Peace Index of MENA Countries Since 1960

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Submitted to the
Institute of Graduate Studies and Research
in partial fulfillment of the requirements for the degree of

Master of Science
in
Economics

Eastern Mediterranean University
September 2018
Gazimağusa, North Cyprus

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ABSTRACT

The Global Peace Index (GPI) is a study to measure peace levels of different countries at a national and international level and rank 162 nations according to their "absence of violence" since 2007. It examines which countries are involved in ongoing national and international conflict while evaluating peace. 23 qualitative and quantitative indicators with auxiliary 32 economic and societal indicators are used. It does not just draw attention to violence and conflict, but also help us, mainly political leaders, to understand those and invest in a more peaceful world. Nevertheless, GPI is inadequate at some points. Firstly, GPI does not base on a proper theoretical model for peace so that the work is done without having a solid theoretical modelling. Second, is the absence of objective selection and weighting of the indicators being assessed an ad-hoc manner. Lastly, the series in use are not reproducible, in order that the GPI production is limited to a certain period of time. This study aims to bring out the significant determinants that feed the peace as well as conflicts in societies both internally and externally. Data series collected independently from the IEP are used in their original forms without transforming them into categorical forms. By this way, we developed objective weighted series, which makes it possible to reproduce GPI back in time until 1960. Non-parametric technique of Partial Least Squares Path Modelling is employed for producing GPI values. With the production of alternative series, this thesis explores the changes in peace level of MENA countries in the long run.

Keywords: Peace, Global Peace Index, Clustering, Principal Component Analysis, Partial Least Squares – Path Modelling.

ÖZ

Küresel barış endeksi (Global Peace Index-GPI) 162 ülkenin barış seviyelerini ulusal ve uluslarası seviyede ölçmek amacıyla başlatılan bir çalışmadır ve barışın tanımı ise "şiddet yokluğu" olarak kabul edilmektedir. Barışı değerlendirirken, devam eden ulusal ve uluslararası çatışmalara hangi ülkelerin dahil olduğu incelenmektedir. Çalışma Ekonomi ve Barış Enstitüsü tarafından 2007 yılında başlatılmış olup günümüze kadar devam etmektedir. Endeks hesaplamasında kullanılan 23 tane nitel ve nicel değişkenler beraberinde 32 ekonomik ve sosyal değişken ile desteklenmektedir. Yapılan çalışma yalnızca yaşanan şiddet ve kargaşalara dikkat çekmekle kalmayıp aynı zamanda siyasi liderler içinde bir "uyanış çağrışı" olup daha barışçıl bir dünyaya yatırım yapılmasına da yardımcı olur. Fakat çalışmanın yetersiz olduğu noktalar bulunmaktadır. İlk olarak, GPI barış için uygun bir teorik modele dayanmadan yapılmaktadır. Diğer bir eksiklik ise göstergeler için objektif seçimin yokluğu ve niyete mahsus bir şekilde değerlendirilmeleridir. Son olarakta GPI üretimi için kullanılan seriler tekrarlanabilir değildir. Bu çalışma hem iç hem dış kaynaklı, toplumlarda barışı ve çatışmaları besleyen önemli belirleyicileri ortaya çıkararak alternatif barış endeksi üretebilmektir. Değişkenler için objektif ağırlıklar kullanılarak Küresel Barış Endeksi'ni yeniden üretilebilir hale getirip 1960 senesine kadar gidebilen alternative seriler oluşturulmuştur. Alternatif serilerin oluşturulması için ise Kısmi En Küçük Kareler Yöntemi kullanılmıştır. Üretilen alternatif seriler ile MENA ülkelerinin zaman içerisinde barış seviyesinde gösterdiği değişmeler incelenmiştir.

Anahtar kelimeler: Barış, Küresel Barış Endeksi, Kümeleme, Temel Bileşenler Analizi, Kısmi En Küçük Kareler Yöntemi-Yol Analizi

To my mom, Sevim

for her manifest love,
her latent support,
her outer energy,
and her inner strength.

ACKNOWLEDGMENT

I would like to express my special gratitude to Prof. Dr. Ali Cevat Taşıran for guiding and supporting me over the years. He has set an example of excellence as a researcher, mentor, instructor, and role model. The door of his office was always open whenever I ran into a trouble or had a question about anything. He has been supportive of my career goals and worked actively to provide me with the protected academic time to pursue those goals. I am indebted to him for his helps.

I owe my most sincere thanks to Prof. Dr. Mehmet Balcılar and Assoc. Prof. Dr. Hasan Güngör for their undefined support to complete this process. I have to appreciate the limitless guidance and indulgence given by Assoc. Prof. Dr. Güngör throughout the year.

Furthermore, I would like to thank to Javad S.K for being “The Flash” for me. Thank you for being supportive with everything that I want to do. You were there when I turned my head around needing help. Having you as my number one cheerleader is such a blessing. And now, I'm cheering for you right back. Thank you for that kind of love and attention coming from you every day.

Last but not least, I am also grateful to my other family members and friends who in one way or another shared their support either morally or physically.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Chapter 1

INTRODUCTION

Humanity is confronting different types of challenges in today's world, and one of the biggest challenges is peace. The word of peace, which is often used every day, actually has more than the general meaning. It is not that easy to define it even though we can certainly experience it. Nevertheless, if we try to express it with a common meaning, it can be said that peace is a harmony in different groups of people, countries and a desire for all to have this experience of peace, but still it is more than what we think. Having peace or being part of a peaceful society surely has good effect. It protects the cultural values of people, improving the commitment of understanding and learning from differences or it resolves conflicts and builds trust among people and so on. As it is stated in Positive Peace Report 2016, “peace is an essential prerequisite because without peace it will not be possible to achieve the levels of trust, cooperation, or inclusiveness necessary to solve these challenges." However, peace cannot be held steady since it may change according to different time periods, incidents, or perception. In other words, peace is quite sensitive and difficult to keep constant. Currently, it is becoming more of an issue due to the increasing number of wars and conflicts all-around of the world. In a century, when the deaths and destructions began to be seen as normal, the word of peace gets more meaning and interest.

Peace is the presence or state of ambiance and order. It is a state where there is no war and fear. If we express the definition of peace in this area in a more serious and

professional way, we can talk about two types of peace; positive and negative peace. In this study, negative peace is the matter of the subject. Positive peace is defined as the structure or attitude that exists in a society. It is an environment that allows human beings to live with one another and excel since they can engage in different activities that add value to their lives. Positive peace can also be used to illustrate the progress taking place in a society based on the economic performance of an area (Carter, 2010). Positive peace is measured by the presence of a functional government and low corruption levels, equal distribution of resources and accessibility to data, as well as the relationship that a country maintains with the others.

On the other hand, negative peace is defined as the absence of fear or violence activities (Galtung & Fischer, 2013). A country experiencing negative peace has no violence and there are no organized military activities. However, if a conflict arises, then arbitrators manage the condition with an aim of restoring peace. Negative peace aims at restoring the ways things were prior to the occurrence of conflicts. However, such solutions form the basis under which nations prepare for eventualities like war breaking either in the short-term or in the long-term. Negative peace limits the exercise of justice since it imposes that things are right, whereas there are unresolved issues which might trigger war (Brauer & Dunne, 2012). The existence of tension in an area becomes the breeding ground for war since warring parties are unsatisfied with the current status of things. It means that conflicts were unresolved and negativity still exists in the society. Negative peace leaves people living in constant fear and uncertainties about the future due to the non-violent status of an area.

The Global Peace Index is an official work to estimate countries' peace levels at domestic and worldwide level. This effort is being announced as a report from 2007

up to now on a yearly basis. 163 countries are ranked based on the concept of "absence of violence" (Galtung, 1969). 23 different qualitative and quantitative variables are used for the index calculation. A country with the least index value alludes to the country at most peace in the region. The same evaluation applies to the international level where the lower overall index refers to a more peaceful country across the world. The GPI is also supported with a scope of thirty-two back up economic and societal variables.

GPI is quite important since it provides a broad picture of peace distribution around the world. It might be a useful tool to take attention of political leaders and make them to focus on observed conflicts and challenges. So that, without a proper measure and comprehension of the components which consolidate peace, is almost not possible to overcome observed conflicts and challenges. As it is clear that the importance of such work being done is close to the debate, it must be open to some certain improvements. It would not be wrong to say the shortcomings of the GPI at this stage.

Firstly, GPI does not base on a proper theoretical model for peace so that the work is done without having a solid theoretical modelling. While the concept of peace is described as an "absence of violence", the fact that the measurement of violence is not explicitly expressed brings the validity of the variables selected to uncertainty. The mentioned thirty-two indicators were first introduced by the Institute for Economics and Peace in 2011 in a report called "Structures of Peace" to define the factors causing a more harmonic society. The report also investigates the dependency of GPI and those thirty-two indicators. These variables are gathered together under eight different categories, however the system portrayed in the report does not go for isolating causality; rather it depicts the 'optimum' condition for peace to be achieved. Inside

this system, the direction of causality is not always constant as it may head to either way. Hence, a new model needs to be defined to theorize peace and its index.To give the second and the third shortcoming together, one is the absence of objective selection and weighting of the indicators being assessed in an ad-hoc manner, and the series in use are not reproducible. A board of peace specialists has selected a number of twenty-two indicators that are thought to reflect the absence of violence or existence of violence. All scores for each variable are banded either on a scale of 1 to 5for qualitative indicators or 1 to 10 for quantitative data. The quantitative data have been converted also to a 1 to 5 scale for a simple comparison before the computation of final index. It is thus almost impossible to reproduce the same series using the various weights given by the panel members so that the GPI production is limited to a certain period of time. These three shortcomings have been tried to be solved by Taşıran through the years 2011-2015.

We can define the thesis in terms of two goals. Firstly, this thesis is methodologically innovative in the ways that seeks to understand the important factors that can be used to theorize GPI and figure out some alternative indicators which are thought to have a significant effect on peace. In other words, it aims to bring out the significant determinants that feed the peace as well as conflicts in societies both internally and externally. Unlike the weighting is done by IEP, data series are used in their original forms without transforming them into categorical forms. Furthermore, some additional indicators are used in the production of our dataset such as energy imports as a % of energy use, freedom of foreign movement, oil reserves or share of democracies in the region. Afterwards, we developed objective weighted series, which makes it possible to reproduce GPI back in time until 1960. A non-parametric technique of Partial Least

Squares Path Modeling (PLS-PM) is employed for producing GPI values. As for the peace scores generated, it must be stated that GPI values are expressed as an index which has more positive meanings with decreasing numbers. The usual and more logical expectation is the GPI values should increase with an increasing level of peace. Accordingly, as a part of this study, scores are reversed. So, all the series are made in a scale of very low to very high level of peacefulness.

Secondly, what is intended to be done for MENA countries in this thesis is to show how peace level changes over time in this region. Competitive environment which raised to be able to have cheap and abundant raw materials as a result of the rapid expansion of the industry in Europe since the late 19th century has laid the groundwork for the emergence of colonialism in world politics. From the beginning of the 20th century the accelerating colonial race has led to political and military initiatives aimed at keeping the wealthy countries from the spatial and economic standpoint in terms of needed rich energy resources such as oil and natural gas (Deniz, 2013). Since then the Middle East and North Africa have been hosting the struggle of dominance of powerful states and experiencing many types of conflicts. With those reasons, the region does not lose its importance. So that promoting peace and security in the region is quite important. In this thesis, it is aimed to examine the peace developments over time in MENA region countries by using the alternative GPI series starting from 1960 to 2016.

The plan of this thesis is as following: Chapter 2 discusses the peace concepts and its definitions in some other sciences with the importance of peace measurement and other empirical works done on the subject. Section 3 includes the construction of the GPI. It also gives place to some critiques about GPI. Additionally, initial findings of the research are presented here. Section 4 takes the methodology and analysis of Partial

Least Squares Path Modelling of the GPI. Section 5 reports the determinants of the internal and external peace using PLS-PM model estimates and reports the results. The last section concludes the study.

Chapter 2

LITERATURE REVIEW

2.1 Peace Definitions in Other Sciences

It is difficult to define the concept of peace as it applies to many theoretical terms in different areas. First thing comes to mind is the psychological peace that is the positive wellbeing and feelings that an individual has despite the negative external forces that may interfere with the happiness of an individual. But this is not a definition we will base on in this study. In the broadest sense, peace definition is more than that. There are many different patterns of peace. A modern pattern to be seen in order to identify the peace can be accomplished by looking at different types and levels of actors in the international system. Throughout this frame, peace can be understood of living in a secular society, in the state, or at the institutional, regional and international level, and in a related economic, political or social ideology. This recognizable development of peace lays on a long line of forerunners identified with social, cultural, political, economic or religious discussions about which kind of system(s) may not sustain peace. Hence, peace is seen to have a certain and objective mind or identity that gives a recipe or a particular procedure for accomplishing a specific result. Those might be reproduced from certain socio-economic and political frameworks varying from socialism, social justice models, democracy, and free trade and neo-liberalism (Richmond, 2006).

There are three situations in world politics; war, absence of violence and peace (Utku, 2007). From the pioneer researcher of the discipline of peace studies, Johan Galtung introduced an important distinction by introducing the concepts of positive and negative peace. Galtung, who deals with the two different perspectives of peace, defines negative peace as nonexistence of direct violence or so called the "absence of violence" rather than the elimination of war or conflict. The definition of negative peace in this way is theoretically regarded as a weak and highly European-centered approach (Wibeng, 1988). French intellectual Raymond Aron (1962) defines the negative peace as the deferral of the struggle between political units in a long or short term. His approach is the most common understanding of peace in the context of conventional political science and international relations.

Contrary to realistic approaches like Aron's (1962), the concept of positive peace emphasizes the understanding of social justice that guarantees the harmony of the states. By definition of Galtung (1990), it includes the nonexistence of social injustice and violence, in particular the structural violence, by extending the concept of peace as a social goal. The structural violence actually refers to the violence that is caused by the political pressures and poverty. Politically, peace is the absence of war in a country (Diehl, 2016). The political stability status determines the status of peace in a country. A country where political war is frequent is unstable since people live in constant fear of violence erupting and disrupting their lives.

In addition to these, the term of democratic peace that entered the literature in the 1980s expressing the situation that they are more likely to get away from conflict in relation to each other. According to Michael Doyle (1986), peace is related to the issue of establishing political orders with legitimate governments all around the world.

Therefore, it is suggested that democratic regimes are more peaceful than authoritarian and repressive regimes due to their internal political systems. In another point of view of inter-state relations, word of peace is used as a synonym of treaty. For example, order of Westphalia which is an important point in the beginning of the international state system is called as Peace of Westphalia (Akgül, 2015).

A repetitive example in the conceptualization of peace lies in the demonstration of characterizing its inclination by particular performers. This speaks to peace and a subjective or between subjective idea, dependent upon conducting negotiation and domination. An essential type of this kind of conceptualization of peace lies in the notable structure of a Victor's Tranquility, where the question of war is a peace on the terms of the victor as Sun Tzu (2003) stated. Numerous realists would contend that peace is reproduced from a definitive military annihilation on the front line, and rests upon the part of the Victor in setting up a structure for a peace to its greatest advantage, however maybe with a small amount of legitimacy. It can be said that peace is regularly connected with militarism.

Lastly, the economic peace is the ability to conduct business with ease and without external pressure negatively influencing the trade activities (Höglund & Kovacs, 2010). An economy thrives better if the citizens or locals can engage in legal activities without disruptions from war.

2.2 Measuring Peace and the Global Peace Index

Townsend et al. (2016) propose a method for systematic measurement of the macro system in Northern Ireland that ensures the assessment of the indicators of low-level violence as well as positive relations. In their proposition, the authors found that the newspaper data were comprehensive regarding the intergroup relations than the other macro-level measurements in the country. The newspaper coding contributes insights about the macrosystem that are different from other data sets. The authors insist that the approach incorporates both the positive and negative indicators of intergroup associations. Such ability ensures the assessment of the changes in the macrosystem over a particular period. Furthermore, they argue that the existing data sets miss such essential aspects of the macrosystem as violent activity, protests, political inflexibility, and historical reflections. Their study demonstrates that newspapers contain relevant information on the state of peace in a country at a particular time of the year. The data allow for a thorough understanding of the transformation of conflict in the macrosystem. However, an analyst must ensure that the information is representative of the political climate especially in cases where the media is controlled by the state.

Forau and Chand (2016) argue that existing literature measures peace in contradiction to violence. Therefore, the measurement of peace is an indirect process and indicates a need for a direct measure. The Peace Perception Index (PPI) represents a direct measure of peace. The attainment of a PPI of 88% of the level of peace before the conflict indicates significant progress. The authors moreover argue that human perceptions on the level of peace following the implementation of a peacekeeping mission provide insight on the actual peacefulness of an area in a post-conflict

situation. Therefore, the people's perception is a direct approach to measuring the levels of peace attained after peace building missions.

Yusuf, S. (2018) argue that encouraging the community members to develop their indicators of change assist to express the local understandings of peace. The reliable measures of peace include the attitudes of people towards themselves and others. Community-based planning has a potential to change the community attitudes. Therefore, participatory monitoring is an alternative technique of measuring peace.

The idea of measuring peace was born in 2007 by global experts in peace. The experts, liaising with institutes in the world that study and uphold peace, came up with ideas on ways to rank the status and quality of peace in different countries in the world. The Economist Intelligence Unit, which was one of the major sponsors of the GPI reports, partnered with the Institute for Economics and Peace to prepare the first statement describing the levels of peace in various nations in the world. The study provides information about countries articulating the violence status as well as the ability of economic activities to thrive. Steve Kilelea, an Australian entrepreneur, is the one coming up with a form of ranking the peace status of different countries. The reports are released annually and factors in the military presence in a country, the security and safety levels from the societies' perception, and the presence or absence of internal conflicts. The factors that determine the level of peace in a country are both internal and external since each nation's peace stability depends on the decisions that leaders in the area make as well as those of the neighbors (Barash & Webel, 2017). For instance, the militaries might be stationed in other countries to maintain peace. On the other hand, the societal perception towards the peace levels in a country shows whether the citizens of a nation feel secure in the region.

2.2.1 The Global Peace Index

The Institute for Economics and Peace (IEP) which has the responsibility of analyzing peace and accessing its effect on the economy produces annual reports. The aim of each report is to change the perception that people of the world perceive peace. It affirms that peace is tangible since it affects the way people live their lives and relationships with each other as well as the conduct of business activities. The report also provides the trends and changes in the global peace. For instance, it shows whether the global status of peace reduces or increases within one year while citing the factors that lead to a positive or negative change. According to IEP, the global peace levels have reduced by 2.14% within the last ten years. This means that most countries in the world have had instances where war and violence have erupted. Levels of terrorism have also increased due to the external attacks from enemies. Some of the wars have been fuelled by political activities where poor leadership has heightened the existence of conflicts between governments and opposition parties.

According to the Global Peace Index (2018), peace is measured on the prevalence of business activities, prosperity, and political status of a nation. This is because peace helps provide a conducive environment where people can live in harmony with each other, making it possible for them to conduct business. Progress is reported in areas that have high levels of peace since citizens in such countries have an enabling environment where they can engage in income generating activities, all of which strengthen the economy. A peaceful environment also attracts external investors, some of which have large amounts of resources they would like to inject into an economy. Projects from investors who come from other countries create employment opportunities for the locals in the host nation.

The subject of peace has attracted the attention of nations who have developed systems and strategies in the way they approach the sensitive topic (Diehl, 2016). Leaders in the world rely on the GPI to understand the way societies work as well as initiate business and trade relationships with others. This is because countries rely on a peaceful environment to engage in projects that help stabilize the economy of nations. Furthermore, the peace status of nations acts as a basis through which leaders in the country initiate changes (Index, 2015). For instance, countries perceived to have low levels of peace have little or no visitors, which affect the tourism industry in such nations. The GPI report also indicates progress in nations that had been considered to have low levels of peace.

2.3 Importance of Measuring Peace

Measuring peace is important as it indicates the prevalence of peace in different countries in the world (Mac Ginty, 2013). Measuring peace examines the status of countries while drawing the economic value of the condition. It expounds whether tensions and conflicts exist in different parts of the world while examining the implications of such eventualities in a country. Brauer & Dunne (2012) state, that people have different perceptions towards peace. This is because countries interpret peace and justice differently. Peace is important as it enables people to have their needs fulfilled in both the regional and national levels. The needs vary ranging from economic, political, social, or cultural, amongst others. For instance, citizens in a country that have a stable environment where peace prevails are most likely to maintain healthy relationships amongst each other, while respecting the differences that exist between them.

The GPI report is important since it shows the trends taking place in the world with reference to peace (Bjarnegård & Melander, 2011). The trends are indicated using the different domains in the GPI which include the safety and security, ongoing conflict, and militarization. The trends expound and explain the changes taking place in the different countries based on the leadership and government strategies to improve the nations. For instance, a country may have an increase in the armed conflicts due to the autocratic government leading to more conflicts internally, while another may have a democratic leadership, which may trigger high levels of militarism (Igbuzor, 2011). The breakdown of the peaceful levels in countries enables the governments to make critical decisions in rebuilding a nation to achieve high levels in the next report. In as much as rebuilding peace can take many years, the GPI report highlights the efforts that many countries make annually (Barash, 2017). The GPI Report also highlights that the governments of different countries strive to ensure that peace prevails despite the risk of being targeted by terrorists. For instance, the 2018 GPI report indicates that terrorist acts have increased over the past ten years from less than 9,000 to more than 30,000 in the world.

Measuring peace is relevant as it indicates the economic effect of violence on the regional and global economy (Index, 2012). The presence or absence of peace in a country has a high probability of affecting the economic status of the neighbouring nations. This is because countries engage in regional trade, meaning that if one nation is engaging in violent activities, then the flow of goods and services if affected. Furthermore, the internal and external security status of a country is affected by the presence of war in an area (Mac Ginty, 2016). The effects of war are also felt in countries that engage in violent activities as well as the neighbouring nations since it

takes time to restore the economic status of a region (Index, 2014). For instance, it may take time for the country to establish trade relationships. Another economic effect of violence is based on the large amounts of the national budget that countries engaging in wars have to spend per year. If a country was in peace, the funds allocated to funding the violence would be used in developing the nation's economy and social infrastructure.

Chapter 3

THE GLOBAL PEACE INDEX

3.1 The Construction of the Global Peace Index

A number of twenty-three quantitative and qualitative indicators are employed to estimate the GPI according to the description of peace, “an absence of violence” by Galtung (1969). These indicators are separated into three categories, which are ongoing domestic and international conflict, social safety and security, and militarization. Measurement is based on a scale of 1 to 5, whereby qualitative indicators are banded into five groupings and quantitative ones are either banded into ten groupings or rounded to the first decimal point.

3.1.1 Ongoing domestic and International Conflict

- Number and duration of internal conflicts
- Number of deaths from external organized conflict
- Number of deaths from internal organized conflict
- Number, duration and role in external conflicts
- Intensity of organized internal conflict
- Relations with neighbouring countries

3.1.2 Societal Safety and Security

- Level of perceived criminality in society
- Number of refugees and internally displaced people as a percentage of the population
- Political instability
- Political Terror Scale
- Impact of terrorism
- Number of homicides per 100,000 people
- Level of violent crime
- Likelihood of violent demonstrations
- Number of jailed populations per 100,000 people
- Number of internal security officers and police per 100,000 people

3.1.3 Militarisation

- Military expenditure as a percentage of GDP
- Number of armed-services personnel per 100,000 people
- Volume of transfers of major conventional weapons as recipient (imports) per 100,000 people
- Volume of transfers of major conventional weapons as supplier (exports) per 100,000 people
- Financial contribution to UN peacekeeping missions
- Nuclear and heavy weapons capability
- Ease of access to small arms and light weapons

The country with the highest index value is defined as the most warlike country and vice versa. Every weighted variable depends on the significance related to peace. This

significance is measured by a rating of one to five points where a score of 1 demonstrates the less destructive to a phase of peace and a score of 5 represents the highest level of harm. By practicing a product-moment correlation analysis, it is aimed to investigate the connection between the GPI and economic and societal variables. Those variables incorporate eight courses as follows: democracy, transparency, international openness, demographics, regional and international framework, education, culture, and material well-being.

3.1.4 Weighting the index

The first year that the GPI was constructed, in 2007, the panel members, mentioned earlier in this paper, assigned different weights for each indicator upon on the importance of each on a scale 1 to 5. After two sub-component weighed variables which are given below is measured from a set of GPI indicators:

1. A measure of how at peace internally a country is;
2. A measure of how at peace externally a country is (its state of peace beyond its borders).

The weights used for internal and external peace are entirely panel members' decisions followed by robust debate. So that in order to measure the internal peace weight of 60% is applied while it is 40% for external peace. The reason behind the heavy weight given to internal peace is said as high internal peace is to cause lower external conflict. The weights have been revised by the panel experts before every GPI report is prepared.

1) Internal Peace (Weight 1 to 5)

- Perceptions of criminality (3)
- Security officers and police rate (3)
- Homicide rate (4)
- Incarceration rate (3)
- Access to small arms (3)
- Intensity of internal conflict (5)
- Violent demonstrations (3)
- Violent crime (4)
- Political instability (4)
- Political terror (4)
- Weapons imports (2)
- Terrorism impact (2)
- Deaths from internal conflict (5)
- Internal conflicts fought (2.56)

2) External Peace (Weight 1 to 5)

- Military expenditure (% GDP) (2)
- Armed services personnel rate (2)
- UN peacekeeping funding (2)
- Nuclear and heavy weapons capabilities (3)
- Weapons exports (3)
- Refugees and IDPs (4)
- Neighbouring countries relations (5)
- External conflicts fought (2.28)
- Deaths from external conflict (5)

3.1.5 Qualitative Scoring

In the GPI measurement, not only qualitative but also quantitative variables are used. As it can be guessed, the measurement of such indicators is not very easy. Production and evaluation of seven quantitative variables, level of perceived criminality, intensity of organized internal conflict, political instability, likelihood of violent demonstration, level of violent crime, political terror scale and relations with neighbouring countries, are carried out by the Economist Intelligence Unit's Country Analysis Team. Moreover, in case of missing data for quantitative indicators, the team is filling them by themselves. All the process relies on experts' analysis and discussions, and the created data are not provided outside the institute.

3.1.6 Economic and Societal Indicators of GPI

3.1.6a Democracy and transparency

- Electoral process
- Functioning of Government
- Political participation
- Political culture
- Civil liberties
- Corruption perceptions
- Women in parliament
- Gender inequality
- Freedom of the pres

3.1.6b International openness

- Exports + Imports as a % of GDP
- Foreign Direct Investment (flow) as a % of GDP
- Number of visitors as a % of domestic population
- Net migration as a % of total population

3.1.6c Demographics

- 15-34-year-old males as a % of adult population
- Gender ratio of population: women/men

3.1.6d Regional & international framework/conditions

- Extent of regional integration

3.1.6e Education

- Current education spending (as a % of GDP)
- Primary school enrolment ratio (% Net)
- Secondary school enrolment ratio (% Net)
- Higher education enrolment (% Gross)
- Mean years of schooling
- Adult literacy rate (% of population over the age of 15)

3.1.6f Culture

- Hostility to foreigners/ private property
- Importance of religion in national life
- Willingness to fight

3.1.6g Material well being

- Nominal GDP (US$PPP bn)
- Nominal GDP (US$ bn)
- GDP per capita
- Gini coefficient
- Unemployment %
- Life expectancy
- Infant mortality per 1,000 live births

3.2 The Critiques about the Global Peace Index

The Global Peace Index (GPI) has been criticized for its reliability based on different arguments. The GPI report is criticized since it is hard to quantify peace or define the way different countries in the world interpret peace. Furthermore, determining the status and level of peace in a country is dependent on different variables like the economic and political status of the nation (Estes, 2014). Moreover, the report released about the peaceful status of a country may change without notice. For instance, a country that had acts of violence may stop, rendering it peaceful while another that was considered peaceful may have war erupting (Megoran, 2011). Therefore, the change in variables affecting peace in a country may reflect a country as having more or less peace.

Another criticism come from Keith Gottschalk (2015), a political scientist from Western Cape University. Gottschalk states that it is appropriate to use the rule of law and other democracy perspectives in measurement, but doubts the weights given to them. With this argument, he is giving South Africa as an example. It raised some questions seeing the South Africa placing as the 136th country out of 162 countries while Equatorial Guinea is ranked at 81st. South Africa is ranked far behind Equatorial Guinea where protests are suppressing with a dynastic dictatorship. But it is presented as more peaceful than a country which has “rumbustious democracy” with daily local protest and revolt. And here the problem is weighting the indicators which is not overtly examined in any of the GPI reports. This concrete situation can be shown not only for South Africa but also for other countries. For example, Djibouti, an authoritarian country, places at 34th or the Gambia with a dictatorship places at 37th while a democratic country is placed lower than them.

Another important critique is the use of many different variables which do not always move in the same direction or to say they are not always unidimensional. (Peace Reflections, 2016) To illustrate, military expenditures may not lead to a conflict. On the contrary, it may be used to prevent it. Or as another example, the indicator of the number of the internal security officers and police per 100.000 people might either be a tool of pacification of conflict-violence or be the violence itself.

One of the critiques of GPI is that it does not indicate the position that countries have towards violence against children and women (Backer, Bhavnani, & Huth, 2016). Women and children are some of the vulnerable groups in the world. They are most affected by the absence of peace in an area since their husbands and fathers are expected to take part in military activities. Women are expected to fend for their children and lead families without the help of their male counterparts. Further, a country might have high levels of peace but the women might not have equal opportunities like the men. In addition, violence towards women in marriages might be high in some countries (Barash, 2017). For instance, in some countries, women and children are still exposed to outdated cultural practices like female genital mutilation and early marriages, while in some nations the killing of female children is highly practiced due to the attitude attached to male kids.

The Philippines President, Duterte, criticized the GPI report released in 2017 by stating that the analysts who collected data from the country failed to look at the developments that had taken place in the country due to increased peace levels. A justification for the poor rating that the country had received was due to the locals' perceptions and arguments towards their security levels. Most stated that the security levels in most urban and rural areas were low and thousands of people had lost their lives. The

President criticized the report by stating that it was characterized by political influences which aimed at painting a bad image of the country to the world. This illustrates that most leaders or governments perceive the GPI report as wrong if it fails to reflect the status of the country in light of what the political leaders think of their nations. However, analysts working with the GPI rely on different metrics like the economic status of the locals when drawing conclusions about a country. The use of diverse metrics in determining the status of a country increases the reliability of the report.

3.3 Initial Findings

As our previous experience, the investigations we have done before have resulted in the points we have claimed to be true. Purpose of the study was to find out the important factors to theorize Global Peace Index. By using objective weighted indicators, we found that most of the indicators are not important for measuring peace. However, democracy and politics related indicators were found important. Also, it was concluded that the variables that are considered sufficient for peace measurement actually show the level of development of the country. In the end, the alternative series could be created for the years in which the study was conducted, between 2007 and 2015 (Taşıran & Tunç, 2016).

Chapter 4

DATA AND METHODOLOGY

The aim of this section is to investigate the real factors of the Global Peace Index. Firstly, it is used to reveal the significant determinants of the GPI. In other words, those factors which have significant effect for the determination of peace are found out. Followed by this, the selected factors are used to measure the scores of related latent variables, and ranked the countries according to their peace score in the end. In other words, we tried to generate some alternative GPI series by using a non-parametric technique which is called Partial Least Squares Path Modelling (Wold, 1980). It helps us to overcome the related theoretical uncertainty problems and prediction problems. Apart from this, PLS-PM is a popular method which is often used to "calculate indices to quantify some key concepts or notion of importance" (Sanchez, 2013)

4.1 The Data and Variables

In the official study which is conducted by Economist Intelligence Unit (EIU), mainly twenty-three qualitative and quantitative indicators are used for the calculation of the Global Peace Index. Additionally, thirty-two economic and societal indicators are adopted as back up indicators to examine the relationship with GPI by using a correlation analysis. The main indicators are grouped into three which are ongoing domestic and internal conflict, societal safety and security and militarization. Followed by this, potential determinants are separated into seven different categories; levels of democracy and transparency, international openness, demographics, education, culture

and material well-being. The level of perceived criminality in society, homicides rate, military expenditures to adult literacy rate, life expectancy, number of armed personnel etc. are some examples of the variables used to concretize the information on drivers of peace. Definitions for each variable used are presented in the Appendix A.

As it is stated earlier in this study, assessment of the many of the qualitative indicators are made by the Economist Intelligence Unit's analysts in their own framework of perception or where the data are not complete analysts make estimation for the gaps, and no data are available for these evaluations. It can be said that attaining those qualitative indicators or any substitutes are almost impossible. In this study, we created our own dataset with various macroeconomic and political variables that can be used retroactively in time without the need of giving subjective weights to each variable.

All the indicators are gathered from different sources with focus on many aspects. Economy and growth, development, public sector or education related data such as GDP per capita, foreign direct investment, homicide rates, infant mortality or adult literacy rate are collected from World Bank-World Development Indicators. The ones representing democracy like civil liberties index, electoral process or freedom of expressions are drawn from Varieties of Democracy (V-Dem). The data proving the arms import and export are taken from Stockholm International Peace Research Institute (SIPRI). Moreover, battle related data set are provided by Uppsala Conflict Data Program (UCDP). Lastly, for the political violence and terror which is initially developed by Freedom House, we used the Political Terror Scale (PTS) scores based on U.S. State Department measurement.

However, not all the collected data could be used for our analysis for various reasons. With the purpose of making objective and high-quality work, data series are used in their original forms without transforming them into categorical forms as it is made by EIU. At this stage, facing missing values in large datasets for many variables is inevitable. In this case, one of the most commonly used methods is the Multiple Imputation by Chained Equations (MICE). Multiple imputation, which was introduced in the 1970s, showed a great success with analyses applied to various areas (Mackinnon, 2010). Here in this study, those variables with data set of twenty percent (20%) and over missing values are not taken into consideration. Imputation for a data with missing values over 20 percent, the rate accepted as a rule of thumb, could lead to a bias in the data (Hardt, Herke, and Leonhart, 2012). By this way, those data series lacking some values, less than 20 percent, is imputed by Taşıran, 2018. In overall, a dataset with 29 different variables for 162 countries in the period between 1960 and 2016 is produced.

The variables included in our dataset are given in the codebook (Appendix A) together with their definitions and blocks they are assigned. The variables in the Table 1 are the ones that could be used in the analysis for the given year intervals according to data availability. Those variables shown in bold are found important in the measurement of peace which is provided separately in Table 3. The indicators included in our dataset but not given in this table were excluded from use for two different reasons. Either it wasn't possible to find the values of some of the indicators retrospectively, or there were missing values in some datasets more than 20 percent.

Table 1. Variables used for different time periods

1960	1970	1980	1990	2000	2007	2016
civlib	**civlib**	**civlib**	armpers	armpers	armpers	armpers
electpro	**electpro**	**electpro**	**civlib**	**civlib**	**civlib**	**civlib**
expgdp	expgdp	expgdp	**electpro**	**electpro**	**electpro**	**electpro**
freemov	fdigdp	fdigdp	engimp	engimp	engimp	engimp
freexp	**freemov**	**freemov**	expgdp	expgdp	expgdp	expgdp
gdpcur	**freexp**	**freexp**	fdigdp	fdigdp	fdigdp	fdigdp
gdppc	gdpcur	gdpcur	**freemov**	**freemov**	**freemov**	**freemov**
impgdp	gdppc	gdppc	**freexp**	**freexp**	**freexp**	**freexp**
infmort	impgdp	impgdp	gdpcur	gdpcur	gdpcur	gdpcur
nlifexp	**infmort**	**infmort**	**gdppc**	**gdppc**	**gdppc**	gdppc
	nlifexp	milex	impgdp	impgdp	impgdp	impgdp
	pts_s	**nlifexp**	**infmort**	**infmort**	**infmort**	**infmort**
		pts_s	milex	milex	milex	milex
		wompp	**nlifexp**	**nlifexp**	**nlifexp**	**nlifexp**
			pts_s	**pts_s**	oilres	oilres
			refpop	refpop	**pts_s**	**pts_s**
			wompp	**wompp**	refpop	refpop
					regdem	regdem
					wompp	**wompp**

4.2 Component-based Predictive Path Modelling

There are plenty of studies for developing the Partial Least Squares Regression, but it can be said that it is first developed by Herman Wold in 1980, Uppsala University. Partial Least Squares Path Modelling is a second generational estimation approach. The focus is making prediction, not confirmation. It is a powerful research tool for causal prediction analysis which is highly applicable in exploratory research models by testing and validating the sample.

PLS Regression is a multivariate statistical method which allows us to work with more than one dependent and explanatory variable. This method includes both partial least squares and multiple linear regression. With another expression, a matrix of regression equations instead of just one linear regression equation where the predicted values in one regression equation might be the predictor values in another. And we are estimating them all simultaneously. It is much like a regression which is simply trying

to maximize the variance in the predicted variables where the main goal is to show how the dependent variable is explained by their block of independent variables. It operates on a variance basis and helps to overcome the related theoretical uncertainty and prediction problems. Another most common application of PLS is that it is the calculation of indices to quantify some key concept or notion of importance. PLS Path Modelling avoids the use of any derived data, and modelling on causal relation. Rather, the "data are treated just as a dataset" (Sanchez, 2013) the components are chosen according to how the variance is expounded by them among the explanatory variable and between the explanatory and dependent variables. Latent variables are obtained by size reduction applying singular value and Eigen value decomposition. After then, latent variables are used as new explanatory variables in the regression analysis.

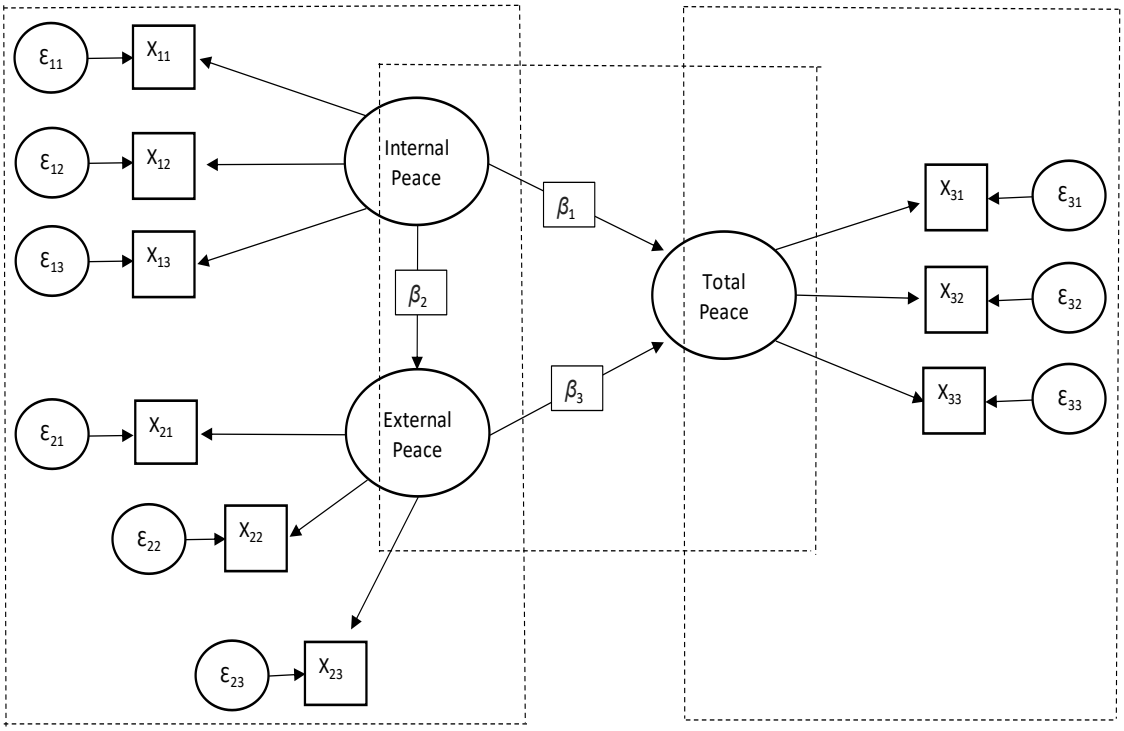


Figure 1. Schematic Representation of a PLS Path Modelling

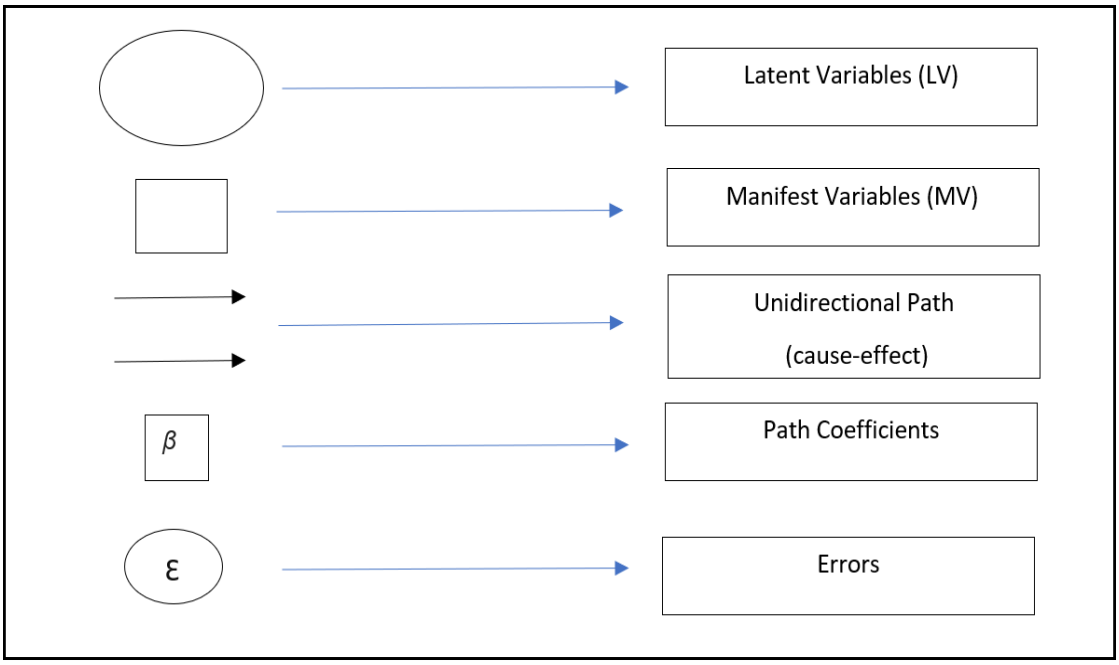


Figure 2. Drawing convention of PLS Path Modelling

4.3 The Methodology

4.3.1 Concept of Latent and Manifest Variables

Latent variables are unobserved variables. The roots of latent variables go back to Spearman seminal work in 1904 on factor analysis which is the first latent variable model to be used widely in psychology and social sciences. Because of the relationship of factor analysis with initial studies of human intelligence, the truth remains that several key variables in a statistical model are on many occasions been unobserved leading to controversy and contention. Indeed, latent variable is an essential concept derived from psychological sciences and then exported to the statistical sciences. As software tools and computer technology continue to improve in its usage, will have the chance to specify and test more complicated latent variables models that reflect better realities of the collected data which carrying out peace research.

On the parlance of the modelling (latent variable modelling), manifest or observed variables refer to those variables for which observable, direct scores are readily available. For instance, in a model of latent variable for measuring peace (the latent variable of interest), the full range of number of security officers employed, the amount of money invested by the government, and international agencies have invested in the security docket, the number of peace forums that are held per months, the number of regional blocs a country is a member are used as manifest variables can be used as manifest variables. The observed or manifest variable can either be continuous or discrete as well as latent variables.

Therefore, latent variables together with the several types of observed variables assist in defining a broad classification of the models (latent variable). The different cases of latent variables traditionally have been considered as disparate entities and existed in a variety of disciplines. For instance, research on democracy testing has depended heavily on item response theory, where modelling is in social sciences has seen the use of structural equation modelling and factor analysis. Basing on a contemporary perspective, irrespective of the types of latent and observed variables, it is possible to construct a latent variable model properly and estimate it provided that the modeller specifies fully the association between the latent variables and the observed variables which is the measurement model and the association that exists among the latent variables or so called the structural model.

Here in our study, showing the level of peace in a country happened to obtain a discrete ratings (categorical) on the peace level in a certain country. Latent variable model for this data set would have three latent variables which are internal peace, external peace and total peace. However, it is better to specify the structural model; in such a way there are correlations between those three latent variables and estimating the correlation coefficients from the data set provided, showing clearly the level to which there is a shared variance.

$$Total\ Peace = f(Internal\ Peace,\ External\ Peace) \tag{1}$$

$$Total\ Peace = f(b_1 * Internal\ Peace\ +\ b_2 * External\ Peace) \tag{2}$$

4.3.2 Notation

Let's have the assumption that there are p indicators observed on n observations (countries) and p indicators can be sub-categorized into j-blocks (Internal, External and Total peace). The notations below will be applied:

X represents the data sets containing p variables and n observations. X is a matrix having dimension n*p. X can be sub- categorized into j, mutually exclusive blocks including X_1, X_2, …., X_J, and each block X_j contain k variables; X_{j1}, ..., X_{jk}. The estimation or approximation of latent variables, also referred to as $\widehat{LV_j} = Y_j$ usually denotes the score (Henseler, 2013).

4.3.3 Structural (Inner) Model

There are three things to put into considerations in inner relationships:

1. Linear relationships: The first thing to check for the inner model is that every structural relationship is linear (Hulland, 2014). The structural relationships can be expressed in mathematical notation:

$$LV_j = \beta_0 + \sum_{i \to j} \beta_{ji} LV_i + error_j \qquad (3)$$

Where the subscript on LV_i directly refers to the latent variables, which are to be predicted. β_{ji} is the path coefficient, and they are the representations of the direction and strengths of the relations between the predictors LV_i and the LV_j. β_0 refers to the intercept term, and $error_j$ represents the residuals (Henseler, 2015).

2. Recursive Models: The second thing to take note of is that the systems of equations ought to be the recursive system. In simple terms, the paths that are followed by the arrows of the inner model should not form any loop.

3. Regression Specification: The last approach to the inner specification is a concept that is referred to as predictor specification and is a fancy term to express linear expression concept. The concept about this specification is that the linear relationships are derived from a standard perspective

$$E(LV_j|LV_i) = \beta_{0i} + \sum_{i \to j} \beta_{ji} LV_i \tag{4}$$

The additional assumption is that;

$$cov(LV_j, error_j) = 0 \tag{5}$$

Which imply that LV_j is not correlated with the residual error term j. There is nothing we notice about the distributions of the error terms and the variables, what is needed is the presence of second and first order moments appearing in the indicators (Hair, 2014).

4.3.4 Measurement (Outer) Model

4.3.4a Concept of Reflective and Formative indicators

After assuming that it is possible to measure latent variable indirectly by using manifest variables, it is needed to put into consideration the methods by which latent variables are measured indirectly. Calculating LVs is possible either with respect to their effects or consequences shown on their indicators, or by other different indicators which are assumed to bring about the LVs.

For instance, in the initial case, known as a reflective way, we consider latent variables to cause manifest variables. In the second case called a formative way since the items or the indicators must form the latent construct. The main difference between formative and reflective ways has to do with relationships of casual-effect involving the constructs and the indicators. Different effects may be analyzed and evaluated. If we explain the concepts through an example that anybody can understand, then the number of people intermarrying from other races would be an example. These are perfect indicators of how bad or good the leadership of a country is. Increasing number of these variables will represent a better leadership. These statistics about the kind of leaders elected is considered to be reflective indicators since they reflect the leadership; patterns of peaceful forum conducted can be considered as formative indicators because they are forming or ought to conduce the goodness of leadership (Henseler, 2017). In our study, all the indicators are considered as reflective indicators of each type of peace blocks.

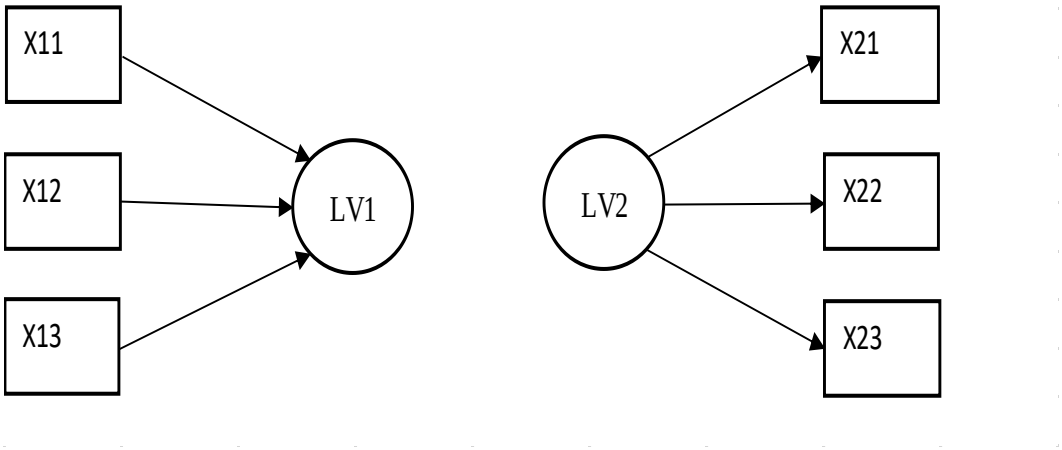


Figure 2. A schematic representation of formative (left) and reflective (right) blocks

1. Linear Relationships: As it is in the structural model, the measurement model relationships are also linear. Mathematical notations are given below for reflective and formative respectively where λ_{jk} refers to loadings and λ_{0jk} to intercept term.

$$X_{jk} = \lambda_{0jk} + \lambda_{jk} LV_j + error_{jk}$$
$$LV_j = \lambda_{0j} + \lambda_{jk} X_{jk} + error_j \tag{6}$$

2. Regression Specification: or so-called predictor specification, and the aim is to understand the conditional expected values of the latent variables or manifest variables in the way of explanatory variables. They are presented in a standard regression for both reflective, first one, and formative blocks, the second one.

$$E(X_{jk}|LV_j) = \lambda_{0jk} + \lambda_{jk} LV_j$$
$$E(LV_j|X_{jk}) = \lambda_{0j} + \lambda_{jk} X_{jk} \tag{7}$$

4.3.5 The Weight Relations

All the latent equations and all the latent variables and the assumptions considered directly depend on the latent variables LV_j though the problem is that they are conjectural elements. The weight relations tie the presence between the material latent variables and the conjectural latent variables (Henseler, 2015). The latent variables in PLS-PM are approximated as a linear combination of the particular manifest variables. In addition, $\widehat{LV_j}$ is known as a *score*, which can be denoted as

$$\widehat{LV_j} = Y_j = \sum_k w_{jk} X_{jk} \tag{8}$$

The LVs are computed as a weighted sum of their items or variables. It is essential to confuse the role of score Y_j and the role that LV_j plays. Both of them represent the same factor, as for the latter is mainly used for theoric causations and the former is used mainly for practical reasons. It does not matter whether the latent variable is observed in a formative or reflective way; a LV is computed as a linear combination of its variables.

4.3.6 The PLS-PM Algorithm

Wold (1980) developed the PLS technique, and its algorithm is a sequence of regressions in the form of weight vectors. It consists of three stages:

Step 1: Getting weights to measure latent variable scores (Iterative process)

Step 2: Calculating the path coefficients for the inner model

Step 3: Achieving the loadings for outer model

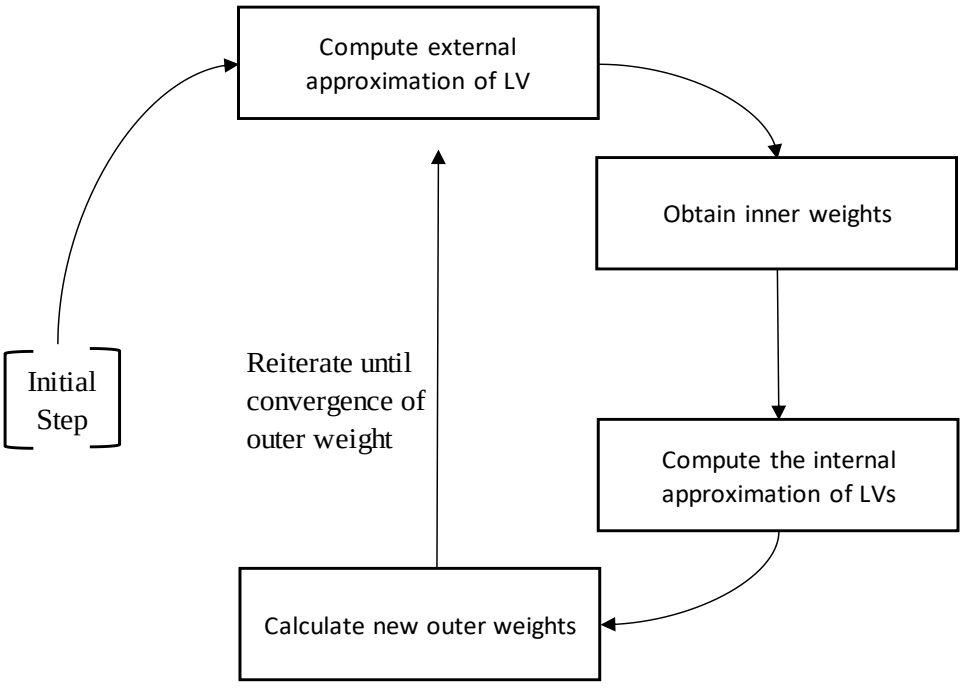


Figure 3. A schematic representation of iterative process

Chapter 5

EMPIRICAL FINDINGS

5.1 Results of the Analysis

Three latent variables (LVs) have been identified, and all of them are measured by some indicators called manifest variables (MVs). The latent variables and the corresponding manifest variables are defined as:

Table 2. Latent Variables and Manifest Variables

Latent Variables	Manifest Variables
Internal Peace	Electpro: Electoral process Freexp: Freedom of expression Civlib: Civil liberties Pts_s: Political terror scale Gdppc: GDP per capita Wompp: Women political participation
External Peace	Freemov: Freedom of movement Pts_s: Political terror scale
Total Peace	Lifexp: Life expectancy Infmort: Infant mortality

Among the latent variables given above- internal peace, external peace, and total peace- internal peace is exogenous which is a non-random variable determined outside the system, while the external and total peace is endogenous which are caused by one or more variables included within the model being evaluated.

PLS Path Modelling is to be completed by analysis and evaluation for a structural model or so-called inner model and a measurement model or outer model separately. It is a two-stage process:

1) The assessment of the measurement model
2) The assessment of the structural model

5.1.1 Assessment of Measurement (Outer) Model: Reflective Indicators

In the outer model, we can see how each block of the manifest variables used related to the latent variables they try to explain. MVs are linked up with LVs of internal peace, external peace and total peace in a reflective way. That is to say the manifest variables are the reflection of the latent variables. In order to check the quality of each reflective block, there are some steps to follow behind the reflective outer model. One of the crucial characteristics of the reflective indicators of the LV is the coherence among its internal structure. Moreover, the interchangeability of these indicators is a must as the measures are all indicators that are valid of and LV, equally. The associations of reflective indicators, however, are built up in two ways. Firstly, they require an association among themselves in a way that reflects a mutual correlation. That is, the increase of one particle inclines the increase of the whole value, and the dip of another means the reduction of value of the other indicators. The other form of correlation is manifested in the agreement with the latent variable of the reflective indicators. This agreement is subversion sensitive. In other words, reflective indicators

normally load mostly on one latent variable, creating some sort of a unique bond with that latent, and the increase of loads to another construct may be a form of indicators treason. These indicators are usually eliminated, as the aim is to have loyal indicators instead. The process of evaluating the reflective measures is mainly based on three fundamental aspects.

1. Unidimensionality of the indicators
2. Loadings and communalities
3. Cross-loadings

5.1.1a Unidimensionality of indicators

Interestingly, the latent variable itself is believed to be the cause of the indicators that is combined with. In other words, the blockage of one reflective indicator will somehow be reflected on the associate latent variable; alternatively, if the latent demonstrates a change, whether an increase or decrease, the linked indicator will have similar reaction. This, therefore, leads to the conclusion of the unidimensionality, which implies that all closely-linked indicators have one dimensional space at which they stand. This is, in fact, the logic inferred in this case, because indicators and their latent variables are basically unified. Hence, variables intending to measure aspects of the same latent variable, for instance, will be supposedly referring to a similar direction, as a result. (Sanchez, 2015)

Table 3. Homogeneity and unidimensionality of peace blocks

Year	Latent Variable	MVs	Cronbach's α	D-G. ρ	Eigen 1st	Eigen 2nd
	IP	3	0.974	0.983	2.85	0.1077
1960	EP	1	1.000	1.000	1.00	0.0000
	TP	2	0.972	0.986	1.95	0.0547
	IP	4	0.929	0.952	3.33	0.5477
1970	EP	2	0.737	0.884	1.58	0.4167
	TP	2	0.970	0.985	1.94	0.0574
	IP	4	0.936	0.956	3.38	0.5107
1980	EP	2	0.755	0.891	1.61	0.3932
	TP	2	0.971	0.986	1.94	0.0558
	IP	6	0.893	0.92	3.98	0.806
1990	EP	2	0.729	0.88	1.57	0.427
	TP	2	0.973	0.987	1.95	0.053
	IP	6	0.893	0.921	3.99	0.8542
2000	EP	2	0.745	0.887	1.59	0.4061
	TP	2	0.969	0.985	1.94	0.0602
	IP	5	0.889	0.923	3.56	0.744
2016	EP	2	0.729	0.881	1.57	0.427
	TP	2	0.931	0.967	1.87	0.129

Cronbach's Alpha:

Cronbach's alpha (α) is an estimate of reliability, and it is very specifically an estimate of internal consistency reliability. In other words, alpha can be viewed as a measure of how well the block of indicators capture the related latent construct. Cronbach's alpha will generally increase as the intercorrelations among manifest variables increase and is thus known as an internal consistency estimate of the reliability of indicators. Since intercorrelations among indicators are maximized when all items measure the same construct, it is widely believed to indirectly indicate the degree to which a set of

manifest variables measure a single unidimensional latent construct. It can range from 0.00 meaning there is no consistency at all to 1.00 meaning there is a perfect consistency in measurement. Surely, it is better to have high alpha values. A commonly accepted rule of thumb, the manifest variables are considered reliable if the Cronbach's alpha is greater than 0.7. It means that 70% of the variance in the blocks is reliable (Vinzi at al., 2010). Since the presentation of fifty-seven years will be difficult, unidimensionality of blocks are given in the Table 3 above with intervals of 10 years after 1960. After 2000, the last year's values are given.

Overall, α values fall within the range of 0.729 to 0.974 with one claiming up to 1.00. If we make an assessment over 2016, for example, we can say that α coefficients of each block are high based on the GPI data collection. All the nine indicators are having high correlation towards corresponding peace construct. It is 0.89 for internal peace, 0.73 for external peace and 0.93 for total peace. With these α coefficients which shows high validity of the variables, we can safely say that these indicators make a strong connection with underlying construct of peace.

Dillon-Goldstein's (Jöreskog's) rho:

This measurement is also used to measure the reliability of a set of indicators. Dillon-Goldstein's rho (ρ) is deemed for being a better indication rather than Cronbach's alpha (Chin, 1998). Even though they do the same thing essentially, the important difference between them is that Dillon-Goldstein's is not sensitive to different relative importance weighting for each indicator. If each indicator in a block has the same amount of importance to the construct, then either method can be used. However if they are different, i.e. some indicators which are more important, PLS estimates this

and allows the weighing of the different items to vary. If they do vary significantly within a block, D.G. rho is more appropriate to use. As it is for Cronbach's alpha, D.G. rho is also expected to be greater than 0.7, so that we can say the block is homogenous. Here in our case, for the three latent variables of peace, D.G. rho is above 0.7 for each year so that each block can be defined as unidimensional.

First and Second Eigenvalues:

Final step to check whether the constructed blocks are unidimensional or not, the last step is the eigenvalues. Eigenvalue testing is the last metric of the correlation matrix for every block of indicators, and aims to strengthen the variance. First eigenvalue is considered more important than others. According to Kaiser's rule, eigenvalue should be greater than 1 while second eigenvalue is lower than 1 to state that the block is unidimensional. Any block having the biggest eigenvalue has the most variance and visa verse for others. The variables with a lower value of First Eigen Value are not important to be used in the analysis (Gorsuch, 1983).

Referring to the Table 3, sixth and seventh columns of the table shows the first and second eigenvalues respectively. First one is distributed between the value of 1.00 and 3.99 which are quite sufficient, and the second one is between 0.0000 and 0.8542 which fulfill the condition of being lower than 1. In the internal peace blocks where the most variables are assigned, we see the highest eigenvalues for each year given. Also, when we compare the values for each block with other years, we see that they are distributed almost in the same way. Correspondingly, we can state that there is a long periodic stationary relationship between the series. Overall, the three blocks of peace can be evaluated as unidimensional. Thus, the reflective model is totally appropriate.

5.1.1b Loadings and Communalities:

Another subject in the measurement model that needs to be checked is loadings and communalities. The relationship between manifest variables and their corresponding latent variables of peace is presented in the table below for only the first and last year of the fifty-seven-year analysis.

Table 4. Loadings and communalities of outer model

			*** 1960 ***		
Latent Variable	**Manifest Variable**	**weight**	**loading**	**communality**	**redundancy**
Internal Peace	electpro	0.342	0.963	0.928	0.000
	freexp	0.329	0.979	0.959	0.000
	civlib	0.355	0.982	0.964	0.000
External Peace	freemov	1.000	1.000	1.000	0.700
Total Peace	nlifexp	0.495	0.986	0.971	0.355
	infmort	0.519	0.987	0.974	0.356
			*** 2016 ***		
Internal Peace	electpro	0.113	0.545	0.297	0.000
	freexp	0.258	0.941	0.885	0.000
	civlib	0.220	0.919	0.844	0.000
	npts_sn	0.275	0.956	0.913	0.000
	wompp	0.301	0.767	0.588	0.000
External Peace	freemov	0.563	0.887	0.786	0.648
	npts_sn	0.564	0.887	0.787	0.648
Total Peace	nlifexp	0.505	0.966	0.933	0.249
	infmort	0.529	0.969	0.936	0.251

Weights:

We already know what the first and second column is referring to, unobservable and directly non-measurable variables and measured variables that are trying to explain

them respectively. The third column shows weights of manifest variables. It indicates the extent of the effect of each manifest variable on the latent variable (Bollen, 1989).

The values with words can be expressed in the following way. For example, in 1960, electoral process 34%, freedom of expression 32% and civil liberties 35% have direct effect on the internal peace. On the other block where freedom of movement has 100% effect on external peace, life expectancy 50% and infant mortality has 51% impact on the total peace. On the other hand, even though all of them contribute positively, when we consider the weights over time, we see that contributions of democracy and transparency indicators such as electoral process or freedom of expression on internal peace gradually declines over time while the effect of some other political and material well-being indicators like women political participation and political terror scale become even more illustrative.

Loadings:

The fourth column is the loadings of MVs. Loadings are observing the correlation between latent variables and their manifest variables. While the weights of MVs refer to the effect on LVs, loadings are used only for assessing the absolute importance of manifest variables to their latent variables (Dolce, 2015). Another common rule of thumb says that the minimum loading value should be above 0.7 so that the loadings can be considered important. Since the loadings are focus in the reflective measurement, bigger loadings give stronger and more reliable measurement model (Hair et al., 2014). In our case, for instance, if we take back the year of 1960, we see that the lowest communality is 0.979 and the highest is 1.00 which varies a high correlation between the LVs and their indicators. Moreover, loadings in the outer model for each year are found sufficient as the sample years given in the table.

Communalities:

Communalities (H^2) are basically the squared loadings. In PLS-PM, it tells us the proportion of variance for each manifest variable that can be explained by the latent variable. In other words, it is another way to interpret the reliability of indicator. The relation is given as below:

$$mv_{jk} = loading_{jk} LV_j + error_{jk} \tag{9}$$

Here "j" refers to the block and "jk" refers to the k-th manifest variable of the block-j it states that MV_{jk} is explained by related LV_j, thusly it is necessary to evaluate how good the latent variable explains its indicators. To be able to this, loadings are examined, showing the variance share between LV and its indicators. So that the communality for jk-th is measured as following:

$$Com(LV_j, mv_{jk}) = cor^2(LV_j, mv_{jk}) = loading^2_{jk} \tag{10}$$

A block where the manifest variables are less, the value of communality increases. To illustrate, in 1960, where the external peace block contains only one variable, freedom of movement, the communality is equal to 1. To give the communality of other blocks, we see that electoral process has 0.928, freedom of expression 0.957 and civil liberty 0.964, which are meaning that $0.963^2 = 0.92$ or 92% of the reliability in electoral process, $0.979^2 = 0.95$ (95%) in freedom of expression and $0.982^2 = 0.96$ (96%) in civil liberties is caught by internal peace, and so on.

The results we have released at this stage is that both loadings and communalities are of considerable size showing which the appended latent variable is adequate to clarify

a good portion of manifest variable's variance, found significant for all years. The last column shows the redundancies which we will refer later in the structural model.

5.1.1c Cross-Loadings:

Table 5. Cross-loadings of the manifest variables

		1960			2016		
Peace Block	**Manifest Variable**	**Internal Peace**	**External Peace**	**Total Peace**	**Internal Peace**	**External Peace**	**Total Peace**
Internal Peace	electpro	**0.963**	0.740	-0.637	**0.941**	0.781	-0.401
	freexp	**0.979**	0.829	-0.496	**0.919**	0.740	-0.269
	civlib	**0.982**	0.877	-0.552	**0.956**	0.864	-0.398
	wompp	-	-	-	**0.545**	0.340	-0.178
	npts_sn	-	-	-	**0.767**	0.887	-0.495
External Peace	freemov	0.837	**1.000**	-0.383	0.843	**0.887**	-0.416
	npts_sn	-	-	-	0.767	**0.887**	-0.495
Total Peace	nlifexp	-0.560	-0.363	**0.986**	-0.421	-0.480	**0.966**
	infmort	-0.577	-0.392	**0.987**	-0.432	-0.513	**0.969**

The last stage to complete the assessment of the measurement (outer) model is to check the cross-loadings. What we want to investigate in this section is to see how each indicator loads in the other blocks or to say how well they load with the other latent variables. The reason behind doing this is to see if the indicators allocated for a block are actually belong to that construct and not being traitor indicators (Sanchez, 2015).

In this framework, it is expected that manifest variables are not loaded any more than the block they are aimed to measure. It is expressed as following:

$$Cor^2 (MV_{jk}, LV_j) > Cor^2 (MV_{jk}, LV_j^{'}) \quad (11)$$

In table 5, values written diagonally in bold indicate how much load each indicator has in its block. Checking them block by block, considering internal peace block in 1960, electoral process has a loading value of 0.963 in internal peace block while it has 0.740 in external and -0.637 in total peace block. Clearly, 0.963 is greater than 0.740 and -0.637. A question may arise in mind for a variable here. In 2016, it is seen that political terror scale is loaded a bit more in external peace than internal peace block. However, we believe that this variable is an important explanatory variable for both internal and external peace, which is also confirmed in the results of other tests, so that we decided to keep it in both blocks at this stage. At the end, we have found that indicators are placed in the right blocks. With the non-existence of traitor indicators, the model is appropriately specified.

5.1.2 Assessment of Structural (Inner) Model:

Once we are sure of the quality and validity of our external model, we can now move on to work for our internal model. Here we focus on the relationship between latent variables based on a casual relation in the inner model. There are three things to check for validity of the inner model as there are in the outer model. First thing is the determination coefficient (R^2), second is the redundancy index and the third one is the goodness of fit (GoF). Summary of the inner model for 1960 and 2016 is given below.

Table 6. Summary of the inner model

Peace Block	Type	R^2	Block Communality	Mean Redundancy	AVE
***** 1960 *****					
Internal Peace	Exogenous	0.000	0.950	0.000	0.950
External Peace	Endogenous	0.700	1.000	0.700	1.000
Total Peace	Endogenous	0.365	0.973	0.355	0.973
***** 2016 *****					
Internal Peace	Exogenous	0.000	0.706	0.000	0.706
External Peace	Endogenous	0.824	0.787	0.648	0.787
Total Peace	Endogenous	0.267	0.936	0.250	0.936

Coefficients of determination (R^2):

R^2, in the multiple regression models, is the ratio of the total sample variation in the dependent variables that is explained by the independent variables. In other words, it gives us the variation of the endogenous latent variable that is directly related to the variation of its independent latent variables. So that the R^2 is 0.00 for the exogenous latent variable which is internal peace. Categorization of this value varies from one study to another, and the rule of thumb we accepted here is as following; (Sanchez, 2015)

Low: $R^2 < 0.20$

Moderate: $0.20 < R^2 < 0.50$

High: $R^2 > 0.50$

In 1960, the R^2 value is placed in high accuracy of prediction of 0.700, 70% of the variation is explained, for external peace while it is in moderate effect of 0.365 % in total peace. In this study, satisfying R^2s are obtained for our latent variables external and total peace throughout the years.

Redundancy:

Following the R^2, another quality index is the redundancy. It is a way of measuring the variance of a set of MVs in an endogenous construct which is anticipated by the other exogenous construct. Computation of the index is as following:

$$Rd(LV_k, mv_{jk}) = loading_{jk}^2 R_k^2 \quad (12)$$

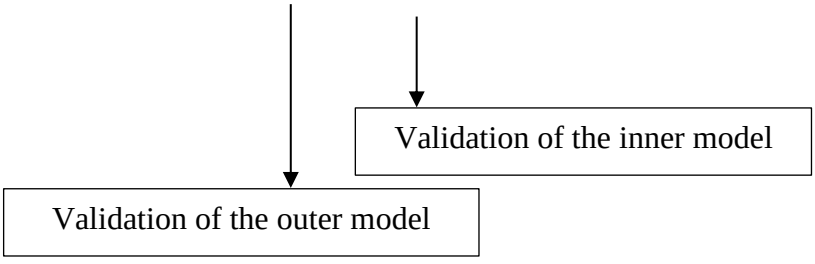
The equation above refers to redundancy index computation of k-th endogenous block, measuring the variability of the j-th MV linked to the k-th block. Looking at the values of mean redundancy in 1960, favourable predictions for endogenous LVs, 70% for external peace and 35.5% for total peace, are obtained by internal peace as exogenous LV. Moreover, the redundancy value is expected to be higher for stronger prediction. We see that the external and total peace are able to predict well the variance of the indicators associated with the related constructs.

If it is needed to go through the average variance extracted (AVE) briefly, it looks for figuring out the variance portion which a latent variable gets hold of its indicators with regard to the amount of variance because of measurement error. Convergent validity which shows the degree of similarity between other indicators that measure the same construct holds if the AVE is greater than 0.50 (Saane et al., 2003).

Goodness of Fit (GoF):

Goodness of fit, introduced by Amato et al. (2015), is the last index used to assess the structural model. It evaluates the overall model fit on both inner and outer models. It is computed with geometric mean of the average communality and the average R^2 value (Vinzi, Chin, Henseler, and Wang, 2010).

$$GoF = \sqrt{\overline{Com} \times \overline{R^2}} \qquad (13)$$



Moreover, the use of goodness-of-fit is more convenient in places where the outer model(s) are in reflective forms since it is partly considered for the average communality evaluation. In our analysis, we obtained valid GoF values like the value of 0.7149 for 1960 meaning that the prediction power of the model is of 71%.

5.2 Parameter Estimation and Validation by Re-sampling Methods

The bootstrap method, introduced by Efron in 1979, is a simple and reliable method for parametric and non-parametric statistical analyses. As it is stated by Davies, 2001, it is not possible to measure the significance levels for the parameter estimates since distributional assumptions do not take place in PLS-PM. On the other hand, it can be overcome by using resampling techniques such as bootstrapping or jackknifing. It informs us over the parameter estimates' variability, and significance coefficients of the outer weights, loadings, path coefficients and total effects. A schematic representation is presented below.

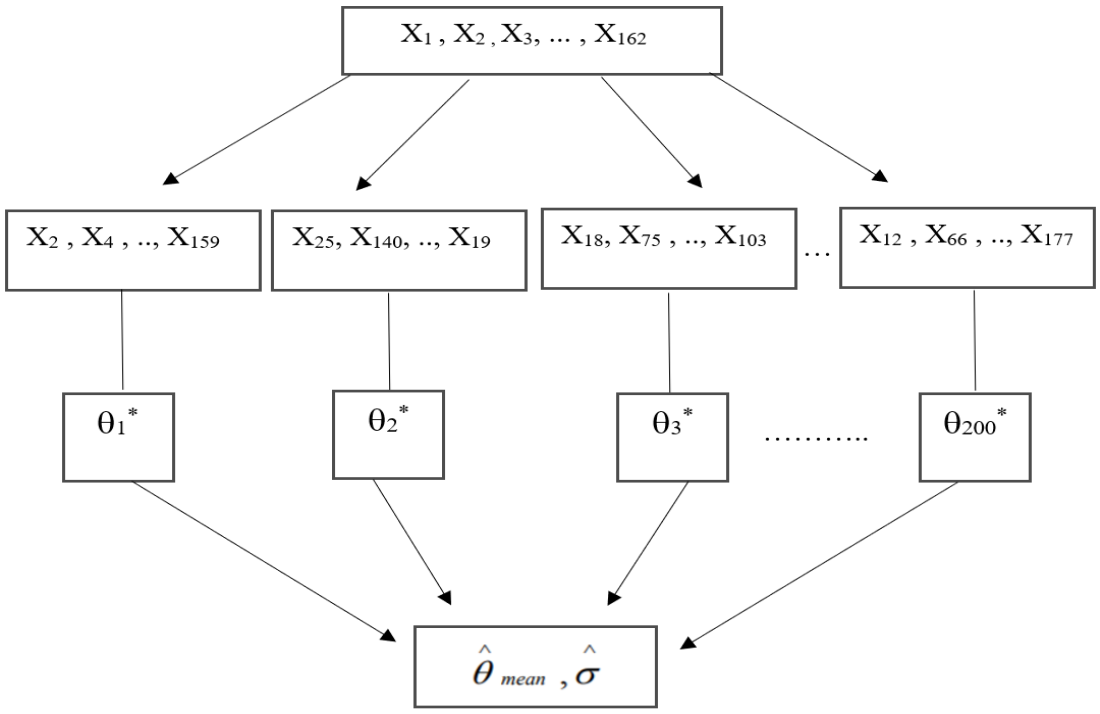


Figure 4. A schematic representation of Bootstrap method

More practically, bootstrap estimates are obtained from 200 bootstrap samples of 162 elements selected based on the random displacement from the original data set. Then, these estimates are used to calculate the mean and the variance.

Table 7. Bootstrap Validation

Belonging to the peace block	**loadings**	**1960**	**1970**	**1980**	**1990**	**2000**	**2007**	**2016**
Internal Peace	Electoral process	0.963 (5.24e-03)	0.945 (0.007)	0.950 (0.006)	0.919 (0.011)	0.930 (0.010)	0.926 (0.012)	0.939 (0.011)
	Freedom of expression	0.980 (4.0e-03)	0.956 (0.007)	0.964 (0.005)	0.904 (0.013)	0.877 (0.016)	0.867 (0.018)	0.917 (0.016)
	Civil liberties	0.982 (2.47e-03)	0.978 (0.003)	0.973 (0.004)	0.938 (0.006)	0.934 (0.008)	0.913 (0.009)	0.955 (0.007)
	(n)Political terror scale	-	0.751 (0.034)	0.775 (0.034)	0.718 (0.037)	0.776 (0.031)	0.741 (0.034)	0.768 (0.028)
	GDP per capita	-	-	-	0.674 (0.039)	0.620 (0.049)	0.651 (0.047)	-
	Women political participation	-	-	-	0.673 (0.049)	0.688 (0.055)	0.617 (0.015)	0.539 (0.065)
External Peace	Freedom of movement	1.000 (1.11e-16)	0.912 (0.012)	0.914 (0.009)	0.904 (0.011)	0.895 (0.015)	0.874 (0.015)	0.885 (0.018)
	(n)Political terror scale	-	0.865 (0.024)	0.877 (0.022)	0.867 (0.022)	0.888 (0.019)	0.867 (0.021)	0.886 (0.017)
Total Peace	(n)Life expectancy	0.986 (2.63e-03)	0.985 (0.002)	0.986 (0.003)	0.986 (0.003)	0.984 (0.004)	0.982 (0.003)	0.966 (0.006)
	Infant mortality	0.987 (2.09e-03)	0.986 (0.002)	0.986 (0.003)	0.986 (0.003)	0.986 (0.002)	0.983 (0.003)	0.969 (0.005)
	R^2	0.7149	0.6955	0.7204	0.6683	0.6465	0.6497	0.65

5.3 Unobserved Heterogeneity Correction and Classes of Countries Ranked after their Peace Scores

There is an assumption behind the implementation of the Partial Least Squares Path Modelling. This assumption is to think that all observations in the dataset are homogeneous. To be more explicit, all observations are considered regardless of any group structure. As a result, the same group of parameter values is considered applicable to all observations. But it is a mistake to think this situation might always be valid or realistic. Moreover, diversity can even be inevitable at datasets where diversity actually get at the heterogeneity. Heterogeneity can be observed when enough information is available to categorize groups in our dataset. Besides, heterogeneity is no longer observable if there are no variables that could be the cause of such diversity in the dataset. We can explain the unobserved heterogeneity in this way, it is not known how many groups of observations can be divided. We know that the data are made up of different classes, but we do not know which classes the observations are involved in. It is possible to overcome this problem by using clustering methods. By this way, we can find out which classes the observations belong to with clustering.

5.3.1 Response Based Unit Segmentation

To restrict the distributional presumptions formed around the latent or even the manifest variables, the REBUS is used in every detected class, fostering the predictive reach of the model. By designating specific observations of groups held upon unit-model distance, the REBUS forms classes. First, the observations' global PLS model is calculated at the beginning of the process. Then, the initial classes are defined, based on the results reached from the hierarchical grouping performed on unit-model distance. Afterwards, the estimation of classes' local models is carried on, leading to

the computation of the distance measures between observations and local models. Consequently, each observation is re-directed to the suitable class depending on the local model that carries the most corresponding characteristics. To ensure the uniformity of the classes formation, local models are assessed once again through an iterative algorithm. REBUS is fundamentally formed by the reliance on measures, aiming to determine the distance between any modal and the observation that was assigned around that model. The distance given, which is reached depending on the Goodness of Fit index, is actually an approach measure, and rather a phony distance; while the GoF index is considered as a concession existing between the qualities of both the outer model and the inner model (Sanchez, 2015).

$$GoF^2 = (AverageCommunality)x(AverageR^2) \tag{14}$$

As a result of this proceeding course, two elements can contribute in the closeness measure break down. On one hand, there is the measurement model quality assessment element, and on the other hand, there is the structural model quality assessment element. Each of these elements carries a specific implication of which they act upon. That is, the first element (or the measurement model element) aims at approaching the observations to their classes by determining the communality residuals between each set. Similarly, the structural residuals of the one observation and its class are calculated by the element of the structural mode. In order to combine the appropriate observation with the class of the suitable model, it is necessary to merge the two elements into one single measure. All in all, we can say that REBUS, when both inner and outer models are considered, identifies the well-fitted local models over the global models, and that is ultimately why is REBUS is designed for.

The REBUS cluster analysis, is a hierarchical clustering in nature. This clustering follows the Ward method, and is used on the outer model residuals and the inner ones, as well. It is believed that the first phase in the algorithm of REBUS starts with that clustering, and hence, the initial division of the observation will be created in accordance with the number of classes chosen. Observations, afterwards and during the iterative procedure, are combined with the model of the class that has the best features fitting to the observation.

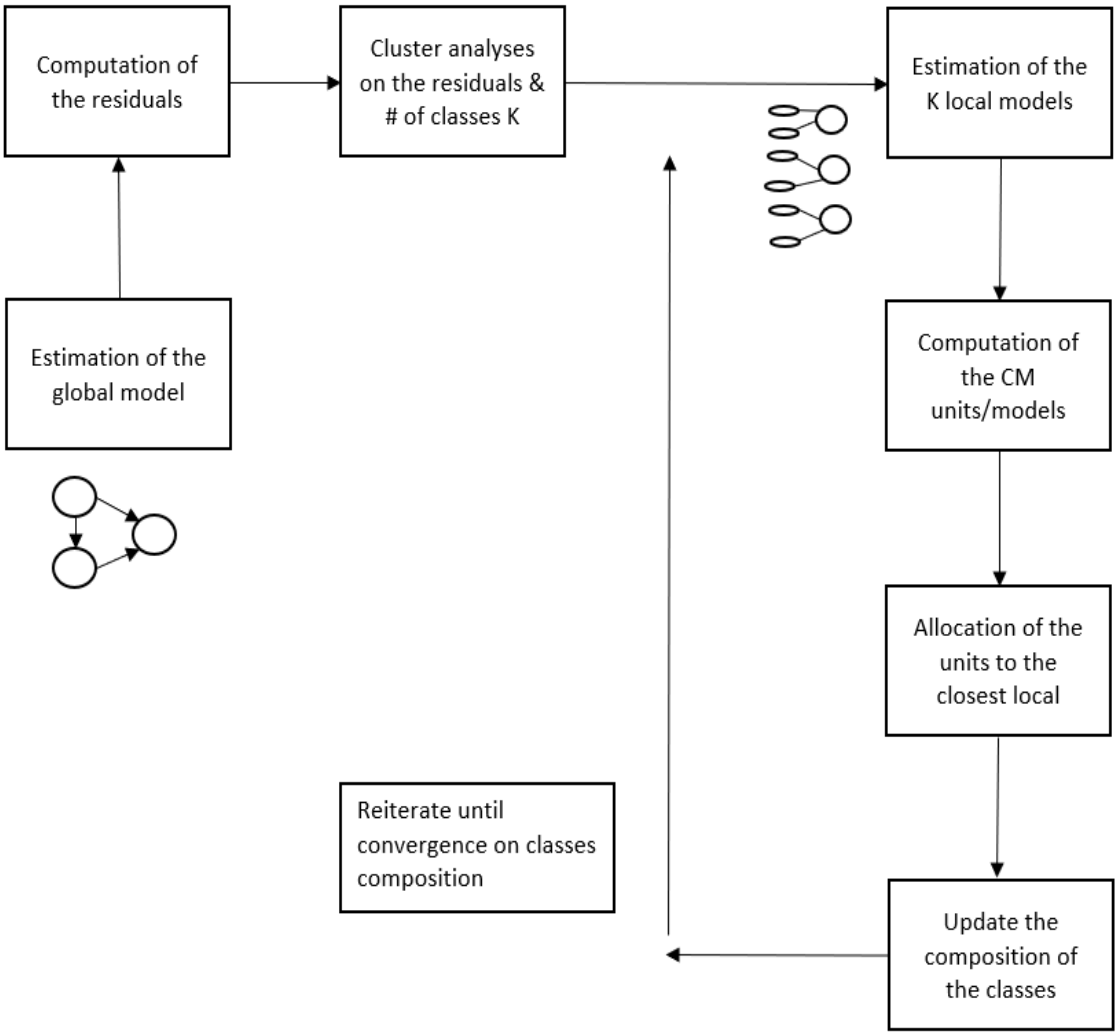


Figure 5. A schematic representation of the REBUS-PLS algorithm

Table 8. Clusters of countries for 2016 (REBUS)

REBUS Segments	**Class.1**	**Class.2**	**Class.3**	**Class.4**	**Class.5**
number.units	30	44	35	35	17
proportions(%)	18	27	22	22	11
		***			
Path coefficients	**Class.1**	**Class.2**	**Class.3**	**Class.4**	**Class.5**
INTER->EXTER	0.9167	0.9492	0.9174	0.8592	0.9501
INTER->TOTAL	-0.4272	-0.4985	0.1209	1.2831	2.2233
EXTER->TOTAL	-0.1058	-0.4243	-0.3674	-0.8820	-2.6330
		***			
loadings	**Class.1**	**Class.2**	**Class.3**	**Class.4**	**Class.5**
wompp	0.4444	0.6973	0.2695	0.4885	0.7371
electpro	0.9047	0.9613	0.9297	0.9077	0.9350
freexp	0.9271	0.9562	0.9259	0.9149	0.9383
civlib	0.9613	0.9747	0.9654	0.9601	0.9716
npts_sn	0.7995	0.8594	0.6315	0.6259	0.9116
freemov	0.9147	0.9231	0.8816	0.9009	0.9446
npts_sn	0.9073	0.9239	0.7394	0.7737	0.9526
nlifexp	0.9699	0.9294	0.7092	0.9569	0.9348
infmort	0.9826	0.9434	0.9657	0.6712	0.9326
		***			
quality	**Class.1**	**Class.2**	**Class.3**	**Class.4**	**Class.5**
Aver.Com					
Com.INTER	0.687	0.802	0.625	0.642	0.814
Com.EXTER	0.829	0.852	0.662	0.705	0.899
Com.TOTAL	0.953	0.876	0.717	0.683	0.871
		***			
Aver.Redu					
Red.EXTER	0.697	0.768	0.557	0.520	0.812
Red.TOTAL	0.263	0.727	0.048	0.327	0.655
		***			
R^2					
R^2.EXTER	0.840	0.900	0.841	0.738	0.902
R^2.TOTAL	0.276	0.830	0.068	0.479	0.751
		***			
GoF	0.678	0.854	0.551	0.642	0.844

As it can be seen in the results showed in the Table 8, there are five classes of countries. Each Group has different numbers of countries. Class 1 includes thirty countries with a proportion of 18 %, Class 2 includes 44 countries with a proportion of 27%, Class 3 having 35 countries with 22%, Class 4 having 35 countries with 22% and last class having 17 countries with 11% proportions. Those classified countries are also presented below in Table 9. The Global Quality index is found as 0.71. If we look over

the path coefficients of the countries placed in the first group, for example, the value for internal peace is -0.4272, and for external peace is -0.1058. With these coefficients, we can conclude that total peace of the countries in the first group are driven by the external peace more even though both internal and external peace has negative impact on total peace. However, in third, fourth and fifth classes internal peace has a positive effect on those countries. In other words, peace of those countries is explained more by their internal peace than external peace.

Table 9. Countries in Groups for 2016

Countries in Group 1		Countries in Group 2		Countries in Group 3	
Turkey	Ethiopia	South Sudan	Iraq	Eritrea	Cuba
Ethiopia	Libya	Afghanistan	Burundi	Turkmanistan	Guinea
Congo, Dem. Rep.	Equatorial Guinea	Somalia	Philippines	Tanzania	Botswana
Swaziland	Kazakhstan	Rwanda	Bangladesh	Mali	Benin
Chad	Oman	Tajikistan	Kuwait	Uganda	Poland
Belarus	Haiti	Nijeria	Armenia	Malawi	Czech Republic
UAE	Honduras	Iran	Angola	Papua New Guinea	Sweden
Bahrain	Indonesia	Qatar	South Africa	Serbia	Zimbabwe
Brazil	Ghana	Cameroon	Nicaragua	Georgia	Russia
Cambodia	Egypt	Gabon	Sri Lanka	Vietnam	Azerbaijan
Jamaica	Liberia	Guatemala	Lesotho	Latvia	Mauritania
Albania	Slovakia	Nepal	Niger	Norway	Madagascar
Spain	Slovenia	Colombia	Gambia	Sudan	Ecuador
Croatia	Estonia	Algeria	Cote D'Ivoire	Uzbekistan	Guinea Bissau
Iceland		Kosovo	Peru	India	Hungary
Netherlands		Timor Leste	Singapore	Malaysia	Costa Rica
		Chile		Lebanon	Panama
				Finland	

Countries in Group 4		Countries in Croup 5
China	Saudi Arabia	Lao PDR
Congo, Rep.	Pakistan	Myanmar
Theiland	Central African Republic	Djibouti
Kenya	Jordan	Bolivia
Zambia	Moldova	Guyana
Mozambique	Burkina Faso	Romania
Dominican Republic	Israel	Venezuela
El Salvador	Yemen	Lithuania
Morocco	Bosnia and Herzegovina	Denmark
Macedonia	Paraguay	Syria
Sierra Leone	Mongolia	Ukraine
Argentina	Senegal	Mexico
Bulgaria	Italy	Mauritius
Greece	Switserland	Trinidad and Tobago
United States	Uruguay	Bhutan
United Kingdom	Australia	Ireland
Portugal	Canada	

5.4 Peace Index for MENA Region Countries

The MENA region is composed of Arab and Islamic countries except for Israel. These countries are becoming increasingly important in the world agenda. The MENA region has an important position in terms of both natural resources and geopolitics. It is the most sensitive and attractive region of the world with its energy resources that it has in its wide geography. The region has more than 60 percent of world oil reserves and 45 percent of natural gas reserves. Moreover, Eight of the twelve OPEC member countries are located in this region. In recent years, there have been intensive economic and political developments in MENA countries. Structural transformations in the region are of vital importance. This structural transformation demand led to a loud voice of democratization demands which would deeply affect the economic and political structure of the countries concerned. This has led to the beginning of mass protest movements called "Arab Spring" which deeply influence MENA countries in economic and political direction. Pro-democracy mass movements that are influential across Africa and Middle East have an important place in the world political and economic life because of the strongest reaction against the authoritarian regimes since the dissolution of the Soviet Union (Freedom House, 2012). The importance of promoting peace and security in the region can be easily understood in all these conflicts that are taking place today. In this study, it is aimed to show the peace change over time in this sensitive region. Some official organizations include some other countries to this region. For example, Somalia and Sudan are also counted in the classification made by United Nations Development Programme (UNDP). On the other side, the World Bank states that Ethiopia, Sudan and Palestine can be included in this classification depending on the work. We used the classification made by the World Bank. However, Malta and West Bank & Gaza are eliminated from the list since

they are not placed in the Global Peace Index countries. Instead Turkey and Cyprus are added to the list. Complete list of the countries is given in Table 10.

Table 10. Middle East and North Africa Region Countries

Middle East and North Africa
1. Algeria
2. Bahrain
3. Cyprus
4. Djibouti
5. Egypt
6. Ethiopia
7. Iran
8. Iraq
9. Israel
10. Jordan
11. Kuwait
12. Lebanon
13. Libya
14. Morocco
15. Oman
16. Qatar
17. Saudi Arabia
18. Syria
19. Sudan
20. Tunisia
21. Turkey
22. United Arab Emirates
23. Yemen

In order to evaluate the peace situation in MENA countries from 1960 to 2016, those twenty-three countries are selected from the sample of 162 countries. The ranking list of the MENA countries within the region and across the world according to their peace scores is as given below in Table 12. Since it is quite difficult to give the ranking lists for all the years here, four years are given at intervals of twenty years; 1960, 1980, 2000 and 2016.

It is seen that those 23 countries in the table are represented by five different colours. In addition, there are two different rankings. Let us first explain the colours. Referring to the classification we made in the last phase of our work, we divided the level of peace into five which are very high, high, medium, low, and very low. The colours seen in the table indicate the class in which the countries are on the world ranking list. To explain the table, the first column from the left side shows the rank of the countries in the MENA region. The ranking on the right side of the countries indicates the rank of the same country among the countries of the world. While Israel, Cyprus and Lebanon are as the most peaceful countries placed in the top three in 1960, Ethiopia, Egypt and Yemen share the last three rows as the least peaceful countries. Talking for 2016, Qatar is taking the place of Lebanon while Israel and Cyprus hold the same place. Yemen, Sudan and Djibouti became the countries where conflicts are the most.

As an example, in 1960, Israel is among the most peaceful countries. It is ranked 1st in the in MENA countries, and also it is settled in the first place in world rankings as well with a score of 3.15 out of 5. If we continue in the same way, 20 years later, in 1980, Israel maintained its place in the most peaceful countries. While it remains the most peaceful country in the MENA region, it has dropped its position in the world rankings to 17th with an index of 3.37. In the Table 12, we see that some countries have also

moved between peace classes. For example, one of the countries that show this change very sharp is the United Arab Emirates. In the 1960s, the UAE ranks 10th in the region with a medium level of peace (score of 2.60). After 20 years, it upgrades its peace level to high class, and rises to 6th place in the region (score of 3.25). When we look at 2000s, it goes up to the 4th place and by 2016 it achieves to be one of the most peaceful countries both in the region and the world. While keeping its position same in the region, it is located in the 31st worldwide.

Below in the Figure 7, Figure 8 and the Figure 9 is a graphical overview of Table 12. The only difference in these images is that the countries in the MENA region are classified according to their development categories.

The classification of countries is based on the Country Classification made by the World Bank Country and Lending Groups. There are four categories which are high-income, upper-middle, low-middle and low- income economies. High income economies are defined as those countries with a GNI per capita, measured by using World Bank Atlas method, greater than 12,056$; upper middle-income economies with a GNI between 3,896$ and 12,055$; low middle income economies are the ones with a GNI between 996$ and 3,895$ and low-income economies are those with a GNI of 995$ or less. In our study, we divided the countries into three groups in compliance with the development level.

Table 11. MENA region countries classification by income

Developed Countries	**Developing Countries**	**Undeveloped Countries**
Bahrain	Algeria	Djibouti
Cyprus	Iran	Egypt
Israel	Iraq	Ethiopia
Kuwait	Jordan	Morocco
Oman	Lebanon	Sudan
Qatar	Libya	Syria
Saudi Arabia	Turkey	Tunisia
United Arab Emirates		Yemen

Table 12. The ranking of the MENA countries within the region and across the world according to their peace scores

Rank within the region	1960			1980			2000			2016		
	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score
1	Israel	1	3.15	Israel	17	3.376	Israel	11	3.683	Cyprus	1	3.681
2	Cyprus	20	3.025	Cyprus	18	3.375	Cyprus	20	3.670	Israel	13	3.623
3	Lebanon	47	2.907	Qatar	36	3.318	Qatar	32	3.635	Qatar	23	3.587
4	Qatar	66	2.828	Bahrain	45	3.288	UAE	34	3.616	UAE	31	3.575
5	Kuwait	69	2.776	Kuwait	46	3.279	Bahrain	36	3.612	Kuwait	35	3.560
6	Jordan	79	2.681	UAE	54	3.259	Kuwait	41	3.597	Lebanon	41	3.543
7	Syria	83	2.65	Lebanon	61	3.224	Lebanon	44	3.588	Oman	45	3.532
8	Sudan	86	2.636	Jordan	65	3.192	Oman	50	3.574	Tunisia	49	3.521
9	Bahrain	89	2.614	Syria	71	3.176	Syria	54	3.562	Bahrain	54	3.493
10	UAE	91	2.608	Libya	77	3.125	Saudi Arabia	57	3.560	Libya	57	3.478
11	Iraq	93	2.579	Iraq	82	3.082	Tunisia	65	3.541	Turkey	65	3.465
12	Morocco	99	2.553	Saudi Arabia	84	3.069	Jordan	67	3.534	Saudi Arabia	71	3.437
13	Algeria	107	2.52	Tunisia	85	3.059	Libya	70	3.517	Jordan	73	3.429
14	Oman	111	2.504	Oman	94	2.999	Iran	76	3.498	Iran	75	3.419
15	Iran	119	2.463	Turkey	103	2.954	Turkey	84	3.483	Syria	80	3.399
16	Djibouti	120	2.463	Iran	106	2.940	Algeria	85	3.479	Egypt	83	3.390
17	Turkey	122	2.458	Morocco	107	2.928	Iraq	88	3.458	Algeria	87	3.381
18	Tunisia	125	2.451	Algeria	109	2.913	Egypt	90	3.447	Iraq	96	3.335
19	Saudi Arabia	126	2.449	Sudan	110	2.897	Morocco	91	3.430	Morocco	105	3.304
20	Libya	127	2.448	Egypt	113	2.875	Yemen, Rep.	114	3.236	Ethiopia	120	3.217
21	Ethiopia	133	2.427	Djibouti	122	2.806	Sudan	116	3.220	Yemen, Rep.	123	3.213
22	Egypt	137	2.395	Yemen, Rep.	136	2.701	Djibouti	128	3.158	Sudan	129	3.171
23	Yemen, Rep.	151	2.276	Ethiopia	148	2.604	Ethiopia	137	3.065	Djibouti	148	2.966

Very High
High
Medium
Low
Very low

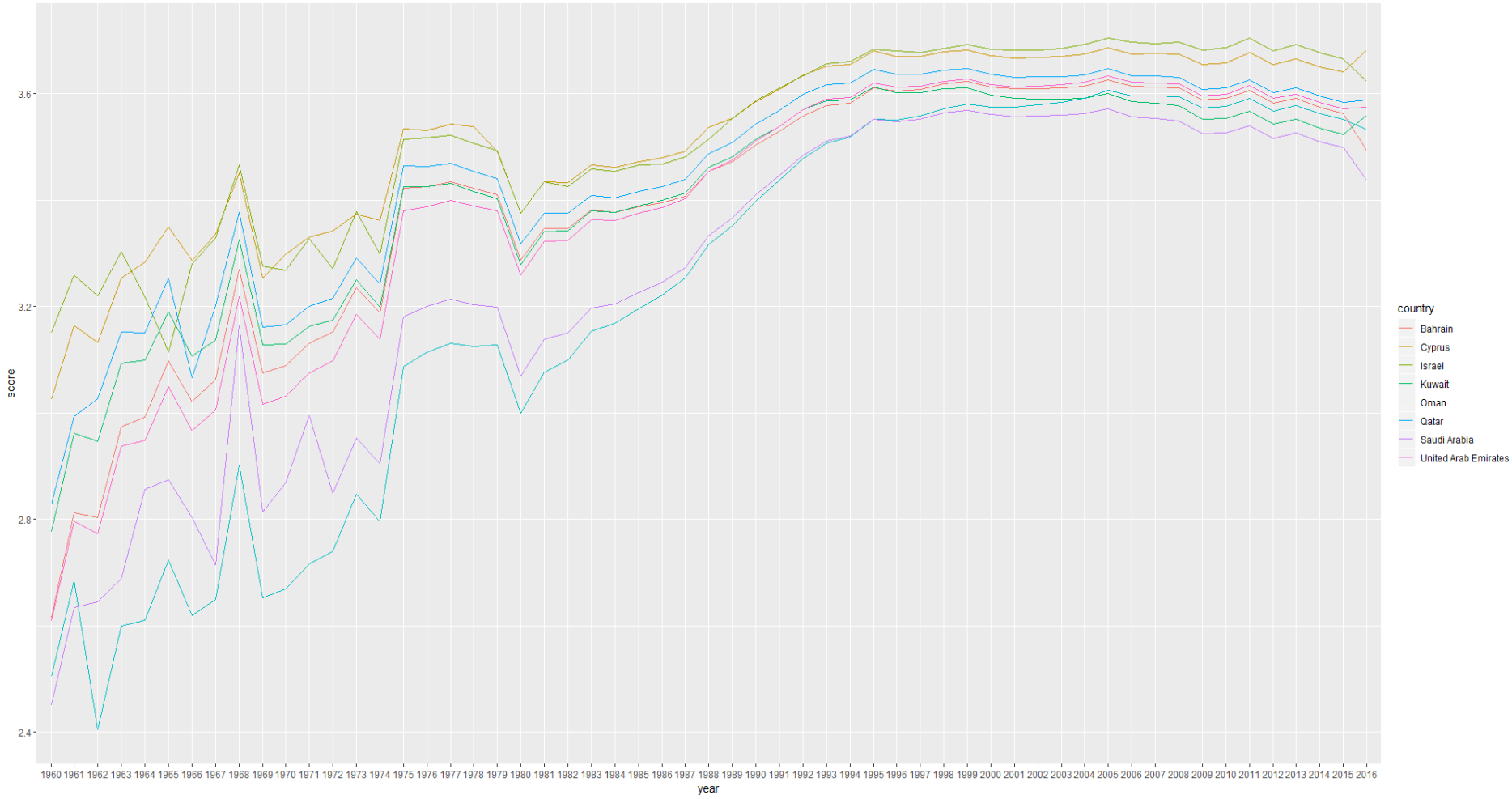


Figure 6. Peace change over time for developed MENA countries

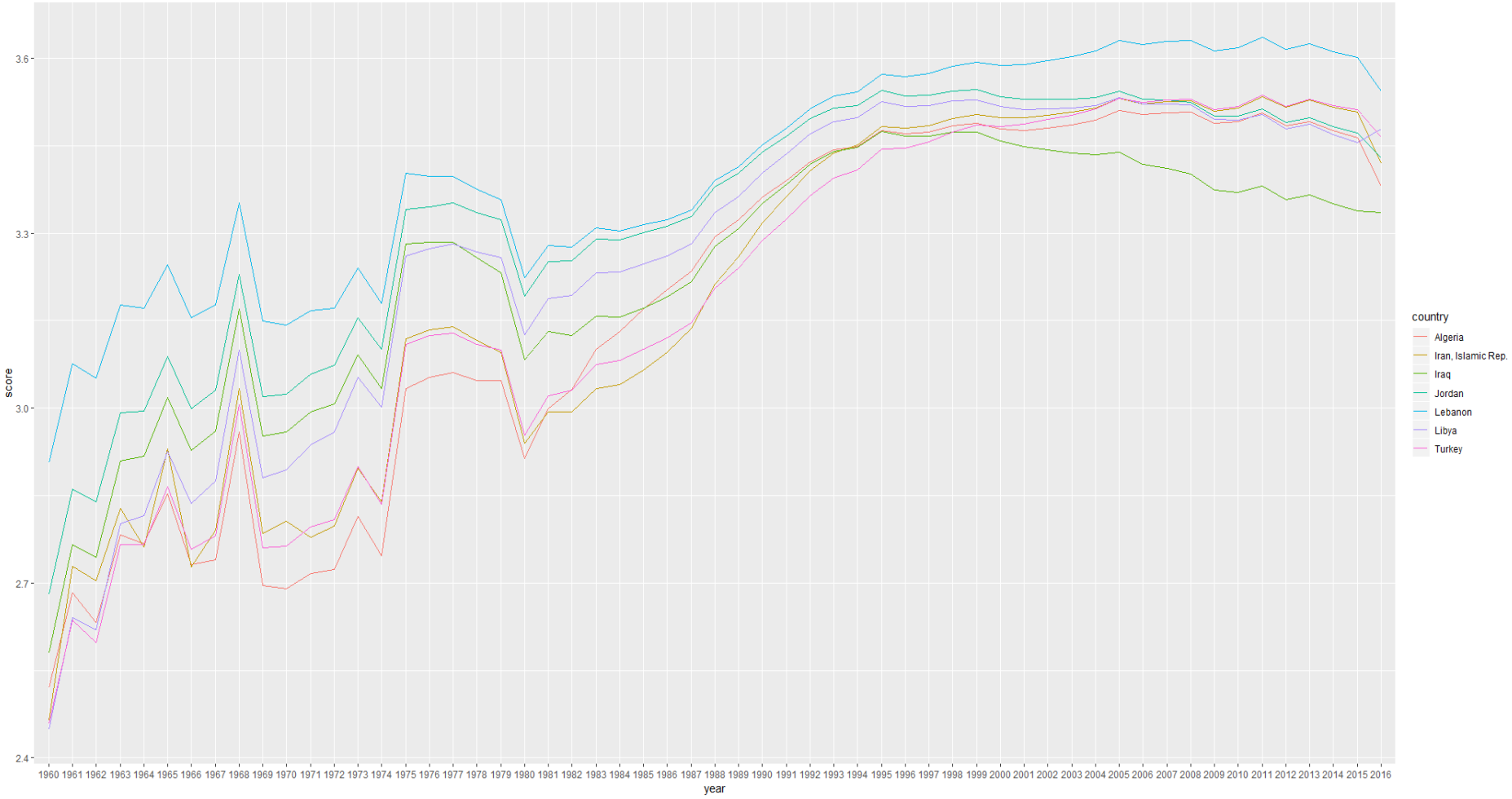


Figure 7. Peace change over time for developing MENA countries

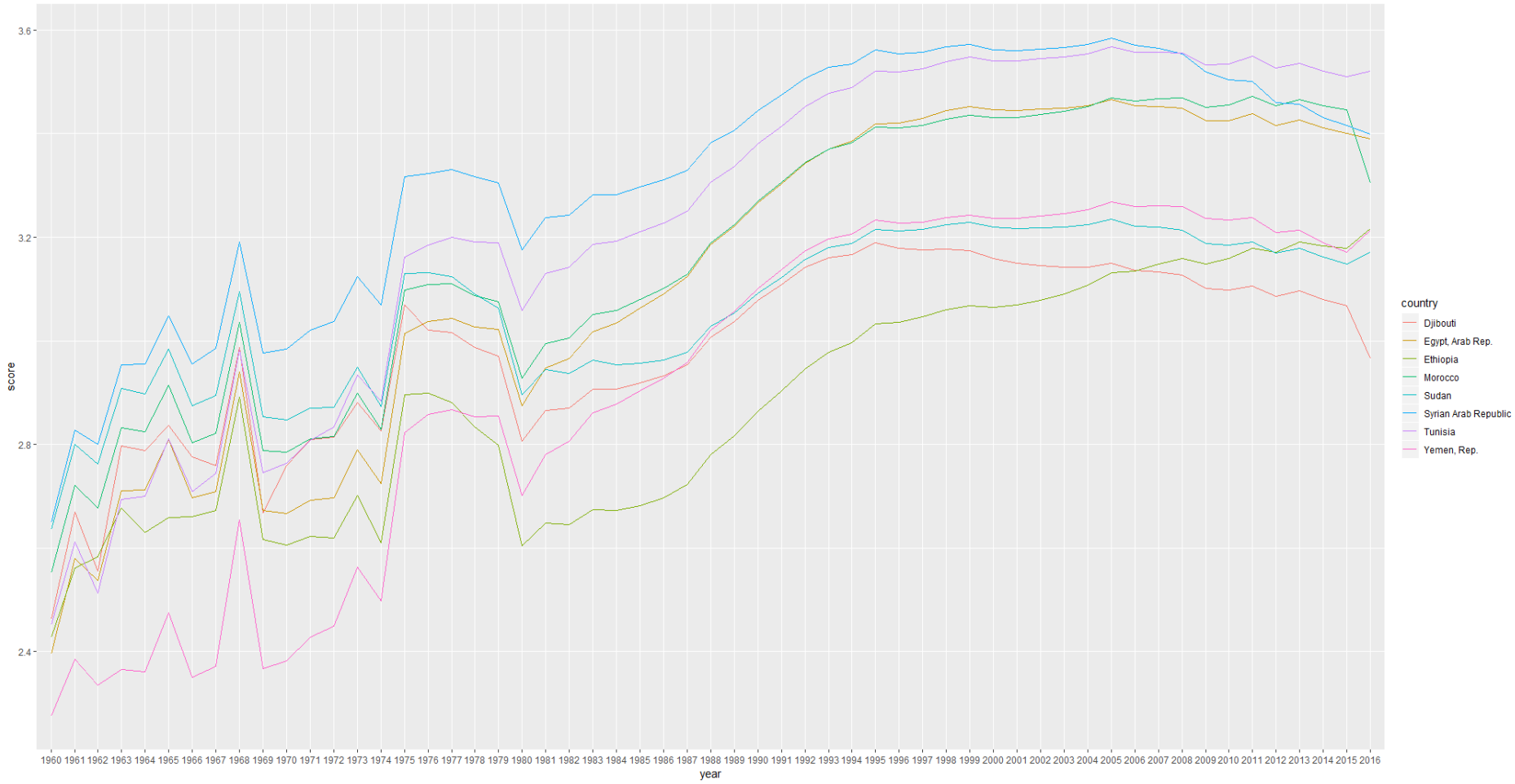


Figure 8. Peace change over time for undeveloped MENA countries

5.5 The Relationship Between Global Peace Index and Development Level for MENA Region Countries

As it is mentioned in the section of initial finding, it was observed that the peace variables used in the original Global Peace Index series actually reflect the development level of a country rather than peace. At this stage, we wanted to see how the scores of the new series are related to the level of development of the MENA region countries. So that we made a simple linear regression that we thought it would create an important picture. We tested the relationship between scores of newly created series and GNI per capita. However, we could only use 12 of the 23 countries we considered as MENA region countries. The reason for this was the excess missing values found in the GNI per capita series, calculated by World Bank. We eliminated those countries with 20% equal or more missing values, cannot also be imputed by MICE due to the 20% rule of thumb, from the analysis. The results we achieved with the remaining 12 countries are given below in the Table 10.

From the Regression analysis, only five of the sampled countries revealed a significant relationship between the development of the country and the scores. These countries are Algeria, Israel, Sudan, Syria and Tunisia. The p-value of the data is used in testing the null hypothesis in which the coefficient being zero means there is no effect. A low p-value (<0.05) shows that the null hypothesis can be rejected. In other terms, it means that a predicting factor with low p-value has a significant addition to the model since changes in the response variable are related to changes in the predictor value (Mason, C. H., & Perreault Jr, W. D. 1991).

To start with, the Coefficient for development in Algeria is positive at 3.168e+00 which is significant at <2e-16. This shows that a unit increase in development causes a consecutive increase in the score level by 3.168e+00. Therefore, the country can focus on development to proportionately improve their score. Unlike the other four countries, the coefficient for development in Sudan is negative at 1.034e-01 which is significant as at 0.01464. This means that a unit increase in development in the country causes a consecutive decrease in the score levels by 1.034e-01. Hence despite the country's effort in development, there is a decrease in the score level. This can be explained by other unobserved independent factors. The GNI coefficient 1.691e-01 significant at <2e-16 shows the level of score in the model when other factors are held constant, i.e. 1.691e-01. The coefficient for multiple linear regression R^2=0.3341 shows that approximately 33.41% of the researched factors explained the dependent variable (peace score) showing that the model used had a medium variability when a linear regression line is plotted. The model used was of a good fit. The F value 24.67 on 590df was significant at 2.2e-16 shows that the variable used thoroughly explained the dependent variable (score). Since this value is less than the significance level of 0.005, we reject the earlier stated null hypothesis. Additionally, we cannot observe a relationship between the peace score and development level of countries like Egypt, Iran, Morocco, Oman, Saudi Arabia and Turkey due to unobserved factors. Based on the initial findings, it was observed that the peace level of a country was mirroring the development level of the country. With the alternative GPI series created in this study, it is found that the peace score decreases by country’s increasing degree of development like Sudan.

Table 13. Linear regression output of GPI and GNI

Residuals:				
Min	**1Q**	**Median**	**3Q**	**Max**
-0.54179	-0.14300	0.04702	0.19352	0.31933

Coefficients:				
	Estimate	**Std. Error**	**t value**	**Pr(>|t|)**
Algeria	3.168e+00	3.000e-02	105.608	< 2e-16 ***
Egypt	9.163e-03	4.326e-02	0.212	0.83233
Iran	-6.524e-03	4.302e-02	-0.152	0.87952
Israel	1.332e-01	4.568e-02	2.916	0.00368 **
Kuwait	-1.023e-01	5.453e-02	-1.876	0.06116 .
Morocco	4.366e-02	4.348e-02	1.004	0.31564
Oman	1.132e-02	4.405e-02	0.257	0.79719
Saudi Arabia	7.104e-03	4.606e-02	0.154	0.87748
Sudan	-1.034e-01	4.225e-02	-2.448	0.01464 *
Syria	1.296e-01	4.424e-02	2.930	0.00352 **
Tunisia	1.136e-01	4.324e-02	2.628	0.00882 **
Turkey	2.248e-02	4.334e-02	0.519	0.60414
GNI	1.691e-05	1.534e-06	11.021	< 2e-16 ***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual std. error: 0.2213 on 590 df
Multiple R-squared: 0.3341
Adjusted R-squared: 0.3206
F-statistic: 24.67 on 590 df, **p-value:** < 2.2e-16

Chapter 6

CONCLUSION

The peace is one of the greatest values of people. Even though peace has its own commonplace meanings, it is a bit more complicated concept than that. Particularly in today's world with all the wars going on, it becomes even more important to understand what peace is and how it is assessed. At this point, we are introduced a study on peace measurement. Global Peace Index is a study conducted in order to measure the level of peace that countries have in national and international levels by the Institute for Economics and Peace. The results of the work is published annually, since 2007, in line with the countries' levels of peace ranking. Thus, every year it is possible to follow how the countries change their internal and external peace levels. Surely the importance of such work is beyond question. It presents us the peace distribution in levels all around of the world, and to be of help for observed challenges in many areas like political, social or economic. So that it is very important to carry out such work.

However, GPI has some shortcomings. These are lacking theoretical model for peace, absence of objective selection and weighting of the indicators being assessed in an ad-hoc manner, and series being non-reproducible, so that it is not possible to go back in time. In this study, it is aimed to figure out which factors are important to theorize the Global Peace Index, and non-parametric technique of Partial Least Squares Path Modeling is used to reproduce alternative Global Peace Index series back in time until 1960. Access of most qualitative indicators is not possible since their series and

evaluations are made by the IEU itself but the remaining variables are collected from the key sources in the related areas. As we go back in time, the number of variables available decreased due to excess missing values. Those series having missing values less than 20% are imputed by Multiple Imputation by Chained Equations. All the series are taken into analysis in their original forms unlike the original work. Twenty-one of total thirty variables in the analysis are deleted either with the reason of excess missing values or for being unimportant for peace measurement. This can contribute finding important factors to theorize the GPI series. The latent variables of peace; internal, external and total peace, can be predicted by using objective weights. After all, the resultant GPI series can be extended back to 1960 using the available indicators. Additionally, some rank correlation test (Pearson, Spearman and Kendall) are made to see the correlation between alternative GPI series (PLS) and original series (IEP), and a correlation around 60% is observed.

Moreover, a separate window is opened for peace change over years in MENA region countries. Their peace levels are presented in a regional and international level separately. Moreover, according to the results we found that the indicators associated with peace shows the development levels of countries. The case is tested for MENA region countries with the new series created and the same is not the case in the new analysis. For future research, this study will require a great deal of variable variety. To explain the latent variables of peace, definitely more macro variables are needed. Additional indicators can be used to address certain needs or primacy at the local and international levels. More careful study of qualitative data on the identification and measurement of peace will be necessary to achieve better results. The findings of this study may be a good start point for further research on theorizing the peace definitions. Put it differently, by undertaking such a study we will be able to contribute to the literature,

which has stereotyped peace definitions and measurements, with a new peace theory and measurement method that are more objective and relevant to the world realities we live in today.

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APPENDIX

Appendix A:

Abbreviation	Variable	Definition	Data Source	Belonging to the peace block
armpers	Armed forces personnel, total	Armed forces personnel are active duty military personnel, including paramilitary forces if the training, organization equipment, and control suggest they may be used to support or replace regular military forces.	World Bank, World Development Indicators	Internal Peace External Peace
armsimp	Arms import	Arms transfers cover the supply of military weapons through sales, aid, gifts, and those made through manufacturing licenses. Data cover major conventional weapons such as aircraft, armored vehicles, artillery, radar systems, missiles, and ships designed for military use. Excluded are transfers of other military equipment such as small arms and light weapons, trucks, small artillery, ammunition, support equipment, technology transfers, and other services. Figures are SIPRI Trend Indicator Values (TIVs) expressed in US$ m. at constant (1990) prices. A 0 indicates that the value of deliveries is less than US$0.5m.	Stockholm International Research Institute (SIPRI)	Internal Peace External Peace
bdeath	UCDP Battle-Related Deaths	This indicator measures the number and duration of extraterritorial conflicts a country is involved in. Information for this indicator is sourced from the UCDP Battle-Related Deaths Dataset. The score for a country is determined by adding all individual conflict scores where that country is involved as an actor in a conflict outside its legal boundaries.	Uppsala Conflict Data Program (UCDP)	External Peace

civlib	Civil liberties index	Civil liberty is understood as liberal freedom, where freedom is a property of individuals. Civil liberty is constituted by the absence of physical violence committed by government agents and the absence of constraints of private liberties and political liberties by the government.	V-Dem (Varieties of Democracy)	Internal Peace External Peace
electpro	Electoral process	Qualitative assessment of whether elections are competitive in that electors are free to vote and are offered a range of choices.	V-Dem (Varieties of Democracy)	Internal Peace
engimp	Energy imports, net (% of energy use)	Net energy imports are estimated as energy use less production, both measured in oil equivalents. A negative value indicates that the country is a net exporter. Energy use refers to use of primary energy before transformation to other end-use fuels, which is equal to indigenous production plus imports and stock changes, minus exports and fuels supplied to ships and aircraft engaged in international transport.	World Bank, World Development Indicators	External Peace
expgdp	exports as a % of GDP	exports of goods and services as a % of GDP	World Bank, World Development Indicators	Internal Peace
fdigdp	Foreign Direct Investment (fl ow) as a % of GDP	Net fl ows of direct investment capital by non-residents into the country, as a percentage of GDP.	World Bank, World Development Indicators	External Peace
freemov	Freedom of foreign movement	This indicator specifies the extent to which citizens are able to travel freely to and from the country and to emigrate without being subject to restrictions by public authorities.	V-Dem (Varieties of Democracy)	External Peace

freexp	Freedom of expression index	To what extent does government respect press & media freedom, the freedom of ordinary people to discuss political matters at home and in the public sphere, as well as the freedom of academic and cultural expression?	V-Dem (Varieties of Democracy)	Internal Peace
gdpcur	Nominal GDP (US$ bn)	Nominal gross domestic product US$ market prices	World Bank, World Development Indicators	Internal Peace
gdppc	GDP per capita	Nominal gross domestic product (US$) per capita	World Bank, World Development Indicators	Internal Peace
gini	Gini coeffi cient	The Gini index measures the extent to which the distribution of income among individuals or households within an economy deviates from a perfectly equal distribution	World Bank, World Development Indicators	Internal Peace
govspend	Government expenditure on education, total (% of government expenditure)	General government expenditure on education (current, capital, and transfers) is expressed as a percentage of total general government expenditure on all sectors (including health, education, social services, etc.). It includes expenditure funded by transfers from international sources to government. General government usually refers to local, regional and central governments.	World Bank, World Development Indicators	Internal Peace
homrate	Number of homicides per 100,000 people	Intentional homicide refers to death deliberately inflicted on a person by another person, including infanticide. The figures refer to the total number of penal code offences or their equivalent, but exclude minor road traffic and other petty offences, brought to the attention of the police or other law enforcement agencies and recorded by one of those agencies.	World Bank, World Development Indicators	Internal Peace

impgdp	imports as a % of GDP	Imports of goods and services as a % of GDP	World Bank, World Development Indicators	Internal Peace
infmort	Infant mortality per 1,000 live births	Infant mortality rate is the number of infants dying before reaching one year of age, per 1,000 live births in a given year	World Bank, World Development Indicators	Total Peace
lifexp	Life expectancy	Life expectancy at birth is the number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life	World Bank, World Development Indicators	Internal Peace Total Peace
liter	Adult literacy rate (% of population over the age of 15)	Data refer to national literacy estimates from censuses or surveys.	World Bank, World Development Indicators	Internal Peace
milex	Military expenditure as a percentage of GDP	Cash outlays of central or federal government to meet the costs of national armed forces—including strategic, land, naval, air, command, administration and support forces as well as paramilitary forces, customs forces and border guards if these are trained and equipped as a military force.	World Bank, World Development Indicators	Internal Peace External Peace
oilres	Oil reserves	Oil reserves in billions of barrels.	V-Dem (Varieties of Democracy)	External Peace
prienr	Primary school enrolment ratio (% Net)	Net enrolment ratio is the ratio of the number of children of official school age (as defi ned by the national education system) who are enrolled in school to the population of the corresponding offi cial school age	World Bank, World Development Indicators	Internal Peace
ptss	Political terror scale	The Political Terror Scale (PTS) measures levels of political violence and terror that a country experiences in a given year based on a 5-level “terror	The Political Terror Scale	Internal Peace External Peace

		scale" originally developed by Freedom House. (US Department of State)		
refpop	Number of refugees	Refugee population by country or territory of origin,	World Bank, World Development Indicators	External Peace
regdem	Share of democracies in the region	The percentage of democracies in each region	V-Dem (Varieties of Democracy)	External Peace
secenr	Secondary school enrolment ratio (% Net)	Net enrolment ratio is the ratio of the number of children of official school age (as defi ned by the national education system) who are enrolled in school to the population of the corresponding offi cial school age	World Bank, World Development Indicators	Internal Peace
tert	Higher education enrolment (% Gross)	Gross enrolment ratio is the ratio of total enrolment, regardless of age, to the population of the age group that officially corresponds to the level of education shown	World Bank, World Development Indicators	Internal Peace
unemp	Unemployment %	ILO defi nes the unemployed as members of the economically active population who are without work but available for and seeking work, including people who have lost their jobs and those who have voluntary left work	World Bank, World Development Indicators	Internal Peace
wompp	Women Political Participation Index	Women's political participation is understood to include women's descriptive representation in the legislature and an equal share in the overall distribution of power	V-Dem (Varieties of Democracy)	Internal Peace

Appendix B: Peace Index of MENA Region Countries 1960-1965

Rank within the region	1960			1961			1962			1963			1964			1965		
	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score
1	Israel	1	3.150	Israel	5	3.258	Israel	6	3.220	Israel	20	3.303	Cyprus	25	3.283	Cyprus	22	3.349
2	Cyprus	20	3.025	Cyprus	27	3.164	Cyprus	31	3.132	Cyprus	34	3.253	Israel	38	3.218	Qatar	47	3.253
3	Lebanon	47	2.907	Lebanon	46	3.076	Lebanon	44	3.051	Lebanon	47	3.177	Lebanon	48	3.171	Lebanon	49	3.246
4	Qatar	66	2.828	Qatar	62	2.994	Qatar	51	3.027	Qatar	50	3.152	Qatar	51	3.150	Kuwait	64	3.189
5	Kuwait	69	2.776	Kuwait	67	2.962	Kuwait	68	2.946	Kuwait	66	3.093	Kuwait	64	3.100	Israel	72	3.114
6	Jordan	79	2.681	Jordan	78	2.861	Jordan	77	2.839	Jordan	75	2.992	Jordan	74	2.995	Bahrain	75	3.098
7	Syria	83	2.650	Syria	81	2.828	Bahrain	83	2.804	Bahrain	78	2.974	Bahrain	76	2.992	Jordan	77	3.089
8	Sudan	86	2.636	Bahrain	83	2.813	Syria	84	2.800	Syria	81	2.953	Syria	80	2.955	UAE	80	3.050
9	Bahrain	89	2.614	Sudan	87	2.801	UAE	88	2.774	UAE	84	2.937	UAE	82	2.948	Syria	81	3.048
10	UAE	91	2.608	UAE	88	2.795	Sudan	90	2.762	Iraq	89	2.909	Iraq	88	2.917	Iraq	86	3.018
11	Iraq	93	2.579	Iraq	91	2.765	Iraq	92	2.744	Sudan	90	2.908	Sudan	91	2.897	Sudan	92	2.984
12	Morocco	99	2.553	Iran	97	2.728	Iran	95	2.704	Morocco	101	2.832	Saudi Arabia	95	2.856	Iran	97	2.930
13	Algeria	107	2.520	Morocco	98	2.721	Morocco	101	2.677	Iran	102	2.828	Morocco	102	2.824	Libya	100	2.926
14	Oman	111	2.504	Oman	108	2.685	Saudi Arabia	108	2.645	Libya	106	2.802	Libya	103	2.816	Morocco	103	2.914
15	Iran	119	2.463	Algeria	109	2.683	Algeria	113	2.632	Djibouti	109	2.798	Djibouti	108	2.787	Saudi Arabia	111	2.874
16	Djibouti	120	2.463	Djibouti	113	2.669	Libya	115	2.620	Algeria	112	2.783	Algeria	114	2.768	Turkey	114	2.865
17	Turkey	122	2.458	Libya	118	2.641	Turkey	118	2.597	Turkey	115	2.766	Turkey	115	2.766	Algeria	116	2.853
18	Tunisia	125	2.451	Turkey	119	2.636	Ethiopia	120	2.582	Egypt	128	2.711	Iran	117	2.761	Djibouti	119	2.836
19	Saudi Arabia	126	2.449	Saudi Arabia	120	2.635	Djibouti	127	2.556	Tunisia	130	2.694	Egypt	125	2.712	Tunisia	122	2.810
20	Libya	127	2.448	Tunisia	123	2.612	Egypt	133	2.538	Saudi Arabia	132	2.688	Tunisia	130	2.700	Egypt	123	2.809
21	Ethiopia	133	2.427	Egypt	131	2.579	Tunisia	136	2.513	Ethiopia	133	2.676	Ethiopia	138	2.630	Oman	138	2.724
22	Egypt	137	2.395	Ethiopia	134	2.562	Oman	148	2.405	Oman	144	2.600	Oman	140	2.610	Ethiopia	146	2.658
23	Yemen, Rep.	151	2.276	Yemen, Rep.	154	2.385	Yemen, Rep.	156	2.335	Yemen, Rep.	161	2.365	Yemen, Rep.	161	2.361	Yemen, Rep.	159	2.475

Peace Index of MENA Region Countries 1966-1970

Rank within the region	1966			1967			1968			1969			1970		
	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score
1	Cyprus	19	3.286	Cyprus	7	3.336	Israel	21	3.465	Israel	20	3.275	Cyprus	9	3.298
2	Israel	22	3.280	Israel	12	3.328	Cyprus	28	3.451	Cyprus	31	3.253	Israel	21	3.268
3	Lebanon	48	3.155	Qatar	43	3.202	Qatar	40	3.376	Qatar	46	3.161	Qatar	43	3.165
4	Kuwait	57	3.106	Lebanon	49	3.177	Lebanon	47	3.352	Lebanon	50	3.149	Lebanon	47	3.142
5	Qatar	67	3.066	Kuwait	57	3.136	Kuwait	56	3.326	Kuwait	54	3.128	Kuwait	51	3.130
6	Bahrain	73	3.021	Bahrain	71	3.063	Bahrain	68	3.270	Bahrain	66	3.075	Bahrain	63	3.089
7	Jordan	76	2.999	Jordan	78	3.030	Jordan	73	3.229	Jordan	74	3.019	UAE	73	3.030
8	UAE	81	2.967	UAE	81	3.005	UAE	76	3.218	UAE	75	3.016	Jordan	74	3.024
9	Syria	83	2.955	Syria	82	2.986	Syria	80	3.190	Syria	80	2.976	Syria	79	2.984
10	Iraq	85	2.927	Iraq	86	2.961	Iraq	85	3.170	Iraq	82	2.953	Iraq	81	2.958
11	Sudan	93	2.874	Sudan	91	2.894	Saudi Arabia	86	3.164	Libya	92	2.880	Libya	89	2.894
12	Libya	97	2.837	Libya	95	2.875	Libya	93	3.100	Sudan	95	2.854	Saudi Arabia	92	2.868
13	Saudi Arabia	103	2.804	Morocco	102	2.822	Sudan	94	3.095	Saudi Arabia	99	2.815	Sudan	95	2.848
14	Morocco	104	2.804	Iran	109	2.790	Morocco	101	3.036	Morocco	105	2.788	Iran	101	2.806
15	Djibouti	111	2.776	Turkey	111	2.781	Iran	103	3.033	Iran	107	2.785	Morocco	106	2.785
16	Turkey	112	2.758	Djibouti	114	2.760	Turkey	111	3.006	Turkey	112	2.760	Tunisia	111	2.763
17	Algeria	115	2.731	Tunisia	118	2.744	Djibouti	113	2.988	Tunisia	114	2.746	Turkey	112	2.763
18	Iran	118	2.727	Algeria	121	2.740	Tunisia	115	2.983	Algeria	120	2.695	Djibouti	113	2.759
19	Tunisia	121	2.710	Saudi Arabia	123	2.715	Algeria	119	2.959	Egypt	125	2.673	Algeria	122	2.689
20	Egypt	122	2.697	Egypt	126	2.710	Egypt	122	2.939	Djibouti	126	2.668	Oman	124	2.669
21	Ethiopia	128	2.660	Ethiopia	134	2.672	Oman	130	2.902	Oman	129	2.653	Egypt	126	2.666
22	Oman	135	2.620	Oman	136	2.650	Ethiopia	132	2.892	Ethiopia	133	2.616	Ethiopia	138	2.606
23	Yemen, Rep.	161	2.350	Yemen, Rep.	161	2.372	Yemen, Rep.	158	2.654	Yemen, Rep.	159	2.366	Yemen, Rep.	158	2.382

Peace Index of MENA Region Countries 1971-1975

Rank within the region	1971			1972			1973			1974			1975		
	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score
1	Cyprus	9	3.329	Cyprus	8	3.342	Israel	15	3.378	Cyprus	8	3.361	Cyprus	17	3.534
2	Israel	10	3.328	Israel	32	3.271	Cyprus	18	3.373	Israel	27	3.298	Israel	23	3.514
3	Qatar	44	3.201	Qatar	41	3.215	Qatar	39	3.291	Qatar	36	3.242	Qatar	37	3.464
4	Lebanon	47	3.167	Kuwait	49	3.175	Kuwait	50	3.251	Kuwait	51	3.198	Kuwait	49	3.425
5	Kuwait	50	3.163	Lebanon	51	3.171	Lebanon	53	3.240	Bahrain	55	3.189	Bahrain	51	3.422
6	Bahrain	60	3.131	Bahrain	57	3.152	Bahrain	55	3.236	Lebanon	57	3.180	Lebanon	56	3.403
7	UAE	69	3.075	UAE	65	3.097	UAE	64	3.185	UAE	64	3.138	UAE	61	3.380
8	Jordan	75	3.059	Jordan	71	3.073	Jordan	69	3.155	Jordan	69	3.100	Jordan	66	3.341
9	Syria	80	3.021	Syria	78	3.038	Syria	77	3.123	Syria	79	3.070	Syria	72	3.316
10	Saudi Arabia	83	2.995	Iraq	81	3.007	Iraq	81	3.091	Iraq	82	3.034	Iraq	78	3.281
11	Iraq	84	2.993	Libya	87	2.959	Libya	84	3.053	Libya	84	3.002	Libya	82	3.261
12	Libya	92	2.937	Sudan	98	2.872	Saudi Arabia	99	2.952	Saudi Arabia	98	2.904	Saudi Arabia	94	3.180
13	Sudan	98	2.870	Saudi Arabia	100	2.849	Sudan	100	2.949	Tunisia	101	2.884	Tunisia	99	3.162
14	Morocco	105	2.811	Tunisia	103	2.833	Tunisia	102	2.934	Sudan	103	2.873	Sudan	103	3.131
15	Djibouti	107	2.810	Morocco	105	2.816	Morocco	106	2.899	Iran	106	2.839	Iran	106	3.119
16	Tunisia	108	2.808	Djibouti	106	2.813	Turkey	108	2.899	Turkey	107	2.835	Turkey	107	3.110
17	Turkey	110	2.796	Turkey	109	2.808	Iran	109	2.896	Morocco	108	2.829	Morocco	108	3.098
18	Iran	114	2.778	Iran	111	2.798	Djibouti	113	2.881	Djibouti	110	2.826	Oman	110	3.087
19	Algeria	122	2.716	Oman	119	2.741	Oman	119	2.847	Oman	114	2.795	Djibouti	114	3.069
20	Oman	123	2.715	Algeria	123	2.723	Algeria	123	2.814	Algeria	121	2.747	Algeria	120	3.033
21	Egypt	126	2.692	Egypt	127	2.698	Egypt	127	2.789	Egypt	126	2.724	Egypt	126	3.015
22	Ethiopia	137	2.623	Ethiopia	141	2.619	Ethiopia	141	2.702	Ethiopia	140	2.610	Ethiopia	143	2.896
23	Yemen, Rep.	156	2.428	Yemen, Rep.	156	2.449	Yemen, Rep.	153	2.563	Yemen, Rep.	150	2.497	Yemen, Rep.	150	2.823

Peace Index of MENA Region Countries 1976-1980

Rank within the region	1976			1977			1978			1979			1980		
	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score
1	Cyprus	13	3.530	Cyprus	10	3.543	Cyprus	9	3.539	Israel	18	3.493	Israel	17	3.376
2	Israel	19	3.518	Israel	19	3.521	Israel	21	3.507	Cyprus	19	3.492	Cyprus	18	3.375
3	Qatar	37	3.463	Qatar	34	3.468	Qatar	34	3.453	Qatar	37	3.439	Qatar	36	3.318
4	Bahrain	49	3.425	Bahrain	44	3.434	Bahrain	42	3.422	Bahrain	44	3.409	Bahrain	45	3.288
5	Kuwait	50	3.425	Kuwait	45	3.431	Kuwait	47	3.415	Kuwait	46	3.402	Kuwait	46	3.279
6	Lebanon	56	3.398	UAE	54	3.399	UAE	54	3.389	UAE	52	3.380	UAE	54	3.259
7	UAE	59	3.387	Lebanon	56	3.398	Lebanon	58	3.376	Lebanon	57	3.357	Lebanon	61	3.224
8	Jordan	67	3.345	Jordan	67	3.352	Jordan	67	3.336	Jordan	66	3.322	Jordan	65	3.192
9	Syria	71	3.323	Syria	72	3.331	Syria	72	3.316	Syria	72	3.305	Syria	71	3.176
10	Iraq	81	3.284	Iraq	79	3.284	Libya	80	3.268	Libya	78	3.258	Libya	77	3.125
11	Libya	82	3.273	Libya	80	3.282	Iraq	81	3.257	Iraq	80	3.232	Iraq	82	3.082
12	Saudi Arabia	90	3.201	Saudi Arabia	88	3.214	Saudi Arabia	86	3.203	Saudi Arabia	84	3.199	Saudi Arabia	84	3.069
13	Tunisia	94	3.184	Tunisia	90	3.200	Tunisia	89	3.191	Tunisia	86	3.189	Tunisia	85	3.059
14	Iran	103	3.135	Iran	102	3.139	Oman	102	3.125	Oman	99	3.128	Oman	94	2.999
15	Sudan	105	3.131	Oman	104	3.131	Iran	104	3.116	Turkey	104	3.099	Turkey	103	2.954
16	Turkey	106	3.124	Turkey	105	3.128	Turkey	106	3.109	Iran	105	3.096	Iran	106	2.940
17	Oman	107	3.114	Sudan	106	3.124	Sudan	108	3.090	Morocco	107	3.076	Morocco	107	2.928
18	Morocco	109	3.109	Morocco	107	3.110	Morocco	109	3.088	Sudan	109	3.062	Algeria	109	2.913
19	Algeria	116	3.053	Algeria	114	3.060	Algeria	114	3.047	Algeria	110	3.047	Sudan	110	2.897
20	Egypt	120	3.037	Egypt	118	3.043	Egypt	118	3.027	Egypt	114	3.023	Egypt	113	2.875
21	Djibouti	125	3.021	Djibouti	124	3.017	Djibouti	124	2.988	Djibouti	122	2.970	Djibouti	122	2.806
22	Ethiopia	144	2.899	Ethiopia	144	2.881	Yemen, Rep.	146	2.853	Yemen, Rep.	140	2.854	Yemen, Rep.	136	2.701
23	Yemen, Rep.	150	2.858	Yemen, Rep.	147	2.868	Ethiopia	149	2.834	Ethiopia	148	2.798	Ethiopia	148	2.604

Peace Index of MENA Region Countries 1981-1985

Rank within the region	1981			1982			1983			1984			1985		
	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score
1	Israel	17	3.434	Cyprus	16	3.432	Cyprus	15	3.466	Cyprus	15	3.461	Cyprus	12	3.472
2	Cyprus	18	3.433	Israel	20	3.424	Israel	19	3.459	Israel	18	3.454	Israel	15	3.466
3	Qatar	33	3.376	Qatar	32	3.374	Qatar	30	3.409	Qatar	28	3.405	Qatar	29	3.415
4	Bahrain	43	3.347	Bahrain	40	3.347	Bahrain	42	3.382	Kuwait	39	3.377	Kuwait	38	3.389
5	Kuwait	44	3.340	Kuwait	44	3.342	Kuwait	43	3.380	Bahrain	40	3.377	Bahrain	39	3.387
6	UAE	52	3.322	UAE	50	3.324	UAE	48	3.363	UAE	46	3.362	UAE	45	3.375
7	Lebanon	61	3.279	Lebanon	60	3.276	Lebanon	60	3.309	Lebanon	58	3.304	Lebanon	59	3.314
8	Jordan	64	3.252	Jordan	63	3.253	Jordan	63	3.290	Jordan	63	3.288	Jordan	63	3.300
9	Syria	70	3.238	Syria	70	3.242	Syria	68	3.282	Syria	64	3.282	Syria	65	3.297
10	Libya	77	3.188	Libya	76	3.193	Libya	77	3.232	Libya	76	3.233	Libya	77	3.247
11	Saudi Arabia	84	3.139	Saudi Arabia	80	3.151	Saudi Arabia	78	3.196	Saudi Arabia	77	3.204	Saudi Arabia	78	3.225
12	Iraq	85	3.131	Tunisia	84	3.142	Tunisia	83	3.186	Tunisia	79	3.192	Tunisia	80	3.210
13	Tunisia	86	3.129	Iraq	85	3.124	Iraq	85	3.157	Oman	85	3.168	Oman	82	3.195
14	Oman	92	3.077	Oman	91	3.098	Oman	86	3.153	Iraq	86	3.156	Iraq	87	3.171
15	Turkey	102	3.020	Algeria	100	3.032	Algeria	95	3.100	Algeria	92	3.131	Algeria	88	3.170
16	Algeria	107	2.999	Turkey	101	3.031	Turkey	100	3.074	Turkey	99	3.081	Turkey	99	3.100
17	Morocco	108	2.994	Morocco	108	3.006	Morocco	105	3.050	Morocco	104	3.059	Morocco	104	3.079
18	Iran	109	2.993	Iran	110	2.994	Iran	110	3.033	Iran	110	3.040	Iran	107	3.065
19	Egypt	112	2.947	Egypt	111	2.965	Egypt	111	3.017	Egypt	111	3.034	Egypt	109	3.063
20	Sudan	113	2.944	Sudan	115	2.937	Sudan	116	2.963	Sudan	116	2.954	Sudan	116	2.957
21	Djibouti	123	2.865	Djibouti	122	2.870	Djibouti	122	2.906	Djibouti	122	2.907	Djibouti	122	2.919
22	Yemen, Rep.	135	2.780	Yemen, Rep.	132	2.806	Yemen, Rep.	127	2.861	Yemen, Rep.	124	2.877	Yemen, Rep.	124	2.903
23	Ethiopia	149	2.648	Ethiopia	150	2.645	Ethiopia	150	2.674	Ethiopia	149	2.672	Ethiopia	149	2.682

Peace Index of MENA Region Countries 1986-1990

Rank within the region	1986			1987			1988			1989			1990		
	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score
1	Cyprus	12	3.480	Cyprus	12	3.492	Cyprus	12	3.537	Cyprus	13	3.554	Israel	13	3.587
2	Israel	18	3.467	Israel	19	3.480	Israel	24	3.513	Israel	14	3.553	Cyprus	14	3.585
3	Qatar	29	3.424	Qatar	29	3.439	Qatar	30	3.487	Qatar	30	3.508	Qatar	30	3.542
4	Kuwait	39	3.399	Kuwait	39	3.413	Kuwait	37	3.461	Kuwait	36	3.481	Kuwait	34	3.515
5	Bahrain	40	3.394	Bahrain	41	3.407	UAE	41	3.453	UAE	38	3.475	UAE	35	3.511
6	UAE	44	3.386	UAE	43	3.403	Bahrain	42	3.453	Bahrain	40	3.471	Bahrain	41	3.504
7	Lebanon	59	3.323	Lebanon	60	3.340	Lebanon	60	3.390	Lebanon	59	3.413	Lebanon	58	3.451
8	Jordan	64	3.312	Syria	62	3.330	Syria	61	3.382	Syria	60	3.407	Syria	60	3.445
9	Syria	65	3.311	Jordan	63	3.329	Jordan	62	3.379	Jordan	63	3.402	Jordan	64	3.438
10	Libya	77	3.261	Libya	76	3.281	Libya	74	3.335	Saudi Arabia	73	3.365	Saudi Arabia	71	3.410
11	Saudi Arabia	78	3.246	Saudi Arabia	78	3.272	Saudi Arabia	76	3.332	Libya	74	3.363	Libya	73	3.403
12	Tunisia	80	3.227	Oman	80	3.252	Oman	78	3.316	Oman	77	3.351	Oman	74	3.398
13	Oman	81	3.222	Tunisia	81	3.251	Tunisia	80	3.307	Tunisia	81	3.337	Tunisia	78	3.380
14	Algeria	85	3.202	Algeria	83	3.234	Algeria	82	3.294	Algeria	82	3.322	Algeria	82	3.361
15	Iraq	87	3.191	Iraq	86	3.217	Iraq	85	3.277	Iraq	84	3.308	Iraq	83	3.351
16	Turkey	99	3.120	Turkey	98	3.147	Iran	96	3.213	Iran	93	3.259	Iran	88	3.317
17	Morocco	101	3.101	Iran	99	3.137	Turkey	97	3.206	Turkey	97	3.241	Turkey	97	3.286
18	Iran	104	3.096	Morocco	101	3.128	Morocco	100	3.189	Morocco	99	3.224	Morocco	99	3.269
19	Egypt	107	3.091	Egypt	104	3.123	Egypt	101	3.186	Egypt	100	3.222	Egypt	100	3.267
20	Sudan	117	2.963	Sudan	117	2.978	Sudan	118	3.028	Yemen, Rep.	119	3.056	Yemen, Rep.	119	3.101
21	Djibouti	122	2.933	Yemen, Rep.	120	2.959	Yemen, Rep.	120	3.020	Sudan	120	3.054	Sudan	120	3.092
22	Yemen, Rep.	123	2.928	Djibouti	122	2.954	Djibouti	122	3.007	Djibouti	121	3.038	Djibouti	121	3.078
23	Ethiopia	149	2.697	Ethiopia	150	2.722	Ethiopia	149	2.781	Ethiopia	147	2.817	Ethiopia	147	2.864

Peace Index of MENA Region Countries 1991-1995

Rank within the region	1991			1992			1993			1994			1995		
	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score
1	Israel	13	3.610	Cyprus	15	3.635	Israel	13	3.656	Israel	13	3.660	Israel	13	3.684
2	Cyprus	14	3.608	Israel	17	3.633	Cyprus	16	3.652	Cyprus	19	3.654	Cyprus	18	3.679
3	Qatar	29	3.568	Qatar	28	3.598	Qatar	28	3.616	Qatar	28	3.620	Qatar	28	3.645
4	UAE	34	3.538	UAE	34	3.570	UAE	35	3.589	UAE	34	3.593	UAE	34	3.620
5	Kuwait	35	3.538	Kuwait	35	3.570	Kuwait	36	3.587	Kuwait	37	3.588	Kuwait	36	3.612
6	Bahrain	37	3.528	Bahrain	38	3.558	Bahrain	38	3.577	Bahrain	38	3.582	Bahrain	38	3.610
7	Lebanon	56	3.480	Lebanon	56	3.513	Lebanon	53	3.535	Lebanon	49	3.542	Lebanon	48	3.572
8	Syria	61	3.474	Syria	59	3.507	Syria	57	3.528	Syria	54	3.534	Syria	52	3.562
9	Jordan	64	3.466	Jordan	63	3.496	Jordan	62	3.515	Saudi Arabia	59	3.520	Oman	60	3.551
10	Saudi Arabia	70	3.446	Saudi Arabia	68	3.484	Saudi Arabia	64	3.510	Jordan	60	3.519	Saudi Arabia	61	3.551
11	Oman	71	3.436	Oman	71	3.477	Oman	67	3.506	Oman	62	3.518	Jordan	64	3.545
12	Libya	73	3.435	Libya	72	3.470	Libya	70	3.491	Libya	68	3.498	Libya	69	3.525
13	Tunisia	79	3.415	Tunisia	76	3.452	Tunisia	72	3.477	Tunisia	71	3.489	Tunisia	71	3.521
14	Algeria	83	3.391	Algeria	82	3.422	Algeria	82	3.443	Iran	82	3.450	Iran	81	3.483
15	Iraq	85	3.384	Iraq	84	3.418	Iraq	83	3.440	Algeria	83	3.449	Algeria	83	3.476
16	Iran	88	3.362	Iran	87	3.407	Iran	84	3.438	Iraq	84	3.447	Iraq	84	3.474
17	Turkey	94	3.324	Turkey	93	3.365	Turkey	92	3.394	Turkey	90	3.409	Turkey	90	3.444
18	Morocco	98	3.306	Morocco	97	3.344	Morocco	95	3.370	Egypt	94	3.385	Egypt	91	3.419
19	Egypt	99	3.303	Egypt	98	3.342	Egypt	96	3.370	Morocco	96	3.382	Morocco	94	3.413
20	Yemen, Rep.	119	3.137	Yemen, Rep.	119	3.174	Yemen, Rep.	120	3.197	Yemen, Rep.	119	3.206	Yemen, Rep.	117	3.233
21	Sudan	120	3.123	Sudan	122	3.157	Sudan	122	3.180	Sudan	123	3.188	Sudan	121	3.216
22	Djibouti	123	3.109	Djibouti	124	3.142	Djibouti	126	3.161	Djibouti	126	3.166	Djibouti	127	3.189
23	Ethiopia	146	2.904	Ethiopia	146	2.946	Ethiopia	144	2.977	Ethiopia	142	2.996	Ethiopia	142	3.032

Peace Index of MENA Region Countries 1996-2000

Rank within the region	1996			1997			1998			1999			2000		
	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score
1	Israel	11	3.680	Israel	13	3.677	Israel	11	3.685	Israel	11	3.692	Israel	11	3.683
2	Cyprus	19	3.669	Cyprus	19	3.670	Cyprus	20	3.678	Cyprus	19	3.682	Cyprus	20	3.670
3	Qatar	30	3.636	Qatar	30	3.636	Qatar	32	3.644	Qatar	32	3.647	Qatar	32	3.635
4	UAE	33	3.611	UAE	33	3.613	UAE	34	3.623	UAE	34	3.626	UAE	34	3.616
5	Bahrain	38	3.604	Bahrain	35	3.607	Bahrain	36	3.618	Bahrain	36	3.622	Bahrain	36	3.612
6	Kuwait	39	3.602	Kuwait	38	3.601	Kuwait	40	3.609	Kuwait	40	3.610	Kuwait	41	3.597
7	Lebanon	49	3.568	Lebanon	49	3.573	Lebanon	47	3.586	Lebanon	45	3.594	Lebanon	44	3.588
8	Syria	53	3.555	Syria	52	3.557	Oman	50	3.571	Oman	50	3.580	Oman	50	3.574
9	Oman	56	3.550	Oman	53	3.557	Syria	54	3.567	Syria	54	3.572	Syria	54	3.562
10	Saudi Arabia	58	3.547	Saudi Arabia	57	3.552	Saudi Arabia	57	3.563	Saudi Arabia	56	3.569	Saudi Arabia	57	3.560
11	Jordan	64	3.535	Jordan	64	3.536	Jordan	64	3.543	Tunisia	65	3.547	Tunisia	65	3.541
12	Tunisia	68	3.519	Tunisia	67	3.526	Tunisia	66	3.539	Jordan	66	3.546	Jordan	67	3.534
13	Libya	69	3.517	Libya	70	3.518	Libya	71	3.526	Libya	71	3.528	Libya	70	3.517
14	Iran	81	3.479	Iran	80	3.485	Iran	78	3.497	Iran	78	3.504	Iran	76	3.498
15	Algeria	82	3.471	Algeria	81	3.474	Algeria	84	3.484	Algeria	84	3.488	Turkey	84	3.483
16	Iraq	84	3.466	Iraq	85	3.466	Turkey	86	3.473	Turkey	85	3.485	Algeria	85	3.479
17	Turkey	90	3.445	Turkey	90	3.456	Iraq	87	3.473	Iraq	88	3.473	Iraq	88	3.458
18	Egypt	91	3.421	Egypt	91	3.430	Egypt	91	3.445	Egypt	90	3.453	Egypt	90	3.447
19	Morocco	92	3.410	Morocco	92	3.416	Morocco	92	3.429	Morocco	92	3.436	Morocco	91	3.430
20	Yemen, Rep.	116	3.227	Yemen, Rep.	115	3.229	Yemen, Rep.	115	3.238	Yemen, Rep.	115	3.243	Yemen, Rep.	114	3.236
21	Sudan	120	3.212	Sudan	118	3.215	Sudan	117	3.224	Sudan	116	3.228	Sudan	116	3.220
22	Djibouti	125	3.178	Djibouti	127	3.175	Djibouti	126	3.177	Djibouti	125	3.174	Djibouti	128	3.158
23	Ethiopia	139	3.036	Ethiopia	139	3.046	Ethiopia	138	3.060	Ethiopia	138	3.068	Ethiopia	137	3.065

Peace Index of MENA Region Countries 2001-2005

Rank within the region	2001			2002			2003			2004			2005		
	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score
1	Israel	10	3.682	Israel	11	3.682	Israel	11	3.684	Israel	10	3.692	Israel	11	3.704
2	Cyprus	20	3.666	Cyprus	20	3.668	Cyprus	19	3.669	Cyprus	20	3.673	Cyprus	22	3.687
3	Qatar	32	3.630	Qatar	32	3.631	Qatar	32	3.632	Qatar	32	3.635	Qatar	32	3.647
4	UAE	35	3.613	UAE	35	3.614	UAE	34	3.616	UAE	34	3.620	UAE	34	3.633
5	Bahrain	37	3.608	Bahrain	37	3.609	Bahrain	37	3.610	Bahrain	37	3.614	Lebanon	36	3.631
6	Kuwait	41	3.591	Lebanon	41	3.596	Lebanon	38	3.603	Lebanon	38	3.613	Bahrain	38	3.626
7	Lebanon	42	3.589	Kuwait	42	3.590	Kuwait	42	3.589	Oman	43	3.591	Oman	42	3.606
8	Oman	49	3.574	Oman	47	3.579	Oman	44	3.584	Kuwait	44	3.590	Kuwait	46	3.600
9	Syria	57	3.559	Syria	55	3.562	Syria	55	3.566	Syria	56	3.572	Syria	54	3.584
10	Saudi Arabia	58	3.557	Saudi Arabia	59	3.558	Saudi Arabia	59	3.559	Saudi Arabia	58	3.561	Saudi Arabia	58	3.572
11	Tunisia	63	3.540	Tunisia	63	3.544	Tunisia	63	3.548	Tunisia	62	3.554	Tunisia	62	3.568
12	Jordan	68	3.529	Jordan	68	3.529	Jordan	70	3.530	Jordan	70	3.533	Jordan	70	3.544
13	Libya	73	3.512	Libya	73	3.513	Libya	74	3.514	Libya	74	3.519	Libya	74	3.533
14	Iran	76	3.498	Iran	76	3.503	Iran	76	3.508	Iran	75	3.515	Turkey	75	3.531
15	Turkey	80	3.486	Turkey	78	3.494	Turkey	77	3.503	Turkey	77	3.513	Iran	76	3.531
16	Algeria	86	3.476	Algeria	85	3.480	Algeria	83	3.485	Algeria	83	3.494	Algeria	82	3.511
17	Iraq	89	3.449	Egypt	89	3.448	Egypt	88	3.450	Egypt	89	3.454	Morocco	89	3.470
18	Egypt	90	3.445	Iraq	90	3.443	Morocco	90	3.443	Morocco	90	3.452	Egypt	90	3.466
19	Morocco	92	3.430	Morocco	91	3.437	Iraq	91	3.437	Iraq	94	3.434	Iraq	94	3.438
20	Yemen, Rep.	113	3.236	Yemen, Rep.	112	3.240	Yemen, Rep.	112	3.245	Yemen, Rep.	113	3.252	Yemen, Rep.	113	3.268
21	Sudan	118	3.216	Sudan	116	3.218	Sudan	116	3.219	Sudan	117	3.224	Sudan	118	3.235
22	Djibouti	129	3.150	Djibouti	129	3.145	Djibouti	129	3.142	Djibouti	130	3.142	Djibouti	131	3.150
23	Ethiopia	135	3.068	Ethiopia	135	3.078	Ethiopia	135	3.090	Ethiopia	134	3.107	Ethiopia	132	3.132

Peace Index of MENA Region Countries 2006-2010

Rank within the region	2006			2007			2008			2009			2010		
	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score
1	Israel	11	3.696	Israel	11	3.694	Israel	11	3.697	Israel	10	3.681	Israel	9	3.686
2	Cyprus	23	3.675	Cyprus	23	3.675	Cyprus	23	3.674	Cyprus	23	3.654	Cyprus	24	3.658
3	Qatar	32	3.634	Qatar	32	3.633	Lebanon	32	3.630	Lebanon	32	3.612	Lebanon	32	3.618
4	Lebanon	34	3.624	Lebanon	33	3.628	Qatar	33	3.630	Qatar	33	3.608	Qatar	33	3.610
5	UAE	35	3.620	UAE	35	3.620	UAE	35	3.618	UAE	35	3.596	UAE	36	3.599
6	Bahrain	38	3.613	Bahrain	38	3.613	Bahrain	38	3.611	Bahrain	39	3.588	Bahrain	39	3.591
7	Oman	42	3.595	Oman	41	3.596	Oman	42	3.594	Oman	43	3.573	Oman	43	3.575
8	Kuwait	47	3.585	Kuwait	47	3.581	Kuwait	49	3.577	Kuwait	52	3.552	Kuwait	54	3.553
9	Syria	54	3.570	Syria	55	3.565	Tunisia	58	3.555	Tunisia	59	3.533	Tunisia	59	3.535
10	Tunisia	57	3.557	Tunisia	58	3.557	Syria	59	3.553	Saudi Arabia	63	3.525	Saudi Arabia	62	3.526
11	Saudi Arabia	58	3.556	Saudi Arabia	64	3.553	Saudi Arabia	64	3.549	Syria	66	3.518	Turkey	66	3.517
12	Jordan	71	3.530	Turkey	71	3.528	Turkey	70	3.530	Turkey	68	3.512	Iran	68	3.515
13	Turkey	74	3.524	Jordan	72	3.528	Iran	72	3.526	Iran	70	3.509	Syria	74	3.504
14	Iran	75	3.522	Iran	75	3.525	Jordan	73	3.524	Jordan	76	3.500	Jordan	76	3.500
15	Libya	76	3.521	Libya	76	3.522	Libya	77	3.519	Libya	77	3.495	Libya	77	3.494
16	Algeria	79	3.503	Algeria	78	3.506	Algeria	78	3.507	Algeria	78	3.488	Algeria	79	3.491
17	Morocco	88	3.463	Morocco	88	3.467	Morocco	86	3.468	Morocco	86	3.451	Morocco	87	3.455
18	Egypt	89	3.453	Egypt	90	3.452	Egypt	89	3.449	Egypt	89	3.425	Egypt	90	3.425
19	Iraq	93	3.418	Iraq	95	3.411	Iraq	98	3.402	Iraq	99	3.374	Iraq	100	3.370
20	Yemen, Rep.	112	3.259	Yemen, Rep.	111	3.261	Yemen, Rep.	111	3.259	Yemen, Rep.	113	3.236	Yemen, Rep.	115	3.233
21	Sudan	118	3.222	Sudan	119	3.220	Sudan	119	3.214	Sudan	120	3.188	Sudan	122	3.184
22	Djibouti	132	3.136	Ethiopia	132	3.148	Ethiopia	130	3.159	Ethiopia	128	3.148	Ethiopia	127	3.158
23	Ethiopia	133	3.135	Djibouti	133	3.133	Djibouti	133	3.126	Djibouti	133	3.102	Djibouti	133	3.098

Peace Index of MENA Region Countries 2011-2016

Rank within the region	2011			2012			2013			2014			2015			2016		
	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score	Country	Rank	Score
1	Israel	10	3.703	Israel	11	3.680	Israel	11	3.691	Israel	12	3.677	Israel	12	3.664	Cyprus	1	3.681
2	Cyprus	26	3.676	Cyprus	26	3.654	Cyprus	26	3.664	Cyprus	26	3.650	Cyprus	26	3.641	Israel	13	3.623
3	Lebanon	31	3.636	Lebanon	30	3.615	Lebanon	30	3.624	Lebanon	29	3.611	Lebanon	29	3.601	Qatar	23	3.587
4	Qatar	34	3.626	Qatar	33	3.602	Qatar	35	3.610	Qatar	36	3.595	Qatar	35	3.583	UAE	31	3.575
5	UAE	37	3.614	UAE	37	3.590	UAE	37	3.599	UAE	39	3.583	UAE	39	3.571	Kuwait	35	3.560
6	Bahrain	40	3.606	Bahrain	41	3.582	Bahrain	41	3.590	Bahrain	41	3.574	Bahrain	41	3.562	Lebanon	41	3.543
7	Oman	44	3.591	Oman	44	3.567	Oman	44	3.577	Oman	44	3.562	Oman	45	3.552	Oman	45	3.532
8	Kuwait	56	3.567	Kuwait	56	3.542	Kuwait	57	3.551	Kuwait	55	3.535	Kuwait	56	3.523	Tunisia	49	3.521
9	Tunisia	59	3.550	Tunisia	60	3.526	Tunisia	61	3.535	Tunisia	60	3.521	Turkey	60	3.511	Bahrain	54	3.493
10	Saudi Arabia	62	3.540	Turkey	63	3.517	Turkey	63	3.530	Turkey	62	3.519	Tunisia	62	3.511	Libya	57	3.478
11	Turkey	64	3.536	Saudi Arabia	64	3.516	Iran	64	3.528	Iran	64	3.516	Iran	64	3.507	Turkey	65	3.465
12	Iran	65	3.534	Iran	65	3.515	Saudi Arabia	65	3.525	Saudi Arabia	65	3.510	Saudi Arabia	65	3.500	Saudi Arabia	71	3.437
13	Jordan	75	3.513	Jordan	75	3.490	Jordan	76	3.499	Jordan	76	3.483	Jordan	76	3.471	Jordan	73	3.429
14	Algeria	77	3.506	Algeria	78	3.484	Algeria	80	3.491	Algeria	79	3.476	Algeria	80	3.463	Iran	75	3.419
15	Libya	79	3.504	Libya	80	3.479	Libya	82	3.486	Libya	81	3.468	Libya	83	3.455	Syria	80	3.399
16	Syria	81	3.501	Syria	84	3.460	Morocco	85	3.466	Morocco	85	3.454	Morocco	85	3.446	Egypt	83	3.390
17	Morocco	86	3.472	Morocco	85	3.454	Syria	88	3.457	Syria	87	3.431	Syria	89	3.415	Algeria	87	3.381
18	Egypt	90	3.438	Egypt	91	3.416	Egypt	92	3.427	Egypt	92	3.411	Egypt	93	3.400	Iraq	96	3.335
19	Iraq	100	3.380	Iraq	101	3.357	Iraq	101	3.366	Iraq	101	3.350	Iraq	101	3.338	Morocco	105	3.304
20	Yemen, Rep.	118	3.238	Yemen, Rep.	118	3.210	Yemen, Rep.	119	3.213	Yemen, Rep.	122	3.190	Ethiopia	122	3.178	Ethiopia	120	3.217
21	Sudan	124	3.191	Ethiopia	124	3.170	Ethiopia	124	3.191	Ethiopia	124	3.183	Yemen, Rep.	124	3.171	Yemen, Rep.	123	3.213
22	Ethiopia	126	3.179	Sudan	125	3.170	Sudan	126	3.179	Sudan	127	3.162	Sudan	128	3.148	Sudan	129	3.171
23	Djibouti	135	3.105	Djibouti	137	3.086	Djibouti	137	3.097	Djibouti	139	3.080	Djibouti	139	3.068	Djibouti	148	2.966