoming a non-correlated asset class, functioning independently of other markets. Therefore, the price of these assets is determined by factors different from the factors that affect fiat currency, including stocks, commodities, and bonds. This is evident from the economic progression attained by cryptocurrency over the last decades, to rising by millions of percentage points.

Likewise, cryptocurrency offers a sustainable control of inflation and hence plays a substantial part in economic reinforcement. Mainly mineable cryptocurrencies, like Bitcoin, Monero, Litecoin, and others, having a restrained supply cap is considered an effective barrier to inflation. And as monetary inflation is inflicted by financial regressions, which are fostered by the printing of more money by the banks, and governments, which in turn increases the supply, leading to decreased value. However, the case of cryptocurrency is different, since this electronic currency has a specified value, measured in dollars, which has a higher chance of having an increase in inherent value. But despite this, the protocol of Bitcoin is designed in such a way that it keeps these coins scarce, being indifferent to the monetary policies.

Another benefit of cryptocurrency is that it is a 24/7 market, unlike the conventional financial markets. For instance, the stock exchange markers are open only for a specified time, only on weekdays and between the determined business hours. However, on weekends, holidays, and at night, these markets are non-functional, which largely affects the financial operations. Cryptocurrency offers a very strategic resolution to this problem since crypto markets are open 24/7, trading at all times, allowing the consumers to execute their financial transactions at any time, without any intervention. The only things that can disrupt these crypto markets include power outage, centralized exchange outage, and internet outage. Hence, this demonstrates that cryptocurrency is a comparatively more effective and efficient type of currency.

DISADVANTAGES OF CRYPTOCURRENCY

However, besides these advantages, there are several disadvantages associated with the use of cryptocurrency, which is primarily associated with the lack of regulatory mechanisms, impeding the system of cryptocurrency to become incorporated into the world economy. Primarily, cryptocurrency is an unspecified form of transaction, which is executed anonymously, by pseudonymous people. However, the digital datasets incorporated in these transactions are evaluated by intelligence institutions, which leads to the possibility of the tracking of financial transfers of money by the common people, as investigated by federal institutions. Furthermore, cryptocurrency has also become a significant tool for criminals, which is used by them for illegal activities, primarily associated with black money, such as money laundering, corruption, and terrorism.

Cryptocurrency is also widely used by drug sellers on the dark web, for selling drugs, and other illicit products, and services. Furthermore, cryptocurrency is also widely used by hackers for stealing private data and important data, using it for performing ransomware activities (Singh et al., 2018).

Furthermore, cryptocurrency has been found to centralize money, though it is a decentralized form of currency, it still, prompts the accumulation of money to a specified class of people, making it a concentrated form of currency. This is evident from the fact that nearly 11000 investors held 45% of the total value of bitcoins, showing the concentration of currency to the specified group of people. Furthermore, another significant disadvantage of cryptocurrency is that it can be operated by anyone using simply a computer and internet connection. However, this mining of the cryptocurrency requires a large amount of energy which in turn requires large costs as well as unpredictability, resulting in the concentration of mining primarily among multinational companies, which leads to the increasing revenue of these companies, with the accumulation of money, as 10% of the total miners of cryptocurrency own 90% of the mining capacity.

Hence, cryptocurrency somehow disrupts the balance in the economic system, leading to a specified concentration of money. Furthermore, it has been asserted by economists that cryptocurrency is quite secured, which is because of the cryptographic combinations and blockchain technology, but some crypto repositories are not secured such as mechanisms of wallets and exchanges, which can be hacked through a sustained effort, resulting in the stealing of some specified coins, which can be millions of dollars' worth (Liu and Tsyvinski, 2018).

Another significant disadvantage of cryptocurrency is that it largely suffers from volatility, and consequently, its value changes constantly, surging immediately at times and then falling after sometimes, which can disturb the economic cycle, leading to the disturbance of the economic structure of the complete world. This is evident from the fact that the market of cryptocurrency fluctuated, rising to more than 17,738 USD in late 2017 and then falling to 7575 USD in early 2018, showing a rapid change in the world of cryptocurrency. That's why some economists have asserted cryptocurrency to be rather a transient currency, which is rather short-lived or a speculative bubble (Wu, 2018).

REFERENCES

- DWYER, G.P. (2015): The economics of Bitcoin and similar private digital currencies. *Journal of Financial Stability*, [online] 17, pp.81–91.
- HOGAN, T.L. (2012): Competition in Currency: The Potential for Private Money. *SSRN Electronic Journal*.
- KSHETRI, N. (2021): The Economics of Central Bank Digital Currency [Computing's Economics]. *Computer*, 54(6), pp.53–58.
- ROLNICK, A.J. (2010): Maintaining a Uniform (Electronic) Currency. *Journal of Money, Credit and Banking*, 31(3), p.674.
- BERENTSEN, A. (2006): On the private provision of fiat currency. *European Economic Review*, 50(7), pp.1683–1698.
- TOWNSEND, R.M. (1989): Currency and Credit in a Private Information Economy. *Journal of Political Economy*, 97(6), pp.1323–1344.
- ANDOLFATTO, D. (2018): Assessing the Impact of Central Bank Digital Currency on Private Banks. *Federal Reserve Bank of St. Louis, Working Papers*, 2018(025).
- DU, W. – SCHREGER, J. (2021): Sovereign Risk, Currency Risk, and Corporate Balance Sheets. *SSRN Electronic Journal*.
- SÖNMEZ, A. (2020): DIGITAL CURRENCY BITCOIN. *TURKISH ONLINE JOURNAL OF DESIGN, ART AND COMMUNICATION*, 4(3), pp.1–14.
- PERUGINI, M.L. – MAIOLI, C. (2014): Bitcoin: Tra Moneta Virtuale E Commodity Finanziaria (Bitcoin: Between Digital Currency and Financial Commodity). *SSRN Electronic Journal*.
- YAO, Q. (2017): Understanding central bank digital currency: a systemic framework. *SCIENTIA SINICA Informationis*, 47(11), pp.1592–1600.
- GOLDFARB, A. – GREENSTEIN, S.M. – TUCKER, C. (2015): *Economic analysis of the digital economy*. Chicago; London: The University of Chicago Press, Cop.
- SINGH, S.R.S. – SATISH, D. – KUMAR, M.V.R. (2018): Survey on Surging Technology: Cryptocurrency. *International Journal of Engineering & Technology*, 7(3.12), p.296.
- LIU, Y. – TSYVINSKI, A. (2018): Risks and Returns of Cryptocurrency. *SSRN Electronic Journal*.
- WU, A. (2018): Non-Stationarity in Stochastic Distributions of Cryptocurrency Returns. *IU Journal of Undergraduate Research*, 4(1), pp.73–79.

Dr. László Erdey – Kristóf Rácz

Supporting purchasing decisions with time series analysis – the case of a plastics company

Our empirical paper uses time series analysis with the FM-OLS estimator to analyse the significant determinants of purchasing prices of a Hungary-based plastics company. Beyond using crude oil prices, we also involve industry-specific indices in the analyses. We use bivariate vector error correction models to support their long-term usefulness in managerial inference.

ABSTRACT

The role of business forecasts is one of the most important factors of competitiveness in today's world. There are many tools for estimating future data for planning, among which time series analysis plays a key role. However, multivariate time-series regression analyses have several hidden pitfalls (stationarity, cointegration), making everyday use very difficult, and the desired frequency of data is only sometimes available. In our study, we model the evolution of purchase prices of a Swiss-owned plastics company operating in Hungary. To address the difficulties of stationarity and cointegration in our time series regressions, we construct several models with the FM-OLS estimator after the necessary pre-testing and try to support their long-run usability with bivariate vector error correction models. Our results include a large number of models that are consistent with our expectations. Still, in some cases, further investigation of the economic environment and the inclusion of other methods may be necessary.*

INTRODUCTION

Oil is one of, if not the most critical and dominant fossil fuels on our planet. Its social perception is highly divisive. Still, it is undeniable that it is essential to creating and maintaining relative prosperity in the developed world, given our current knowledge and technologies. Its uses are many and varied, but it is no coincidence that the fuels that first come to mind are those produced by refineries, which have been powering the internal combustion engines that have made our daily lives more manageable since the early 20th century, but which are likely to make them impossible in the long term.

Our research area is the plastics industry, where oil is the primary raw material. Thus, a parallel can be drawn between the activities of Neopac Hungary Kft., a producer of plastic tubes, and the world price of oil. The Debrecen-based affiliate, owned by a Swiss parent company, produces tubes for pharmaceutical, dental hygiene and cosmetics companies. The manufacturing process for these tubes starts with melting different polyethylene

granules. These are plastics of varying composition, hardness and quality, which the company sources from other suppliers. However, they have one thing in common: the granules are all petroleum derivatives.

Using company data, measurements and statistical estimations, the question to be answered is whether Neopac Hungary Kft. can reduce its actual granule purchase price exposure by forecasting.** We hypothesise that by correlation and time series analyses of monthly prices/indices of Brent, WTI, and Ural crude oils, the Plastixx index (price index for the plastics industry), and other futures, we find correlations with the company's granule purchase prices over the past six years that project the expected magnitude and direction of price movements with reasonable confidence.

Of particular interest will be the impact on prices and supplies of the coronavirus epidemic, which we hope to have put behind us in the period under review, and the conflict in Ukraine, which has had a significant micro- and macroeconomic impact on countries around the world.

An essential ingredient in tube production is the plastic granule, heated at the first stage of the production line to produce a mouldable, homogeneous material. In the case of Neopac Hungary Kft., we are concentrating specifically on polyethylene-type plastic granules. There are wide varieties of these plastics, but generally, they can be divided into three groups. According to their molecular structure and tensile strength, we distinguish between HDPE (high-density polyethylene), LDPE (low-density polyethylene) and LLDPE (linear low-density polyethylene).

Neopac has many suppliers, so we selected a granules manufacturer for each of the three types of polyethylene from which we had access to a monthly purchase and delivery record going back at least six years.

The timeframe covered is the 6-year (72-month) period from July 2016 to June 2022, as we had not or had only incomplete data available for earlier dates. The exact value of the purchase prices is further nuanced by the fact that they were accessible as the DDP (Incoterms, 2020) parity prices, where the supplier

* Parts of this paper were presented at the local Scientific Students' Associations Conference in Hungarian by Kristóf Rácz; his research was supported and supervised by László Erdey.

** For a comprehensive overview of the controlling approach as a part of financial culture, see Karabassov et al. (2022).

bears all the costs and risks associated with the delivery of the goods to the recipient. The seller typically passes on these additional costs to the buyer so that the actual purchase price is higher than the product's Ex Works (EXW) price.

Another critical variable in our econometric analysis is the world oil price. Since we do not know precisely what type of crude oil the granule companies use to produce the polymers they market, we used the monthly average prices of the 3 "most popular" types of crude oil used in the most considerable quantities. The alternative types of oil have different properties in terms of composition, viscosity and sulphur content. We used the monthly prices of the three definitive oil types that primarily influence the costs of granules made in Europe: the WTI, Brent and the Russian Urals.

West Texas Intermediate (WTI) is the name given to the oil produced in the western part of the US state of Texas, which, despite accounting for only 1% of global oil production, has a significant impact on world prices. It is mainly used to produce petrol. Monthly average prices for WTI back to July 2016 have been compiled from the official website of the US Energy Information Administration (EIA, 2022). Brent is the type of oil recovered from deep North Sea deposits, with the UK and Norway being the leading producers and exporters. Average prices for Brent, as for WTI, are available on the EIA website (EIA, 2022). Russia is not short of oil reserves, with its most famous 'brands' being Sokol, ESPO, Vityaz and Ural. However, only the latter has a significant influence on the world market. Ural prices were provided by Statista.com (Statista, 2022).

One source of guidance for companies interested in the plastics industry is the website "Plastic Information Europe". Since 2005, a price index called "Plastixx" has been available on the website, recording the price trends of plastics in Western Europe. The index is calculated monthly based on actual market prices for thermoplastics. The calculation is based on the average monthly market price of the materials, weighted by the volume of consumption in Western Europe. The Plastixx indicator plays a crucial role in market segments such as construction, automotive, electrical and, most importantly for us, packaging. It allows the comparison of equally indexed time series for almost any type and quality of polymers. Even in the case of HDPE, LDPE and LLDPE, which have already been presented, polyethylenes can be divided into several subtypes based on their production and appearance. We accessed this data via the German Kunststoff Information website. For each of the three material types, a separate price index was associated with the sub-types of blown film qualities, blow moulding qualities, and injection moulding qualities (Kunststoff Information, 2022).

Since the international oil market has been based on the US dollar/barrel (1 barrel = 42 gallons = ~159 litres), this is how WTI, Brent and Ural prices were recorded in our database. On the other hand, the prices of granules purchased from suppliers were available in euros. Although the currency of their purchases was unknown to us, we considered it necessary to include the euro/dollar exchange rate in the econometric analyses. The monthly average exchange rates' source was the Banque de France (Banque de France, 2022).

Following data collection, time series analyses were conducted to look for regularities in the impact of the three different oil types (WTI, Brent, URAL) and the six different Plastixx indices on granule prices.

In our models, we had two dependent variables by granule prices from 2 suppliers, three independent variables, WTI, Brent and Ural prices, and six additional explanatory variables by the different Plastixx indices. And because of the availability of supply prices in euros and the price per barrel of oil in dollars, we also needed an explanatory variable EUR/USD to illustrate the exchange rate fluctuations. The R 4.2.1 program was used to organise and logarithmise the data. We then first used correlograms and partial correlograms from the econometric options offered by the Stata 17.0 software package to investigate possible autocorrelation in our time series. An examination of stationarity followed this. After drawing conclusions from the correlograms, the Phillips-Perron unit root test was run for all variables, respectively, to decide on the issue of stationarity. To facilitate managerial decisions, finally, we run several regression analyses using the OLS (Ordinary Least Squares) and FM-OLS (Fully Modified Ordinary Least Squares) estimators, also in Stata.

RESULTS

For economic processes, non-stationary time series are standard, and our correlograms suggested that this was also the case for the variables we studied. We used the very commonly applied Phillips-Perron unit root test to test stationarity. We found that each variable is integrated of order one, $I(1)$. This result opened the possibility of using the FM-OLS estimator (Stata's cointreg).

The advantage of the FM-OLS is that it handles well variables that are integrated of the same order, and the OLS estimates can be used in the forward procedure to increase the explanatory power of our models.

Four cases were examined, but this meant setting up more models than this, as we tried to increase the explanatory power of the models by the forward procedure OLS estimation following the FM-OLS estimations. The four cases can be divided into two groups. In the first group, the price changes of granules purchased in euro for HDPE and LLDPE were examined as a function of the price changes of WTI, Brent and URAL oil types and the fluctuations of the euro/dollar exchange rate. The methodology used in the second group is similar to that used in the first group. The only difference is that the Plastixx indices have replaced the explanatory variables, and we examined which of the six indices shows a significant relationship with the purchase price of the granules currently inserted in the place of the dependent variable.

To meet space constraints, we demonstrate below only those results that we derived from the optimised models and are suitable for direct management inference.

After running the forward OLS compared to our base equation, the explanatory variables $\ln WTI_{USD}$ and $\ln EUR_{USD}$ have been dropped. The explanatory power of the model has increased to 84%, and the coefficients are as follows: a 1% increase in Brent oil price leads to a 0.848% increase in the purchase price of HDPE, and a 1% increase in URALS leads to a 0.477% decrease in the purchase price.

Our simple bivariate vector error correction (VEC) models also support the long-run relationship between the price of HDPE and the Brent and Ural prices, respectively. The time series are cointegrated. Here and in the case of the following models, we omit for space the statistics on the estimation and further testing of the cointegrated systems.

In the case of the LLDPE granule, our models' explanatory power was lower.

As usual, the FM-OLS test following the forward procedure showed a higher explanatory power, as the adjusted R^2 increased from 22% to 36.61% compared to the attempt before the forward test. In terms of the effect on the dependent variable, URALS remains insignificant. The change in the prices of the other two oil types has been somewhat reduced, with a 1% increase in the purchase price of WTI bringing a price increase of only 3.167%, and for Brent, the decrease in the pur-

chase price associated with an increase in the oil price is also smaller, at only 1.967%.

The bivariate vector error correction (VEC) models also support the long-run relationship between the price of LLDPE and the WTI and Brent prices, respectively. The time series are cointegrated.

Regarding the relationship of the Plastixx indices with the granule prices, we found strong comovements, although multicollinearity issues might arise, causing some bias in the estimations.

Table 1: FM-OLS estimation, dependent variable: lnHDPEur, independent variables: lnBRENTusd, lnURALusd

Cointegration regression (FMOLS):

VAR lag(user)	=	0	Number of obs	=	53
Kernel	=	bartlett	R2	=	.8465792
Bandwidth(neweywest)	=	12.5219	Adjusted R2	=	.8404423
			S.e.	=	.0598815
			Long run S.e.	=	.0803807

lnHDPEur	Coefficient	Std. err.	z	P> z	[95% conf. interval]	
lnBRENTusd	.8479864	.1289712	6.58	0.000	.5952075	1.100765
lnURALSusd	-.4774441	.1462561	-3.26	0.001	-.7641008	-.1907874
_cons	-1.09786	.1608716	-6.82	0.000	-1.413163	-.7825575

Source: Authors' calculations

Table 2: Bivariate VEC models for lnHDPEur, lnBRENTusd and lnURALusd, respectively
error-correction model

: 2016m9 thru 2022m6	Number of obs	=	
kelihood = 197.9995	AIC	=	-5.
gma_ml) = .000012	HQIC	=	-5.
	SBIC	=	-5.

grating equations			
on	Parms	chi2	P>chi2
	1	21.66061	0.0000

fication: beta is exactly identified

Johansen normalization restriction imposed						
beta	Coefficient	Std. err.	z	P> z	[95% conf. int]	
DPEur	1	.	.	.	.	.
ENTusd	-.693304	.1489664	-4.65	0.000	-.9852728	-.4
_cons	2.389901	.	.	.	.	.

: 2018m3 thru 2022m6	Number of obs	=	
kelihood = 140.9397	AIC	=	-5.0
gma_ml) = .0000152	HQIC	=	-4.
	SBIC	=	-4.7

grating equations			
on	Parms	chi2	P>chi2
	1	70.79615	0.0000

fication: beta is exactly identified

Source: Authors' calculations

Table 3: FM-OLS estimation, dependent variable: lnLLDPEur, independent variables: lnWTIusd, lnBRENTusd, lnURALusd

Cointegration regression (FMOLS):

VAR lag(user)	=	0	Number of obs	=	53
Kernel	=	bartlett	R2	=	.4026918
Bandwidth(neweywest)	=	11.0891	Adjusted R2	=	.3661219
			S.e.	=	.2229104
			Long run S.e.	=	.247137

lnLLDPEur	Coefficient	Std. err.	z	P> z	[95% conf. interval]	
lnWTIusd	3.167272	.866796	3.65	0.000	1.468383	4.866161
lnURALSusd	-.6546578	.4582618	-1.43	0.153	-1.552834	.2435189
lnBRENTusd	-1.966739	1.025419	-1.92	0.055	-3.976524	.0430464
_cons	-1.58955	.4954951	-3.21	0.001	-2.560703	-.6183974

*Source: Authors' calculations***Table 4: Bivariate VEC models for lnLDPEur, lnWTIusd and lnBRENTusd, respectively**

Vector error-correction model

Sample: 2016m9 thru 2022m6	Number of obs	=	70
	AIC	=	-4.890078
Log likelihood = 180.1527	HQIC	=	-4.775247
Det(Sigma_ml) = .0000199	SBIC	=	-4.600986

Cointegrating equations

Equation	Parms	chi2	P>chi2
_ce1	1	38.5753	0.0000

Identification: beta is exactly identified

Johansen normalization restriction imposed

beta	Coefficient	Std. err.	z	P> z	[95% conf. interval]	
_ce1						
lnLLDPEur	1	.	.	.	.	.
lnWTIusd	-.9381702	.1510522	-6.21	0.000	-1.234227	-.6421134
_cons	3.348691	.	.	.	.	.

Vector error-correction model

Sample: 2016m9 thru 2022m6	Number of obs	=	70
	AIC	=	-4.914486
Log likelihood = 181.007	HQIC	=	-4.799655
Det(Sigma_ml) = .0000195	SBIC	=	-4.625394

Cointegrating equations

Equation	Parms	chi2	P>chi2
_ce1	1	27.76392	0.0000

Identification: beta is exactly identified

Johansen normalization restriction imposed

beta	Coefficient	Std. err.	z	P> z	[95% conf. interval]	
_ce1						
lnLLDPEur	1	.	.	.	.	.
lnBRENTusd	-.9360943	.1776557	-5.27	0.000	-1.284293	-.5878955
_cons	3.414948	.	.	.	.	.

Source: Authors' calculations

Our first model using indices examined the relationship between the purchase price of the HDPE granule and the Plastixx indicators.

Following the results of the forward procedure, only two explanatory variables were left in the regression model, and their explanatory power increased from 75.52% to 79.36%. Both variables are significant. As expected, only $\ln\text{HDPE_BS}$ continues to positively affect the purchase price of Neopac HDPE, as its 1% increase increases the purchase cost by 2.649%. In contrast, the coefficient of $\ln\text{LDPE_FQ}$ is negative, which means that a 1% increase in the LDPE-Blasfolienqualitäten Plastixx index leads to a 1.468% decrease in the purchase price of HDPE.

The bivariate vector error correction (VEC) models only support the long-run relationship between the price of HDPE and the HDPE_BS index. That means that the LDPE_FQ index, reasonably, is not a good predictor of the cost of HDPE.

Table 5: FM-OLS estimation, dependent variable: $\ln\text{HDPEur}$, independent variables: $\ln\text{HDPE_BS}$, $\ln\text{LDPE_FQ}$

Cointegration regression (FMOLS):

VAR lag(user)	=	0	Number of obs	=	71
Kernel	=	bartlett	R2	=	.799491
Bandwidth(neweywest)	=	15.8299	Adjusted R2	=	.7935937
			S.e.	=	.0603774
			Long run S.e.	=	.0586797

$\ln\text{HDPEur}$	Coefficient	Std. err.	z	P> z	[95% conf. interval]	
$\ln\text{HDPE_BS}$	2.649198	.1987609	13.33	0.000	2.259634	3.038762
$\ln\text{LDPE_FQ}$	-1.467735	.1448528	-10.13	0.000	-1.751641	-1.183828
_cons	-8.097868	.4691714	-17.26	0.000	-9.017427	-7.178309

Source: Authors' calculations

Finally, we estimated the model for the price of LLDPEur as a function of the indices. We followed the "usual" procedures.

Table 6: Bivariate VEC models for $\ln\text{HDPEur}$, $\ln\text{HDPE_BS}$ and $\ln\text{LDPE_FQ}$, respectively

Vector error-correction model

Sample: 2016m9 thru 2022m6	Number of obs	=	70
Log likelihood = 304.0051	AIC	=	-8.428718
Det(Sigma_ml) = 5.79e-07	HQIC	=	-8.313887
	SBIC	=	-8.139626

Cointegrating equations

Equation	Parms	chi2	P>chi2
_ce1	1	21.52663	0.0000

Identification: beta is exactly identified

Johansen normalization restriction imposed

beta	Coefficient	Std. err.	z	P> z	[95% conf. interval]	
_ce1						
$\ln\text{HDPEur}$	1	.	.	.	.	.
$\ln\text{HDPE_BS}$	-3.009225	.6485846	-4.64	0.000	-4.280427	-1.738023
_cons	21.44298	.	.	.	.	.

Vector error-correction model

Sample: 2016m9 thru 2022m6	Number of obs	=	70
Log likelihood = 295.7308	AIC	=	-8.192308
Det(Sigma_ml) = 7.34e-07	HQIC	=	-8.077477
	SBIC	=	-7.903216

Cointegrating equations

Equation	Parms	chi2	P>chi2
_ce1	1	10.19194	0.0014

Identification: beta is exactly identified

Johansen normalization restriction imposed

beta	Coefficient	Std. err.	z	P> z	[95% conf. interval]	
_ce1						
$\ln\text{HDPEur}$	1	.	.	.	.	.
$\ln\text{LDPE_FQ}$	2.205727	.690913	3.19	0.001	.8515627	3.559892
_cons	-16.6412	.	.	.	.	.

Source: Authors' calculations

Table 7: FM-OLS estimation, dependent variable: lnLLDPEur, independent variables: lnLLDPE_SS, lnHDPE_SS

Cointegration regression (FMOLS):

VAR lag(user)	=	0	Number of obs	=	71
Kernel	=	bartlett	R2	=	.965481
Bandwidth(neweywest)	=	12.8506	Adjusted R2	=	.9644658
			S.e.	=	.0485785
			Long run S.e.	=	.0593883

lnLLDPEur	Coefficient	Std. err.	z	P> z	[95% conf. interval]	
lnLLDPE_SS	.7687843	.1806127	4.26	0.000	.4147899	1.122779
lnHDPE_SS	.6260202	.2613833	2.40	0.017	.1137184	1.138322
_cons	-9.7187	.6713305	-14.48	0.000	-11.03448	-8.402916

Source: Authors' calculations

Table 8: Bivariate VEC models for lnLLDPEur, lnLLDPE_SS and lnHDPE_SS, respectively

Vector error-correction model

Sample: 2016m9 thru 2022m6	Number of obs	=	70
Log likelihood = 296.7883	AIC	=	-8.222523
Det(Sigma_ml) = 7.12e-07	HQIC	=	-8.107692
	SBIC	=	-7.93343

Cointegrating equations

Equation	Parms	chi2	P>chi2
_ce1	1	538.3341	0.0000

Identification: beta is exactly identified

Johansen normalization restriction imposed

beta	Coefficient	Std. err.	z	P> z	[95% conf. interval]	
_ce1						
lnLLDPEur	1	.	.	.	.	.
lnLLDPE_SS	-1.277665	.0550669	-23.20	0.000	-1.385594	-1.169735
_cons	8.828383	.	.	.	.	.

Vector error-correction model

Sample: 2016m9 thru 2022m6	Number of obs	=	70
Log likelihood = 314.7151	AIC	=	-8.734718
Det(Sigma_ml) = 4.27e-07	HQIC	=	-8.619887
	SBIC	=	-8.445626

Cointegrating equations

Equation	Parms	chi2	P>chi2
_ce1	1	950.0175	0.0000

Identification: beta is exactly identified

Johansen normalization restriction imposed

beta	Coefficient	Std. err.	z	P> z	[95% conf. interval]	
_ce1						
lnLLDPEur	1	.	.	.	.	.
lnHDPE_SS	-1.895214	.0614883	-30.82	0.000	-2.015729	-1.774699
_cons	13.44503	.	.	.	.	.

Source: Authors' calculations

Performing the final FM-OLS estimation, we can see that the adjusted R^2 has increased further, giving our model an explanatory power of 96.45%. Both independent variables can be considered significant based on their p-values, and their coefficients have positive signs. For a 1% increase in $\ln\text{LLDPE_SS}$, the actual purchase price of LLDPE increases by 0.769%, and the same increase in $\ln\text{HDPE_SS}$ leads to a price increase of 0.626%. The bivariate vector error correction (VEC) models support the long-run relationship between the price of the granule and both indices, respectively.

SUMMARY

After evaluating the results, we can conclude that the models, in many cases, have confirmed our initial expectations that, for example, the sub-types of some Plastixx indices show a high level of significance and explanatory power concerning the purchase prices of the same type of granules as the sub-type. The best example of this is the HDPE-type granule model. As expected, the HDPE Blasformqualitäten index of the Plastixx indices showed a strong and positive correlation with the variation in the purchase price of HDPE-type granules purchased by Neopac in “blow mould” form.

We may also have demonstrated correlations that cannot be supported by economic explanations or logical reasoning. A perfect example of this was the last model, where the purchase prices of granules of the LLDPE type and purchased in “blasfolien” form showed a positive correlation with the purchase prices of entirely different types and sub-types of Plastixx indices, with an incredibly high adjusted R-squared. More detailed models and research using other variables will be needed in the above cases to obtain reliable results with accurate economic explanations.

As a suggestion, Neopac Hungary Kft. could use the models developed as predictive methods in its cost calculations.

If the company can foresee the trends of oil price changes or has forecasts of oil prices, including oil futures prices, it can use the models in its cost calculations, taking into account the confidence intervals. With their known limitations, our present model calculations were suitable to show the relevance of considering stationarity in time series regression analyses and demonstrate the benefits of the FM-OLS estimator and bivariate vector error correction models. Further research directions for us will include machine learning and artificial intelligence based on our current econometric models.

REFERENCES

- BANQUE DE FRANCE (2022): Main monthly average euro foreign exchange rates, <https://www.banque-france.fr/en/statistics/rates/exchange-rates/main-monthly-average-euro-foreign-exchange-rates> (Letöltés dátuma: 2022.09.04.)
- EIA (2022): Petroleum & Other Liquids, https://www.eia.gov/dnav/pet/pet_pri_spt_s1_m.htm (Letöltés dátuma: 2022.08.20.)
- KARABASSOV, R. – FENYVES, V. – TÚRÓCZI, I. – TÓTH, R. (2022): The controlling approach as an integral part of financial culture, *Economics & Working Capital* 2398-9491 2022 (1-2 issues) pp. 42-47.
- Kunststoff Information (2022): Polymerpreise, <https://www.kiweb.de/default.aspx?pageid=200> (Letöltés dátuma: 2022.08.18.)
- STATISTA (2022): Average monthly price of Urals crude oil from January 2018 to September 2022, <https://www.statista.com/statistics/1112243/urals-crude-oil-price/> (Letöltés dátuma: 2022.09.10.)
- WANG, Q. – WU, N. (2012): Long-run covariance and its applications in cointegration regression, *Stata Journal*, Stata Press, Vol. 12 No. 3, pp. 515-542, ISSN: 1536-867X, Online ISSN: 1536-8734

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The Effects of Country Reputation on International Trade

The research builds on GNI per capita and FDI net inflow to assess the impacts on exports. It aims to analyze country reputation effects on international trade activities. Specifically, the objective is to determine to what extent country image has impacts on international trade and their correlation.

ABSTRACT

The research builds on GNI per capita and FDI net inflow to assess the impacts on exports. It aims to analyze country reputation effects on international trade activities. Specifically, the objective is to determine to what extent country image has impacts on international trade and their correlation. The hypothesis in the paper suggests that country reputation has impacts on foreign trade activities of countries. FDI net inflow and GNI per capita are considered as some of main indicators of country reputation in international level and exports is taken as indicator of foreign trade. Using multiple regression analysis, the research defines that GNI per capita and FDI net inflow are positively correlated with exports as well as they can predict exports. Analysis shows that the research model is statistically significant. Thus, hypothesis is supported with the analysis and accepted meaning that country reputation has impacts on international trade activities in some certain ways.

INTRODUCTION

The surge of international trade activities among countries over the past decades has been one of the most essential consequences of globalization. There are many factors affecting international trade both directly and indirectly. Indirect barriers are usually non-trade barriers. Country reputation is a type of non-trade barrier impacting international trade invisibly. Measuring the impact of non-trade barriers has always been complicated since there is no concrete data and direction. However, some insights can be derived through different approaches. This research analyzes the impact of country reputation on international trade.

Hypothesis: country reputation has an impact on international trade.

I consider that there is more demand for the products of countries which have higher reputation and in international trade, countries tend to buy more from the countries with higher image.

The objective of this research is as follows:

- to find out country reputation indicators on international level,
- to provide information about characteristics of Foreign Direct Investment (FDI) inflow and Gross National Income (GNI) per capita as indicators of country image,
- to find out if country image has an impact on international trade,

- to illustrate the effects of country reputation on international trade.

METHODOLOGY

This research paper is explanatory research and the approach is inductive method. There are three sets of data used in the research: GNI per capita (Atlas method); FDI inflow; Total exports of goods and service. The data is exported from World Bank and OECD database. 182 countries are reflected and the data is for the year of 2019. Using the SPSS software, these three sets of data are analyzed. Binary regression analysis was used to build various models to ascertain their predictive values. In the analysis, GNI per capita and FDI inflow are taken as independent variables and total exports as dependent one. Total exports data is used as an indicator of international trade. Net exports data is not considered as it includes imports as well and might not be predicted accurately during analysis. Through this analysis, the correlation and to what extent these independent variables explain our dependent variable are identified. Net FDI inflow and GNI per capita represent country image and total exports represent international trade. Consequently, the impact of country image on international trade is demonstrated.

LITERATURE REVIEW

COUNTRY REPUTATION

A country image is defined as the total of all descriptive, inferential and informational beliefs one has about a particular country (Martin and Eroglu, 1993, p. 193). The process of image formation is inferred through lifelong socialization. Country image is a non-trade barrier which has an impact on international trade. It can affect and boost the trade activities of a country. There are many factors added to image formation such as IQ level, literacy rate, population size, geographical location, democracy index level, happiness, minimum wage rate and many others. The reputation of a country can be assessed from different perspectives. From the economic perspective, the factors that form country image are GDP, GDP per capita, FDI, engagement in international trade, reserves, wages, and human and natural resources. Among these factors, GNI per capita and FDI inflow are discussed as indicators of country reputation from economic point of view.

Importance of managing a country's reputation has been increased due to the information flow easiness through the internet and other digital channels. Any even in a country can become world news easily and it can affect the public opinion.

Consequently, diplomatic relations between countries, tourism sectors, foreign investments can be affected since public has a common idea based on the information spread (Kotler and Gertner, 2002). The stated idea is significantly relevant mainly for developing countries which are competing to attract tourists and investments from developed countries (Kang and Yang, 2010). Moreover, a country's reputation could significantly impede or increase the success of services and good originating from that country seen from the perspective of other countries (Verlegh and Steenkamp 1999).

As reputation of a country increases, it is likely to affect the foreign trade engagements as international trade is one of the oldest and broadest fields in economics. It raises the income levels of countries by increasing trade openness, economic growth in developed and developing countries. However, to what extent these effects are in developing countries has been a long-standing controversy. According to the World Bank data, the trade gap was 38.7% in 1980, while it increased to 57.8% in 2017. In the last 30 years, limiting development strategies based on import substitution and organizations such as International Monetary Fund and World Bank Fund which supports trade liberalization have had gradual significant impacts on free trade between countries especially in developing countries (Zahonogo, 2016: 41-42).

Increasing integration of countries in the world economy is perceived as an important determinant of income and growth differences between countries. Trade resource allocation efficiency enables countries to benefit from economies of scale and scope, facilitates the dissemination of information. At the same time, trade has positive impacts on economic growth by provision of technological development and strengthening competition in domestic and foreign markets (Villaverde and Maza, 2011).

Liberal trade; free trade, reduced barriers to trade, globalization and it means an increasing trade in goods and services between countries. Independent technology transfer of trade, transfer of skills, workforce and total factor productivity have created many positive economic results, including economic growth and development. In many studies in the literature of the paper, the results of trade openness increases economic growth has been obtained.

FOREIGN DIRECT INVESTMENT

The surge of Foreign FDI flows over the past few decades has been one of the most important consequences of globalization (Chauvin, 2013). Foreign direct investment brings plenty of advantages for the economies, such as increased efficiency, lowering costs, diversification, sharing of technology, culture, and knowledge. These advantages of FDI have direct positive effect on economic growth of host countries. The other essential benefit of FDI is a boost to international trade. Foreign direct investment promotes international trade as it allows production to flow to parts of the world which are more cost effective. For instance, Apple was able to conduct FDI into China to assist with the manufacturing of its products which resulted in increased exports of China to US. The country reputation has significant impact on FDI attractiveness (Burcio, 2014). This statement explains that country image is positively proportional with the FDI inflow which means the higher reputation a country has, the more FDI is likely to be attracted. The correla-

tion between FDI and country reputation concludes that FDI is an indicator to assess the image of a country.

Frankly, economic development and improved general welfare of populations can be achieved through direct and indirect effects of foreign capital inflows. FDI is attracted through FDI-specific promotions and campaigns which are aiming to show investment and growth opportunities in countries. Investing companies seize such opportunities and conduct FDI which is in favor of both investing and invested countries. The foremost benefit of investing company is expected profit in the future. Such benefit makes the investing country to have an interest on FDI conducted country. Once, the number of investments and the number of companies from different countries are increased, more countries will have interests in that country and as a result the image of the country is positively affected (Pillai, 2013).

Considering FDI as an indicator of country image, it will be used to identify to what extent it has effects on international trade. In the analysis, FDI net inflow data is used which includes both FDI inflow and outflow.

Foreign direct investments are investments that can be made from one country to another by purchasing any firm located in another country by providing capital to a newly established firm or by increasing the capital of an existing firm (Karluk, 2007: 100). Foreign capital can enter a country in different ways. First, financial are capital market investments that move with developments. Another name for these investments is portfolio investments. Portfolio investments include securities such as bonds and stocks. The other way is that goods produced within the country are sold to another country and this is called export. The last one is directly by individual or a company who will invest in foreign capital wants to enter the company, institution, organization in that country. It can use its own technology or brand name and companies make license agreements. Foreign investments are direct incomes to countries which are real investments for capital accumulation and production (Alpar, 1978: 1).

Below is the map illustrating the foreign direct investments net inflows over the countries. The countries which had the most FDI inflows are U.S., Canada, Brazil, Russia, Australia, Germany, France, China and India. Among these most of them are developed countries. Thus, most of the developed countries have higher country reputation. Consequently, such countries attract more FDI than other countries.

GROSS NATIONAL INCOME

The most widely used indicator for tracking a country's wealth is Gross Domestic Product (GDP). The other measure used for the same purposes is GNP which is the value of goods and services produced by only a country's citizens but both domestically and abroad. However, GNP excludes income earned by foreigners in the country. The alternative measure to GDP and GNP as means of estimating a nation's wealth is GNI. It includes a nation's gross domestic product plus the income received from overseas sources. The base of such external sources is income earned by residents out of the country in case remitted back. Thus, GNI is considered a more accurate indicator when measuring a nation's wealth. For countries that have large scale of foreign outlays or receivables, GNI is better measure. GNI

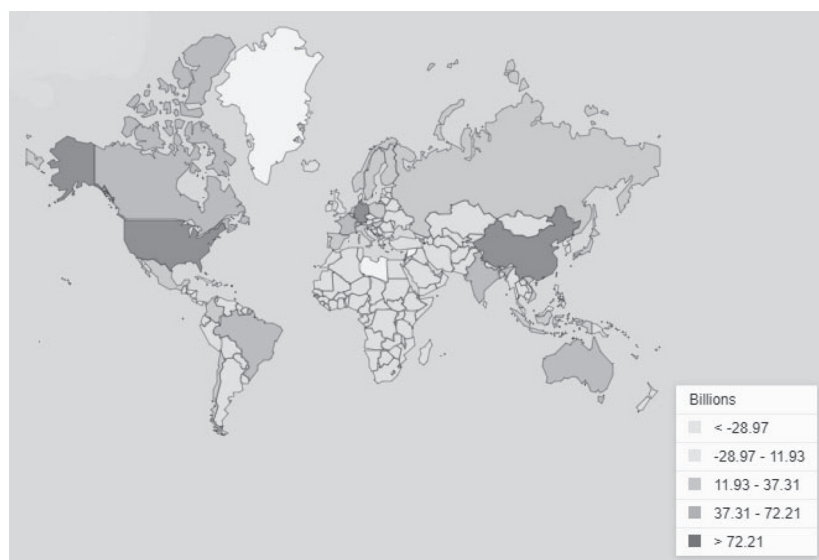


Figure 1

Source: The World Bank, 2019

measures wealth of a nation and the wealth is one of the main elements of reputation and image.

In order to analyze whether a country prosperous or not, it must be taken into account to use GNI per capita, not only GNI. For instance, if there is an increase in GNI of a country, it does not necessarily mean that the country is getting prosperous as population size might be increasing parallelly. In order to improve prosperity, GNI per capita must be increased. Theoretically, GNI per capita also has direct effects on the economic development and prosperity (Diacon and Maha, 2014). For instance, Norway provides prosperous life for the citizens and GNI per capita is very high which is ranked first in the world. Consequently, the country reputation of Norway is high.

Above figure 2 illustrates the GNI per capita (Atlas method) for the whole World between 1990-2019. As it is shown, GNI per capita has been growing since the gradually which also means that there has been economic growth.

In GNI, purchasing power parity is essential element to be considered, however, since we are analyzing to what extent GNI

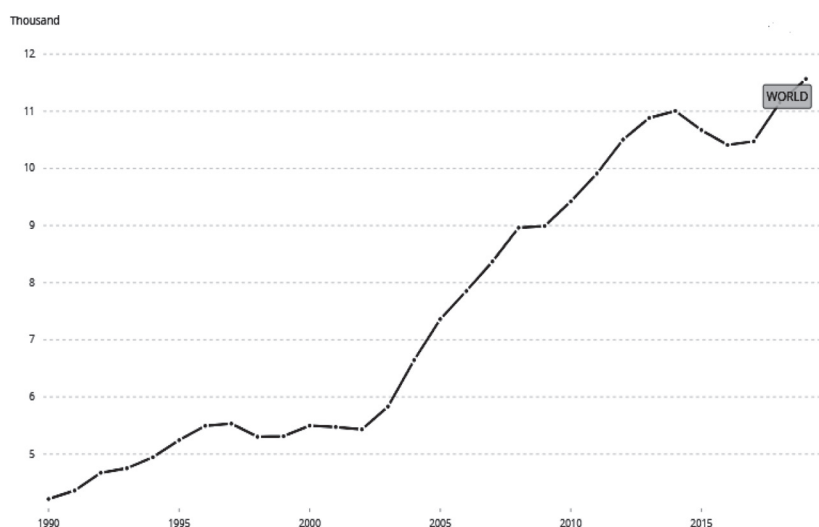


Figure 2

Source: The World Bank National Accounts data

per capita affects international trade, only US dollar means in measurement is adequate.

Economically prosperous nations are those with a per capita GNI of more than US\$10,000, and unprosperous nations are those with per capita GNI of less than US\$10,000 (Omondi Ochieng, 2015). Prosperity of a nation is an essential indicator of reputation in international level.

RESULTS AND DISCUSSION

Using SPSS software, multiple regression analysis was run. Exports were taken as dependent variable while GNI per capita and FDI net inflow as independent variables. The number of the countries with valid data is 86. Through the analysis, we will find out if GNI per capita and FDI net inflow significantly predict exports.

Below is the correlation table exported from SPSS. We can see that both GNI per capita and FDI net inflow have positive correlation with ex-

ports. The Pearson Correlation coefficient between FDI net inflow per capita and exports is 0.790 which is higher than 0.75, therefore there is high degree of correlation. The correlation between GNI per capita and exports is somewhat in low degree, since it is 0.388.

In below Anova table, we can see the significance value of our model (p value) which is 0.000 (0.000016). The confidence level in the analysis is 95%. The model is statistically significant since the p value is less than 0.05. So, the null hypothesis is rejected. In other words, GNI per capita and net FDI inflow predict exports. Significance model is reported as below:
 $F(2,83) = 85.882, p = 0.000$

Below is the table of model summary. Adjusted R square value is 0.666 meaning that 66.6% of the variance in exports can be explained by GNI per capita and net FDI inflow.

Below table contains coefficients of our model. The slopes for FDI net inflow and GNI per capita are 8.093 and 4799911.731 respectively. The equation of line for using GNI per capita and FDI net inflow to predict exports is: $y = mx + b$. Here, "m" is the slope and "b" is constant. Thus, the mathematical equations of our model are as follows:

$$\text{FDI net inflow: } Y = 8.093X + 24804722491.169$$

$$\text{GNI per capita:}$$

$$Y = 4799911.731X + 24804722491.169$$

CONCLUSION

In this research, some of country image indicators are listed and the characteristics of FDI net inflow and GNI per capita is discussed which are some of main influencers of country reputation in international level. After analysis, the null hypothesis is rejected and the data results favored alternative hypothesis which was assuming GNI per capita and FDI net inflow have impacts on exports. Consequently, considering GNI and FDI as indicators of country image and exports as of international trade, we can conclude that country image indirectly affects international trade activities. Reputation of a country can be

Table 1

Correlations				
		Exports of goods and services (current US\$) [NE.EXP.GNFS.CD]	Foreign direct investment, net inflows (BoP, current US\$) [BX.KLT.DINV.CD.WD]	GNI per capita, Atlas method (current US\$) [NY.GNP.PCAP.CD]
Pearson Correlation	Exports of goods and services (current US\$) [NE.EXP.GNFS.CD]	1.000	.790	.388
	Foreign direct investment, net inflows (BoP, current US\$) [BX.KLT.DINV.CD.WD]	.790	1.000	.216
	GNI per capita, Atlas method (current US\$) [NY.GNP.PCAP.CD]	.388	.216	1.000

Table 2

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12167367114440135000000000.000	2	6083683557220067000000000.000	85.882	.000 ^b
	Residual	5879556231959998000000000.000	83	70838026891084320000000.000		
	Total	18046923346400134000000000.000	85			

a Dependent Variable: Exports of goods and services (current US\$) [NE.EXP.GNFS.CD]

b Predictors: (Constant), GNI per capita, Atlas method (current US\$) [NY.GNP.PCAP.CD], Foreign direct investment, net inflows (BoP, current US\$) [BX.KLT.DINV.CD.WD]

Table 3

Model		Unstandardized Coefficients		Standardized Coefficients	t
		B	Std. Error	Beta	
1	(Constant)	24804722491.169	40162148110.228		.618
	Foreign direct investment, net inflows (BoP, current US\$) [BX.KLT.DINV.CD.WD]	8.093	.701	.741	11.548
	GNI per capita, Atlas method (current US\$) [NY.GNP.PCAP.CD]	4799911.731	1347086.441	.229	3.563
Model		Sig.	95.0% Confidence Interval for B		
			Lower Bound	Upper Bound	
1	(Constant)	.539	-55076174785.496	104685619767.834	
	Foreign direct investment, net inflows (BoP, current US\$) [BX.KLT.DINV.CD.WD]	.000	6.699	9.487	
	GNI per capita, Atlas method (current US\$) [NY.GNP.PCAP.CD]	.001	2120610.980	7479212.481	

assessed from many different perspectives as well as international trade from the perspectives of imports and exports. This research opens a path to further research on analyzing effects of different types of country image indicators on international trade.

REFERENCES

- ACAR, M. (2016): Economic growth impact of foreign direct investment: The case of Turkey, *Iktisadi ve Idari Bilimler Dergisi*, (13), 92 – 105.
- BERENS G. – FOMBRUN C.J. – PONZI L.J. – TRAD N.G. – NIELSEN K. (2011): Country RepTrak™: A Standardized Measure of Country Reputation. In: Go F.M., Govers R. (eds)

- International Place Branding Yearbook 2011. Palgrave Macmillan, London. https://doi.org/10.1057/9780230343320_7
- BÚRCIO, C. (2014): *The effect of a Country's reputation and country-of-origin on FDI Attractiveness*. [online] Springer.com. Available at: <https://link.springer.com/chapter/10.1007/978-3-319-10951-0_47> [Accessed 9 September 2020].
- BÜTHE, T. – MILNER, H. (2008): *The Politics of Foreign Direct Investment Into Developing Countries: Increasing FDI Through International Trade Agreements?* [online] onlinelibrary.wiley.com. <<https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1540-5907.2008.00340.x>> [Accessed 7 September 2020].
- COUPÉ, T. – SHEPOTYLO, O. (2017): "Country Reputation

- and Trade Policy Preferences – Using the News of the Election of Donald Trump as an Instrument,” Working Papers in Economics 17/08, University of Canterbury, Department of Economics and Finance.
- DIMITROVA, B.V. – KORSCHUN, D. – YOTOV, Y.V. (2017): “When and how country reputation stimulates export volume”, *International Marketing Review*, Vol. 34 No. 3, pp. 377-402. <https://doi.org/10.1108/IMR-10-2015-0211>
- FERNANDEZ-CREHUET, J.M. – ROSALES-SALAS, J. – COGOLLOS, S.D. (2021): Country’s International Reputation Index. *Corp Reputation Rev* 24, 14–30 <https://doi.org/10.1057/s41299-019-00088-8>
- GREIF, A. (1989): Reputation and Coalitions in Medieval Trade: Evidence on the Maghribi Traders. *The Journal of Economic History*, 49(4), 857-882. Retrieved April 19, 2021, from <http://www.jstor.org/stable/2122741>
- HAQUE, N. – KUMAR, M. – MARK, N. – DONALD, J. MATHIESON (1996): The Economic Content of Indicators of Developing Country Creditworthiness. *IMF Econ Rev* 43, 688–724 (1996). <https://doi.org/10.2307/3867366>
- IVERSEN, N. – KLEPPE, I. – STENSAKER, I. (1998): *Country Image In Marketing Strategies: Conceptual Issues And An Empirical Asian Illustration*. [online] Acrwebsite.org. Available at: <https://www.acrwebsite.org/volumes/11575/volumes/> [Accessed 7 October 2020].
- JAIN, R. – WINNER, L. (2013): Country reputation and performance: The role of public relations and news media. *Place Brand Public Dipl* 9, 109–123. <https://doi.org/10.1057/pb.2013.7>
- FULLERTON, J. – KENDRICK, A. (2017): Country reputation as a moderator of tourism advertising effectiveness, *Journal of Marketing Communications*, 23:3, 260-272, DOI: 10.1080/13527266.2014.973436
- KANG, M. – YANG, SU. (2010): Comparing Effects of Country Reputation and the Overall Corporate Reputations of a Country on International Consumers’ Product Attitudes and Purchase Intentions. *Corp Reputation Rev* 13, 52–62. <https://doi.org/10.1057/crr.2010.1>
- KARL, L. (2019): *Correlation And Regression Analysis: SPSS*. [online] Available at: <http://core.ecu.edu/psyc/wuenschk/SPSS/CorrRegr-SPSS.pdf> [Accessed 19 October 2020].
- OECD (2021): Gross national income (indicator). doi: 10.1787/8a36773a-en (Accessed on 18 April 2021)
- PAPADOPOULOS, N. – IBRAHIM, Y. – DE NISCO, A. – ROSARIA NAPOLITANO, M. (2018): *The Role of Country Branding in Attracting Foreign Investment: Country Characteristics and Country Image*.
- SHIN, H. – LEE, J. – WRIGLEY, B. (2008): *Country Reputation in Multidimensions: Predictors, Effects, And Communication Channels*. [online] tandfonline.com.
- SUNG-UN, Y. – HOCHANG, S. – JONG-HYUK, L. – BRENDA, W. (2008): Country Reputation in Multidimensions: Predictors, Effects, and Communication Channels, *Journal of Public Relations Research*, 20:4, 421-440, DOI: 10.1080/10627260802153579
- VILLAVARDE, J. – MAZA, A. (2011): Globalisation, growth and convergence. *The World Economy*, 34(6), 952-971
- YORAM Z. Y. (2010): Ratification counts: US investment treaties and FDI flows into developing countries, *Review of International Political Economy*, 17:2, 348-377, DOI: 10.1080/09692290903333103
- Boycewire.com. 2020. *Foreign Direct Investment (FDI) Definition*. [online] Available at: <https://boycewire.com/foreign-direct-investment-definition/> [Accessed 19 October 2020].
- Worldpopulationreview.com. 2020. *Countries by IQ – Average IQ By Country 2020*. [online] Available at: <https://worldpopulationreview.com/country-rankings/average-iq-by-country> [Accessed 19 October 2020].

Dr. Attila Szakács – Dr. Zsolt Szakács – Dominik Szakács

Literature review of conscious consumer behavior in the world of cryptocurrency

The research is significant to analyze the implications of cryptocurrency, concerning the various parameters that affect the market of cryptocurrency, and influence consumer buying behaviour, including factors such as advantages, and disadvantages which predict changing behaviour of consumers in the market. Hence, the research is critical for economists and consumers, to analyze various facets pertaining to cryptocurrency, and for policymakers to make administrative policies as per the behaviour of consumers.

ABSTRACT

Financial sustainability is one of the most predominant factors, that has played a significant role in controlling the socio-economic and socio-political paradigms of the world since all social and political factors are explicitly related to the economy. Hence, it is given special significance, which is demonstrated by the incorporation of new models, and the adoption of new strategies to attain economic sustainability. One such strategy is the deployment of technology in finance, which has introduced new modes of payment, primarily called digital currency. The digital currency, principally cryptocurrency has changed the complete dynamics of the economy, completely revolutionizing the world of currency. Cryptocurrency is different from fiat currency in that it is not regulated by any third party or intermediary in the form of banks or other financial institutions. But yet, it offers increased transparency, privacy, protection, and regulation of the financial system though it might be vulnerable to some breaches. Hence, in this paper, we will evaluate the various parameters of cryptocurrency, including its implications, advantages, disadvantages, and others, and how these facets affect consumer behavior. The research method incorporates a structured questionnaire, and a desk survey, which has provided a detailed insight into the conscious consumer behavior in the world of cryptocurrency, by evaluating the preferences and perspectives of 109 respondents. Hence, the research will be highly significant for economists and investors, giving them an insight into the various paradigms and trends of the cryptocurrency market, by an evaluation of the interest of consumers in the market.

LITERATURE REVIEW

INTEGRATION OF TECHNOLOGY AND FINANCE: FINTECH

FinTech as evaluated by Kowalski, Lee and Chan is an assortment of finance and technology, which has substantially ruled out the people in finance, as technology has completely taken over it. It has been implied by the technologists that predominantly technology was implemented in the financial institutions through the back-end mechanisms, whose entire objective was to benefit the organizations in performing the organizational tasks, but with technological advancement,

this conceptual framework has changed, changed to benefit the consumer by developing consumer-oriented services. FinTech is highly significant, as it has entirely revolutionized the business world, making it reliable and convenient to operate. This assortment of technology and finance, which is used to improve and automate various financial processes and services is considered FinTech. FinTech is extensively assessed as the use of new technology in the monetary sector to improve, reinforce, and innovate the use of financial services to automate operational tasks and services. As a result of this automation, FinTech is presently used by business owners, corporate organizations, and consumers to virtually administer their financial mechanisms, financial or economic operations, and processes by the use of systematic and specialized software, by the use computers, mobiles, and principally internet. And hence under these consumer-oriented services, FinTech has now evolved as it includes the integration of financial systems of different sectors, including education, retail banking, investment management, industries, fundraising and non-profit management and others (Kowalski, Lee, and Chan, 2021).

IMPLICATIONS OF FINTECH

Yang explained the various parameters of FinTech and the various advantages offered by it. He asserted that one of the most important parameters of FinTech is the hodgepodge of FinTech and the new technology such as artificial intelligence, robotics, data-driven databases big data, cloud computing systems, and others. These technological facets specifically artificial intelligence is a comparatively broader encompass of the new technology since it includes numerous facets, including machine learning, data-driven marketing, behavioural analytics, and others which largely facilitates the organizations in performing business operations, and in taking effective financial decisions. And because of the significance of FinTech, a large number of companies are investing in FinTech landscapes. This is evident from the fact that in 2016, nearly 17.4 billion USD were invested in FinTech, while in 2017 nearly 83.6 billion USD were invested in the same industry, which increased to 143.37 billion USD in 2018.

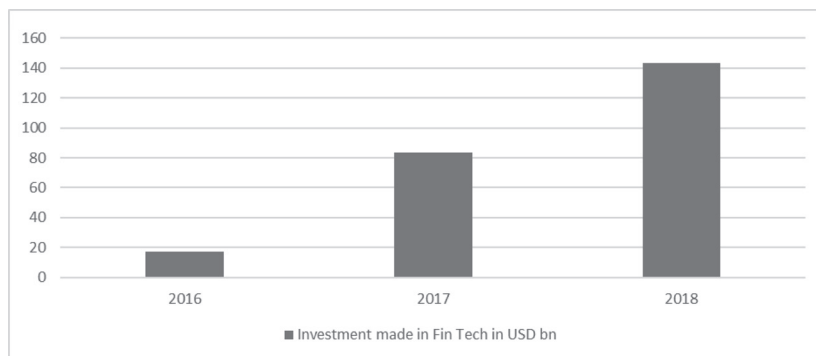


Figure 1 Investment made in Fin Tech in USD bn

Yang and Brown have presented a list of areas principally a list of parameters, which represent the potential benefits of Fin-Tech. This list includes electronic banking or e-banking, open banking, blockchain, digital currency, smart contracts, Insurtech, Robo-advisors, unbanked services, and others. Open banking is a type or a modification to e-banking, but uses a blockchain mechanism and promotes the access of the third party (a party other than the bank and consumer) to the data record of the bank, enabling the bank to develop a collaborative interconnection through an application, that creates a network of financial institutions, principally banks and the third party.

Unbanked service often disadvantages low-income individuals, or who are financially less developed, and the traditional banks also underscore or undervalue these individuals, as some of the mainstream financial institutions. Digital currency principally cryptocurrency, protected by cybersecurity, leads to increased protection of the data, through increased protection of databases, transactional records, and transactional processes, and this is significantly important because of the increased cybercrime and decentralized storage of data. Blockchain technology, includes Ethereum, a type of distributed ledger technology (DLT), which stores the data record on a computer network but does not have a central ledger. Insurtech, the assortment of technology in an insurance company, to improve and automate customer services. Smart Contracts, which also use technology in computer programs, use blockchain technology to automatize the contracts between the buyers and the sellers. Robo-advisors incorporate algorithmic means to automatize investment and incorporate effective decision-making mechanisms, for financial inclusion, increased accessibility, and lower cost. (Treleaven, Gendal Brown and Yang, 2017)

INTRODUCTION TO CRYPTOCURRENCY

The word cryptocurrency is derived from the widely used encryption method, which is used to protect the digital economic networks. A cryptocurrency as mentioned earlier, is a type of digital currency, principally a decentralized digital currency, that is operated by cryptography, making it impossible for businesses to counterfeit or double-spend the money, thereby protecting the revenue effectively. Cryptocurrency, the most significant and supreme type of digital currency, is quite similar to virtual currency and is based on a cryptographic framework, which makes it highly secured, and highly protected. Cryptocurrency is primarily a decentralized digital currency since it does not depend on a third party or an intermediary and does

not follow any provisions implied by the federal government. The algorithms and data used in the cryptocurrency are highly complex and integrated, as it is designed to operate as a technological medium of exchange. The operational system of the cryptocurrency is highly effective, as it stores the datasets of each of the coins, by using cryptographic mechanisms, and computerized databases. In addition to storing the record of each coin ownership, it regulates the record of each transaction, to ensure the safe transfer of coin ownership, and the creation of new coins. Cryptocurrencies are these digital or virtual currencies that depend on cryptographic systems, and allow the users to execute online payments without using any external source, or third-party intermediary.

The word crypto is regarded as the various encryption datasets that are based on cryptographic techniques, which safeguard data entries including public-private key pairs, elliptical curve encryption, and hashing functions. There are several mechanisms, used in the transaction of the cryptocurrency. Some of the crypto schemes employ validators to sustain the cryptocurrency (Wang et. al, 2020). And in this process, some of the coin owners place their tokens as collateral for increased transparency, and as a result of this process, these coin owners acquire administration over the specified proportional amount, equal to the worth of their token. And with time, these token owners are paid with increasing ownership, in the form of minted tokens, network fees, or any other reward. It is asserted by R Auer and R Bohme that cryptocurrency uses cryptographic techniques, which principally include blockchain and distributed ledger technology, make it nearly impossible for hackers to hack the system, or counterfeit or double-spend the system, since these technologies incorporate a disparate and extensive network, which makes it immune from external threats. Besides the mechanism of cryptocurrency, since is based on a decentralized digital economy, therefore it is also immune to the interference of the government and hence immune to governmental manipulation. Hence, the protection that cryptocurrency offers to users, from both sides, makes it a very reliable and secured type of digital currency, making it preferable (Fernández-Villa Verde et al., 2020).

EVALUATION OF BLOCKCHAIN

Dhotre evaluated blockchain and explained its functional mechanism of blockchain. He asserted that Blockchain, is, a type of decentralized database, which records transactional data by using unchangeable cryptographic data, which is commonly regarded as the hash. A blockchain is an extended list of datasets, which are referred to as the blocks, and these blocks are linked together by using mathematical algorithms of cryptography.

A blockchain is also evaluated as a digital balance sheet containing the transactional data, which is transcribed and translated across the entire network of blockchain across the computer system. Each of these blocks a certain record, of a certain number of transactions, and each time a new transaction is made, the data of that transaction is added to the balance sheet of the participant. Each of these blocks consists of cryptographic data, which is related to the data of the subsequent

block. This data is principally transaction data and a record of time. This transactional data demonstrates the record of each of the transactions, whereas the timestamp is used to keep the record of the time, and the date on which each of the blocks was launched. This provides the complete data record of each of the blocks.

Any individual with a computer and an internet connection can use them for making transactions, and can also become the validator. As each block consists of the complete information of its record and the information of the subsequent block, and therefore these blocks reinforce the information of each of these blocks, keeping the information intact. These blocks are correlated with each other and form a network of data, and this network is resistant to any change, once the data is recorded. This fact makes cryptography a reliable algorithmic combination, as it is entirely based on this chain of blocks, whose data cannot be altered, replaced, or modified without changing the configurational sequence of the blocks. This entire network of blocks is referred to as the blockchain, which is defined as an algorithmic system for recording information in such a way, which renders it impossible or at least difficult to alter, modify, or hack the system (Dhotre, 2019).

SECURITY RECEPTACLE OF BLOCKCHAIN

Peck explained the security of the blockchain using the principle of data storage on the blocks. He asserted that these blockchains are normally monitored by an integrated network or precisely a peer-to-peer network since it is a distributed ledger, where each of the multiple participants implies a disciplinary protocol to inform and verify the addition of data to a block, as well as the production of new blocks. The reason that a blockchain network is difficult to hack, is because of the complicated algorithmic data on each block in the chain, and how these blocks record the information. If one block in the chain is changed or altered, it would indicate immediately that it had been changed, because the data of the subsequent block will be changed. Hence, to hack the regulatory system of the cryptocurrency, the hacker will have to change the entire blockchain and change the data of every block, across all of the versions of the blockchain, distributed across all the computers. And this all-systematic mechanism of data input, data record, and data processing, makes the blockchain a relatively secure system. That is why, blockchain is the operating system of cryptocurrency, which as mentioned earlier uses cryptography (Peck, 2017).

TYPES OF BLOCKCHAIN AND RESPECTIVE CRYPTOCURRENCIES

Xiong et al explained the types of blockchains since these types are highly significant for understanding cryptocurrency. It is classified into four categories: public blockchains, private blockchains, hybrid blockchains, and sidechains. The private blockchains, on the other hand, are not accessible to everyone, and cannot be used by everyone. They can only be accessed if invited by a network administrator, and the participant and validator access is restricted in the private blockchains. They are mostly decentralized and are regarded as decentralized databases. The public blockchains are accessible to everyone with a computer, and therefore they have no restrictions. These blockchains are highly beneficial for financial advancement, as they

offer monetary incentives. Similarly, hybrid blockchains are an assortment of private and public blockchains and are having the properties of both centralized digital blockchains, and decentralized digital blockchains.

Therefore, some of the features of the hybrid blockchains are accessible like public blockchains, while some of the features are restricted like the private blockchains since it incorporates both centralized and decentralized systems. A sidechain is quite different from all three categories. It is a design for the blockchain ledger that is proportional to the initial blockchain. The data record of the primary chain is transcribed and is translated to the sidechains. Once the sidechains are formed, and the data is recorded on them, they can operate independently of the primary blockchain. This is mainly done by using a different algorithmic combination and a different operating system for storing the data, as from the primary blockchain (Xiong et al., 2021).

SMART CONTRACT AND ALTCOINS

Kabuye explained that the word alternative coins, which is also simplified as altcoins, is collectively used for token cryptocurrencies, that are not included under the tag of the bitcoin. The altcoin is also disparagingly referred to as the shitcoins or alternative versions of bitcoin. It has been asserted that the term altcoin has been proposed to include all types of cryptocurrency tokens, that have been proposed after the bitcoins. The primary difference between bitcoin and altcoin is that altcoin uses smart contracts rather than blockchain cryptography, which is equally transparent and is equally protected like cryptography but is more automated since it allows to perform various transactions through systematic databases. He asserted that smart contracts, using a technological receptacle that also uses networks in computer programs, use blockchain technology to automate the contracts between the buyers and the sellers. Moreover, the blockchain operates by employing smart contracts, which is a newly emerging protocol, incorporated by modern AI-based machines. Smart contracts use a strategic method to set out some provisional rules for executing and enacting financial contracts, assuring that the right agreements are made under the right regulations. Hence, once a treaty is being made, using a smart contract, it holds funds unless all regulations and rules are improvised, and as soon as these regulations are met, the contract automatically releases these funds. Hence, this has entirely changed the Fintech works, as it has replaced the conventional financial transaction methods with a new one, and the mode of transactions, as well as the intermediaries, are all now operating through online mode (Kabuye, 2018).

STABLE COINS AND SIGNIFICANCE

Zilioli evaluated stable coins and how this type of digital currency is different from other types of cryptocurrencies. Zilioli asserted that stable coins are the most used type of cryptocurrency in the digital market making it different from other types of cryptocurrencies. These are a type of cryptocurrency that is linked to an inherent value, and by linking to a physical currency, principally a federally administered currency, like the US dollar, European Euro, or other currency. However, the majority of the stable coins use the dollar as their benchmark, but some are also linked to government-issued fiat currencies. As a result, the inherent value of the cryptocurrency becomes

stable, with very little fluctuation in the value. This differentiates stable coins from the other types of cryptocurrencies, including Bitcoin and Ethereum, which are vulnerable to sudden fluctuations.

The first stable coin was established in 2014, and was called Tether, which is inherently connected to the US dollars, and was initially used by investors to avoid the sudden risks and immediate volatility, that are often related to other cryptocurrencies. Besides saving it from extreme volatility, the linking of Tether with the inherent value of the dollar was to keep its value within the crypto market. Basically, stable coins are cryptocurrencies, whose price is pegged to a fiat currency or exchange-traded commodities including metals, and industrial products, such as gold and silver (Chohan, 2019). After tether, many other stable coins have been modelled, which are extensively used in the business. These stable coins are backed by a physical asset, which makes them highly reliable, as they are stabilized by physical assets whose value fluctuates outside the sphere of cryptocurrency, and hence this fluctuation does not affect the value of cryptocurrency. This is one of the most effective measures to be taken to reduce financial instability, as it has largely mitigated the economic risks. The other cryptocurrencies on the other hand, including Bitcoin, and Litecoin, are highly vulnerable to financial risks, and their holders cannot escape the falling prices unless they either exit the market or invest in stable coins. Normally, it is operated in a very systematic way, in which each user receives a token in exchange for a dollar, and this token can be translated back into the original currency with the same value of one dollar, at any time with the one-for-one exchange rate (Brown, 2019).

Moreover, these stable coins are regulated by a centralized as well as decentralized system and have the mechanism for financial sustainability. Through this mechanism, the asset backing the stable coin can be regained, and since it is directly related to the cryptocurrency, its inherent value is also stabilized. Some economists have implied that though there is some risk associated with stable coins, because of the financial risks associated with the physical asset, such as the fall in inherent value because of the rise in inflation, if a stable coin is linked with the physical asset by the use of a decentralized system, then it can be effectively saved from all sorts of financial risks. However, if these stable coins are linked with the physical asset using the centralized system, and are regulated by the federal government or any other federally administered organization, then these are prone to financial risks, for instance, robbery (Zilioli, 2020).

ADVANTAGES OF CRYPTOCURRENCY

Wang et. al evaluated the various advantages offered by cryptocurrency, asserting that cryptocurrency has entirely revolutionized the complete infrastructure of economics, offering numerous benefits to the financial paradigms, leading to the stabilization of the financial structure of the world. Cryptocurrency offers a very unusual, yet sustainable paradigm for the increased transparency and increased security of the economic system, using a decentralized system of economy. Cryptocurrency facilitates the process of sending and receiving funds

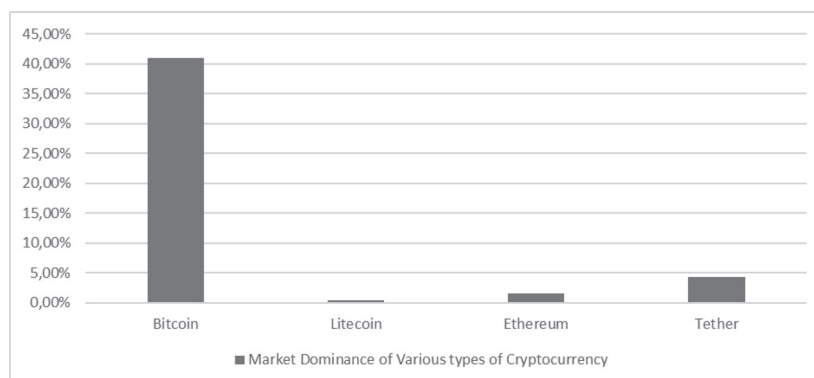


Figure 2 Market Dominance of Various types of Cryptocurrency

between two various parties, by using algorithms, and blockchain, without the need for physical presence or any meeting, but all the matters can be resolved virtually, without the assistance of third parties and banks.

Furthermore, portfolio diversification is also a well-known advantage of cryptocurrency, becoming a non-correlated asset class, functioning independently of other markets. Therefore, the price of these assets is determined by factors different from the factors that affect fiat currency, including stocks, commodities, and bonds. Likewise, cryptocurrency offers a sustainable control of inflation and hence plays a substantial part in economic reinforcement. Mainly mineable cryptocurrencies, like Bitcoin, Monero, Litecoin, and others, having a restrained supply cap is considered an effective barrier to inflation since this electronic currency has a specified value, measured in dollars, which has a higher chance of having an increase in inherent value. But despite this, the protocol of Bitcoin is designed in such a way that it keeps these coins scarce, being indifferent to the monetary policies.

Similarly, the industry of cryptocurrency is exponentially growing and is becoming the fastest growing industry in the world. And as a result, the major multinational companies are investing in it, and are accepting thereby incorporating it as a medium of payment. This is evident from the fact that the net market cap of cryptocurrency was nearly 1.6 billion USD in 2013 and 3048 billion USD in 2021. This exponential growth of cryptocurrency despite the pandemic shows the significance of the industry and the prospective potential it withholds.

Similarly, outsized returns are also a significant advantage of cryptocurrency, contributing tremendously to the strengthening of the economic structure of individuals, businesses, and countries. Cryptocurrency specifically bitcoin results in large outsized returns, representing millions of points on the stock exchange market, worth millions of dollars. Similarly, increased security is also a fundamental benefit offered by the market of cryptocurrency, which is based on blockchain technology and cryptographic mechanisms, making it a comparatively secured form of payment. This security is largely based on the hash rate, as the higher, the hash rate is, the higher the computing power and algorithmic complexity, which in turn means higher security. Furthermore, increased consensus and reduced cost are other property, which makes cryptocurrency a comparatively preferable medium of payment. Another benefit of cryptocurrency is that it is a 24/7 market, unlike the conventional financial markets. For instance, the stock exchange

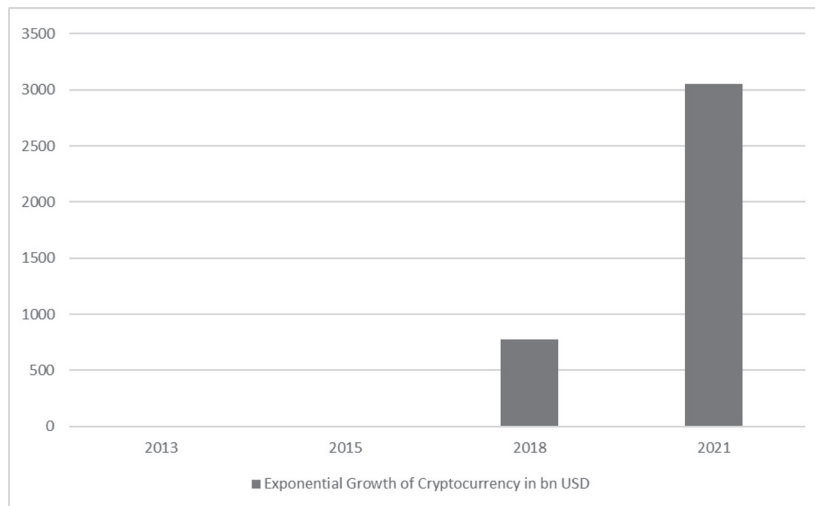


Figure 3 Exponential Growth of Cryptocurrency in bn USD

markers are open only for a specified time, only on weekdays and between the determined business hours. Crypto markets are open 24/7, trading at all times, allowing the consumers to execute their financial transactions at any time, without any intervention. The only things that can disrupt these crypto markets include power outage, centralized exchange outage, and internet outage.

Furthermore, significance of cryptocurrency primarily lies in the independence of the mechanism that it uses for the transaction of money, primarily independent of the centralized intermediaries including financial institutions, independent of these institutions to implement regulations that somehow impede the autonomy and sovereignty of the users. This results in increased confidence and trust of users, which operate the entire system with the assistance of developers, and algorithmic combinations using the system to execute the operation by themselves, through increased automation. Moreover, the system of cryptocurrency eliminates the possibility of a single point of failure, which is very common in banks and a leading cause of disruption of financial systems, leading to economic regression. Therefore, the use of cryptocurrency is comparatively safer, as it eliminates the possibility of financial breakdown and fosters the process of economic sustainability.

Hence, this has largely increased the efficacy and effectiveness of online transactions, which are not only highly effective but also highly secured, through the use of public keys and private keys, and various other forms of incentives including proof of work which is also typically known as proof of stake. Furthermore, cryptocurrency can be highly useful for generating profits, and large sums of revenue since cryptocurrency markets have been flourishing over the last two decades, rising constantly over the past years, and consequently is attracting the attention of investors. Hence, cryptocurrency withholds numerous opportunities for both stakeholders, businesspersons, and investors, allowing them to earn huge profits as per the demand of the market (Sheth and Dattani, 2019).

DISADVANTAGES OF CRYPTOCURRENCY

LEE Kuo Chuen et. al, explained various types of disadvantages associated with the use of cryptocurrency, which are primarily associated with the lack of regulatory mechanisms, impeding

the system of cryptocurrency to become incorporated into the world economy. A cryptocurrency is a significant tool for criminals, which is used by them for illegal activities, primarily associated with black money, such as money laundering, corruption, and terrorism. Cryptocurrency is also widely used by drug sellers on the dark web, for selling drugs, and other illicit products, and services. Furthermore, cryptocurrency is an unspecified form of transaction, which is executed anonymously, by pseudonymous people. However, the digital datasets incorporated in these transactions are evaluated by intelligence institutions, which leads to the possibility of the tracking of financial transfers of money by the common people, as investigated by federal institutions. Furthermore, cryptocurrency is also widely used by hackers for stealing private data and important data, using it for performing ransomware activities.

Furthermore, cryptocurrency has been found to centralize money, though it is a decentralized form of currency, it still, prompts the accumulation of money to a specified class of people, making it a concentrated form of currency. Furthermore, cryptocurrency somehow disrupts the balance in the economic system, leading to a specified concentration of money as it can be operated by anyone using simply a computer and internet connection. However, this mining of the cryptocurrency requires a large amount of energy which in turn requires large costs as well as unpredictability, resulting in the concentration of mining primarily among multinational companies, which leads to the increasing revenue of these companies, with the accumulation of money, as 10% of the total miners of cryptocurrency own 90% of the mining capacity.

Moreover, cryptocurrency largely suffers from volatility, and consequently, its value changes constantly, surging immediately at times and then falling after sometimes, which can disturb the economic cycle, leading to the disturbance of the economic structure of the complete world. That's why some economists have asserted cryptocurrency to be rather a transient currency, which is rather short-lived or a speculative bubble (LEE Kuo Chuen, Guo, and Wang, 2020).

CONSCIOUS CONSUMER BEHAVIOR AND CRYPTOCURRENCY

G Heilman and R Rauchs evaluated the consumer buying behaviour in the world of cryptocurrency, specifically concerning the continuously changing value of the cryptocurrency, and the considered speculative bubble of the cryptocurrency and other digital currencies. Heilman and Rauchs assert that the world of cryptocurrency has generated considerable attention from the people, constantly fluctuating the perception of consumers towards it as the value of these digital assets has changed substantially. And this whole perception of the consumers is principally changed because new consumers are constantly entering the world of cryptocurrency, while some are leaving it.

This is evident from the fact that within one the year 2021, nearly 969.5 million people visited 60 crypto websites all across the world, which was a nearly 200% increase in the audience

as compared to 2020. This increase in the number of people resulted in the increased value of cryptocurrency, which was doubled over the years, Bitcoin, reached a value of more than 1 trillion USD in late 2020, despite the pandemic which had disrupted the the complete financial receptacle of the world.

Heilman and Rauchs used web trafficking and internet data to acquire information on how many people visited various websites of cryptocurrency, how frequently visited these websites, and how much invested in them, giving them a generalized insight into the total number of people leaving the sphere of digital currency, and entering the digital currency. The recent data statistics show that consumers have been primarily interested in cryptocurrency, as the investments being made by people have been constantly increasing during the last decade, with the increasing value of the cryptocurrency. Using these statistics, it was found that by December 2021, the total market capitalization of the crypto market was more than 2.21 trillion USD, showing the potential of the market of cryptocurrency. Furthermore, nearly the average trading volume of cryptocurrency was amounted to be 120 billion USD, which demonstrated the constantly growing and constantly flourishing cryptocurrency on a daily, monthly, and annual basis. And though all types of cryptocurrencies have been important, 40% of the consumers investing in cryptocurrency invested in bitcoin, which predominantly dominates in the world of cryptocurrency. This is also evident from the fact that during the pandemic when the value of nearly all things fell, the business world suffered socially, and economically, leading to the disruption of the whole economic receptacle.

However, despite all these economic failures, the world of cryptocurrency flourished, primarily because of its stability, and potential to minimize financial regression, which led to various small and medium-sized enterprises adopting cryptocurrency as a medium of exchanging goods and services with their shareholders, customers, and investors. This is evident from the fact that nearly 32% of the corporations in the United States not only accepted but also adopted cryptocurrency as a form of payment. This resulted in the increasing value of bitcoin, which rose from 6000 USD to more than 60,000 USD from 2021 to 2022. Furthermore, considering the increasing surge in cryptocurrency, it is expected that the currency will grow at an annual rate of 13% by 2030. And this increasing surge toward cryptocurrency has resulted in an increasing inclination of the people toward the adoption of bitcoin, for instance, it has been found that nearly 27% of Americans have supported the adoption of bitcoin as legal tender.

However, it was found by R Farell, that cryptocurrency is somehow not so popular throughout the world, but is specifically concentrated in some geographic zones, which is primarily because of the disadvantages of the cryptocurrency, including price volatility, scalability, lack of investment values, and various others.

In nearly, 195 countries situated on the map of the world, only 10 countries are found to be extensively incorporated into the market of cryptocurrency, which primarily includes Canada, the United States of America, Brazil, Russia, Australia, Spain, India, Japan, Ukraine, and Argentina, all responsible for the advancement of cryptocurrency. Though cryptocurrency is quite flourishing in these zones, however, other countries are quite restrained from using cryptocurrency. This can

also be associated with a large number of scams, that people face while using cryptocurrency as a medium of exchange. For instance, in 2020, it was found that there were 8000 scams of cryptocurrency in the United States. Furthermore, it has been found that though consumers want to adapt to the cryptocurrency, a preliminary lack of users around them impedes them to adopt the currency itself. The perspective of the people plays a vital role in this case since people are collectively influenced by the perception of each other, which either motivates them to adopt or retrieve a technology.

However, besides this, there are several other reasons which impede the users to incorporate cryptocurrency as a medium of payment. Furthermore, Wang asserted that cryptocurrency explicitly operates between two parties, which makes it much faster compared to the transfer of fiat currency, which primarily incorporates three parties, and hence takes more time (Wang et. al, 2020).

REFERENCES

- DWYER, G.P. (2015): The economics of Bitcoin and similar private digital currencies. *Journal of Financial Stability*, [online] 17, pp.81–91.
- HOGAN, T.L. (2012): Competition in Currency: The Potential for Private Money. *SSRN Electronic Journal*.
- KSHETRI, N. (2021): The Economics of Central Bank Digital Currency [Computing's Economics]. *Computer*, 54(6), pp.53–58.
- ROLNICK, A.J. (2010): Maintaining a Uniform (Electronic) Currency. *Journal of Money, Credit and Banking*, 31(3), p.674.
- BERENTSEN, A. (2006): On the private provision of fiat currency. *European Economic Review*, 50(7), pp.1683–1698.
- TOWNSEND, R.M. (1989): Currency and Credit in a Private Information Economy. *Journal of Political Economy*, 97(6), pp.1323–1344.
- ANDOLFATTO, D. (2018): Assessing the Impact of Central Bank Digital Currency on Private Banks. *Federal Reserve Bank of St. Louis, Working Papers*, 2018(025).
- DU, W. – SCHREGER, J. (2021): Sovereign Risk, Currency Risk, and Corporate Balance Sheets. *SSRN Electronic Journal*.
- SÖNMEZ, A. (2020): DIGITAL CURRENCY BITCOIN. *TURKISH ONLINE JOURNAL OF DESIGN, ART AND COMMUNICATION*, 4(3), pp.1–14.
- PERUGINI, M.L. – MAIOLI, C. (2014): Bitcoin: Tra Moneta Virtuale E Commodity Finanziaria (Bitcoin: Between Digital Currency and Financial Commodity). *SSRN Electronic Journal*.
- YAO, Q. (2017): Understanding central bank digital currency: a systemic framework. *SCIENTIA SINICA Informationis*, 47(11), pp.1592–1600.
- GOLDFARB, A. – GREENSTEIN, S.M. – TUCKER, C. (2015): *Economic analysis of the digital economy*. Chicago; London: The University of Chicago Press, Cop.
- SINGH, S.R.S. – SATISH, D. – KUMAR, M.V.R. (2018): Survey on Surging Technology: Cryptocurrency. *International Journal of Engineering & Technology*, 7(3.12), p.296.
- LIU, Y. – TSYVINSKI, A. (2018): Risks and Returns of Cryptocurrency. *SSRN Electronic Journal*.
- WU, A. (2018): Non-Stationarity in Stochastic Distributions of Cryptocurrency Returns. *IU Journal of Undergraduate Research*, 4(1), pp.73–79.

- LEE KUO CHUEN, D. – GUO, L. – WANG, Y. (2019): Practical Applications of Cryptocurrency: A New Investment Opportunity? *Practical Applications*, 6(4), pp.1.11-5.
- I G, V. (2020): Survey on Blockchain: Backbone of Cryptocurrency. *International Journal for Research in Applied Science and Engineering Technology*, 8(6), pp.2011–2027.
- DHOTRE, S. (2019): A Survey of Blockchain Applications beyond Cryptocurrency. *International Journal for Research in Applied Science and Engineering Technology*, 7(4), pp.1102–1105.
- PECK, M.E. (2017): Blockchain world – Do you need a blockchain? This chart will tell you if the technology can solve your problem. *IEEE Spectrum*, 54(10), pp.38–60.
- SHETH, H. – DATTANI, J. (2019): OVERVIEW OF BLOCKCHAIN TECHNOLOGY. *ASIAN JOURNAL OF CONVERGENCE IN TECHNOLOGY*, 05(01), pp.1–4.
- C, K. (2018): An Overview of Blockchain Technology. *International Research Journal of Electronics and Computer Engineering*, 4(4), p.1.
- XIONG, H. – DALHAUS, T. – WANG, P. – HUANG, J. (2020): Blockchain Technology for Agriculture: Applications and Rationale. *Frontiers in Blockchain*, 3.
- FERNÁNDEZ-VILLAYERDE, J. – SANCHES, D.R. – SCHILLING, L. – UHLIGH, H. (2020): Central Bank Digital Currency: When Price and Bank Stability Collide. *SSRN Electronic Journal*.
- NELSON, B. (2018): Financial stability and monetary policy issues associated with digital currencies. *Journal of Economics and Business*, [online] 100, pp.76–78.
- KWON, O. – LEE, S. – PARK, J. (2020): Central Bank Digital Currency, Inflation Tax, and Central Bank Independence. *SSRN Electronic Journal*.
- CHOHAN (2019): Are Stable Coins Stable? *SSRN Electronic Journal*.
- BROWN, P.N. (2019): Incentives for Crypto-Collateralized Digital Assets. *Proceedings*, 28(1), p.2.
- ZILIOLI, C. (2020): Crypto-assets: Legal Characterisation and Challenges under Private Law. *SSRN Electronic Journal*.
- LYONS, R.K. – VISWANATH-NATRAJ, G. (2019): What Keeps Stable Coins Stable? *SSRN Electronic Journal*.
- REZA, T.S. (2018): A STUDY ON DIGITAL CURRENCY: THE SAFETY OF FUTURE MONEY. *Transparency Journal Ilima Ilhum Administration*, 1(1), pp.134–139.
- KWON, O. – LEE, S. – PARK, J. (2020): Central Bank Digital Currency, Inflation Tax, and Central Bank Independence. *SSRN Electronic Journal*.
- WU, Y. – FAN, H. – WANG, X. – ZOU, G. (2019): A regulated digital currency. *Science China Information Sciences*, 62(3).
- SAITO, K. – IWAMURA, M. (2019): How to make a digital currency on a blockchain stable. *Future Generation Computer Systems*, 100, pp.58–69.
- MEANING, J. – DYSON, B. – BARKER, J. – CLAYTON, E. (2018): Broadening Narrow Money: Monetary Policy with a Central Bank Digital Currency. *SSRN Electronic Journal*.

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Theories and methodological approaches in human controlling

Our study highlight in which functional fields works better the intellectual capital which methods help us to compare and make difference between these fields. Understanding and developing the channels through which human capital components influence market outcomes is therefore crucial. In our study, we highlight which functional areas of intellectual capital are most detectable and which methods are most appropriate for measuring these factors.

ABSTRACT

Nowadays, the really competitive enterprises go beyond the opportunities offered by the market – depending on their size, they become multi- or transnational and expand the competition to the whole world market, or perhaps even create new markets. One might think that corporate success depends mainly on innovation, but our study highlights that innovation is only a tool to achieve success, and exist “invisible” tools, ideas which we can not find in the account system. The invisible tools are ideas and excellent work, know-how to our colleagues. These type of innovation present license and advantage in the market and this way could achieve as a result a blue ocean method.

INTRODUCTION

When we think of the value of an economic organisation, we immediately think about economic values, which we meet as part of the financial balance, quarter year results, et cetera. It is quite obvious that we use a variety of accounting, logistics, and other functional systems in order to create more and more precise reports. Projects, their successfulness, and sustainable development are the things that fuel the life of the enterprise. This enterprise has a role in the patents, new technological solutions, and licenses created by the employees that is too significant to properly measure in our huge variety of books. The knowledge, innovation, and know-how existing within the employees’ heads offer the element harnessed by the enterprises which we didn’t really feel was significant until recently – intellectual capital.

„As enterprises are adapting to the challenges of information based competition around the world, the capability to use their immaterial resources is becoming more and more important, as opposed to investing into tools, or the capability of managing them.” (Kaplan – Norton, 2007)

If we take a look at the significant differences between the value of organisations listed on the stock market, depending on where we see them – on the market, or in books – we may have a deeper understanding of the above-mentioned quote. This difference is caused by the intellectual capital. The name „intellectual capital” was first used by J.K. Galbraith. He believed that intellectual capital also includes a kind of mental activity as well, that it means more than intellect. This theory is evaluated differently, both in its scientific meaning, and its economic usefulness and function. The definition found in the

Jónás – Kövesi – Tóth (2009) publication states that intellectual capital is not a combination of material elements of capital, which are managed by the enterprise, and if managed properly, may become the source of the enterprise’s sustainable competitiveness. They separate intellectual capital into three parts, which are the human, relationship, and structural/organisational units. The points of interconnections, separations, and cause and effect are also taken into consideration. The definition is based on how an economic organisation manages its intellectual capital by the categories in which its elements are placed, and the activity necessary for the enterprise to transform it’s human and consumer capital, which may be lost at any time, into structural capital. If we go deeper, we may see that despite their differences, opinions are rather well-matched. In light of this, Gyökér and Finna (2008) state that intellectual capital is none other than the difference between the economic organisations’ value of tools, and market value. This is the relation that we highlighted at the start of our study. Stewart believes that this is the summarised form of the so-called “useful knowledge”, which includes new technological solutions, licenses, the abilities of the employees, and the grand total of all information collected about consumers, and transporters. In the definition of Brooking, intellectual capital is a combination of immaterial assets which is indispensable for the operation of the enterprise.

WHAT ELEMENTS DOES INTELLECTUAL CAPITAL HAVE?

Apart from traditional enterprise resources also known by accounting, the three main subgroups of intellectual capital are garnering more and more attention in recent years:

1. *External immaterial assets* – every element, which is related to the external connections (aka the relationship capital) of the enterprise.
2. *Internal immaterial assets* – these are the elements, which make it possible for the enterprise to realise their basic tasks as efficiently as possible, and to lead the enterprise organise and operate itself.
3. *Personal knowledge capital of employees* – these are basically the element of knowledge owned by the employees, but only the ones which are related to the operations of the enterprise, or in other words, have an effect on whether the enterprise completes its goals or not.

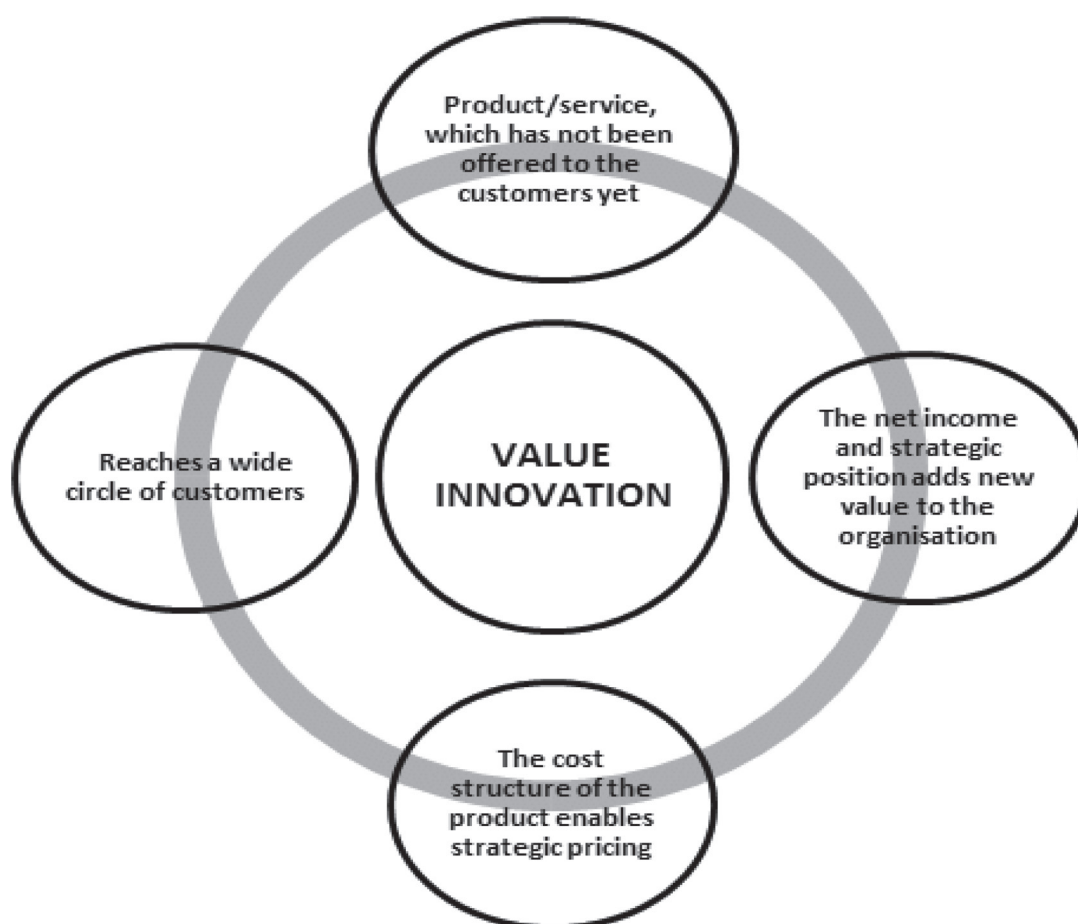
Table 1: Elements of intellectual capital

Human capital	Consumer (relationship) capital
– Know-how	– Brand names
– Educational level	– Consumers
– Field of expertise	– Consumer loyalty
– Knowledge related to work	– Enterprise names
– Workplace evaluations	– Orders waiting to be shipped
– Psychometric evaluation is	– Distribution channel
– Competences related to work	– Business corporations
– Adventurous nature, innovative vein, proactive and reactive capabilities, adaptability	– Licence deals, Franchise deals, advantageous contracts
Organisational (structural) capital	
Intellectual property	Infrastructural tools
– Patents	– Leadership philosophy
– IPR	– Organisational culture
– Design rights	– Controlling processes
– Business secrets	– Information systems
– Trademarks of products	– Networking systems
– Trademarks of services	– Financial connections
– Management philosophy	

Source: self-made, based on Zéman – Tóth p.124, 2017

We may also use the definition of the organisational (structural) capital to approach the definition of intellectual capital. Intellectual capital can also be approached through the definition of organisational (structured) capital, which is presented in Table 1 below. Organisational capital includes all the organisational capacities created in order to complete market requirements. Structural capital is the value, which becomes an asset on the side of the enterprise as the product of human capital. The two parts of capital together form the enterprise's intellectual capital. Though it is impossible to create a framework model that is unified for the organisational (structural) capital economy, which has all of its parts included within the so-called value chain analysis. (Zéman – Tóth, 2017)

In conclusion, we can say that the human capital includes the know-how, abilities, competences, and expertise owned by the people working for the enterprise. Consumer capital includes all the connections outside of the organisation, for example enterprise value, consumer loyalty, et cetera. Properly handled human resource, and properly managed intellectual capital are becoming more and more valuable within the accelerating competition we can see on the market today. This results in more and more CEOs

**Figure 1: Consequences of the creation of blue oceans**

Source: self-made, based on Albert Kondor, 2015

considering the more efficient management of workforce a question of core importance, in order to increase enterprise competitiveness. Using proper communication within the enterprise, human resources can be managed, and encouraged to realise the goals of the enterprise more efficiently. This means that management has an important role in creating a socio-psychological environment, in which the human resource can be encouraged to reach for higher levels of performance, thereby making them more dedicated to increasing the financial performance of their enterprise in the long term. (Zéman – Tóth, 2017)

PRESENTATION OF THE MAIN RESEARCH MATERIAL – APPEARANCE OF INTELLECTUAL CAPITAL ON MARKETS

The theory of the market space without competition was known by the field for a while, however, now that the industries are trying to become more and more saturated, it is garnering a much higher level of interest. This model of innovation is excessively simple – it states that the market universe consists of two oceans: the red and the blue oceans. The red oceans encompass all of the currently existing industrial sectors, thus they make up the currently known market space. The so-called „blue oceans” signify the industrial sectors that do not currently exist. This is considered the as of yet unknown market space. The various different industrial sectors within the red oceans are very well defined, the borders between the various sectors are very clear and easy to understand, furthermore, the participants of the competition all know the conditions that the market requires from them. Enterprises within the known market space try to beat their competitor enterprises by conquering as much of their demand as possible. While the market is becoming more and more saturated, the possibilities of profits and growth are becoming less and less just as fast, and the developments and innovations are also becoming tighter.

The blue oceans are the currently untouched markets defined by their possibilities of creating the man, and being profitable. Most of these unknown market spaces are created by extending the borders of currently existing industrial sectors within the red oceans. Within the blue oceans, competition has no significant role, because the conditions of the market competition are not defined, not written out. naturally, one always has to take how the red oceans will never lose their significant role into consideration, and remember that they will be a definitive factor within the business life. The consequences of blue ocean formation are shown in Figure 1.

While analysing the various different industrial sectors, we may see that by their main product and service categories, the market actors are becoming more and more similar to each other, which results in the consumer behaviour of not choosing by the uniqueness of the brand, or by brand loyalty, but prices taking the dominant role because of the increasing similarity between the choices. A lot of enterprises do not see a very significant importance in the fact that the conditions of the various industrial sectors, and that the borders between them are not standardised, but are shaped by the actors themselves. We have to note that strategic controlling has to incor-

Table 2: Comparison between the red and the blue ocean strategy is

Red ocean strategy	Blue ocean strategy
Competition within the existing market space.	Creation of a market space with no competition.
Defeating the competitors.	Making the competition meaningless.
Exploiting the existing the manned.	Creating and conquering a new demand.
Making value and cost compromises.	Breaking out of value and cost compromises.
Harmonising the entirety of the enterprises activity systems with the choice of strategy being either differentiating or a low-cost.	Harmonising the entirety of the enterprises activity systems with the same tiniest implementation of the strategies of differentiating and low-cost..

Source: Chan K. W. – Mauborgne R., 2008.

porate these conditions within its methodological application. According to the pair of authors Chan Kim and Mauborgne (2008) these strategic steps are basically a group of CEO interventions and decisions, which are measures taken during taking up business risks in order to realise a huge market creation process.

The above facts mean that without this strategy, enterprises are basically doing nothing but trying their best to protect themselves within the industrial default already created, in order to keep their place on the market, and compete against other actors they view their competitors. However, enterprises which are opening towards the blue ocean do not conduct any form of benchmarking activities on what the other enterprises are doing at the moment. Instead of this, they are using the so-called value innovation. Value innovation from this perspective is one of the cornerstones of the blue oceans, because instead of concentrating on the other actors of the market, it aims to fully dispose of the market competition, in a way that they create an explosive development for both the enterprise and the consumers, thereby creating new market spaces lacking a market competition altogether.

If we look carefully at Table 2, we can see that the blue ocean is moving towards a (complex) business strategy model, where the enterprise produces profits from the very blue ocean that they have created. They do this in a way that they determine the optimal combination of main strategy, usefulness, prices, costs, and acceptance for the enterprise.

HOW CAN WE MEASURE AND EVALUATE INTELLECTUAL CAPITAL?

The most important tasks of human controlling are as follows:

- explaining the strategic relevance of HR, writing out and detailing the strategic goals of the the HR activities;
- the identification of processes and resources, determining cost causes, dividing human costs;
- the identification of these competences, the definition of strategic work areas, the system of development actions;
- rethinking the systems of responsibility and controlling, and the human system backing it up;
- defining the HR service processes based on the dim and, determining the quality level of services, and their costs;
- how can intellectual capital be integrated into the enterprise's value model;

Table 3: New methods of evaluating immaterial assets and intellectual capital

Original name	Author(s)	Category	Short introduction
Technology Broker	Brooking (1996)	KIT	They defined intellectual capital's value by analysing the answers given to 20 questions related to for basic elements of intellectual capital. Brooking, A. (1996): Intellectual Capital: Core Assets for the Third Millenium Enterprise, Thomson Business Press, London, Unnited Kingdom.
Citation-Weighted Patents	Bontis (1996)	KIT	They calculate a technological factor based on the patents of the enterprise. They evaluate intellectual capital and its performance using indexes. These aim to measure the effects of research and development initiatives, for example the number of patents, the ratio of costs and sales related to patents, and other indicators. Bontis, N. (2000): Assessing knowledge assets: A review of the models used to measure intellectual capital. Working paper, Queen's Management Research Centre for Knowledge-Based Enterprises. http://WWW.business.queensu.ca/kbe
Inclusive Valuation Methodology (IVM)	McPherson (1998)	KIT	They use the hierarchic system of weighted factors, and concentrate on the relative values. total added value = financial added value + immaterial added value McPerson (1998): Inclusive Valuation Methodology, cited in Skyme (1999): Measuring the Value of Knowledge: Business Intelligence
The Value Explorer™	Andriessen, Tiessen (2000)	KIT	The accounting methodology suggested by KPMG, which tries to assign a value to the following five immaterial elements: tools, abilities, community values, norms, primary and management processes. Andriessen&Tiessen (2000): Weightless Weight – Find your real value in a future of intangible assets. Pearson Education London
Intellectual Asset Valuation	Sullivan (2000)	KIT	A unique method of evaluating intellectual tools. Sullivan O. (2000): Value-driven Intellectual Capital. How to convert intanglibecorate assets into market value. Wiley
Total Value Creation, TVCTM	Anderson – McLean (2000)	KIT	Practice suggested by the Association of Canadian Accountants, which generates assumed discounted money flows for planned transfers, in order to measure their effects Andersen R.& McLean R. (2000): Accounting for the Creation of Value. Ongoing research project sponsored by the Canadian Institute of Chartered Accountants
Accounting for the Future (AFTF)	Nash H. (1998)	KIT	System of calculated discounted money flows. The difference between the AFTF values at the start and the end of the period is considered the added value. Nash (1998): Accounting for the Future, a disciplined Appriach to Value-Added Accounting. http://home.sprintmail.com/~humphreynash/indexback.htm
Tobin's q	Stewart (1997) Bontis (1999)	PT	„q” is the quotient of the capital market value of the enterprise and the acid re-procurement value. Stewart, T. A. (1997) Intellectual Capital: The New Wealth of Organizations, Doubleday/Currency New York
Investor assigned market value (IAMVTM)	Standfield (1998)	PT	They consider the real value of the enterprise as the capital market value, further dividing this value to the following factors: value achieved by tool assets + (realised intellectual capital + intellectual capital destruction) + sustainable competitive edge. Standfiels K (1998): Extending the Intellectual Capital Framework. Available on line http://WWW.knowcorp.com/article075.htm
Market-to-Book Value	Stewart (1997) Luthy (1998)	PT	They define intellectual capital's value as the difference between the enterprises capital market value and its accounting value. Luthy, D.H (1998): Intellectual capital and its measurements. Availale Inline: http://www3.bus.osaka-cu.ac.jp/apira98/arhives/htmls/25.htm
Economic Value Added (EVATM)	Stewart (1997)	ROA	They calculate the income of the intellectual capital through the changes in the enterprises EVA value.
Human Resource Costing & Accounting (HRCA)	Johansson (1996)	ROA	They evaluate the hidden effects of the costs related to human resources, that the crease the profits, by conducting the appropriate modifications on the result report. Johansson (1996): Human Resource Costing and Accounting

Original name	Author(s)	Category	Short introduction
Value Added Intellectual Coefficient (VAICTM)	Pulic (1997)	ROA	They measure how efficiently bound capital and intellectual capital create value, based on their interrelations with three definitive components, which are the bound capital, the human capital, and the organisational capital. Pulic, a. (2000): An accounting tool for IC management. Available online: http:// www.measuring-ip.at/Papers/ham99txt.htm
Human Capital Intelligence	Jac Fitz-Enz (1994)	SC	A method similar to HRCA, they evaluate human capital factors based on benchmarking. Fitz-EnzJac (1994): How to Measure Human resource Management. McGraw-Hill. One of his many books ont he subject. http://www.saratogainstitute.com
Skandia Navigator TM	Edvinsson – Malone (1997)	SC	They determine intellectual capital using 164 numerical indicators, which cover five areas: finances, consumer, assess, renewal and the developments, human factors. Edvinsson, L. and Malone, M.S (1997) Intellectual Capital: REalizing your Campany's True Value by Finding Its Hidden Brainpower, Harper Business, New York Skandia Insurance Company (1995-2000) Visualizing intellectual Capital in Skandia: Supplements to Skandia Annual Reports 1994-2000 Skandia Insurance Company Stockholm, Sweden Available on line: http://www.skandia.com/
IC-Indextm	Roos, Roos, Dragonetti, Edvinsson (1997)	SC	The aggregate the various factors recorded for analysis perspectives into a joint index. The change of the index signifies the change in the enterprise's value. Roos, J. Roos, G, Dragonetti, N.C. and Edvinsson, L. (1997) Intellectual Capital: Navigating int he New Business Landscape, Macmillan, HoundsmillsBasingtoke
Intangible Asset Monitor	Sveiby (1997)	SC	The management of the enterprise select a few factors of success, in order to measure four basic components of immaterial assets in accordance with strategy: growth, renewal, efficiency, stability. Sveiby, K.E. (1997) The New Organizational Wealth: Managing and Measuring Knowledge Based Assets, Barrett Koehler, San Fransisco CA. Chapter on measuring available online: http://www.sveiby.com/articles/MeasureIntangibleAssets.html
Balanced Score Card	Kaplan – Norton (1992)	SC	They measure the performance of the enterprise by following the changes in various factors, which can be divided by four basic perspectives: finances, consumer factors, internal processes, learning. The factors are based on the unique strategy of the enterprise. Kaplan R.S and Norton D.P. (1992): The balanced scorecard measures that drive performance. harvard Business Review, January-February, pp. 71-79

Source: Szőke B. – Gábor A. – Bárczi J. (2019)

– methods of evaluating intellectual capital, competence maps and competence evaluation;

The third table summarises recent methods for valuing intangible assets and intellectual capital.

SUMMARY

The various definitions of intellectual capital may differ greatly. The various researchers and analysts used very different approaches, analyse different enterprise and national cultures, and obtained results very close to each other.

If we compare the definitions to each other, we can obviously differentiate between three areas, which are the human, the enterprise structure, and the differentiation between connections. the questions pertaining to innovation and renewal are a very significant divider between the various opinions, however. Whereas the human area usually pertains to very obvious categories, the areas of the organisation and its connections as far unlike this. Apart from the topic of innovation already mentioned before, a less developed topic was determining factors outside structure and culture, whereas for the latter, consumers versus other parties of interest was more important.

REFERENCES

- CHAN, W. K. – MAUBORGNE, R. (2008): Blue Ocean Strategy, Kék óceán stratégia – A verseny nélküli piaci tér, 308. p., ISBN: 978-9-6353-0800-2
- GYÖKÉR, I. – FINNA, H. (2008): Teljesítménymenedzsment. Oktatási segédanyag, Budapest,
- JÓNÁS, T. – KÖVESI, J. – TÓTH, Zs. E. (2009): Az intellektuális tőke mérésének és értékelésének egyes kérdései, Vezetéstudomány – Budapest Management Review, 40 (ksz). pp. 24-29. DOI 10.14267/VEZTUD.2009.ksz.04
- KAPLAN, R. S. – NORTON, D. P. (2007): Using the Balanced Scorecard as a Strategic Management System, Harvard Business Review 85(7) ISSN: 0017-8012
- KLINE, S.J. – ROSENBERG, N. (1986): An Overview of Innovation, The Positive Sum Strategy. Harnessing Technology for Economic Growth, National Academy Press, Washington 656 p. ISBN: 978-0-309-07848-1
- KONDOR, A. (2015): Kék ocean stratégia, www.slideshare.net/KondorAlbert/kk-cen-stratgia-eladsom-anyaga-2014
- SZŐKE, B. – GÁBOR, Á. – BÁRCZI, J. (2019): Az intellektuális tőke értékelésére alkalmazott mérési módszerek összeha-

- sonlító elemzése, Controller Info 7 : 1 pp. 24-28., 5 p. (2019)
<https://doi.org/10.24387%2FCI.2019.1.5>
- VÉRY, Z. (2008): Management Control & Compliance Control
 (www.mce.hu/publikaciok)
- ZÉMAN, Z. (2002): A controlling rendszerek integritása a vállalkozások controlling rendszerében, Gyakorlati kézikönyv, Raabe kiadó
- ZÉMAN, Z. – TÓTH, A. (2000): Controlling alapismeretek, főiskolai jegyzet, 128 p.
- ZÉMAN, Z. – TÓTH, M. – BÁRCZI, J. (2008): Modelling of Developing process of Controlling Activity especial regard to Accounting R&D and Innovation Concerning Management Activities, Bulletin of the Szent István University (Gödöllő) II.: pp. 485-495., ISSN 1586-4502
- ZÉMAN, Z. – TÓTH, A. (2017): Stratégiai pénzügyi controlling és menedzsment, Akadémiai Kiadó, 211 p., ISBN: 978-963-454-068-7
- Internet sources:**
http://burotika.hu/wp-content/uploads/2015/03/szf_16_11.pdf
https://www.tankonyvtar.hu/hu/tartalom/tam-op425/0049_02_teljesitmenymenedzsment/3088/index.scmrl

Dr. Zsolt Bujtár

The potential role of Central Bank Digital Currency (CBDC) in the financial system

The proliferation of digitalised financial instruments and crypto assets may force a renewal of fiat money in particular. CBDC, its possible forms, its antecedents and the benefits and risks of its introduction are examined in the article from legal and economic point of view.

ABSTRACT

This paper focuses on the role of CBDC in the financial system. Three factors make the emergence of digital banknotes and coins necessary. The first factor is digitalisation, which has not yet penetrated the field of finance, if we ignore blockchain-based technology and the activities of fintech companies. At the intersection of digital tools, blockchain and financial services, Decentralized Finance (DEFI) has emerged, with decentralized operations, decentralized intermediation, i.e. the elimination of financial intermediaries, and programmed operations with smart contracts as its main features (Wharton, 2021). The second factor is the relative slowness of global currency transfers when using fiat money. The third factor is the dominant role of stablecoins in crypto-assets and the resulting risks (Zéman et al., 2017) and functioning of stablecoins similar to as of the money market instruments (Kecskés, 2018). In addition to these three reasons, central banks must also address the limited availability of financial services in the context of financial system reform. The timeliness of the latter problem was confirmed by the fact that the public funds allocated during the coronavirus epidemic were slow to reach the affected populations.

INTRODUCTION

The study first examines the reasons for the introduction of CBDC. A relevant starting point in this process is the concept of Facebook's Libra (Cash-hub, 2019) (from 2021 Deim) (CNBC, 2021) as a global stablecoin that aims to become a world money, a goal that is openly embraced by the operating foundation and Facebook's management from the very launch of Libra. Not coincidentally, a successful first launch could lead to a significant market share in the global money market.

The author then looks at the main forms of CBDC. In addition to the many advantages of the CBDC, each type may present different but also new risks (Lentner et al., 2017), which both the legislator and the central banks creating CBDC need to be prepared for. In the case of CBDC based on distributed ledger technology (DLT), the underlying crypto-asset, there are significant risks to the protection of personal data, the stability of the financial system and the fight against money laundering and terrorism.

THE EMERGENCE OF CBDC

AND STABLECOINS IN THE 21ST CENTURY

More than 85% of central banks have started to analyse CBDC in the last four years (Carsten, 2019). And the World Bank itself is experimenting with a pseudo-CBDC (Berman, 2019). China has already tested the digital yuan in four major cities and has conducted a cross-border test involving Hong Kong (Reuters, 2021). The commitment to creating CBDC is illustrated by the unsuccessful and rather dangerous attempts by smaller countries (Marshall Islands 2018 – attempt to create a sovereign national cryptocurrency and El Salvador – adoption of bitcoin as legal tender in 2021 (Crowdfundinsider, 2021; Reuters, 2021, 2) to introduce cryptocurrencies as national currencies. In parallel, major economic powers such as China, the European Union, Japan and Canada have been considering the pros and cons of adopting CBDC since the second half of the 2010s. More recently, the United States has also entered the competition among CBDCs with the concept of the digital dollar, with the aim of maintaining the international hegemony of the dollar (Aaei, 2021). In November 2022, India also launched a CBDC test project (Techmonitor, 2022).

POSSIBLE FORMS OF CBDC

To define CBDC, it is useful to first categorize the different forms of money in a single system, whether they are payment instruments with or without a money function. Due to the limitations of the paper, only the instruments with a money function, including fiat money and cryptocurrencies, are considered in the following.

First, it is worth noting that for fiat currencies, which are widespread today, the full realisation of the payment instrument, the value measurement function, is crucial. The world money function is a significant feature among the money functions, but it is a feature that only a few fiat currencies have. The Chinese national currency, the renminbi, aims to take over the world money function from the US dollar and offers a rapidly feasible means for China to do so by being the first Chinese CBDC to enter the market. Facebook's Deim is aiming for the same role, and it is for this reason, and the anticipated emergence of the Chinese digital currency, that the US has already entered the race (Cryptonews, 2020) and started to think about

the digital dollar, a desire that has been further reinforced by the impact of the COVID epidemic (Coindesk, 2020).

There are two basic types of fiat money, and of money in general, according to the form in which it is presented: money in the form of an account and money in the form of a token. In the case of the former, although the financial settlement of the transaction is immediate, the actual financial settlement takes place only later. An example of the former is the immediate virtual settlement of a purchase by credit card, where the funds are credited to the merchant's account only a few days later. In contrast, money with its own physical appearance, like cash, is transferred to the other party either at the time of payment or in the form of a physical representation of the money (electronic data overlay). In addition to cash, other forms of physical money include CBDCs as a digital form of cash, and instantly creditable payment instruments such as cryptocurrencies, including bitcoin. While the former is CBDC issued by the central bank, cryptocurrencies are decentralised and provide instant payment and financial settlement simultaneously through an independent computer network. The market value of both CBDC and cryptocurrencies is negotiable, the former being accepted by all at nominal value and the latter being subject to negotiation, with the exchange rates of the (crypto) trading platforms acting as a guide.

PREDECESSORS AND POSSIBLE TYPES OF CBDC

The two precursors of CBDC mentioned above are the physical token and the non-physical account digital banknote, the latter of which may be based on the central bank's instant clearing system. In addition, the third possible type of CBDC is a hybrid of the above two forms (token and account), which partly has the characteristics of one and partly of the other. The paradigm shift is clearly in the case of token-based CBDC, which have similar characteristics as of the crypto-assets. The US has committed to the account type, the EU to the token type and China (Digital Currency Electronic Payment – DCEP) (Coindesk, 2020, 2) to the hybrid type.

In terms of issuance, three types can be distinguished: central bank single-issue, central bank and commercial bank (synthetic) and non-central bank private CBDC. The adoption of private cryptocurrencies as CBDC implies a partial abandonment of monetary policy. This solution would not only mean giving up the benefits of printing money (seigniorage) for the central bank concerned, but also losing the possibility of regulating the money supply (Fridman et al., 2021). Therefore, the decision of the Marshall Islands in 2018 to introduce a cryptocurrency issued by an independent entity (Crowdfundinsider, 2020) as its second official currency (Forbes, 2021), or the idea of the Salvadoran president to introduce bitcoin as the second official national currency in 2021, seemed rather reckless. In the case of CBDC, centralised according to the technology on which it is issued, with one-tier and two-tier settlement, a further question is to what extent it should be blockchain-based or just a centralised electronic money such as e-currency. If a blockchain-based version is chosen, there is also the possibility that only persons designated by the central bank could be the approvers (nodes) of the distributed ledger system, thus ensuring centralisation.

MAIN BENEFITS AND RISKS OF THE THREE TYPES OF CBDCs (DOBRAUZ ET AL., 2021)

Inclusivity is the key benefit of CBDCs. For previously unbanked retail customers, the mobile phone is now readily available and manageable, but the use of bank accounts is less accepted, especially in Africa and Asia. One of the main reasons for this is illiteracy and low per capita income. However, only token and hybrid CBDCs are being used to access financial services in this way. An account-type CBDC implies a bank account-type relationship in the same way as is required for fiat money, if the entity does not hold its liquid assets in cash.

Another attraction of CBDC is the low cost of production. While the production and continuous exchange of cash in Hungary is as high as billions of forints annually and the ever-increasing security requirements can even further increase the cost of producing money. Direct central bank account management (a return to a one-tier banking system) could bring significant savings, if we consider the fact that by eliminating the financial intermediary system, its transaction costs can be saved in the operation of the financial system (Szilovics, 1997). Even if the financial intermediary system is maintained, the production and maintenance of CBDCs will generate significant cost savings. This form of tokenised digital asset, such as CBDC, can be produced by smart contract and its properties can be modified according to predetermined conditions. The storage and physical production of this digital form of money will “only” involve cyber security costs, which are far from negligible.

While the above benefits seem very attractive, the risks are just as broad and a loss of confidence in the central bank could lead to the collapse of the entire financial system (Szilovics, 2003). The most important of these risks is the risk of gaining control over cryptocurrencies in the case of decentralised CBDC, and over blockchain-based digital money if 51% control of the approvers involved in the system were to be achieved. On a theoretical level, a centralised CBDC could be a solution to overcome this problem. In this case, the central bank would have full control but, as computers, 51% ownership could be acquired by external attack if not properly protected. However, the scope for monetary policy is considerably reduced when using CBDC without a financial intermediary system, as the first two of the transmission systems of interest rates, monetary and credit aggregates and capital market asset prices, and exchange rates and currency rates are effectively eliminated by direct central bank account management. In the case of direct central bank book-keeping, a system breakdown could trigger an immediate bank run, which would entail significant operational and liquidity risks (Bold et al., 2019) and complicate the central bank's role as lender of last resort.

However, the most important factor for any CBDC is the data protection and money laundering risk arising from its universality. The privacy risk is particularly significant in the case of Libra, as in the case of Facebook, the Cambridge Analytica scandal (TheGauradian, 2019) has been proven to have been abused. Indeed, in the case of cryptoassets, anonymity becomes easy to unravel with full control of the system. There is thus the potential for abuse, particularly through artificial intelligence, of both citizens and Facebook users, through the

improper handling of data from the financial services they use. The issue of anonymity has already been addressed by the fourth-generation identification-based blockchain, the Sovereign Wallet Network of the Metamui Network. The system is in a pilot phase with central banks and commercial banks. The new blockchain offers a solution to the trilemma formulated by Vitalik Buterin, the father of the Ethereum blockchain, according to which decentralisation is a trade-off between scalability and anonymity, one of which must be given up in any case (Cointelegraph, 2021). The importance of the money laundering risk has already been recognised by the legislator, which has included wallet providers, for example in the European Union, in the scope of anti-money laundering data processing activities.

CONCLUSION

In this paper, the author set out to define the place of CBDC in the financial system. First, the author investigated the reasons for the emergence of the new money and found that Facebook emerged in the international financial system with a global stablecoin initiative called Libra (now Diem). And decentralised financial instruments, blockchain-based global payment systems, laid the new foundations for global payment systems. Society's demand for money-saving and digital solutions, as well as the need to involve a wide range of people excluded from financial services, also supports the emergence of CBDC. Both basic types of modern money, account and token, could emerge as possible forms of CBDC, and even a hybrid version (the Chinese CBDC). However, the answer for the question of which form will be the winner will be decided by the market, depending on the decisions of the central banks in each country. In the meantime, the risks, alongside the obvious benefits, will have to be considered before the introduction of the new currency. In addition to money laundering and terrorist financing risks, there is a need to always ensure an adequate level of cyber security. The stakes are high, as an ill-conceived introduction could lead to a loss of control over the conduct of monetary policy by the central bank; a significant loss of financial confidence in the central bank and the state; and thus, directly threaten the very foundations of the operation of the financial system in the economy.

REFERENCES

- BERMAN, A. (2019): *IMF and World Bank Launch Quasi-Cryptocurrency in Exploration of Blockchain Tech* <<https://cointelegraph.com/news/imf-and-world-bank-launch-quasi-cryptocurrency-in-exploration-of-blockchain-tech>? April 14, 2019, accessed 2022. 05.01.
- BOLD, URNA – FERENCZ, BARNABÁS – KECSKÉS, ANDRÁS (2019): *Limiting „limited liability”* Economics and Working Capital Volume 4. Issue 3-4., pp. 30-31
- CARSTENS, AGUSTIN (2019): *The future of money and payments* Speech by General manager of Bank for International Settlements Central Bank of Ireland 2019 Whitaker Lecture, Dublin 22 March 2019 <https://www.bis.org/speeches/sp190322.htm> accessed 2022. 04. 20.
- DOBRAUZ-SALDAPENNA, GUENTHER – KOUMBARAKIS, ANTONIOS (2019): *Central Bank Digital Currency Benefits and drawbacks* (2019. július 19). also <https://ssrn.com/abstract=3429037> or <http://dx.doi.org/10.2139/ssrn.3429037> accessed 2022.05.11.
- FRIEDMAN, MILTON – SCHWARTZ, ANNA J (1987): *Has government any role in money* szerk Schwartz, Anna J.: Money in Historical Perspective Oxford University Press pp 295. <https://cash-hub.org/resource/the-official-libra-white-paper/2019> accessed 2022. 08.24.
- CONNOR, SEPHTON (2021): *Fourth generation identity-based blockchain targets CBDC implementation issues* <https://cointelegraph.com/news/fourth-generation-identity-based-blockchain-targets-cbdc-implementation-issues> June 28, accessed 2022.05.21
- ALPER, TIM (2020): *Can a Digital Dollar Save the US?* JPMorgan Says...It's Complicated <https://cryptonews.com/news/can-a-digital-dollar-save-the-us-jpmorgan-says-it-s-complica-6625.htm>? May 22, accessed 2022.05.11.
- FITRI, AFIQ – NOONE, GREG (2022): *Nobody's using CBDCs. India's piloting one anyway.* <https://techmonitor.ai/policy/digital-economy/nobodys-using-cbdc-indias-piloting-one-anyway> December 5, accessed 2022.12.05.
- TEWS, SHANE – HARPER, JIM (2020): *The Potential of the Digital Dollar: Highlights from My Conversation with Jim Harper* <https://www.aei.org/technology-and-innovation/the-potential-of-the-digital-dollar-highlights-from-my-conversation-with-jim-harper/> July 28, accessed 2022.07.14.
- BURSZTYNSKY, JESSICA (2020): *Facebook-backed Libra Association has been renamed Diem* <https://www.cnn.com/2020/12/01/facebook-backed-libra-digital-currency-has-been-renamed-diem.html> December 1, accessed 2022 07.30.
- RASKIN, MAY (2020): *Digital Dollars Give the State Too Much Control Over Money* <https://www.coindesk.com/digital-dollars-will-give-the-state-too-much-control-over-money> May 2, accessed 2022.05.02.
- HAAN, CALI (2019): Marshall Islands Promotes its SOV National Cryptocurrency Development Fund at UN Blockchain Summit in New York <https://www.crowdfundinsider.com/2019/06/148086-marshall-islands-promotes-its-sov-national-cryptocurrency-development-fund-at-un-blockchain-summit-in-new-york/> June 4, accessed 2022.06.14.
- WINTERMAYER, LAWRENCE (2021): *Could Developing Nations Follow El Salvador's Move To Bitcoin?* <https://www.forbes.com/sites/lawrencewintermeyer/2021/08/05/could-developing-nations-follow-el-salvadors-move-to-bitcoin/> August, accessed 2022.08.06.
- RENTERIA, NELSON – WILSON, TOM – STROHECKER, KATRIN (2021): In a world first, El Salvador makes bitcoin legal tender <https://www.reuters.com/world/americas/el-salvador approves-first-law-bitcoin-legal-tender-2021-06-09/> accessed 2022.06.22.
- KECSKÉS, ANDRÁS (2017): *A kereskedelmi kötvények pénzügyi szabályozási környezetének változása az Egyesült Államokban és Európában* Pénzügyi Szemle/Public Finance Quarterly (1963-) 62 : 4 pp. 532-548.
- LENTNER, CSABA – ZÉMAN, ZOLTÁN (2017): A pénzügyi válság bankszabályozási kontroll elveinek meghatározóbb történeti elvei Európai Jog January, pp. 8-14.
- SZILOVICS, CSABA (2003): A magyar államháztartás pénzügyi rendszere In: [s n,] (szerk.) Adójog alapjai. Illeték-

- jog. A magyar államháztartás pénzügyi rendszere Pécs, Magyarország : PTE Állam- és Jogtudományi Kar 87 p. pp. 65-67.
- SZILOVICS, CSABA (1997): *Az államháztartás pénzügyi jogi rendszere* Pécs, Magyarország: Janus Pannonius Tudományegyetem pp 62 p.
- ZÉMAN, ZOLTAN – KALMÁR, PETER – LENTNER, CSABA (2018): *Evolution Of Post-Crisis Bank Regulations And Controlling Tools: A Systematic Review From A Historical Aspect Banks And Bank Systems* Volume 13. Issue. 2 szám pp 130-140.
- Wharton University of Pennsylvania: *DeFi Beyond the Hype The Emerging World of Decentralized Finance* Wharton Blockchain and Digital Asset Project, in collaboration with the World Economic Forum May, 2021
- <https://www.reuters.com/world/china/china-expand-digital-yuan-experiments-central-bank-vice-governor-2021-04-18> accessed 2022.06.18.
- The Cambridge Analytica scandal changed the world – but it didn't change Facebook <https://www.theguardian.com/technology/2019/mar/17/the-cambridge-analytica-scandal-changed-the-world-but-it-didnt-change-facebook> accessed 2020.05.09.

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Shareholder supremacy in law: Truth or Fiction?

Shareholder supremacy seems to be accepted as a legal norm in business studies. This article aims at looking into the validity of such claims with the help of relevant scientific literature and the relevant provisions of company law statutes.

ABSTRACT

A commonly held view in business studies is that the management of a company are legally obligated to only serve the interests of the shareholders. This viewpoint seems to be the most coherently developed in the fields relating to corporate governance which also could be an explanation for its popularity. The aim of the article is to show that legal regulations about directors' duties are more permissible when it comes to business decisions. The article mainly focuses on available scientific literature and the provisions of relevant statutes and rulings. The main finding of the article is that while certain jurisdictions explicitly state the requirement for giving special attention to shareholders, however, legally the management has the freedom to exercise business judgement in the interest of company, especially in jurisdictions where the shareholders are not given special treatment in the provisions on directors' duties.

INTRODUCTION

It is a commonly held view in company law – both from representatives of jurisprudence and economics – that for the board of a company the interests of the shareholders must reign supreme (Smith et al., 2016: 467-469). Many examples could be brought up from both Hungarian and foreign scientific works in which the exclusivity of shareholder interests is being interpreted as a legal norm. Placing the shareholder interest solely in the forefront fits well within the framework of neoclassical economics, which has a tendency to reduce complex economic relationships into simplistic models. The main reason could be that this way it is possible to give an elegant answer to the questions pertaining to the workings of a corporation. On the other hand, this oversimplification may carry the risk of potentially excluding many other relationships from the model, thus making the real-world validity of such models questionable.

The theoretical background of shareholder supremacy seems to be the most coherently developed in the fields relating to corporate governance which also could be an explanation for their popularity (Mayer, 2018). An almost complete, logical theoretical framework may make decision-making easier; if there is only one group whose interest must be taken into account then it is possible to concentrate company resources to achieve that particular group's goal. It must be emphasised that the shareholder primacy theories are not a homogeneous mass. They are more like a spectrum of different views that could be imagined on a scale in which the one of the end-point is the views that permit the observation of other interests for

the board – but insist on the primacy of shareholder interests – and on the other hand we can find viewpoints that completely prohibit the board from taking into account any other interests than the shareholder's. For example, according to Gilson the board and the management should solely focus on the stock prices (Gilson, 2005) (Bujtár et. al, 2019)

THE ORIGINS OF SHAREHOLDER SUPREMACY

An important basis of the shareholder-stakeholder divide can be traced back to the influential debate between Adolf Berle and Merrick Dodd, which took place in the pages of Harvard Law review during the early 1930s, when the Great Depression was still adversely affecting society. Dodd pointed out that decisions made by the management do not exclusively affect the interests of the shareholders, thus the interests of other parties (e.g. employees) should be also taken into account (Dodd, 1932). Berle on the other hand argued that since it is more beneficial for optimal operations if the shareholders are actively participating the company to pursue their own interests, as to him the main problem was the management's unaccountability and self-serving behaviour (Berle, 1932). It must be noted, however, Berle later stated that he had never argued against the need to observe the interest of other stakeholders (Berle, 1954) (Bratton et. al, 2008). Yet, this debate has entered into the scientific consensus as the first debate on the supremacy or exclusivity of shareholder interests.

The term 'shareholder primacy' has been coined much later, however. David Millon and Lyman Johnson used this term for the first time in 1989 when in a joint study they were examining the proliferation of M&A transactions throughout the 1980s. To summarise their views, there could be two interpretations of shareholder primacy: the first one is related to the corporate purpose, according to which a fundamentally autonomous management must observe shareholder interests in the case of conflict between interests of various parties. However, the company's management fundamentally works for the benefits of the company as a whole. The second interpretation which they called 'shareholder autonomy' or 'radical shareholder primacy' posits that the most important questions must be decided by the shareholders. Thus it is permissible for the shareholders to put pressure on the company's board to solely for the reason of increasing profitability. While these two approaches seem to differ greatly, there is one common link: both of them wish to protect shareholders from the abuses of the company's management (Millon, 2013).

The latter approach could be easily justified if we take the formulation of the agency theory literally, according to which the shareholders are the principals and the board are the trustees or agents whose duty is to act according to the interest of the principals (Marnet, 2011). The reasoning being that the shareholders are providing the necessary capital for company, yet they are the residual claimants, meaning that they are the last to receive anything from the company's assets upon its liquidation (Alchian et al., 1972). The business judgement-rule that protects managerial autonomy gives rise to moral hazard, as the management following their own interests may take excessive risks, knowing well that they are mostly shielded from consequences to their personal assets.

IS THERE A LEGAL BASIS FOR SHAREHOLDER SUPREMACY?

There is a tendency in which the exclusivity of shareholder interests is said to be the legal norm (Stout, 2008). Adherents to this viewpoint tend to cite the *Dodge v. Ford** case from 1919, in which the Supreme Court of Michigan explicitly ruled that the purpose of a business is to make profits for the shareholders. This ruling thus gives an excellent excuse for the company's management to shield themselves against any kind of criticism regarding company operations, as legal compliance is certainly their duty. On the other hand, should we accept these views without any critique? Does the law really limit the focus of a company's management to the shareholder's interests? A special emphasis must be placed on the role of judge-made law on takeovers regarding the development of shareholder supremacy. The decisions made by Delaware courts show that shareholder supremacy has been formulated in law in a much more restricted sense than the adherents of said theories tend to believe (Stout, 2002).

It is true that shareholder supremacy is the law in Delaware, however it must be noted that it differs from the way it is normally presented in business studies. Shareholder supremacy was formulated by Delaware courts in the *Revlon*** and *Unocal**** decisions, both of which concerned takeovers. Mitchell argues that courts have formulated this duty for the management as an answer to the proliferation of takeovers in the 1980s, so that they would be able to defend the corporations against corporate raiders and the adverse effects of the takeover mania (Mitchell, 2019: 200).

Other states in the USA were looking at the developments in Delaware with great concern. It was felt that the interests of other stakeholders need to be protected by law during takeovers. The result has been the adoption of constituency statutes (Bisconti, 2009) (Orts, 1992). The primary goal of such statutes had been to authorise management to consider the interests of other stakeholders (constituents), thus strengthening the decision-making freedom for the management. The first constituency statute was adopted by Pennsylvania in 1983 (Hansen, 1991), expressly as a reaction to the *Revlon* decision (Bisonti, 2009). By 1999 around 41 states had adopted statutes similar to the one in Pennsylvania. These acts mainly fell into two categories: mandatory and authorising (permissive). In the former

case the act requires the management to consider other constituent's interests. Only Connecticut has a constituency statute where it is mandatory to consider other constituent's interests (Silver-Thompson, 2014). In contrast, authorising (permissive) constituency statutes simply permit the management to consider other stakeholders' interest, but it is not mandatory for them to do so. Another way of categorising can be the scope of constituency statute. Some of them are limited strictly to takeovers, whereas in certain jurisdictions such constituency statutes may be applied in general (Orts, 1992). Thus it can be said that in the USA most jurisdictions seem to make into the directors' duties to observe shareholder interests.

Meanwhile the European landscape seems more varied. Some countries have shareholder supremacy as the general rule for the duties of the management. For example, in Bulgaria, the companies act stipulates that the management must work in favour of the company and the members (shareholders) in particular. In the United Kingdom Section 172 of the Companies Act 2006 is formulated in a way that theoretically aims at bridging the gap between shareholder supremacy and stakeholder pluralism by adhering the enlightened shareholder value approach. Section 172 sets the general duty of a company's director to promote the company's success for the benefit of the members as a whole, while also having regard to the long-term consequences of their decisions, and interests of various other stakeholders, including employees, suppliers, customers, communities and the environment.

The continental tradition, however, seems to be rooted in the belief that companies are an aggregate of interests, thus the duties of the directors are owed to the whole company, rather than one particular group (e.g. shareholders). We can find many examples to this approach, for example in Germany, where the Stock Corporation Act (AktG) explicitly states that directors owe their duties to the company itself. France has a similar approach and the Hungarian company law – owing to its Germanic roots – also emphasise the company's interests (Halász, 2016).

CONCLUSION

In conclusion it can be said that it is not entirely unfounded to claim that shareholder supremacy is the law. Both the British and American company law provides examples for the management to pay special attention to the interests of shareholders. However, it must be noted that this does not restrict the management in exercising their business judgement, thus the law should not be interpreted strictly in a way to requires them to solely focus on maximalising share prices on the stock exchange. It must also be noted that there are jurisdictions where the laws emphasise the company's interest as a whole compared to the special treatment of shareholders. Thus it can be said that the common approach by business studies over the purpose of a corporation is an oversimplification. Yet, the idea is rather persistent that claims shareholder supremacy to be the law. We can definitely see that in the way business studies curriculums treat this subject matter and probably that is the reason why it is so widespread, at least

* *Dodge v. Ford Motor Co.*, 204 Mich. 459, 170 N.W. 668 (Mich. 1919)

** *Revlon, Inc. v. MacAndrews & Forbes Holdings, Inc.*, 506 A.2d 173 (Del. 1986)

*** *Unocal v. Mesa Petroleum Co.*, 493 A.2d 946 (Del. 1985)[

according to Craig Smith and David Rønnegard. Their study concluded that shareholder supremacy – the way it is normally understood by managers – can be rooted in their education and their social attitude. Their findings show three major reasons: first, they are taught that way. Second, they think that if they deviate from this norm, it may be detrimental for their employment status. Third, their compensation system builds upon highly on the pursuit of shareholder interests (Smith et al. 2016).

REFERENCES

- ALCHIAN, A. – DEMSETZ H. (1972): Production, Information Costs, and Economic Organization. *The American Economic Review* Vol. 62, No. 5. pp. 777-795.
- BERLE, A. (1932): For Whom Are Corporate Managers Trustees: A Note, *Harvard Law Review*, Vol 45. , No. 8., pp. 1365-1372.
- BERLE, A. (1954): *The 20th Century Capitalist Revolution*. – Harcourt, Brace and Company, New York – 978-0151917037 p. 192.
- BRATTON, W. – WACHTER, M. (2008): Shareholder Primacy's Corporatist Origins: Adolf Berle and the Modern Corporation. *The Journal of Corporate Law*, Vol. 34, No 1. pp. 99-152.
- BISCONTI, A. (2009): The Double Bottom Line: Can Constituency Statutes Protect Socially Responsible Corporations Stuck in Revlon Land? *Loyola of Los Angeles Law Review*, Vol. 42, No. 3. pp. 765-806.
- BUJTÁR, ZS. – HALÁSZ, V. – KECSKÉS, A. (2019): *Tőzsdeuni-verzum*. HVG-ORAC Budapest: ISBN: 978 963 258 431 7, p. 1080.
- DODD, M. (1932): For Whom Are Corporate Managers Trustees? *Harvard Law Review*, Vol. 45., No. 7., pp. 1145-1163.
- GILSON, R. J. (2005): Separation and the Function of Corporation Law. *Berkeley Business Law Journal*, Vol.3. No.1. pp. 141-152.
- HALÁSZ, V. (2016): A „társaság érdeke”: a vállalati vezetők tevékenységére irányadó szabályokról Európában és Amerikában. *Magyar Jog*, LXIII. évf. 12. szám pp. 698-707.
- HANSEN, C. (1991): Other Constituency Statutes: A Search for Perspective. *The Business Lawyer*, Vol. 46. No. 4. pp. 1355-1376.
- LANGEVOORT, D. C. (2020): The Effects of Shareholder Primacy, Publicness, and Privateness on Corporate Cultures. *Seattle University Law Review*, Vol. 43, No. 2, pp. 377-411.
- MARNET, O. (2011): *Behaviour and Rationality in Corporate Governance*. Routledge, Abingdon, ISBN 978 041 562 034 5 p. 320.
- MAYER, C. (2018): *Prosperity*. Oxford University Press. Oxford, ISBN: 978-0198866824, p. 277.
- MILLON, D. (2013): Radical Shareholder Primacy. *University of St. Thomas Law Journal* Vol. 10, no. 4. pp. 1013-1044.
- MITCHELL, D. (2019): From Dodge to Ebay: The Elusive Corporate Purpose. *Virginia Law & Business Review*, Vol. 13 No. 2. pp. 155-211.
- ORTS, E. W. (1992): Beyond Shareholders: Interpreting Corporate Constituency Statutes. *George Washington Law Review*, Vol. 61, No. 1. pp. 14-135.
- SILVER-THOMPSON, M. (2014): Reasonable Consideration of Non-Shareholders: Redrafting State Constituency Statutes to Encourage Socially-Minded Business Decisions. *Cardozo Public Law, Policy and Ethics Journal* Vol. 13, No. 1, pp. 253-280.
- SMITH, N. C. – RÖNNEGARD, D. (2016): Shareholder Primacy, Corporate Social Responsibility, and the Role of Business Schools. *Journal of Business Ethics* Vol. 134. No. 3. pp. 463-478.
- STOUT, L. (2002): Bad and Not-so-Bad Arguments for Shareholder Primacy. *Southern California Law Review*, Vol. 75, No. 5. pp. 1189-1210.
- STOUT, L. (2008): Why We Should Stop Teaching Dodge v. Ford. *Virginia Law and Business Review*, Vol. 3, No. 1. pp. 163-190.

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Tanácsadás

Cégünk tanácsadási portfóliója elsősorban a vállalkozások számviteli, pénzügyi, irányítási (controlling), menedzsment területeit érinti. A menedzsment tanácsadásban könyvvizsgáló kollégáink és szakértőink dolgoznak, akik több éves tapasztalattal és tudással rendelkeznek ezeken a területeken. A tanácsadási tevékenységet az elmélet és a gyakorlat dinamikus integrálásával végezzük, melyben kiemelt szerepet kap az ügyfél céljainak megvalósítása.

Bármilyen kérdése felmerülne, lépjen kapcsolatba velünk:

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