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STOCK EXCHANGES SUSTAINABILITY SUPPORT ASSESSMENT

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J E L Classification: Q56, G15.

Abstract: Financial markets can play a role in sustainability development. They can support sustainability by making ESG disclosure, launching sustainability related indices or offering sustainability guidance for listing companies. All of these activities helps in developing sustainability. This article is an attempt to analyze sustainability support level in stock exchanges in the world. It is based on a survey conducted in 27 stock exchanges. The aim of this article is to assess the level of stock exchanges sustainability support and examine the relationship between the stock market size and sustainability support level. To achieve the aim the assessment tool has been created. Sustainability Support Index is a synthetic stock markets sustainability support measure. It helps to compare stock exchange sustainability support levels. In the article statistical tools are used to compare the phenomena, mainly regression analysis and Pearson's correlation.

The conclusion presented in the article states that there is a differential stock market sustainability support level in the world. There is no clear correlation between sustainability support variables and stock market size variables.

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OCENA WSPARCIA ZRÓWNOWAŻONEGO ROZWOJU NA GIEŁDACH AKCJI

Słowa kluczowe: zrównoważony rozwój, giełda papierów wartościowych, indeks wsparcia zrównoważonego rozwoju.

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Klasyfikacja J E L: Q56, G15.

Abstrakt: Rynki finansowe mogą odgrywać pewną rolę w zrównoważonym rozwoju. Rynki te mogą wspierać zrównoważony rozwój poprzez ujawnienie własnej polityki dotyczącej środowiska, spraw społecznych i ładu korporacyjnego (ESG). Zrównoważony rozwój może być również wspierany przez rynek akcji poprzez tworzenie indeksów zrównoważonego rozwoju oraz oferowanie wytycznych dotyczących zrównoważonego rozwoju dla notowanych firm. Wszystkie te aktywności wspierają zrównoważony rozwój. Artykuł ten stanowi próbę oceny poziomu wsparcia zrównoważonego rozwoju światowego rynku papierów wartościowych. Analiza ta opiera się na badaniach ankietowych przeprowadzonych na 27 rynkach akcji. Celem artykułu jest ocena poziomu wsparcia zrównoważonego rozwoju na rynkach akcji i zbadanie zależności pomiędzy wielkością rynku akcji a poziomem wsparcia zrównoważonego rozwoju. Dla realizacji celu w pracy stworzono narzędzie oceny zrównoważonego rozwoju (Sustainability Support Index – SSI). SSI jest syntetyczną miarą poziomu zrównoważonego rozwoju na rynku akcji. Narzędzie to pomaga w porównywaniu rynków akcji w analizowanym zakresie. W celu dokonania analizy porównawczej w artykule wykorzystano narzędzia statystyczne takie jak analiza regresji i wskaźnik korelacji Pearsona.

Podsumowując należy stwierdzić, że przeprowadzone badania wskazują, że poziom wsparcia zrównoważonego rozwoju na rynku akcji na świecie jest zróżnicowany. Ponadto nie można stwierdzić jednoznacznej i istotnej zależności pomiędzy zmiennymi dotyczącymi wsparcia zrównoważonego rozwoju i w zakresie wielkości rynku akcji.

■■■ INTRODUCTION

Sustainability is a trendy word. The problem is to find the understanding of that concept and implement it in various sectors of the economy. One of the elements of this structure is the financial sector. Quintessential questions can be developed on this basis: Can financial markets institutions develop and support sustainability? What is the sustainability support level in different financial markets? What are the relationship between sustainability support variables and stock markets size?

The basic question is to what extent business sustainability is contributing to sustainable development. There is a discussion about it in expert literature.

Banerjee (2011, 720) suggests that there are ideological barriers that are considered when business sustainability is approached from the economic-centered paradigm. These barriers include the benefits perspective for the organization (such as increasing brand value, reducing risk and cost factors, embracing new revenue growth potential) rather than covering a more balanced approach to value creation. Often, such benefits are called “win-win” approaches (Dyllick, Muff 2013). The dominant view is that business can profit from sustainability when solving the social and environmental problems of the world

through new growth opportunities (Hart 2007), through opportunities for innovation (Nidumolo et al., 2009) or for profit (Prahalad, Hammond 2002; Prahalad 2004). The underlying assumption set in this perspective is that business will not pursue environmental and social initiatives if these do not provide economic advantages to the business.

Banerjee (2011) arrives at the same conclusion with regard to corporate social responsibility (CSR) and links it to the primary focus in the literature on the financial impact and on the company not on the outcomes for society. Margolis & Walsh (2003, 289) conclude more broadly from their appraisal of 30 years of studies on corporate social performance: “Although the financial effects of corporate social performance have been extensively studied, little is known about any consequences of corporate social initiatives. Most notable, as calls for corporate involvement increase, there is a vital need to understand how corporate efforts to redress social misery actually affect their intended beneficiaries.”

Analyzing this literature we can realize how difficult it is to point and realize sustainability assumptions especially in the financial sector. This article is focused on specific type of financial institutions – stock exchanges.

Stock Exchanges can play a major role in facilitating transparency of sustainability risks and better corporate sustainability performance. Among the key international policy developments that underpin the increasing number of stock exchange initiatives on sustainability, the main is the outcome of Rio+20 United Nations Conference on Sustainable Development. European Commission has also adopted a proposal for a directive enhancing the transparency of companies on social and environmental matters on April 16, 2013 by changing existing Accounting Directives. Earlier on 6 February 2013, the European Parliament had adopted two resolutions connected with Social Responsibility (“Corporate Social Responsibility: accountable, transparent and responsible business behaviour and sustainable growth” and “Corporate Social Responsibility: promoting society’s interests and a route to sustainable and inclusive recovery”), acknowledging the importance of company transparency on environmental and social matters (Promoting Sustainable Development: The Way Forward for a Sustainability Index in Turkey 2014).

Despite being in the position to promote sustainability, stock exchanges are concerned about imposing more strict regulations or listing requirements that might discourage future listings. Sustainability Indices based on ratings using voluntary public disclosure appear to be one of the preferred instruments used

by the exchanges to encourage transparency of corporate sustainability indicators without mandatory rules. Such indices highlight top performers, facilitating investor pressure and competition between companies to drive disclosure, and ultimately better performance, in the long term. Tough but flexible regulations are conduit to improving a country's competitiveness through innovation (Porter, Linde 1995). Lower the environmental and social local standards, higher would be the costs of adopting better sustainability practices for individual firms.

THE RESEARCH METHODOLOGY AND THE COURSE OF THE RESEARCH PROCESS

The aim of this article is to assess the level of stock exchanges sustainability support and test the correlation between the stock market size and sustainability support level. The research is based on the data from Sustainable Stock Exchange Initiative survey (Sustainable Stock Exchange. Report on progress 2012). The SSE initiative is a joint project organised by the United Nations-backed Principles for Responsible Investment (PRI), the United Nations Conference on Trade and Development (UNCTAD), the United Nations Environment Programme Finance Initiative (UNEP-FI), and the United Nations Global Compact (UNGC). This study was completed using a combination of publicly available information, survey responses and findings at the time of research. Exchange entity ownership information was accessed from Bloomberg, January 2012.

27 Stock Exchanges all over the world were surveyed in 2012 and described in this publication. An exchange entity could refer to either the holding company of a single or multiple exchanges or a single exchange.

There was 19 questions in the survey made in 2012. For this research purpose 4 questions was considered as the most important. Selection was made taking into account assessment objectivity and comprehensiveness. Important in the selection proces was also data reliability. Assumption was that variables are the various actions associated with: internal regulations, external regulations, investors and listed companies.

The questions used to conduct a research in this article were as follows:

- Does the exchange make its own ESG disclosures?
- Is the exchange a signatory of PRI?
- Has the exchange launched sustainability related indices?
- Has the exchange offered sustainability guidance for listing companies?

Answers to the questions in the conducted questionnaire allowed to assess overall sustainability support level on a scale from 0 to 1 in four categories (ESG disclosure, PRI signatories, sustainability indices, sustainability guidance for listing companies). Each category has been proposed as support variable assessing stock exchanges sustainability. All variables were assigned equal weights.

On basis of described 4 variables the Sustainability Support Index (SSI) was created in this article. SSI is the sum of selected variables. The Sustainability Support Index formula is presented below.

$$SSI = \sum_{i=1}^4 x_i$$

SSI – Sustainability Support Index

x_1 – ESG disclosure (Yes – 1, No – 0, GRI – 0,5)

x_2 – PRI signatories (Yes – 1, No – 0)

x_3 – Sustainability Indices (Yes – 1, No – 0, Plan – 0,5)

x_4 – Sustainability guidance for listing companies (Yes – 1, No – 0)

SSI is a stock markets sustainability support synthetic measure. It can be used to compare overall stock exchange sustainability support level. The SSI index may not reflect all sustainability initiatives that exchanges have been internally pursuing or contemplating. This tool gives the opportunity of initial overall sustainability support assessment.

To analyze regional diversity additionally, the exchanges have been assigned to regions of the world (according to the World Bank methodology). Then the average value of SSI for each region was estimated to present geographical differences in the SSI value.

The next stage of the research was to analyse the correlation between characteristics that describe the exchange size (the number of listed companies and market capitalization) and the SSI level. It is based on Pearson’s ratio.

THE OUTCOME OF THE RESEARCH PROCESS AND CONCLUSIONS

Sustainability Support Index was calculated on 27 stock exchanges. Results and source data are presented in table 1. as a SSI ranking.

Table 1. Sustainable Support Index ranking

Region	Stock Exchanges	Country	Number of listed companies (2012)	Market capitalization 2012 (bln USD)	Type company	ESG disclosure ¹	PRI signatories ²	Sustainability Indices	Sustainability guidance for listing companies	Sustainability Support Index
SSF	Johannesburg Stock Exchange	South-Africa	392.00	852.28	Listed company for profit	1	1	1	1	4
LCN	BM&FBO-VESPA	Brazil	372.00	193.77	Listed company for profit	0.5	1	1	1	3.5
EAS	Korea Exchange	Korea	1 816.00	1 091.50	Demutualized company for profit	1	0	1	1	3
EAS	Shanghai Stock Exchange	China	932.00	2 457.33	Association not for profit	1	0	1	1	3
EAS	Bursa Malaysia	Malaysia	937.00	431.09	Listed company for profit	1	0	0.5	1	2.5
ECS	Deutsche Börse AG	Germany	742.00	1 303.59	Listed company for profit	0.5	0	1	1	2.5
ECS	Istanbul Stock Exchange	Turkey	264.00	232.69	Governmental not for profit	1	1	0.5	0	2.5
ECS	NYSE Euronext	France	3 418.00	15 187.61	Listed company for profit	0.5	0	1	1	2.5
EAS	Singapore Exchange	Singapore	772.00	665.73	Listed company for profit	1	0	0.5	1	2.5
EAS	The Stock Exchange of Thailand	Thailand	545.00	289.75	Governmental not for profit	1	0	0.5	1	2.5
ECS	BME Spanish Exchanges	Spain	3 263.00	1 096.20	Listed company for profit	1	0	1	-	2
ECS	London Stock Exchange	UK	2 864.00	3 397.13	Listed company for profit	1	0	1	0	2
NAC	Nasdaq OMX	US	3 440.00	5 057.58	Public company for profit	0	0	1	1	2

Region	Stock Exchanges	Country	Number of listed companies (2012)	Market capitalization 2012 (bln USD)	Type company	ESG disclosure ¹	PRI signatories ²	Sustainability Indices	Sustainability guidance for listing companies	Sustainability Support Index
NAC	Toronto Stock Exchange	Canada	3 947.00	2 014.47	Listed company for profit	0	0	1	1	2
EAS	Hong Kong Exchanges and Clearing	Hong-Kong	1 506.00	2 480.18	Listed company for profit	0.5	0	0	1	1.5
ECS	SIX Swiss Exchange	Switzerland	280.00	1 122.74	Private company not for profit	1	0	0.5	0	1.5
LCN	Bolsa Mexicana de Valores	Mexico	476.00	441.41	Listed company for profit	0	0	1	-	1
SAS	Bombay Stock Exchanges	India	5 115.00	1 225.47	Demutualized	0	0	1	-	1
EAS	Indonesia Stock Exchange	Indonesia	442.00	407.71	Private company for profit	0	0	1	-	1
SAS	National Stock Exchange of India	India	1 641.00	1 200.74	Demutualized company for profit	0	0	1	0	1
EAS	Shenzhen Stock Exchange	China	1 420.00	1 044.60	Association not for profit	1	0	-	-	1
EAS	Tokyo Stock Exchange	Japan	2 288.00	3 468.88	Demutualized company for profit	0	0	1	0	1
EAS	Philippine Stock Exchange	Philippines	253.00	175.89	Association not for profit	0	0	0.5	0	0.5
EAS	Australian Stock Exchange	Australia	2 078.00	1 303.81	Listed company for profit	0	0	0	0	0
LCN	Bolsa de Comercio de Santiago – Santiago Stock Exchange	Chile	266.00	290.37	Listed company for profit	0	0	0	0	0

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ECS	Moscow Interbank Currency Exchange	Russia	284.00	770.61	Private company for profit	0	0	0	-	0
MEA	Saudi Stock Market - Tadawul	Saudi Arabia	150.00	347.49	Governmental not for profit	0	0	0	-	0

¹ ESG – Environmental, Social, and Corporate Governance

² PRI – Principles for Responsible Investment

Source: own study based on: Sustainable Stock Exchange. Report on progress, Sustainable Stock Exchange Initiative 2012.

In the table 1 there are values between 0 and 1 in columns 7–10. Numbers are interpreted as follows: 1 – yes, 0 – no, 0.5 in column 7 means “GRI¹ disclosure”, 0.5 in column 9 means “is planning”.

The highest SSI index level is observed on Johannesburg Stock Exchange (4). Slightly lower level (3.5) is in Brazil (BM&FBOVESPA). In Korea (Korea Exchange) and China (Shanghai Stock Exchange) SSI is on level 3. The lowest sustainability support indicator is observed in Saudi Arabia (Saudi Stock Market – Tadawul), Russia (Moscow Interbank Currency Exchange), Chile (Santiago Stock Exchange) and Australia (Australian Stock Exchange). This markets reached level 0 in this category.

At this stage of the research it is worth to examining regional differences in SSI index. To perform such an analysis countries have been assigned to world regions. The division is based on the World Bank methodology (World Bank).

Table 2. World regions

Region symbol	Region name
EAS	East Asia
ECS	Europe & Central Asia
LCN	Latin America

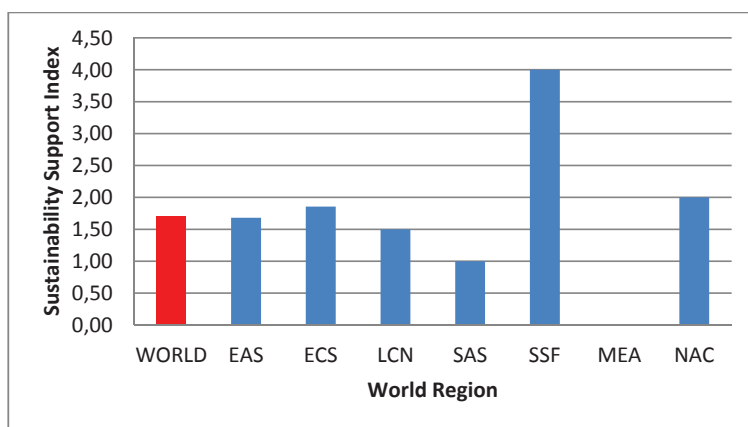
¹ GRI – Global Reporting Initiative

Region symbol	Region name
SAS	South Asia
SSF	Sub-Saharan Africa
MEA	Middle East & North Africa
NAC	North America

Source: World Bank.

The mean SSI value in the research sample amounts to 1.7 (figure 1). The highest sustainability support level is observed in Sub-Saharan Africa (4). The research covered only one stock exchange in this region: Johannesburg Stock Exchange. Second in terms of the SSI value is North American region (2). The third region is Europe & Central Asia (1.86). Then East Asia (1.68) and Latin America (1.50). The lowest sustainability support level is observed in South Asia (1) and Middle East & North Africa (0).

Figure 1. Sustainability Support Index in world regions



Source: own study.

Diversed levels of SSI raise a question about the factors affecting the level of sustainability support. Is there a relationship between the Sustainability Support Index level and the stock market size? To answer this question stock market size variables and the SSI level can be compared. The market size can be

measured by different variables. Two of them have been used in this research: a number of listed companies and market capitalization. The SSI ratio will be related to “number of listed companies” and “market capitalization” in this section of the article.

There is a neutral relationship between SSI and number of listed companies variables. The linear regression line is very flat in this case. Studied variables of Pearson’s correlation ratio amount to 0.0262. This confirms the low relationship between the variables.

The second variable describing the stock market size is market capitalization. A higher correlation level between SSI ratio and market capitalization is conspicuous. Pearson’s correlation ratio amounts to 0.1621. The regression line is still flat, but a positive tendency is noticeable. In both cases SSI ratio volatility is reduced with market size increasing.

The next research step was to assess the correlation between stock exchange size variables and sustainable support sub-variables using Pearson’s ratio. The highest positive correlation level occurs between “Sustainability Indices” and “Number of listed companies” (0.4277). Negative correlation appears between “PRI signatories” and “number of listed companies” (-0.2972).

Table 3. Pearson’s correlation ratio of stock market size variables and stock market sustainability support variables

	Number of listed companies	Market capitalization
<i>Sustainability Support Index</i>	0.0262	0.1621
ESG disclosure	-0.1611	-0.0311
PRI signatories	-0.2972	-0.1689
Sustainability Indices	0.4277	0.2661
Sustainability guidance for listing companies	0.1363	0.1912

Source: own study.

There is a weak correlation between sustainability support variables and stock market size variables. It should be stressed that there is no significant relationship between market size variables and sustainability support variables. Some relations are positive and some negative.

Concluding the research it is worth pointing out that:

1. The highest sustainability level occurs in Johannesburg Stock Exchange, BM&FBOVESPA, Korea Exchange, Shanghai Stock Exchange. The lo-

- west sustainability level is in Australian Stock Exchange, Santiago Stock Exchange, Moscow Interbank Currency Exchange, Saudi Stock Market – Tadawul.
2. The highest level of Sustainability Support Index is observed in Sub-Saharan Africa. It is interesting that it is based on one stock exchange. A high level also is observed in North America and Europe & Central Asia. The lowest SSI ratio is in Middle East & North Africa, South Asia and Latin America.
 3. The sustainability support level is weakly correlated with the market size in view of considering “number of listed companies” and “market capitalization”. Pearson’s correlation ratio amounts to 0.0262 and 0.1621.
 4. A deeper analysis of sub-variables confirms a weak relationship between sustainability support and the stock market size. Pearson’s correlation ratio ranges from -0.2972 to 0.4277. This relationship should be considered as weak.

In author’s opinion it is worth to develop stock market sustainability support research in the future. A measurement tool proposed in this article can be used in the sustainability support dynamic analysis. It can be modified depending on needs.

As shown in the article the biggest Stock Exchanges began to compete not only by number of listed companies or capitalization but also by sustainability aspects. Less developed markets, like Polish are not engaged in this process. In the future taking care of stock market sustainability is inevitable. Participation in this process could become a distinguishing feature for exchanges such as Warsaw Stock Exchange.

■■■ REFERENCES

- Banerjee S.B. (2011). Embedding Sustainability across the Organization: A Critical Perspective. *Academy of Management Learning & Education*, 10 (4), 719–731. <http://dx.doi.org/10.5465/amle.2010.0005>.
- Dyllick T., Muff K. (2013). Clarifying the Meaning of Sustainable Business, Introducing a Typology from Business-As-Usual to True Business Sustainability. <http://dx.doi.org/10.2139/ssrn.2368735>.
- Hart S.L. (2007), *Capitalism at the Crossroads*. 2nd ed. Upper Saddle River, NJ: Wharton School Publishing.
- Margolis, J. and Walsh, J. (2003). Misery Loves Companies: Rethinking Social Initiatives by Business. *Administrative Science Quarterly*, 48 (2), 268–305. <http://dx.doi.org/10.2307/3556659>.

- Nidumolu R., Prahalad, C.K., Rangaswami M.R. (2009). Why Sustainability Is Now the Key Driver of Innovation. *Harvard Business Review*, 87 (9), 57–64. <http://dx.doi.org/10.1109/EMR.2013.6601104>.
- Porter M.E. and Claas van der Linde (1995). Toward a New Conception of the Environment Competitiveness Relationship. *Journal of Economic Perspectives*, 9 (4), 97–118. <http://dx.doi.org/10.1257/jep.9.4.97>.
- Prahalad C.K. & Hammond A. (2002). Serving the World's Poor, Profitably. *Harvard Business Review*, 80 (9), 48–55.
- Prahalad C.K. (2004). *The Fortune at the Bottom of the Pyramid: Eradicating Poverty through Profits*. Upper Saddle River, NJ: Wharton School Publishing.
- Promoting Sustainable Development: The Way Forward for a Sustainability Index in Turkey (2014). Sabanci University.
- Sustainable Stock Exchange. Report on progress (2012), Sustainable Stock Exchanges Initiative, <http://www.sseinitiative.org/publications/> (accessed: 15.03.2014).
- World Bank, <http://www.worldbank.com> (accessed: 15.03.2014).