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How Different ESG Factors Across Cultures Affect Financial Performance

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Abstract

This paper examines the financial performance of publicly traded companies based on their ESG factors' specific commitment across different cultures. Using ESG ratings from HIP Investor Inc. on companies the agency evaluates and cultural dimensions as defined by Geert Hofstede, the average stock return of companies was compared to countries' main stock indexes. The results show that the majority of the analyzed combinations of ESG factors and cultural dimensions outperformed the main stock indexes between the years 2016 and 2020. Moreover, it seems that for ESG committed companies, culture plays a role in ESG practices as well as financial performance.

JEL Codes: G10, G150

Keywords: International Financial Markets, Portfolio Choice, ESG Practices

Introduction

Integration of environmental, social, and governance factors in organizations' decision-making processes has been around for decades. In the past 25 years, the world has seen significant growth in the number of companies that measure and report environmental data (e.g., carbon emissions, water consumption), social data (e.g., product safety, product information), and governance data (e.g., lobbying, board diversity) – in short, ESG data (Amel-Zaeh and Serafiem, 2018). But only in the most recent years, investing in companies that use ESG factors when conducting business gained attention. Part of the reason is that very few companies disclosed their data in the 1990s. With the increase in ESG data, investor interest increased as well. Interestingly, the search for a relation between ESG criteria and corporate financial performance (CFP) can be traced back to the 1970s (Friede et al., 2015). With the lack of uniformity in measuring ESG while facing the difficulty to establish firm guidelines across countries, many people argue this makes it hard to integrate ESG data in the investing process. ESG practices differing across countries also play a role in establishing a unified ESG performance rating system. With several recent studies finding a correlation between certain cultural aspects and ESG practices, considering culture when investing in ESG-oriented companies is inevitable. Thus, looking at how different ESG factors across different cultures affect the financial performance of companies would provide investors with invaluable insights.

Literature Review

In recent years, more and more funds, as well as investors, are investing in companies that have a strong commitment towards ESG performance. "Environmental, social, and governance" are by themselves not financial factors; however, they do seem to affect stock returns based on previous studies. In their study, Boadi and Amegbe (2017) found that the quality of governance significantly affects stock market performance. Amel-Zadeh and Serafiem (2018) concluded that investors are financially motivated to use ESG data. Furthermore, they found out that the information that investors use varies systematically across countries depending on the major issues in those areas. Jieqiong Sun et al. (2019), in their research, concluded that corporate social responsibility affects corporate social performance. Additionally, they found that CSR has a weaker effect on CFP in firms located in indulgent countries. Research by Friede et al. (2015) looked at the ESG's effect on financial performance and found evidence from more than 2000 empirical studies that roughly 90% of studies find a nonnegative ESG-CFP relation. Moreover, they concluded that most studies find positive findings. Many studies support the findings that culture or geographical difference does affect ESG practices around the world. Halkos and Skouloudis (2017) found that culture does impact CRS. According to their study, companies should pursue knowledge on how cultural distance affects CSR practices to establish a more effective CSR agenda and enhance their CSR performance. Their findings also pointed out that cultural perspectives pertaining to "long-term vs short-term orientation" as well as "indulgence vs restraint" affect the composite CSR index positively, while "uncertainty avoidance" has a negative impact. In contrast, their research concluded that the effects of other Hofstede cultural values of "power distance," "individualism," and

“masculinity” are found to be insignificant. Another research by Eriksson and McCollum concluded that the 6 Hofstede’s cultural dimensions have a significant effect on any of CSRHub’s CSR categories (2019).

The existing research papers in most cases cover the relationship between either the ESG practices and the stock market performance or between ESG practices and culture. This research looks at those factors holistically, as it examines whether companies focusing on certain ESG factors tend to outperform market benchmarks based on the cultural characteristics within the country where they are headquartered.

ESG and Cultural Dimensions Data

In order to conduct the analysis, a dataset comprised of ESG ratings of publicly traded companies around the world was used. The proprietary dataset analyzed was issued by HIP Investor Inc., an ESG rating and investment advisory firm. Based on their practices, the ESG rating assessment of each company is conducted through detailed research from publicly available information and from third-party data collectors. Through that process, the so-called HIP Rating, which stands for “Human Impact + Profit”, is assessed. The HIP rating provides us with a detailed breakdown of the company’s ESG practices. The total HIP Rating is comprised of 7 HIP Pillars, which are Health, Wealth, Earth, Equality, Trust, Management Practices, and Products and Services. The Health pillar is comprised of the health effects from the firm’s behavior on the employees, shareholders, and customers. More specifically, the rating evaluates the employees’ access to healthcare, overall job safety, employee retention, and customer satisfaction. The Wealth pillar is rated based on how the firm affects the financial status of everyone involved. Specifically, it consists of employee access to stock options, employee pay, as well as the company’s investments in community development. The Earth pillar is conducted out of the company’s resource efficiency, carbon reductions, water usage, waste production, and more. The Equality pillar is assessed from the data of board diversity, LGBTQ+ policies, the number of women employees and managers, the supplier sourcing, and the diversity of the population served. The Trust pillar consists of the firm’s lobbying, customer guarantee policies, and data disclosure. Company’s Management Practices are valued based on the firm’s long-term vision, decision making, financial performance – considering return on equity and beta, as well as accountability to public commitments. Lastly, the Products and Services pillar is rated based of the impact that the firm’s products and services cause and its extent of solving real human problems.

To get an answer on how the cultural differences and ESG practices affect financial returns globally, the different aspects of culture must be measured. Culture is known to be a collective phenomenon because it is shared with people who live in the same social environment. “Culture is ultimately the collective programming of the mind distinguishing members of one group of people from others” (Hofstede et al., 2010, pp. 6). To measure the cultural values of each culture, a widely accepted Hofstede’s concept of the culture was used. In his research, Geert Hofstede has conducted different work-related values typical for different cultures. Those values are power distance, individualism-collectivism, masculinity-femininity, uncertainty avoidance, long-term orientation, and indulgence-restraint. Each country’s culture can be accurately described based on their score from zero to one hundred for each value, and it is critical to comprehend what each of them represents.

The power distance index (PDI) measures inequality by assessing the dependence of relationships in a country. Countries scoring low in PDI will have a limited dependence of subordinates on bosses with a preference for consultation (Hofstede et al., 2010). On the other hand, people living in countries scoring high in PDI will be unlikely to approach their bosses. Hofstede et al. (2010, pp. 61), ultimately define power distance as “the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally.” The individualism index (IDV) addresses the fact that societies are based on relationships, as there is always a dependence between the individual and the group. A society where the interests of an individual prevail over the interest of the group is referred to as an individualistic society, scoring high in IDV. If the interests of the group are found to be more important and integrated from birth, the society is known to be collectivistic, scoring low in IDV. The masculinity score (MAS) looks at the systematic difference between the genders. A society with a high MAS score will have more distinct gender roles – men are supposed to be assertive, tough, and focused on materialistic success, and women are supposed to be more modest, tender, and focused on quality of life. A more feminine country will score lower in MAS because the gender roles will overlap more as both genders will be expected to be modest, tender, and concerned about the quality of life (Hofstede et al., 2010). The uncertainty avoidance index (UAI) measures the extent to which the members of a culture feel threatened by ambiguous or unknown situations (Hofstede et al., 2010). The higher the UAI, the more the people within the society will try to avoid unknown situations and minimize unusual occurrences. Countries with lower UAI will display more ease towards uncertainty and more tolerance towards change. Hofstede et al. (2010, pp. 239) define long-term orientation (LTO) as “the fostering of virtues oriented toward future rewards—in particular, perseverance and thrift”, which is typical for

countries scoring high in LTO. Thus, more short-term oriented countries, with a low LTO score, will focus more on fostering virtues related to the past and the present. Finally, the indulgence versus restraint index (IVR) looks at the national levels of happiness and the perception of life control. People in indulgent countries, scoring high in IVR, have a tendency to allow relatively free gratification related to enjoying life and having fun. On the other hand, a restraint culture with a low IVR score reflects a conviction that gratification needs to be curbed and regulated by strict social norms (Hofstede et al., 2010).

Methodology

The data used from HIP Investor Inc. tracks several thousand companies across 72-78 countries with between 5249-8356 companies in total, depending on the selected year. However, not all countries and companies analyzed were usable for this research. For example, several countries lacked or had no Hofstede cultural dimensions ratings. In such cases, the comparison of the HIP data with the Hofstede dimensions was excluded. There are also many countries that do not have a sufficient number of firms that are publishing ESG related practices, and thus, those countries are not included in the analysis. If a country had fewer than 30 firms that were publishing ESG practices to be able to receive the HIP rating, those countries were then excluded from the analysis. The United States was also excluded from the analysis because of the country's largest dataset available dominating the cultural ranks in order to get a better understanding of the global effects of culture and ESG practices. Accordingly, the number of countries fell from 72 to 28 in 2016 and from 78 to 38 in 2020. A list of countries analyzed per each year is found in Appendix, Exhibit 1.

All analyzed countries were given their Hofstede dimension rankings, and their respective companies had their HIP pillar ratings. Firms were ranked by their HIP numeric ratings within each country and were broken into 3 groups called high (for high numeric HIP rating), middle (middle third), and low (for bottom third) relative to other firms ranked in the country based on their numeric HIP rating. Countries were ranked by their Hofstede scores. All countries used were then split into three groups based on the Hofstede score by category. The highest numeric Hofstede score for each cultural dimension was given a ranking and then broken into three groups, high for the highest numeric Hofstede score, medium for the middle third numeric Hofstede score, and low for the lowest third of numeric Hofstede score. From this, the combined ratings of HIP by Hofstede or as referred to, HIP by Hof scores, were combined. If they had a high in HIP and a high Hofstede dimension score, that would show as high HIP by high Hofstede, then High HIP by medium Hofstede, then high HIP by low Hofstede; the same was repeated for medium HIP rating and low HIP rating to assess all combinations. Thus, there were nine groups for each Hofstede dimension and each HIP pillar. This was repeated for each Hofstede dimension. In place for each company ranking, the annual abnormal return of the firm was used. The data is considering yearly returns. Although, for 2020, data from January to November was used because the December returns were not available. In Equation 1, R_{hh} represents the abnormal return of the firm found from the joint rank of the union of HIP by Hof. The Hof score by each dimension is the same for each country so there is no variation at the country level, only at the international level.

$$R_{hh} \Leftarrow \bigcap_{HIP=1}^n HOF \quad (1)$$

The abnormal return by the firm is the annual firm return subtracted by the annual benchmark index return for the country. R_i represents the return for each firm and R_m represents the respective market index. For each country, the average abnormal returns were calculated.

$$R_{HH} = \sum_{i=1}^n R_i - R_m \quad (2)$$

The R_{HH} value represents the average return for the HIP by Hof score across all companies in the country. From these averages, all values are calculated across all included countries. The standard deviations of each country are used to calculate variance, which can be summed as all countries are aggregated to get an overall abnormal return of HIP by Hof. The variances are summed up and t-values are calculated across each HIP by Hof measure. This process is repeated for the five years of data available.

$$R_{HH}^{Year} = \sum_{j=1}^c \sum_{i=1}^n R_i - R_m \quad (3)$$

Equation 3 shows the average R_{HH} value across all firms, across all countries, for a given year. As the number of firms is above 30, t-values are used, as the N would meet the minimum number for approximation to a normal distribution.

Typically, they would be ranked and then a Mann-Whitney test would be performed, but since “N” is high in most cases, t-values were used. The significance values are calculations by one variable t-tests on all firms and variance across those firms over the period of the 5-year window.

Results

The results of Hofstede’s dimensions with Health, Wealth, Earth, and Equality pillars are found in Table 1. The combinations with the rest of the pillars – Trust, Management Practices, and Products and Services - are found in Table 2 alongside the Total HIP Ratings across different Hofstede’s cultural dimensions.

Table 1: Average Yearly Abnormal Returns 2016-2020 (in %)

		Health			Wealth			Earth			Equality		
		High	Med	Low	High	Med	Low	High	Med	Low	High	Med	Low
PDI	High	4.90	3.22+	3.06+	3.93	3.04*	3.06	3.58+	4.78+	2.37	3.92+	4.73	2.06
	Med	0.54	3.84	0.66	0.16	0.53	5.26	1.16	2.71	0.11	0.97	0.68	4.83
	Low	2.92	4.68*	5.82**	5.29*	2.55	5.51*	3.43+	4.45*	5.14*	4.34	4.33*	4.85*
IDV	High	2.91	12.48	9.66*	5.07+	4.00	9.03*	4.19	11.02*	11.46+	2.98	9.88	17.28+
	Med	2.41	1.25	1.79*	2.77+	0.68	2.62+	0.16	1.98	1.17*	0.38	1.81	1.16+
	Low	4.77	4.38+	3.50+	2.93	4.26*	3.54	3.38+	5.83	3.16+	4.76+	5.46+	2.33
MAS	High	2.37	2.13	4.99*	3.94*	1.76	4.99+	3.83+	3.86	1.42	4.47+	3.70	0.64
	Med	4.77	1.11	3.46	1.79	-0.29	8.99+	1.94	1.73	4.99**	-0.40	5.50	4.40*
	Low	3.80	6.04*	2.81**	4.53+	3.79*	4.22**	3.23+	5.90*	2.99*	4.64+	3.48+	5.07*
UAI	High	3.92	0.61	2.71*	2.17	1.51	2.71*	1.40	3.35	1.62*	1.99*	3.25	1.48+
	Med	2.87	9.76+	2.94+	5.35	2.77	8.25+	4.48	6.59+	4.06	4.83	5.13	7.18
	Low	3.60+	3.11*	5.57+	4.47**	3.26*	4.36	4.15*	4.00+	4.11+	4.34*	3.85+	3.94+
LTO	High	4.51	3.07+	3.29+	3.78	2.58	3.29+	2.77	5.42+	2.08+	5.30+	2.74	1.98+
	Med	2.39	3.97**	3.68+	3.63+	2.25*	4.51**	2.57+	4.02*	3.57*	2.71+	3.88*	3.94*
	Low	4.31	4.35	3.68*	3.90	2.54	6.23	4.04	4.33	2.85+	2.97	4.90	4.87+
IVR	High	4.72+	4.42+	7.60**	5.43+	3.33+	7.60**	5.30+	3.36+	8.24*	3.98	7.01+	7.13*
	Med	3.09	5.09*	3.15	3.79	3.22	4.30+	2.71+	5.47	2.49	3.34	4.01+	3.94
	Low	3.04	1.13	2.03	2.24	0.41	3.26	2.09	2.71	0.75	3.09	1.85	0.67

**significant at 1% level, *significant at 5% level, +significant at 10% level

Table 2: Average Yearly Abnormal Returns 2016-2020 (in %)

		Trust			Management			Products and Serv.			Total HIP Rating		
		High	Med	Low	High	Med	Low	High	Med	Low	High	Med	Low
PDI	High	5.42+	3.27	2.16+	3.96	2.79	4.56*	2.48	1.42	9.13	3.25+	3.51*	4.10+
	Med	2.54	-2.17	4.71	0.75	0.00	4.17	1.78+	5.38	0.22	1.17	-0.75	5.48
	Low	5.81*	1.69	6.25*	3.92*	3.55+	6.43+	4.38+	4.26**	6.40	4.90*	2.69+	6.17*
IDV	High	4.60	6.65	14.90*	2.70	4.82+	19.67*	3.98	9.50*	13.53	3.93	3.07*	24.56
	Med	3.31	0.20	0.91+	2.10	1.12	0.89+	2.82+	0.90+	3.88	1.06+	1.08	1.46+
	Low	6.23*	3.33	3.29+	4.50	4.18	3.61+	3.92+	1.23	7.66	3.44+	5.43+	2.85
MAS	High	5.04	2.33	1.79	3.70+	2.67	2.78	4.44*	4.54+	2.68	3.99+	3.50	1.17
	Med	4.72	0.42	4.71*	1.83	0.05	8.41*	-0.21	-1.64	16.55	0.69	-0.73	10.58
	Low	5.22*	2.31	5.03*	3.93	3.53	5.39**	3.37+	4.76*	4.78	4.15*	3.40+	5.33*
UAI	High	4.09	1.11	1.81+	2.32	0.71	4.06*	3.60**	0.75	5.49	2.35	2.24	2.05*
	Med	5.45	3.25	7.02+	4.44	4.28	7.39+	2.17	5.40+	9.78	3.82	2.51	10.87+
	Low	5.91**	1.46	5.07*	4.02*	3.18+	5.54*	3.03	4.94*	5.07	4.40*	3.03*	4.78
LTO	High	3.89+	3.37	3.13+	3.56	3.42	4.06+	4.64**	3.84+	2.59	4.45+	2.93	2.83+
	Med	4.41*	2.36	3.47**	2.70	3.52*	4.12*	3.04	3.00+	5.15	2.50*	2.97*	4.69**
	Low	6.56	0.31	5.57*	3.93	0.69	7.83+	1.12	3.29	12.01	3.35	1.88	7.93
IVR	High	6.38+	2.60	8.79*	3.89*	3.50	10.92*	4.06+	2.55+	12.06+	4.52+	2.94+	11.24*
	Med	4.61+	2.50	4.06	2.72	3.01*	5.60	3.45*	4.90	4.34	3.64*	3.58	4.27
	Low	4.20	0.82	0.77	3.82	0.79	1.34	1.43	0.67	6.40	1.94	0.77	2.72

**significant at 1% level, *significant at 5% level, +significant at 10% level

The findings suggest that between the years 2016 and 2020, on average, companies that were at least sufficiently reporting their ESG practices and showing some initial commitment, as well as those that are the most committed to ESG practices as evaluated by HIP Investor Inc., have, in most cases, performed better than their indexes, looking at the different HIP by Hof combinations. Moreover, it is interesting to note that even in the cases where the selected HIP by Hof combination has not outperformed the main countries' indexes, the biggest 5-year average underperformance was -2.17%. That being said, only 5 total HIP by Hof combinations underperformed (having a negative return compared to the indexes' average) out of 378 total HIP by Hof combinations looking at the 7 HIP pillars. On the other hand, there were 80 HIP by Hof combinations of the 7 HIP pillars that have, on average, outperformed the main indexes by at least 5%. The rest of the combinations – 293 of them - outperformed the main indexes between 0% to 4.99% for the 5-year average of abnormal returns. In total, 98.7% of the HIP by Hof combinations for the 7 HIP pillars have matched or outperformed the main market indexes.

Conclusion

The results provide us with the financial performance of each combination of companies scoring either high, medium, or low in a specific Hofstede's cultural dimension score, and a specific HIP Pillar or the total HIP Rating for the years between 2016 and 2020. As noted, in total, 98.7% of the HIP by Hof combinations for the 7 HIP pillars have not underperformed compared to the main market indexes on a 5-year average basis. Also, many combinations are found to be significant. As the analysis suggests, the companies that have enough ESG data available to be rated by HIP Investor Inc. are, in the majority of the cases, outperforming the respected main countries' indexes over the selected period of 5 years.

To some extent, it might seem counterintuitive that, in many cases, firms with lower or medium HIP ratings tend to outperform companies with high HIP ratings across different cultures. This might indicate that companies that are starting to incorporate at least some ESG practices in their business prior to utilizing none (low HIP ratings), and those that are on the move with focusing on more and more ESG practices (medium HIP ratings), tended to outperform those companies on the high end that might have already maximized the benefits of utilizing ESG practices (high HIP ratings) as the additional incremental benefits decline. However, as pointed out, 98.7% of the HIP by Hof combinations with sufficient ESG reporting within countries with Hofstede's cultural dimension data available have outperformed or had the same performance as the main indexes across the 7 HIP pillars, and many of them were found significant. This implies that companies with any or desirably increasing commitment towards ESG practices outperform the respective countries' main stock indexes.

In terms of cultural dimensions, looking at the results, it seems that the companies exercising some ESG practices in cultures with low PDI scores tend to do better than those in countries with medium or high PDI cultures. This could mean that companies within environments where the relationships between subordinates and bosses are not necessarily very distant – possibly enhancing teamwork and encouraging new innovations – might lead to better financial performance. Furthermore, the results imply that companies in cultures with high IDV scores tend to do better return-wise than those with medium and low IDV scores. This could mean that companies integrating ESG practices are doing better in cultures where the company's performance is at the forefront and where people are not as dependent on others. Moreover, the results imply that companies in cultures with high IVR scores tend to outperform those companies with ESG practices in cultures with medium or low IVR scores. This could suggest that firms incorporating ESG practices are going to perform better return-wise in cultures where there is some gratification allowed and where the work-life balance is more prevalent than a restrained way of life.

This research opens many doors towards connecting the ESG practices and cultural differences with financial returns. Companies that will, in the future, commit to ESG practices will differentiate themselves from other competitors, and based on the results of this research, have a better chance of outperforming the main indexes in the countries where they operate.

Acknowledgments

The ESG rankings data and companies' annual returns data was provided by HIP Investor Inc. The countries' main indexes return data was used from FactSet; for exceptions, see Appendix, Exhibit 2. Hofstede's cultural dimensions data was acquired from <https://www.hofstede-insights.com/product/compare-countries/>.

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Appendix

Exhibit 1: List of Countries Observed Based on a Specific Year

2016: Australia, Belgium, Brazil, Canada, China, France, Germany, Hong Kong, India, Indonesia, Ireland, Italy, Japan, Korea (South), Malaysia, Mexico, Netherlands, New Zealand, Poland, Russia, Singapore, South Africa, Spain, Sweden, Switzerland, Taiwan, Thailand, United Kingdom

2017: Australia, Belgium, Brazil, Canada, Chile, China, Denmark, France, Germany, Hong Kong, India, Indonesia, Ireland, Italy, Japan, Korea (South), Malaysia, Mexico, Netherlands, New Zealand, Poland, Russia, Singapore, South Africa, Spain, Sweden, Switzerland, Taiwan, Thailand, United Kingdom

2018: Argentina, Australia, Belgium, Brazil, Canada, China, Chile, Denmark, Finland, France, Germany, Hong Kong, India, Indonesia, Ireland, Italy, Japan, Korea (South), Malaysia, Mexico, Netherlands, New Zealand, Peru, Poland, Russia, Singapore, South Africa, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, United Kingdom

2019: Argentina, Australia, Austria, Belgium, Brazil, Canada, China, Chile, Denmark, Finland, France, Germany, Hong Kong, India, Indonesia, Ireland, Italy, Japan, Korea (South), Malaysia, Mexico, Netherlands, New Zealand, Norway, Peru, Poland, Russia, Singapore, South Africa, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, United Kingdom

2020: Argentina, Australia, Austria, Belgium, Brazil, Canada, China, Chile, Denmark, Finland, France, Germany, Greece, Hong Kong, India, Indonesia, Ireland, Italy, Japan, Korea (South), Luxemburg, Malaysia, Mexico, Netherlands, New Zealand, Norway, Peru, Poland, Russia, Saudi Arabia, Singapore, South Africa, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, United Kingdom

Exhibit 2: List of Stock Indexes Used to Compare with the Firms' Returns Data

Argentina: *S&P Merval*, Australia: *ASX 200*, Austria: *ATX*, Belgium: *BEL 20*, Brazil: *IBOV*, Canada: *S&P/TSX*, China: *SSE*, Chile: *IPSA*, Denmark: *OMX Copenhagen 20*, Finland: *OMX Helsinki*, France: *CAC 40*, Germany: *DAX*, Greece: *ATHEX*, Hong Kong: *Hang Seng*, India: *S&P BSE 100*, Indonesia: *JSX*, Ireland: *ISEQ*, Italy: *FTSE MIB*, Japan: *Nikkei*, Korea (South): *KOSPI*, Luxemburg: *LUXX*, Malaysia: *Bursa KLCI*, Mexico: *S&P/BMV IPC*, Netherlands: *AEX*, New Zealand: *NZX*, Norway: *OBX*, Peru: *S&P BVL PERU***, Poland: *WIG*, Russia: *IMOEX**, Saudi Arabia: *TASI*, Singapore: *FTSE STI*, South Africa: *FTSE JSE 40*, Spain: *IBEX 35*, Sweden: *OMX Stockholm 30*, Switzerland: *SMI*, Taiwan: *TAIEX*, Thailand: *SET*, Turkey: *BIST 100*, United Kingdom: *FTSE 100*

Yearly returns on those indexes were acquired from www.FactSet.com

*Data on *IMOEX* was acquired from www.FactSet.com for years 2016-2018 and from www.moex.com for 2019-2020

**Data on *S&P BVL PERU* was acquired from <https://www.spglobal.com/spdji/en/indices/equity/sp-bvl-peru-general-index/#overview> for the years 2016-2020