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A New Era for Sustainable Development: A Comparison for Sustainability Indices[1]

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Abstract
Sustainability is rapidly moving from an abstract concept to a measurable state of dynamic human-ecological systems. The large number of economic, social, and environmental indicators currently available provides a view of system sustainability. In this respect, sets of sustainability indicators and aggregation of these indicators into indices are increasingly used to make policy decisions.
The indices offer companies the opportunity to compare their sustainability performances on both local and global level. With the indices, provide companies an instrument for evaluating their performance and consequently adopting new targets or furthering their performance while allowing them to develop their risk management abilities for corporate transparency, accountability and sustainability.
The purpose of this paper is to discuss conceptual requirements for Sustainability Indices and with using Dow Jones Sustainability Indices (DJSI) analyze the differences and the relationship of DJSI Emerging Markets with DJSI Developed Markets in which North America and Europe is chosen.

[1] This paper is presented in The 6th International Conference on Governance, Fraud, Ethics and Social Responsibility (ICONGFESR2015) in Malaysia.

1. Introduction

Nations and corporations are under growing pressure from internal and external investors to consider the environmental and social impacts of their operations as well as economic. In response to this pressure, a variety of sustainability performances have implemented.

The concept of sustainable development from 1970's to the present has evolved into definitions of three pillars of sustainability; social, economic and environmental, which are interrelated and complementary.

In 1987, the Brundthland Report "Our Common Future" popularized the most commonly used definition of sustainable development: Development that meets the needs of current generations without compromising the ability of future generations to meet their own needs (WCED, 1987).

Sustainable development has been adopted as a desirable goal by many institutions, governments and businesses. The dominant view of governments and businesses is that sustainable development is continued economic growth made more environmentally sensitive in order to raise living standards globally and break the link between poverty and environmental degradation. Economic growth is seen as part of the solution, markets and technology will produce a richer world that is more ecologically stable (Drexhage and Murphy, 2010).

Monitoring progress towards sustainable development first requires the identification of operational indicators that provide manageable units of information on economic, environmental and social conditions. Since the early 90's a multitude of sustainability indicator lists have been developed.

To aid policy decisions, the indicators are either presented in the context of a conceptual framework, or quantitatively aggregated into indices.

To help investors assess the sustainability performance of corporations, a number indices linked to financial markets have emerged, including the Dow Jones Sustainability Index (DJSI), the FTSE4Good Index, and the MSCI ESG Index (Searcy and Elkhawas, 2012).

A prominent example of sustainability indices are the Dow Jones Sustainability Indices (DJSI) which was launched in September 1999. The DJSI benchmarks are comprised of three geographical breakdowns (S&P, 2015):

- DJSI World (including DJSI World, DJSI World Enlarged, DJSI Emerging Markets)
- DJSI Regions (including DJSI Asia/Pacific, DJSI Europe, DJSI North America)
- DJSI Countries (including DJSI Australia, DJSI Canada Select 25, DJSI Korea)

All other indices are subsets of the benchmarks.

The DJSI select the most sustainable companies, in industries that meet certain minimum sustainability requirements, for index membership. Therefore, companies must continually intensify their sustainability initiatives to be included or to remain in the Indices. The aim of this research is to show the differences and the relationships between the DJSI Emerging Markets and DJSI Developed Markets. Our research, therefore, is focused on the Dow Jones Sustainability Index (DJSI). In this study, we seek to determine the difference (Paired Sample t-Test used) and the relationship (correlation analysis used) between the DJSI of Emerging Markets and DJSI Developed Markets in which we analyze North America and Europe. In the study, the dates from 9/30/2012 till 7/31/2015 are taken, and total returns are used in the indices.

This paper is organized as follows: First; the history of sustainable development is reviewed, then indicators of sustainable development which are bases for decision making at all levels are stated. Aggregation of indicators into indices are described and the world's one of the most prominent indices; Dow Jones Sustainability Indices are analyzed. Our research methodology is reviewed, results are presented.

2. Sustainable Development

Sustainability is seen as a delicate balance between the economic, environmental and social health of a community, nation and the earth. Sustainability is not a new subject in economical content. The theoretical framework for sustainable development evolved between 1972 and 1992 through a series of international conferences and initiatives. The United Nations Conference on the Human Environment, held in Stockholm in 1972, was the first major international meeting to discuss sustainability at the global scale. This conference gave birth to the first true notion of sustainable development which was called "eco development" in those days.

The term "sustainability" was introduced as an international issue by the International Union for the Conservation of Natural Resources (IUCN) with the book "The World Conservation Strategy" in 1980 (IUCN, UNEP and WWF, 1980, Gland). Since that date the

term begin to be used with increased frequency and its economic, social and environmental dimensions were debated as well as its importance in the search for a new form of development (Siche et al, 2008).

The term, "sustainable development", was popularized in a report called, "Our Common Future" published by the World Commission on Environment and Development (WCED) in 1987. Also known as the Brundthland Report, "Our Common Future" included the classic definition of sustainable development: "development which meets the needs of the present without compromising the ability of future generations to meet their own needs (WCED, 1987: 43). In the report it is also stated that, "Sustainable development is not a fixed state of harmony, but rather a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are made consistent with future as well as present needs" (WCED, 1987: 44). It has to be noted that the definition of sustainable development used in the Brundthland Report, was a specific turn-point from previously dominating attitude "growth **or** environment" towards a possibility of "growth **and** environment" the idea of complementary interaction between the environment and development is one of the interpretations of the philosophy of the Brundtland Commission (Ciegis et al, 2009: 31).

The definition of sustainable development was extended at the United Nations Conference on Environment and Development in Rio de Janeiro in 1992. The declaration described Sustainable Development as, "long-term continuous development of the society aimed at satisfaction of humanity's need at present and in the future via rational usage and replenishment of natural resources, preserving the Earth for future generations" (Agenda21, 1992: 29).

Since that time a number of important international conferences on sustainable development have been held-including the 1997 Earth Summit+5 in New York and 2002 World Summit on Sustainable Development (WSSD) in Johannesburg. These meetings were primarily reviews of progress; and reported that a number of positive results had been achieved, but implementation efforts largely had been unsuccessful at the national and international level (Drexhage and Murphy, 2010).

As a general concept, sustainable development encompasses three fundamental approaches: economic, environmental and social development which is interrelated and complementary. "The overall goal of sustainable development is the long-term stability of

the economy and environment; this is only achievable through the integration and acknowledgement of economic, environmental, and social concerns throughout the decision making process" (Emas, 2015: 2).

Several points are shared in a lot of notions of sustainability. Sustainability assessments ought to:

- Integrate economic, environmental, social and increasingly institutional issues as well as to consider their interdependencies,
- Consider the consequences of present actions well into the future,
- Acknowledge the existence of uncertainties concerning the result of our present actions and act with a precautionary bias,
- Engage the public,
- Include both intragenerational and intergenerational equity considerations (Gasparatos et al, 2008; Mori and Christodoulou, 2012).

3. Sustainability Indices

Monitoring progress towards sustainable development requires in first place the identification of operational indicators that provide manageable units of information on economic, environmental, and social conditions (Böhringer and Jochem, 2007). The idea of indicators to evaluate the sustainability has been emphasized by the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in 1992. In Agenda 21, Chapter 40.4, it is stated that "commonly used indicators such as the gross national product (GNP) and measurements of individual resource or pollution flows do not provide adequate indications of sustainability. Methods for assessing interactions between different sectorial environmental, demographic, social and developmental parameters are not sufficiently developed or applied. Indicators of sustainable development need to be developed to provide solid bases for decision-making at all levels and to contribute to a self-regulating sustainability of integrated environment and development systems".

Indicators

Human-environmental systems are multidimensional, influenced by many different economic, social and environmental characteristics (Pezzoli, 1997; Cabezas and Fath,

2002). These characteristics interact in a complex network of feedbacks. To examine these complex systems, indicators are used. An "indicator" is a variable which describes one characteristics of the state of a system, usually through observed or estimated data. Some indicators may give information about the position of the system relative to particular sustainability boundaries or goals ("distance-to-target" indicators) (Mayer, 2008).

Index

When many indicators are used, they are either presented in a framework of categories, or aggregated into an index. An "index" is a quantitative aggregation of many indicators and can provide a simplified, coherent, multidimensional view of a system (Mayer, 2008).

Indices

To achieve and maintain sustainability, policy-makers require timely information which demonstrates whether a system is generally becoming more or less sustainable, and specific information on which characteristics need the most improvement (e.g., poverty rates among children, water pollution, etc.). Sustainability indices have been developed specifically to help policy-makers in these respects. Indices usually give a static overview of a system, but when calculated periodically, they can indicate whether the system is becoming more or less sustainable, and can highlight which factors are most responsible for driving the system (Mayer, 2008). Sets of sustainability indicators and aggregation of these indicators into indices, are increasingly used to make policy decisions (Oras, 2005; Hezri and Dovers, 2006), and it is critical to understand index strengths, weaknesses, biases and scale-dependence when using them (Parris and Kates, 2003; Morse and Fraser, 2005; Ness et al, 2007).

The term "sustainability indices" can be defined as 'measures that server to systematically, accurately, consistently and transparently assess the environmental, social and economic performance of corporations' (Search and Elkhawas, 2012; Windolph, 2011).

An impressive number of sustainability indices have been developed (Ness et al, 2007). As different as the indices may seem, many of them incorporate the same underlying data because of the small number of available global sustainability datasets. Data for many of these indicators (e.g., life expectancy, fertility rate, percentage of cultivated land) are

collected by the United Nations and other international organizations. Many of these indices also use the same type of methods to aggregate the data. The degree to which these indices differ in their results using the same data is due to their assumptions, biases, and methodological disparities, creating confusion for sustainability efforts (Mayer, 2008).

Several studies have focused on relative strengths and weaknesses of sustainability indices. Chatterji and Levine (2006) compared the DJSI, KLD400 and FTSE4Good indices on the basis of their weighting systems, bar of performance, method of data collection, transparency, and other issues. They found that "their measurement systems and the resulting selection and ranking of companies differ considerably (Searcy and Elkhawas, 2012). Delmas and Blass (2010) quoted this point and stated that the tradeoffs involved in the evaluations are often poorly understood. Windolph (2011) arranged the challenges faced by corporate sustainability ratings, including "lack of standardization, lack of credibility of information, bias, tradeoffs, lack of transparency and lack of interdependence". These challenges are due to a number of reasons including the complexity of corporate sustainability, lack of data availability, and the intermingled business of raters, among other reasons.

3.1. Organizations Providing Sustainability Indices

The organizations that provide sustainability indices are mostly:

- Stock exchanges
- Private companies that offer financial services
- Non-governmental organizations

specializing in sustainability.

When stock exchanges launch such indices, they mainly aim at promoting sustainability in corporate strategies, and they stimulate the disclosure of companies' economic, social, environmental performances. Private companies, in turn, launch these indices to provide investment solutions to their clients because they provide input to the development of sustainable products, such as mutual funds and exchange-traded funds. Other important players in the implementation of these indices are organizations specializing in sustainability-oriented issues, which provide indicators and data analysis methodologies to verify companies' economic, social, environmental performances (Cunha and Pamanez, 2013).

3.2. Classification of Indices

Sustainability indices typically use the three main sustainability factors (environmental, economic and social) to assess the performances. However some indices use only one or two factors. With this view the major sustainability indices can be divided into two categories (Mori and Christodoulou, 2012):

1) Indicator-based indices
2) Single-unit indices

3.2.1. Indicator-Based Indices

Indicator Based Indices refer to indices structured by combining different indicators that represent different processes. The main critics against them have to do with the subjectivity of the choice of variables and the weighting of the indicators.

Some of the indices / indicators belong to this category are;

- The City Development Index (CDI)
- The Dashboard of Sustainability (DS)
- The Environmental Sustainability Index (ESI)
- The Environmental Vulnerability Index (EVI)
- The Environmental Policy Index (EPI)
- The Wellbeing Index (WI)
- The Human Development Index (HDI)
- The Living Planet Index (LPI)

For example; EVI and EPI focus on environmental aspects. The EVI assesses the vulnerability of physical environment. The EPI focuses on reducing environmental stresses to human health and protecting ecosystems and natural resources (Esty et al, 2008). The DS is a mathematical and graphical tool that assesses environmental, economic and social dimensions of sustainability (Scipioni, 2009). The CDI is the composite index that is composed of five sub-indices such as city product, infrastructure, waste, health and education (UN-Habitat, 2001).

3.2.2. Single-Unit Indices

Single Unit Indices aim to represent the balance between economic activities and the environment. Single unit indices cannot consider as many processes as indicator-based ones can, but they provide a clear picture of the relationship between economic activities and the environment.

Economic indices are a subcategory of single-unit indices as they value the impacts on the environment and society in monetary terms (Mori and Christodoulou, 2012).

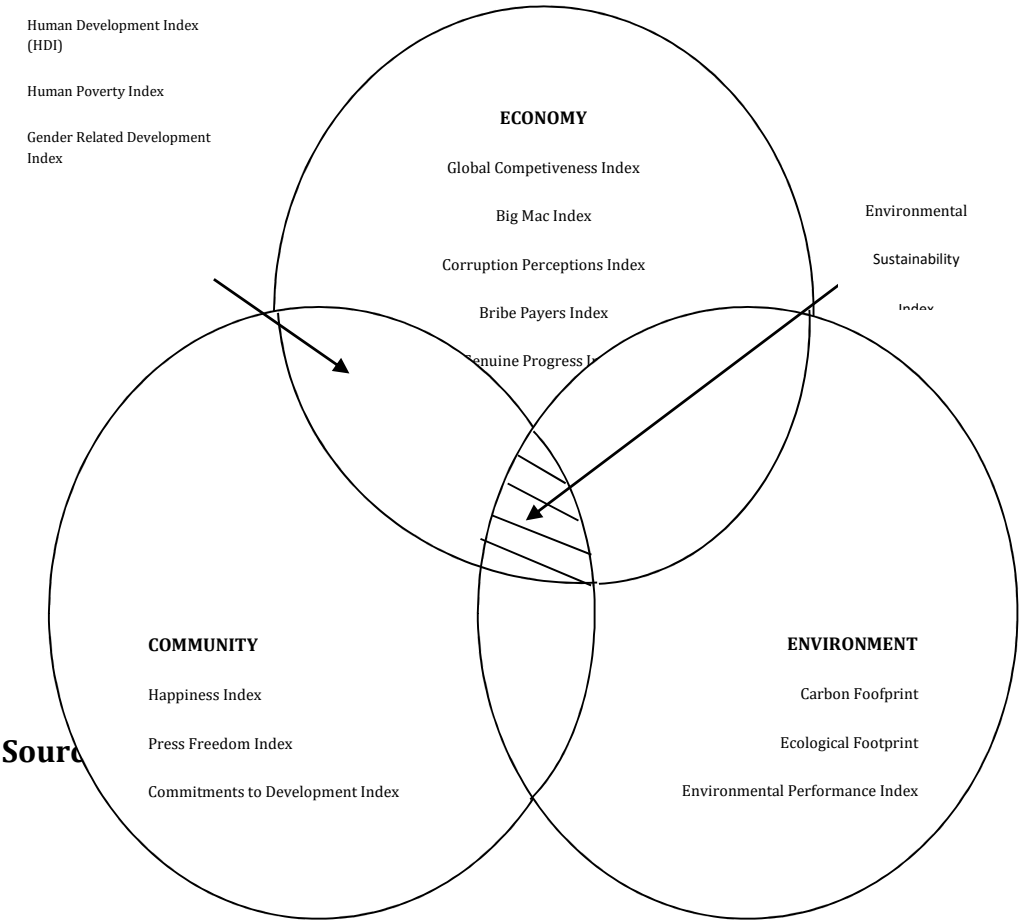
Several indices / indicators included in this category are:

- Ecological Footprint (EF)
- Water Footprint (WF)
- Index of Sustainable Economic Welfare (ISEW)
- Genuine Progress Indicator (GPI)
- Environmentally-adjusted Domestic Product (EDP or Green EPP)
- Genuine Savings (GS).

EF and WF measure the stresses of human activities on the environment. The EF is an indicator of strong sustainability that assumes substitutability of different forms of natural capital, because it assumes different natural capital goods are additive in terms of land area (Dietz and Neumayer, 2007) WF addresses the preservation of natural capital representatively indicated by water.

In Figure 1, placements of some sustainability indices are shown by the three overlapping circles of economy, society and environment.

Figure 1. Placement of the 18 sustainability indices in the spaces of sustainable development represented by the three overlapping circles of economy and environment



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4. The Dow Jones Sustainability Indices

The first sustainability index in the World-Domini400 Social Index (DSI) - was launched in 1990 and is currently known as the MSCI KLD400 Social Index. Over the last decade, several sustainability indices were launched, with the Dow Jones Sustainability Index (DJSI) series (in 1999) and the FTSE4Good Index Series (in 2001) being the most prominent. In Emerging Markets, the first launched index was the Johannesburg Stock Exchange Socially Responsible Investment Index (JSESRII, in 2004). The second was the Corporate Sustainability Index (ISE, in 2005) (Cunha and Samanez, 2013).

Although sustainability indices are more common in developed countries, the establishment of such indices in emerging markets has grown significantly in recent years.

In our study we will try to compare the Dow Jones Sustainability Emerging Markets Index with Dow Jones Sustainability North America Index and with Dow Jones Sustainability Europe Index which are indices of Developed Markets.

In this context, Dow Jones Sustainability Indices will be presented.

The Dow Jones Sustainability World Index was launched in 1999 as the first set of global sustainability benchmarks. In 2015, the DJSI are globally recognized by investors as the leading benchmarks for corporate sustainability. The DJSI family is offered cooperatively by RobecoSAM Indices and S&P Dow Jones Indices. The family tracks the stock performance of the world's leading companies in terms of economic, environmental and social criteria, providing investors with objective benchmarks for managing their sustainability investment portfolios (S&P, 2015).

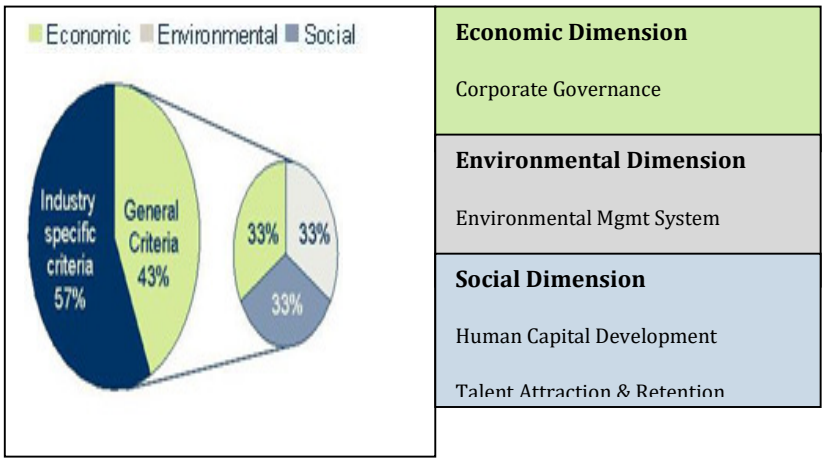
The DJSI use a best-in-class approach to select sustainability leaders. This means that only the most sustainable companies, in industries that meet certain minimum sustainability requirements are selected for index membership. Therefore, companies must continually intensify their sustainability initiatives to be included or remain in the Indices. By selecting the best (i.e. most sustainable) companies from a given industry and combining them into a single index, the DJSI ensure a high sustainability profile for index constituents, while maintaining a balance in terms of industry exposure (S&P, 2015).

To address specific investor requirements, DJSI index family includes sub-indices that exclude companies engaged in certain activities widely considered as unsustainable. The DJSI Blue Chip Indices also comprise a sub-family within the DJSI, but maintain their own selection and weighting criteria.

4.1. DJSI's Evaluation Process

DJSI has indices for different geographic regions as well as emerging markets. Since only 2.500 biggest companies are eligible to participate in the evaluation process, economic criteria are most important for companies who want to be listed in the index. In terms of social and economic criteria, 57 % of them are industry specific criteria while 43 % are general for all companies.

Figure 2. DJSI Evaluation Criteria (Corporate Sustainability Assessment, Dow Jones Sustainability Indices, 2012)



DJSI generally provides a score of each company's management of its sustainability risks, challenges and oppourtunities. It provides investors with independently reported and processed data to assist in making investment decisions.

The key factor in selecting constituents for any DJSI-branded index is a company's Total Sustainability Score (TSS), calculated under RobecoSAM's annual Corporate Sustainability Assessment (CSA). The first CSA was undertaken in 1999, with the launch of the original family of DJSI Indices.

The annual CSA process begins in Marh each year, with new scores released in September (S&P, 2015).

DJSI has four steps to follow in the evaluation process:

1) Each participating company has to fill in an industry-specific company questionnaire which evaluates the overall social and environmental strategies of each company.
2) DJSI analyze industry-relevant media reports, press releases, news articles, investor commentaries and employee feedback to get a comprehensive understanding of how the company is perceived by opinion leaders and stakeholders.
3) From all companies sustainability reports, environmental reports, health and safety reports, social reports and annual financial reports are requested.
4) With this stage, DJSI contacts each company and have discussions and phone conversations with corporation leaders (Chen, 2013).

The DJSI use a transparent, rule-based constituent selection process based on the companies' Total Sustainability Score (TSS) and the Corporate Sustainability Assessment (CSA) Industry classifications resulting from the annual RobecoSAM CSA.

With the growing awareness of and demand for sustainability assessment, DJSI is a great tool for companies who are dedicated to gaining ongoing financial growth while meeting high environmental and social standards. The major benefit of being listed in DJSI is that it will help companies to be more transparent for investors through a thoroughly planned and designed corporate sustainability ranking system (Chen, 2013).

In DJSI, total return index series are calculated for the indices as well as the price return series. Ordinary cash dividends are applied on the ex-date in calculating the total return series. "Special dividends" are those dividends that are outside of the normal payment pattern established historically by the issuing corporation. These may be described by the corporation as "special," "extra," "year-end," or "return of capital." Whether a dividend is funded from operating earnings or from other sources of cash does not affect the determination of whether it is ordinary or special. "Special dividends" are treated as corporate actions with offsetting price and divisor adjustments; the total return index series reflect both ordinary and special dividends (S&P, 2015).

4.2. Dow Jones Sustainability Index Range

The DJ Sustainability Index family comprises global, regional and country benchmarks. S&P Dow Jones Indices and RobecoSAM can create customized versions of the indices to meet investors' specific requirements for their unique investment objectives, including industry and country exclusions.

Table 1, shows the classification of DJSI and the number of firms in each index.

Table 1. Classification of DJSI

Index	Number of Component
DJSI World	319
DJSI World Developed	286
DJSI World 80	80
DJSI Asia Pacific	148
DJSI Asia Pacific 40	40
DJSI Japan 40	40
DJSI Emerging Markets	86
DJSI Europe	154
DJSI Eurozone	92
DJSI Europe 40	40
DJSI Eurozone 40	40
DJSI North America	149
DJSI United States	124
DJSI North America 40	40
DJSI United States 40	40
DJSI Australia	48
DJSI Korea	54
DJSI Korea 20	20
DJSI World Enlarged	602
DJSI Nordic	35

Source: http://www.sustainability-indices-com/index-values, 06.09.2015.

Table 2, shows the DJSI history availability, base dates and base values.

Table 2. DJSI History Availability, Base Dates And Base Values

Index	Launch Date	First Value Date	Base Date	Base Value
Dow Jones Sustainability World Index	09/08/1999	12/31/1993	12/31/1993	440.11
Dow Jones Sustainability World Index ex Alcohol, Tobacco, Gambling, Armaments & Firearms	09/08/1999	12/31/1993	12/31/1993	434.70
Dow Jones Sustainability World Index ex Alcohol, Tobacco, Gambling, Armaments & Firearms and Adult Entertainment	07/01/2008	06/30/2008	06/30/2008	1000
Dow Jones Sustainability Emerging Markets Index	02/21/2013	09/30/2012	09/30/2012	1000
Dow Jones Sustainability World Enlarged Index	11/30/2010	09/30/2005	09/30/2005	1000
Dow Jones Sustainability World Enlarged Index ex Alcohol, Tobacco, Gambling, Armaments & Firearms and Adult Entertainment	11/30/2010	09/30/2005	09/30/2005	1000
Dow Jones Sustainability North America Index	09/23/2005	12/31/1998	12/31/1998	100
Dow Jones Sustainability North America Index ex Alcohol, Tobacco, Gambling, Armaments & Firearms	07/10/2014	04/12/2013	04/12/2013	125.77
Dow Jones Sustainability North America Index ex Alcohol, Tobacco, Gambling, Armaments & Firearms and Adult Entertainment	07/10/2014	04/12/2013	04/12/2013	111.45
Dow Jones Sustainability Europe Index	08/04/2010	09/28/2001	09/28/2001	100
Dow Jones Sustainability Europe Index ex Alcohol, Tobacco, Gambling, Armaments & Firearms	08/04/2010	09/28/2001	09/28/2001	100
Dow Jones Sustainability Europe Index ex Alcohol, Tobacco, Gambling, Armaments & Firearms and Adult Entertainment	08/04/2010	09/28/2001	09/28/2001	100
Dow Jones Sustainability Eurozone Index	08/04/2010	09/28/2001	09/28/2001	100
Dow Jones Sustainability Eurozone Index ex Alcohol, Tobacco, Gambling, Armaments & Firearms	08/04/2010	09/28/2001	09/28/2001	100
Dow Jones Sustainability Eurozone Index ex Alcohol, Tobacco, Gambling, Armaments & Firearms and Adult Entertainment	08/04/2010	09/28/2001	09/28/2001	100
Dow Jones Sustainability Nordic Index	11/30/2010	09/30/2005	09/30/2005	1000
Dow Jones Sustainability Asia/Pacific Index	01/16/2009	12/31/2003	12/31/2003	100
Dow Jones Sustainability Asia/Pacific Index ex Alcohol, Gambling	01/16/2009	12/31/2003	12/31/2003	100
Dow Jones Sustainability U.S. Index	09/23/2005	12/31/1998	12/31/1998	100
Dow Jones Sustainability Canada Select 25 Index	05/30/2012	09/30/2011	09/30/2011	100
Dow Jones Sustainability Australia Index	02/28/2006	10/29/2004	10/29/2004	1000
Dow Jones Sustainability Korea Index	10/20/2009	12/30/2005	12/30/2005	1000
Dow Jones Sustainability World 80 Index	08/26/2008	09/30/2002	09/30/2002	1000
Dow Jones Sustainability Asia/Pacific 40 Index	01/16/2009	09/30/2008	09/30/2008	1000
Dow Jones Sustainability Japan 40 Index	07/31/2009	09/30/2008	09/30/2008	1000
Dow Jones Sustainability North America 40 Index	08/29/2008	09/30/2005	09/30/2005	1000
Dow Jones Sustainability United States 40 Index	08/29/2008	09/30/2005	09/30/2005	1000
Dow Jones Sustainability Europe 40 Index	07/22/2010	09/28/2001	09/28/2001	1000
Dow Jones Sustainability Eurozone 40 Index	07/22/2010	09/28/2001	09/28/2001	1000
Dow Jones Korea 20 Index	10/20/2009	09/30/2009	09/30/2009	1000

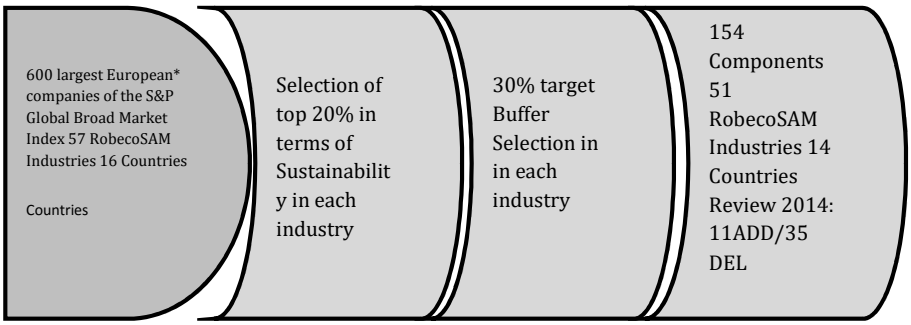
Source: S&P Dow Jones Sustainability Indices Methodology, 2015: 17-18.

4.3. Comparison of DJSI

In our research we compare DJSI Europe and DJSI North America (which consists of developed countries) with DJSI Emerging Markets.

The Dow Jones Sustainability Europe Index and respective subsets track the performance of the top 20 % of the 600 largest European companies in the S&P Global Broad Market Index that lead the field in terms of sustainability (Figure 3).

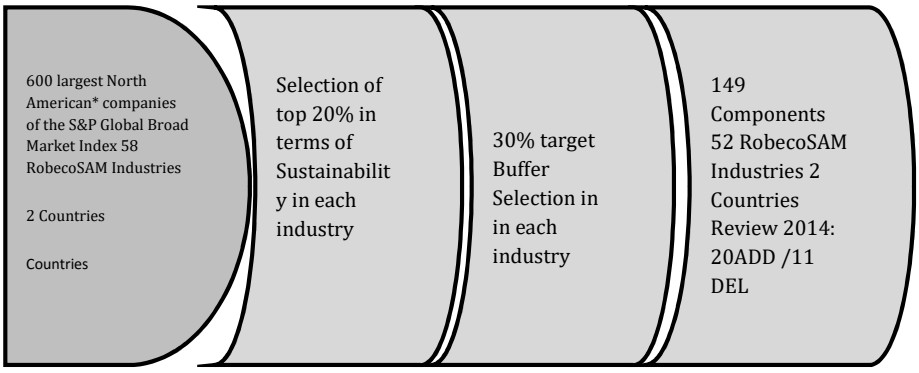
Figure 3. DJSI Europe Factsheets



* 600 largest Austrian, Belgian, Dutch, Danish, Finnish, French, German, Irish, Italian, Luxembourg, Norwegian, Portuguese, Spanish, Swedish, Swiss and UK companies
Source: http://www.sustainability-indices.com/index-values, 06/09/2015.

The Dow Jones Sustainability North America Index and respective subsets tracks the performance of the top 20 % of the 600 largest Canadian and United States Companies in the S&P Global Broad Market Index that lead the field in terms of sustainability (Figure 4).

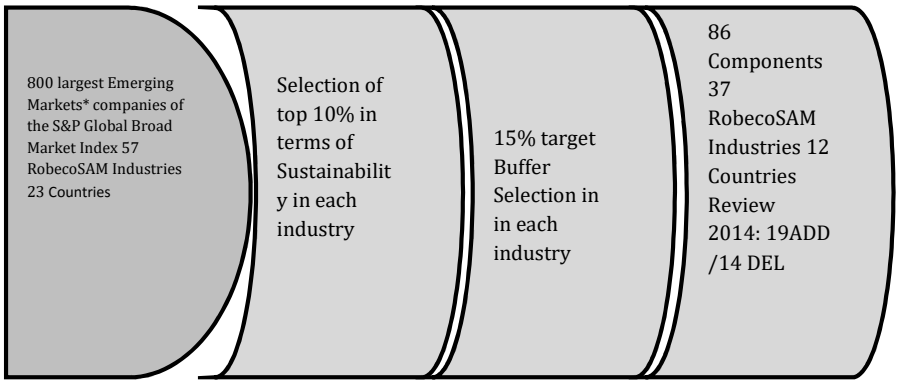
Figure 4. DJSI North America Factsheets



** 600 largest companies from Canada and the United States*
Source: http://www.sustainability-indices.com/index-values, 06/09/2015.

The Dow Jones Sustainability Emerging Market Index tracks the performance of the top 10 % of the 800 largest Emerging Markets companies in the S&P Global Broad Market Index that lead the field in terms of sustainability (Figure 5).

Figure 5. DJSI Emerging Markets Factsheets



** Brazil, Chile, China, Colombia, the Czech Republic, Egypt, Greece, Hungary, India, Indonesia, MALAYSIA, Mexico, Morocco, Peru, the Philippines, Poland, Qatar, Russia, South Africa, Taiwan, Thailand, TURKEY and United Arab Emirates.*

Source: http://www.sustainability-indices.com/index-values, 06/09/2015.

4.4. Sustainability in the Emerging Markets

Over the last ten years, in contrast to the economic conditions of developed markets in Europe and the United States, emerging market economies have evolved into a robust investment opportunity, increasingly attracting investment flows from developed markets.

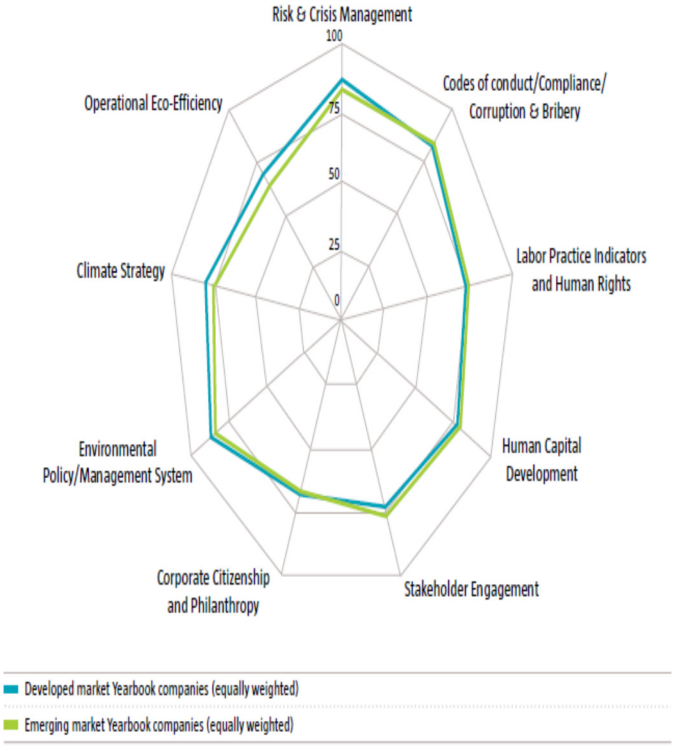
Two key drivers have influenced this shift in global asset allocation (RobecoSAM, 2013).

The first is a growing consensus among economic experts of the growth potential of emerging markets. At a time when most developed countries are going through a phase of fiscal consolidation and belt-tightening in the private sector, numerous emerging market economies are showing healthy public finances and increasing private consumption. Secondly, the political landscape in many emerging market countries has shifted over the past decade. As many move towards greater social and economic stability, investors have gained more confidence in the ability of emerging markets to grow over time (RobecoSAM, 2013).

From 2008 to 2013, the number of companies participating in the Corporate Sustainability Assessment (CSA) from emerging markets grew 27 to 89, representing an improvement in the participation rate from 4,6 % to 10,9 %, confirming the trend towards long-term thinking and improved sustainable practices that are becoming ever more present in this part of the World (RobecoSAM, 2014).

RobecoSAM sustainability data also shows that across a range of criteria, companies in the emerging markets are becoming more comparable to their developed market peers. Figure 6, compares the sustainability performance of emerging market companies included in the Sustainability 2014 Yearbook against that of the developed market Yearbook companies.

Figure 6. Comparison of sustainability performance of all emerging market companies against all developed market companies in the 2014 Yearbook



Source: RobecoSAM The Sustainability Yearbook 2014: 21.

From this diagram, it is evident that the difference in practices across social, economic, and environmental dimensions between the leading developed and emerging market companies is remarkably narrow. Particularly along social dimensions such as stakeholder management and labor practice indicators, leading emerging market companies have caught up with and even surpassed the standards of industrialized nations. It could be said that as many developing markets have fewer state-provided essential social services compared to developed countries, companies need to step in and provide basic services such as housing, meals and the like for their employees. In such an environment, addressing the social dimension of sustainability factors represent a natural first step towards addressing sustainability.

Although many positive things can be said about corporate sustainability in the emerging markets, it is clear that many of these companies still have some way to go in terms of improving their sustainability performance. Many companies in this group still lag behind developed market peers in terms of sustainability strategies along the environmental dimension. Exogenous factors such as the regulatory environment in which the companies operate are also important to consider. Even in the social dimension where emerging market companies on average are operating at a level close to their global peers, examples of disgruntled stakeholders and bad practice are never far away. It is clear that emerging markets still have some way to go in terms of increasing their sustainability performance.

4.5. Comparison of DJSI Emerging Markets and DJSI Developed Markets

In the research, daily total return data of DJSI from 9/30/2012 to 7/31/2015 is used for both emerging markets and for Europe and North America. The aim of this research is to show the differences and the relationships between the DJSI Emerging Markets and DJSI Developed Markets. First, Paired Samples t-Test is used and the results are obtained as follows:

Table 3. Paired Samples T-Test Results for Emerging Markets and North America

DJSI	Mean	N	Std. Deviation
Emerging Markets	1.045,2487	731	110,42212
North America	192,1830	731	22,55695

DJSI	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Emerging Markets & North America	853,06573	99,69662	3,74401	845,82653	860,30493	231,345	730	,000

H0: There isn't a significant difference between the mean of DJSI Emerging Markets and the mean of DJSI North America

H1: There is a significant difference between the mean of DJSI Emerging Markets and the mean of DJSI North America

Because p = 0,000 < 0,05 = α hypothesis H0 is rejected and H1 is accepted. There is statistically significant difference between the mean of DJSI Emerging Markets and the mean of DJSI North America; and the mean of DJSI Emerging Markets is higher than the mean of DJSI North America.

Table 4. Paired Samples T-Test Results for Emerging Markets and Europe

DJSI	Mean	N	Std. Deviation
Emerging Markets	1.045,8994	733	110,84344
Europe	155,1138	733	20,85046

DJSI	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Emerging Markets & Europe	890,78558	97,03494	3,58407	883,74930	897,82186	248,540	732	,000

H0: There isn't a significant difference between the mean of DJSI Emerging Markets and the mean of DJSI Europe

H1: There is a significant difference between the mean of DJSI Emerging Markets and the mean of DJSI Europe

Because p = 0,000 < 0,05 = α hypothesis H0 is rejected, H1 is accepted. The difference between the mean of DJSI Emerging Markets and the mean of DJSI Europe is statistically significant; and the mean of DJSI Emerging Markets is higher than the mean of DJSI Europe.

Table 5. Paired Samples T-Test Results for North America and Europe

DJSI	Mean	N	Std. Deviation
Europe	154,9814	728	20,82240
North America	192,0655	728	22,52888

DJSI	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
North America & Europe	-37,08419	9,25825	,34313	-37,75784	-36,41054	-108,075	727	,000

H0: There isn't a significant difference between the mean of DJSI North America and the mean of DJSI Europe

H1: There is a significant difference between the mean of DJSI North America and the mean of DJSI Europe

Because p = 0,000 < 0,05 = α hypothesis H0 is rejected and H1 is accepted. There is statistically significant difference between the mean of DJSI North America and the mean of DJSI Europe, and the mean of DJSI North America is higher than the mean of DJSI Europe.

The relationship between DJSI Emerging Markets, DJSI North America and DJSI Europe is analyzed. Table 6, shows the correlations between three markets.

Table 6. The Correlations Between Three Markets

DJSI		Emerging Markets	North America	Europe
Emerging Markets	Pearson Correlation	1		
	Sig. (2-tailed)			
North America	Pearson Correlation	,715**	1	
	Sig. (2-tailed)	,000		
Europe	Pearson Correlation	,555**	,912**	1
	Sig. (2-tailed)	,000	,000	

**Correlation is significant at the 0.01 level (2-tailed).

H0: Between the values of DJSI Emerging Markets, DJSI North America and DJSI Europe there isn't a significant relationship

H1: Between the values of DJSI Emerging Markets, DJSI North America and DJSI Europe there is a significant relationship

According to the correlation analysis between the values of DJSI there is a significant relationship. Because p=0,000<0,05=α hypothesis H0 is rejected, H1 is accepted.

Between the DJSI Emerging Markets and DJSI North America there is relationship, strong, and on the same direction (r=0,715).

Between the DJSI Emerging Markets and DJSI Europe there is relationship above the average level, and on the same direction (r=0,555).

Between the DJSI North America and DJSI Europe there is relationship, very strong, and on the same direction (r=0,912).

5. Conclusion

Both firms and investors in the World believe that, strategies that take sustainability criteria into account have the capacity to create long-term value.

To stay competitive in the global market, corporations both in emerging markets and in developed markets realized that sustainability considerations have a great impact on their performances.

Especially from 2008 to 2015, DJSI show that across a range of criteria, companies in the emerging markets are becoming more comparable to their developed market peers.

In our research, with paired samples t-test we see that there is a significant difference between the mean of DJSI Emerging Markets and DJSI Europe, DJSI North America which are Developed Markets. And also the mean of DJSI Emerging Markets is higher than the both DJSI North America and Europe.

In the research the difference between the two Developed Markets is also analyzed. It is found that the mean of DJSI North America is higher than the mean of DJSI Europe. It means that total revenue at North America is higher than Europe.

As also stated in the paper, over the last ten years, in contrast to the economic conditions of developed markets in Europe and the North America, emerging market economies have evolved and attracted investment flows from developed markets.

Over the past decade, many emerging markets have seen a move towards a more stable state. This has encouraged international investors, also corporations, to further explore opportunities in these markets. Governments of several emerging market states have also discovered the power and appeal of incentives such as tax incentives in order to attract investment in areas that it would like to encourage.

As correlation results analyzed, between the DJSI Emerging Markets and DJSI North America, the relationship is strong and on the same direction. It can be said that, the sustainability performances of corporations in emerging markets are in close relationship with North America. The relationship which is on the same direction is seen with Emerging Markets and Europe, and a strong relationship above the average level is defined.

A similar relationship is emerged with the DJSI between North America and Europe. Positive and almost full correlation between those developed markets can be summarized as that they are both global and have many multinational companies. It can be said that these markets progress their sustainability performances with similar processes and sources.

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