Achieving Sustainable Development Goals in MENA countries: an Analytical and Econometric Approach

Dhaoui, Iyad

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This paper assesses the achievements and disparties toward SDGs in MENA countries in two-stage performance analysis. First, we use a descriptive approach and then a composite indicator 'SDG achievement index' (SDGI) for the social develoment in the the region through Principle Component Analysis weighting. After that, the analysis examines the coherence between this index and income per capita. The descriptive analysis and the composite indicator confirm the existence of disparties between the countries of the region in all components of social development. Furthermore, the results reveal consistency between the SDGI and GDP per capita for some countries and inconsistency for others.

1- INTRODUCTION

The United Nations member States adopted the Millennuim Development Goals in 2000 as practical and measurable goals. The plan of action focused on the commitements of all countries and organizations to achieve these goals to serve the world's poorest and most disadvantaged people by 2015. Recognizing the need to help their people in combating poverty, hunger, disease and illiteracy and discrimination against women, all MENA countries adopted the Millennium Declaration which encompasses eight inter-dependent development goals with specific targets and indicators.

The end of the plan of action for the achievement of the SDGs and their replacement with the Sustainable Development Goals to be achieved by 2030, to which SDGs trajectories changed, for better or worse, and to what scale of human consequence, are the main motives behind this study. From this we state the problematic, which is the subject of this paper. The primary concern of the present study is to shed light on the degree of progress achieved in human development in the MENA region and to highlight cross-country disparties in this region. Also, the paper aims to adress the consistency between economic and social conditions in the region. The specific questions that we attempt to answer can be formulated in the following points: What are the challenges faced by the countries of the region during the period of work on achieving the Sustainable Goals (2000-2015)? What is the degree of progress in the achievement of the Sustainable Development Goals? Is there consistency between social conditions improvement and economic developemnt in the region? The findings in this study could provide context for initiating constructive debates concerning the formulation of appropriate programs in order to take, either, measures to solve problems that

hampering attainment of some goals and hence to give priority in development plans and programs, or to accelerate the strengths of other goals.

Following introductory motive, this paper is set out as follow. Section 2 presents the methodology and data sources. Section 3 briefly outlines the general description of the economic context that characterized the period of work toward achieving the Sustainable Development Goals. Section 4 includes the application of the methodology of the study to determine the degree of achievement of these objectives and their targets. Section 5 deals with, both, the study of disparities between the sample countries based on the construction of a Composite Indicator, and the consistency betweeen social and economic develoment in the region. Section 6 concludes.

2. METHODOLGY AND DATA

The sample includes all the 22 MENA countries. The grouping of sample countries is based on their level of development. Three subregions were determined. The first subregion is the oil-producing countries which include 8 countries: 6 from the Cooperation Council for the MENA States of Golf (GCC: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and United MENA Emirates) and 2 other countries: Algeria and Lybia. The second subregion includes the countries with diversified economies: Egypt, Iraq, Jordan, Lebanon, Morocco, Palestine, Syria, and Tunisia. The third subregion encompasses 6 least developed countries (LDCs) which are: Djibouti, Mauritania, Somalia, Sudan, and Yemen.

The primary data source is the official United Nations site for the SDG indicators (http://SDGs.un.org). Other data sources are the World Bank (World Data Indicators), other organizations and official national statistics. The study followed the methodology adopted by the United Nations Statistics Division. The many discrepancies between international data and national or regional values of indicators exist for some countries and this was a major challenge in preparing this study. Data covered the period from 1990 to 2015; however for the last year data was rather scarce. For the composite indicator, our analysis uses data for the year 2014 or most recent data available that correspond to the SDG achievement period.

In order to answer the questions presented above, this study was adopted in the first stage a descriptive approach, i.e, the approach that seeks to describe characteristics of a population or phenomenon and which can be either quantitative or qualitative. This approach reports summary data and examines them in a way that reflects patterns and evolutions in comprehending the study and its implications at country or regional levels. The comparison with other parts of the world was sometimes used when it seems ncessary. In the second phase, the study relied on the construction of a Composite Indicator '*SDG achievement Index: SDGI*' through the Principal Component Analysis (PCA) method in order to determine the degree of variation among the countries of the region on the path to achieving the development goals through a set of variables.

3. Economic context toward achieving SDGs

Increasing the rate of growth is a prerequisite for achieving a qualitative leap on the path of economic development. This difficult equation faces many challenges in the MENA countries. GDP in current prices for the MENA region in 2014 was estimated at $ 2757 billion compared with $ 2071 billion in 2010 and $ 706 billion in 2001. In recent years, the economic growth in the region has been affected by the economic conditions experienced by some MENA countries, as well as the impact of declining oil export revenues for most of the oil producing countries. The weakness and limited recovery of the euro zone economies has not helped to boost demand for exports from countries such as Tunisia, Morocco and Egypt. The MENA region experienced a decline in the rate of growth of GDP which ranged from 6.3% in 2000 to about 2.5% in 2014, at constant prices. However, economic performance was varied among countries and among sub-regions. The average growth rate in the oil-producing countries ranged from 2% in 2013 to 2.4% in 2014. In contrast, for the MENA countries with diversified economies the growth rates declined from about 3% to about 2.5% during the same period.

On other side, the region experiences spectacular proliferation of informal sector. The statistics of the World Bank indicate that this sector contributes about one third of the GDP and two thirds of the labor force. Unregulated economic activities are concentrated especially in disadvantaged communities within urban areas, providing the only means to escape unemployment and deprivation.

Also, the region is characterized by lack of production and dissemination of knowledge. The economic structure in the region is generally based on older technology compared to the developing economies, which led to a knowledge gap between the countries of the region and the advanced industrial countries. The reasons for the lack of production and dissemination of knowledge elements in the MENA region are due to several factors. First, the low level of education, which has crystallized in the weakness of the analytical and innovative capacities of students, as reflected in the ranking of MENA countries in international assessments such as PISA and TIMSS, and also the ranking of MENA universities in the academic ranking of international universities. Second, the level of research and development is low, where the share of MENA countries does not exceed 1% of the total publication in the world, according to statistics of the World Bank. Third, the weakness of financial allocations as the proportion of what has been spent in the MENA countries do not exceed 0.2% of the national product compared to between 2.5% to 5% of the national incomes of developed countries; and weak private sector contribution, which does not exceed 10% of the volume of spending. The Emirates was ranked 42th globally in the Knowledge Economy Index in 2014, followed by Oman and Saudi Arabia at 47 and 50 respectively, but this is still not aligned with what expected. The rest of the MENA countries are in the second half of the international list, and this indicates the poor efficiency and productivity of human resources in the MENA region.

On other hand, the industrial sector faces many difficulties. The Encyclopaedia of MENA-African Economic Integration summarized these problems, especially in the rule of extractive character, lack of funding, weak returns and foreign monopolies of basic industries, poor maintenance, shortage of qualified executives and low wages.

Finaly, the financial crisis affected some MENA countries' performance. The crisis was concentrated in the oil-producing countries, where oil and gas accounted for more than 85% of total commodity exports. Oil revenues fell sharply in 2009. Despite the fact that these countries benefit from the fall in prices of food and construction materials after the peak in 2008, this decline is small compared to a much higher decline in the proceeds of the sale of oil. These countries have been able, thanks to their large reserves, to ease foreign exchange restrictions and financial constraints and thereby mitigate the economic and social repercussions of this crisis. The region's financial assets and financial markets have been hit hard by the global financial crisis as some countries, particularly those closely linked to the global financial system (Saudi Arabia, the UAE and Oman), experienced a decline in stock markets. In this regard, the stock market index in 2009 recorded a decline compared to previous years. The GCC countries also witnessed a sharp fall in the value of assets earmarked for buying real estate and shares after the period of prosperity in which banks lent money for this purpose. In Dubai, the average residential property price indices (RPPIs) fell by 46% by the end of 2008 according to Colliers' house price report. However, the banking sectors in these countries remained healthy due to the abundance of capital by 8% to 28% in that period. As for countries with diversified economies, their financial indicators were not affected much, due to the control of government on the banking sector (IMF, 2009). Despite the fact that they benefited from the decline in their energy bills and thus enjoyed greater financial space, the volume of expenditure on development in these countries remains below what is required by the 2010 World Monitoring Report of the International Monetary Fund and the World Bank. The least developed countries have not been able to deal effectively with these crises.

4. SDGS: theories and evaluation

4.1. Theoretical framweork: Inclusive growth scheme

The general frameworks of the decision-making system and development strategies have been evolved in the world. In the early 1990s, Washington Consensus emerged as the most important framework for development action. This framework is founded upon on the adoption of market-based policies whose economic development objectives are based on income growth and the means to achieve it. Thereafter, the world witnessed a gradual shift to embrace a broader concept of development and link it to human development, which is inclusive growth. The United Nations and its development agencies have adopted the inclusive growth concept as the basis for achieving the Sustainable Development Goals and hence the goals of sustainable development.

As for the relationship between development and distribution, many theories have been concerned with this issue, including the 'Kuznets curve' theory, founded by Simon Kuznets in the mid-1950s (Kuznets, 1955) who first proposed an invered U-shaped relationship. This relationship describes economic inequality against income per capita over the course of economic development. As economic structures shifted from low-productivity agricultural sectors to more productive industrial sectors, the average income has risen and wages have become less uniform and thus levels of inequality have risen. However, with social transfer policies (old-age pensions, unemployment benefits, etc.) and with policies aimed to reduce the gap between urban and rural areas, inequality levels are beginning to decline.Thus, the early stages of development are complex in terms of public redistribution policies, in which most MENA countries are located.

Other theories interested in predicting inequality include the Heckscher-Ohlin-Samuelson theory derived from international trade. According to this theory, the more poor countries participate in world trade, the more often they specialize in the production of goods with competitive advantage, which require limited skills and are supposed to result in increased labor demand in these countries for limited skills and raise the wages of workers with limited skills compared to the wages of skilled workers (Leamer, 1995). With the ratio of skilled labor to unskilled labor as an alternative to inequality variable, the level of inequality is supposed to decline. The opposite case is supposed to be the case for rich countries as their exports of highly skilled goods increase, the level of inequality will rise (Milanovic, 2011). Frazer (2006) highlights a cross contry comparison on how income inequality has evolved within countries at different level of development.

Over the last decades, a large body of studied attempted to seek whether inequality can increase or reduce growth. According to some authors, greater inequality is an handicap for growth since it can generates a high taxation which reduce incentives to invest and so reduce growth (e.g, Bertola, 1993; Persson and Tabellini, 1994 ; Bénabou, 1996). Also greater inequalty can generate political insatbility with damaged effect on growth (e.g, Alesina and Perotti, 1996; Keefer and Knack, 2000). On the other hand, some studies show that greater inequality might increase growth for two main raisons. First, high inequality can increase the incentives to invest more and to take advantages of high rates of return (Mirrlees, 1971, Lazear and Rozen, 1981). Second, higher inequality can foster savings and therefore accumulation (Kaldor, 1956; Bourguignon, 1981).

On the question of determinants of development, physical capital has long been seen as the primary determinant. In addition, according to many economists, inequality is beneficial for growth. They argue that investments require a large group of the rich who can save a larger share of their income than the poor and invest in physical capital. But the profound shifts in human capital have made many economists believe that wage inequality is detrimental to growth, and some have argued that promoting equality can help sustain growth. In this context, universalization and quality of education can be

considered the key to growth; however, the provision of education on a large scale remains linked to the equalization and distribution of income in a positive sequential cycle, and can be considered as an important factor in reducing income gaps between skilled and unskilled labor force. Accordingly, policies that limit inequality can facilitate economic growth and reduce income disparities between men and women or between individuals living in different regions of the same country or among countries in the world. Also, education is a cornerstone of social development. It is necessary to promote the quality of human resources that are indispensable for any economic prosperity. If educational curricula are appropriate, they will be able to improve participation in the scientific and technological revolution, which clearly has implications for health care, communication and transport, environmental awareness and other develement aspects. (ESCWA, 2005).

To assess human progress, the United Nations Development Program (UNDP) annually publishes the Human Development Index (HDI), an index for measuring the level of development of countries and improving peoples' conditions by monitoring three key indicators: life expectancy, level of education, and average per capita income.This indicator ranges from 1 to very good and 0 to null human development. At present, human development in calculating this indicator takes a wide range of elements that assume an approach that combines economic, social and political frameworks. However, this indicator does not take into account loss to human development due to inequality. The UNDP has issued a revised Human Development Index adjusted to inequality (HDII) in 2010. The HDII is based on the measures of Foster, Lopez-Calva and Szekely (2005), which in turn are based on the inequality indices of Atkinson (1970). The HDII falls below the HDI when inequality rises.

4.2. Results toward achieving SDGs

Some countries in the MENA region have made remarkable progress in many development goals, especially in the areas of education and health. However, other countries are still facing developmental difficulties that prevent the achievement of the rest of the Sustainable Goals. The indicators show that success in achieving the goals has been uneven among countries in the region.

The HDI for the MENA region was 0.686 in 2014, compared with 0.553 in 1990, according to the UNDP. In general, MENA countries are ranked among countries with intermediate levels of development. The index is lower than its global counterpart at the world level which was 0.711 in 2014. The index for Eastern Asia and the Pacific, and Latin America and the Caribbean were 0.710 and 0.784 respectively for the same year. In the MENA region, there are significant disparities; some countries achieved high or medium indicators; while others are still below the regional average. Gulf MENA countries have been able to catch up with countries with high indicators of human development. The average index for this group is 0.825, while the index fell slightly above half for the least developed or conflict countries. Countries with diversified

economies recorded an average value of 0.711, with Jordan and Tunisia being the top two countries with a high index of 0.748 and 0.721 respectively. Based on the components of the HDI, the differences between countries are clearly shown by GNI per capita, which is linked to many factors such as natural resources, investment volume and so on. Life expectancy at birth was 70.6 in the MENA region. The education index was 9.2, with an average of 6.4 years of schooling and an expected number of years of schooling of 12. Taking into account the inequality factor in the HDI calculation, the MENA countries in general recorded a decline in their results from 0.686 to 0.512, a decline of about 25%, compared with a decline of 23.2% for Latin American countries and 12.9% for the OECD countries. At the world level, the HDI declined from 0.711 to 0.548, or 22.7%, less than the decline in the MENA region. This indicates the importance of inequality factors in the decline in human development in the MENA countries. Maternal mortality index was 0.643; the educational level was adjusted by a factor of inequality of 0.334; and finally the inequality index of income had an index of of 0.626.

Concerning poverty reduction, the poverty rate in the MENA country was 36% in 2010. Compared to other regions of the world such as Asia, the average poverty rate in the MENA region is relatively low. In general, MENA countries were able to reduce poverty rates during the period 1995-2005; however, these ratios have increased in a number of countries, especially as a result of the internal situation experienced by these countries after 2011. (AMF, 2014). Poverty rates vary according to the national poverty line. It doesn't exceed 11% in Algeria, Morocco and Bahrain, while it ranges from 14% to 19% in Jordan, Tunisia and Iraq; and stills over 26% in Palestine, Egypt, Lebanon and Yemen and reach more than 40% in Mauritania, Somalia, Comoros and Sudan. The Multidimensional Poverty Index exceeds 0.1% in Djibouti, Yemen, Mauritania and Somalia, which means a high degree of deprivation in education, health and the standard of living of these countries.

Concerning employment, the MENA region is still far from achieving this goal as indicated by youth and gender indicators. According to World Bank statistics for 2013, the MENA labor force is estimated at 125.3 million, equivalent to 33.9% of the total MENA population. This percentage is lower than the average at the world and developing countries levels, which reached about 65 and 70.5%, respectively. This phenomenon is attributed to a combination of demographic and social factors. The percentage of the population aged 15-64 years and above is 63.1%. Rapid population growth led to an increase of 3.21% in the MENA labor force during the period 2000-2013, which exceeded the population growth rate of 2.23% during the same period of time. The average annual growth rate of the labor force during the period 2003-2013 is between 1.4% in Morocco and 14.8% in Qatar (AMF, 2014). Unemployment in the MENA region becomes a matter of real concern. The rate of unemployment was 11.4% in 2013, compared to 6% at worldwide level. In addition, unemployment rates have shown upward trends, especially in countries with diversified economies, according to ILO statistics. Unemployment remains particularly high among young people, represented

32% which is roughly thrice the total unemployment rate (Appendix 1). Indicators also show that the situation is worse for young women. Also, the region is heavily dependent on employment in the government sector and the growth of this type of employment is very slow (World Bank, 2008).

Concerning education, the World Monitoring Report for Education for All (UNESCO, 2010) noted that MENA countries show strong commitment to finance education. About 5.5% of GDP is allocated to education as an average basis, which has not changed since 1999. This remains the second highest percentage in the world after North America and Western Europe. However, the report noted that there are differences in spending within the region. In Lebanon, for example, only 1.8% of the GDP is spent on education, while Tunisia spends about 6.6%. Statistics show that the Sustainable Goal of universal primary education has already been achieved in all the countries of the region, with the exception of Somalia, Djibouti, Sudan and Syria. The total enrollment rates for these countries were respectiveley 33%, 68%, 70%, and 74% in 2013. Despite many achievements, the average years of schooling in most MENA countries are still modest, ranging from 2.5 years in Yemen to 9.9 in Jordan compared to 12.9 and 12.3 years in Germany and Canada, respectively. (UNDP, 2014). MENA countries recorded an increase in the rate of completion of primary education from 69.7% in 1990 to 86.5% in 2013, according to UNESCO statistics. At the national level, the countries of the MENA Gulf, as well as Tunisia, Egypt and Morocco, were able to achieve this goal. Some countries face many difficulties in achieving this goal, such as lack of resources, high drop-out rates, poverty and conflict. As for the quality of education, international and regional assessments (e.g, PISA, TIMSS, and PIRLS) indicate a relative weakness in educational achievement in many MENA countries, especially in the field of languages, mathematics and science.

Concerning the gender equality promotion and the emporwment of women, the gender equality index for primary education in MENA countries was 0.93 in 2010, compared to 0.87 in 1999 (UNESCO, 2010). In secondary education, the index rose from 0.88 to 0.94 during the same period. Thus, the region has made progress in raising female enrollment rates at all levels of education. Compared with the rest of the world, the MENA region, along with sub-Saharan Africa, has the widest gender gap. According to the same report, 9 out of 15 countries with data achieved gender parity in primary education. Girls who did not attend school at the age of primary school enrollment exceeded 60% and 53% may not attend school at all. In addition, only 34.7% of women of middle age have secondary or higher education compared to 47.6% of men in the period 2005-2014. Other indicators of empowerment include economic participation in the non-agricultural sector, which amounted to 17.4% in 2008, according to World Bank statistics, which remains weak, compared to 43.6% in Latin America and the Caribbean and 47.1% in Europe and Central Asia. Women's participation in economic life remains among the lowest in the world, with the participation rate of women in the labor force aged 15 years and older reaching 23.2% in 2013, compared to 50.3% worldwide and

65.4% in sub-Saharan Africa. The percentage of women's participation in the labor market is very low in Qatar (11.6%), while it rises to 35% in Djibouti, 34% in Somalia, 29% in Sudan and 27% in Tunisia, Morocco and Mauritania. The particiaption of woemn is characterized by an orientation towards education and health sectors and lack of orientation towards non-traditional occupations in the scientific and technical fields are noted. Also, the MENA region is still facing the issue of wage differences, where wages vary between countries and within the same country and also between sectors. The difference in wages between men and women in Lebanon is around 67% (ESCWA, 2009). On ther hand, it is clear from the data of the MENA countries issued by the UNDP that women occupy only 14% of seats in Parliament, compared with to 21.8% at world level, 22.5% in sub-Saharan Africa, and 27% in Latin American and Caribbean countries. MENA region is still far from the Beijing Platform for Action[1] . In order to accelerate the gender equality, some MENA countries like Jordan, Tunisia, Sudan, Iraq, Palestine, Egypt, Morocco and Mauritania adopted a quota system.

Concerning child, infant and maternal health, the under-five mortality rates have declined significantly in MENA region and a similar improvement in life expectancy at birth has been observed. MENA countries achieved an increase in immunization coverage for 1-year-olds from 77% in 1990 to 86% in 2008 (United Nations, 2010). The percentage of children immunized with a triple vaccine (DPT) for the 12-23 age-group was 86.5%. Syria, Somalia and Iraq recorded the lowest rates, with the average of the three countries at 50%. The under-five mortality rate per 1,000 live births has declined steadily from 83 in 1990 to 52 in 2008 and to 29.7 in 2013. There is a difference between countries in terms of child mortality rates. The least developed countries registered a rate of about 60 deaths per 1,000 live births in 2013. The rest of the countries have fallen to this ratio without 30 cases. Thus, these countries have already achieved the goal of reducing the mortality rate to below 26. The candidate countries for this purpose are Iraq and Palestine, where mortality rates were respectively 28 and 18.6 per 1000 live births. The most important challenges facing countries in the region are the problems of access to vaccines, the decline in the spread of health facilities and the lack of health services in conflict zones. The strategies adopted in the provision of services are kept below idealism. The region as a whole is slowly moving towards the fifth development target, with the maternal mortality rate still at 155 deaths per 100,000 live births. Maternal mortality rates range from less than 10 deaths per 100,000 live births in some GCC countries such as Qatar and the UAE to nearly 340 in Sudan, the Comoros and Mauritania. The disparities were significant even within a single country, particularly between urban and rural areas (United Nations, 2010). The proportion of births attended by skilled health staff varied among MENA countries. In Tunisia, the rate

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[1]The Beijing Declaration Platform for Action was the resolution adopted by the UN at the end of the Fourth World Conference on Women on 15 September 1995. It remains the most comprehensive agreement between governments concerning the equality of men and women, the empowerment of women and the elimination of all forms of discrimination against them.

is almost 100%, compared to 98.6% in 2013, compared to 73.6% in Morocco. Most of the MENA Gulf countries have achieved coverage in the field of births attended by skilled staff, while Saudi Arabia and Algeria registered more than 95%. Somalia, Yemen, Sudan and Mauritania recorded the lowest rates of coverage in this field, which did not exceed at best 25%. The overall MENA region recorded a rate of 75.4%. The GCC countries and the Maghreb countries have succeeded in reducing adolescent fertility rate, which did not exceed 46%. The countries of the Mashreq and the least developed countries still have high rates of early pregnancy and related risks. On the other hand, there is a disparity among MENA countries with regard to prenatal care, with 9 out of 10 pregnant women in the GCC countries, 8 out of every 10 women in Mashreq and Morocco and 6 out of 10 women in the least developed countries, according to World Bank statistics.

Concenring the objective HIV/AIDS and Malaria reduction, the development of the HIV/ AIDS pandemic is characterized by a lack of homogeneity among MENA countries. Statistics recorded 68,000 new infections in 2006, and due to limited access to care and treatment, 36,000 children and adults died. As for malaria, the majority of MENA countries have succeeded in eradicating the epidemic, with the exception of the least developed countries such as Djibouti, Somalia, Sudan and Yemen. The prevalence of HIV / AIDS is still relatively low in the MENA region where it was 0.1% for the 15-49 age group, compared to 4.7% in sub-Saharan Africa and 0.5% in Latin America and the Caribbean, according to World Bank statistics. According to UNAIDS and WHO statistics, the prevalence of the epidemic in the MENA region remained unchanged between 2001 and 2008. On other hand, malaria eradication is almost entirely from the MENA countries. However, the level of endemic disease in the less developed MENA countries remains high: 7167 cases in Sudan and 6140 cases in Mauritania per 100,000 people.

Concerning environment sustainability, the share of the MENA region to the global total of greenhouse gases emissions is estimated to be about 5%. There are significant disparities in the total emissions and per capita share of the countries of the region, indicating the different levels of energy availability and use. On the other hand, fifteen MENA countries face the danger of exhausting their water resources. Also, there is a serious shortage of fresh water in other MENA countries such as Egypt, Morocco and Tunisia, as well as the problems of managing the shared water resources between the countries of the region and neighboring countries. Nearly 83 million people in the MENA region do not have access to safe drinking water and 96 million people need sanitation, most of them live in low-income or conflict-stricken MENA countries (United Nations, 2010). On other hand, the percentage of people using improved sanitation facilities in the region was 68.9% in rural areas and 91.3% in urban areas. Also, the percentage of people using basic drinking water services was 76.3% in rural areas and 92.1% in urban areas. The quality of water supply and sanitation in rural areas is often mediocre.

5. A COMPOSITE INDICATOR FOR SOCAL DEVELOPMENT

5.1. Previous studies

Recognizing the importance and the complex character of the social development, nowdays more and more indicators are intended to measure the achivement of goals, to explore strengths and weaknessses, and to detail the structure of social development. Composite indicators are mathematical aggregations of a set of indicators on the basis of an underlying model of the multi-dimensional concept that is being measured (Nardo *et al.*, 2004). These indicators are based on a theoretical framework. The sub-indicators are combined and weighted in a manner which reflects the dimension of the phenomena being measured (OECD, 2005). Composite indicators make easier to interpret phenomena than a battery of many separate indicators. Also, they are useful in identifying trends and drawing attention to particular issues, offer a rounded assessment of countries' performance, etc. (Saisana and Tarantola, 2002).

Recent decades have shown a growing interest in composite indicators in academic circles and among policy-makers. One example of such indiators is the Human Development Index which reflects three equal outcome components: life expectancy, education leve and income in each country, and is used by the UNDP for the estimation of progress and annual country comparisons. Some studies adressed critics to the methodological framework used to construct the HDI (e.g., Noorbakhsh, 1998; Sagar and Najam, 1998, Cahill, 2002). Other studies incorporate other dimensions (e.g., Mahlberg, 2001; Neumayer, 2001; Mazumdar, 2003; Depostis, 2004; Arecelus *et al.*, 2005). The UNDP has made two imporatnt changes in the HDI calculation in 2010 and 2014. The 2010 revison introduced three modifications including changes in indicators, changes to the aggreagation method and changes to minimum and maximum value (goalposts). The 2014 change introduced changes to minimum and maximum value which are now fixed rather than set at the observed values (UNDP, 2014).

Many studies have shown the advantage of using composite indicator in determining human develoment. Kondyli (2010) devolop a composite indicator to assess the sustainable develoment of the North Aegean islands based on three composite sub-indicators: economic, social and environmental. The methodology used deals with different temporal points. De Muro *et al.,* (2010) propose a composite indicator MPI (Mazziota-Pareto Index) to assess devoloment and poverty in 10 regions of the world. Seven human development indicators and seven poverty inidators were selected from the SDGS. The indicators are related to health, education, employment and internet users. The authors made comparison by using a number of national and regional single indicators that are included in the set of indicators. In order to correct and fair measurement issues.

The study of Dollar and Kraay (2002) shows a weak relationship between income distribution and GDP growth. The researchers found that the development of the income of the first quintile was the same pace of development of average income. The study concludes that the role of economic growth remains positive in the area of absolute poverty reduction, but has no impact on inequality and poverty in relative terms. The benefits of growth on the average remain proportionately divided between poor and non-poor. This study is consistent with many other studies (Deininger and Squire, 1996; Chen and Ravallion, 1997; Easterly, 1999).

The study of Gasparani *et al.* (2011) aimed to identify the magnitude of inequality in Latin American countries. The study concluded that there was a significant reduction in inequality in Brazil, where the Gini coefficient fell from the low 60 in 2000 to less than 57 points in 2010. Soares *et al.* (2007) found that the low inequality in Latin American countries is not only due to improvements in several social support programs, such as the *'Oportunidades'* (Opportunities) program in Mexico, or *'Bolsa Família'* (Family Allowances) in Brazil, but also, to a greater extent, to increased access to education, and to increase the supply of skilled labor. The researchers also noted that Latin American countries still face high levels of inequality despite the many improvements they have made. The study of Nagi and Saad (2001) focused on the situation of poverty in Egypt and focused on the reasons that led to the aggravation of this phenomenon. The study reached conclusions in support of many studies that interpreted the factors of poverty as lying in the absence of opportunity and the absence of a supportive environment.

On the other hand, the World Bank (2004) report on gender equality and development stressed that gender inequality has become an important issue for the economies of the Middle East and North Africa. Equal access to opportunities involves equal access to education, health care, participation in the labor market, leadership positions, access to security and safety from domestic violence, and other human rights protections. Masood (2006) presented definitions of the concept of empowerment and focused on the growing importance of empowerment since the early 1990s, especially with the rise of liberal currents that aim to activate the role of civil society, as well as feminist movements seeking to support women's participation in the economic and social fields.

The ESCWA (2005) report noted that the emphasis on the concept of sustainable development increases awareness of the risks of current patterns of production and consumption that result in depletion of natural resources and damage to soil, water and climatic conditions. The use of natural resources has far-reaching effects both regionally and globally.

5.2. Theoretical framework for the Composite Indicator

The theoretical framework provides the basis for the selection and combination of single indicators into a meaningful overall indicator (OECD, 2005). After that, we conduct an explanatory analysis that investigate the overall structure of the indicators and explain the methodological choices.

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This study is different from others. It is based on several indicators that refer to different areas of social development, such as education, health, environment, gender equality and employment. In the field of education, we put quantitative indicators and other qualitative and also considering the use of modern technologies (Internet) as an important means of educational achievement. The impact of education on economic growth through the production, accumulation and diffusion of human capital channels has been an enormously popular research topic since the 1960s (Schultz, 1960, 1961, 1964; Becker, 1962, 1964; Mincer, 1974). More recent studies have also interested at the relationship between the learning achievement and economic growth rates and have shown a robust positive correlation (Hanushek & Wössmann, 2007). Others studies demonstrated the crucial role of women education in declining infant and child mortality, better health and higher life-expectancy. (LeVine et al., 2001; Schultz, 2002). The empirical work of Caillods and Hallak (2004) identified the potential of post-primary education in the development of the productive sectors and in the adoption of a more pro-poor overall development strategy.

In the area of health, attention was focused on the need to integrate indicators to measure maternal health and others indicators to measure children health. The literature shows that better health is a key factor of the human happines and well-being (Sabatini, 2011), improves the quality life of citizens (Gimmler et al., 2002), influences economic prosperity (Bhargava et al., 2001) and sustainable development (Von Schirnding, 2002). In order to study the access to public services, the indicators for linking to electricity networks and access to improved sources of water and sanitation have been adopted. Over the past three decades the relationship between these variables and economic development has been a major issue of debate among economists and policy makers. Some studies point out the positive impact of the improvment of basic services to economic development (e.g.; Huttly, 1990; Checkley et al., 1997; Odhiambo, 2009; Altinay and Karagol 2005). For the labor market, indicators of employment rates and unemployment of youth and women were adopted. Employment and sustainable development are two concepts closely related. Many studies investigated the important impact of youth employment on sustainable development (eg ; Frey and Stuzer; 2002 ; Camifield ; 2006). Other studied adressed the effects of youth unemployment on the level of health and happines (e.g; Siergrist et al., 2011; Robone et al., 2008). As for gender equality, attention has been given to employment, education and participation in public life. Empirical studies revealed the crucial role of gender equality and women's empowerment in reducing poverty and stimulating growth (e.g, World Bank, 2001; Banerjee et al., 2002; Morison et al., 2007). In the environmental field, indicators were used to refer to environmental sustainability and environmental degradation. The literature linking economic development to environmental outcomes has flourished over the past two decades and the majority demonstared a positive relationship (e.g; Grossman and Krueger, 1995; Pezzey and Withagen, 1998; Jones and Manuelli 2001).

For methodological puroses, all sub-indicators were selected and linked to each other to be suitable for the intended use, within the overall framework of the Sustainable Development Goals (Appendix 2). A set of criteria has been identified to serve as a guideline to determine whether a particular sub-index should be included in the composition of the overall index (e.g; indicators of education, health, equality, etc.) depending on the criterion of its importance in presenting the social development of the peoples; or excluded (like the income indicator), which will later be used to refer to economic development. These criteria have been carefully identified to describe the phenomenon of interest in a well-articulated manner.

5.3. Steps to construct Composite Indicator

5.3.1. Selecting variables

This study set out to develop a composite indicators assessing SDGs achievement for benchmarking purposes, which combain the most relevant dimensions of social targets. To develop a composite indicator, basic indicators for each dimension that need to be considered should be first defined. To this end, six dimensions are developed that are further aggregated into one composite indicator. Therefore, the SDGI consists of six core dimensions that combine between three to six underlying variables, mostly derived from UNDP and World Bank databases.

The first core dimension (Health) contains two sub-dimensions: Maternal health and Infant health. The sub-dimension Maternal health aggregates variables such as births attended by skilled health staff, contaraceptive prevalence, Adolescent fertility rate and maternal mortality ratio. For the sub-dimension Infant health we retain DPT immunization and infant mortality ratios. The second core dimension (Education) includes two sub-dimensions: Primary education and Youth education. The Primary education is assessed through four variables measuring education access and supervison rates in the first cycle such as net enrollment ratio, completion rate, ratio of staff to students and dropout ratio. For the Youth education we retain literacy rate and a variable which describe using of new technologies proxied by the number of individuals using the Internet per 100 inhabitants. The third core dimension (Service) looks at basic services through data relating to water access, electricity network, and sanitation sources. In the fourth dimension (Employment), data on particiapation rate, youth unemployment rate and female youth unemplyment rate are used to measure employment performance. The fifth dimension (Equality) assess equality in education, employment and public life through three variables female to male enrollment rate, female labor force participation, and Proportion of seats held by women in national parliaments. The final componenet (Environment) adresses performance in environment in terms of natural richness of the land, energy and air pollution by including three variables which are forest area , energy depletion and CO2 emissions. The choice of these variables is based on their relevance to the SDGs Agenda and because they are internationally comarablle data which are available for all the MENA

countries. Other relevant variables were omitted due either to lack of data or none compatibility at international level. Also, the study doesn't consider any variable that can assess the income or the monetary poverty since the main objective is to assess the 'social' performane derived from SDGs targets and after that look at the consistency between the composite indicator and an income variable. In addition, the result can be strongly influenced by income since the high heterogeneity that characterizes the region in terms of GDP per capita. This structural difference across the sample countries may influence the overall social develoment performance.

In order to build the SDGI, the indicators were chosen based on their relevance to the study and the availability of their data. These indicators have been selected on the basis of their analytical soundness, measuribility, availibility, and relevance to the SDGs Agenda. We used proxy varaibles when data are scarce. For example, instead of using the variable ratio of students who have computer, the percentage of the number of individuals using the Internet per 100 inhabitants was used. The sources of the initial indicators were adopted through the World Bank, UNDP, UNESCO Institute for Statistics, and the official United Nations Sustainable Development Goals website (SDGs.un.org).

5.3.2. Preliminary data treatment

In the first step, the directions of indicators were taken according to their change in relation to the composite index, i.e., does the increase mean an improvement or deterioration in the value of the index. For example, the increase in the rates of school enrollment, employment or births attended by skilled health staff or the connection to the electricity network were considered as an increase in the value of the composite index and therefore positive signs were maintained. While the rates of school dropout, maternal mortality and environmental pollution were considered as a decrease in the value of the composite indicator and were turned into negative indicators. The litterarure shows different remedies for misssing values (OECD, 2005). In this paper, the missing data were estimated based on the individual estimation through the regression imputation method[2].

To measure and evaluate achievements, complex tools are needed to highlight problems and to assess performances. There is a wide range of methodological approaches to composite indicators. To create the SDGI the methodological guidelines of OECD (2005) and Nardo *et al.* (2004), Kondyli (2010) were adopted.

24 individual indicators were selected according to their relevance to the measurement of SDGs. These indicators were grouping into six dimensions (D_i): Health, Services, Education, Employment, Equality, and Environment. This grouping was based on literature review and on the SDGs Agenda key orienations. We note that variables must

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[2]The imputed value is predicted from a regression equation. The dependent variable in the regression analysis is the sub-indicator that contains the missing values. The independent variable (independent variables) is the sub-indicator (sub-indicators).

be standardized first. The SDGI is defined as a weighted sum of the indicies computed for the six pillars :

$$SDGI_i = \sum_{i=1}^{6} w_i \, D_{ic}$$

Where $\sum_{i=1}^{6} w_i = 1$ and $0 \leq D_{ic} \leq 1$ for all $i = 1, \dots, 6$, and $c = 1, \dots, 22$, where c indicates the countries and i of the different dimensions.

Each dimension index (D_i) is computed as a linear weighted aggregation of the sub-dimension (SD_{ij}) with weight $(w_j^\propto)$:

$$D_{ic} = \sum_{j=1}^{v_i} w_{ij}^\propto \, SD_{ijc}$$

Where $j = 1, \dots, v_i$

v_i : correspond to the number of sub-dimensions, aggregated by the domain. It varies among the different domains (D_i). For Health domain $(i = 1)$, v_i is equal to 2 (Maternal Helath and Infant health) and for Education domain $(i = 2)$, v_i is equal to 2 (Primary education and Youth education).

Each sub-dimension (SD_{ij}) is calculated as the sum of the lienar weighted of the n_{ij} normalized sub-indicators N_{ijkc} with weights $w_{ijk}^{\#}$, (the sum of weight is eqaul to 1 and the weigt for each normalized sub-indicator is betwen 0 and 1):

$$SD_{ijc} = \sum_{k=1}^{n_{ij}} w_{ijk}^{\#} N_{ijkc}$$

N_{ij} Correspond to the number of basic indicators (variables) in the sub-dimension j of the dimension i for each couple i,j.

The overall aggreagtion gives the below formula of the SDGI:

$$MDGI_i = \sum_{i=1}^{6} w_i \sum_{j=1}^{v_i} w_{ij}^\propto \sum_{k=1}^{n_{ij}} w_{ijk}^{\#} N_{ijkc}$$

5.3.3. Normalization

Normalization is necessary if there is a difference between measuring units of the sub-indicators. The normalization is required before any data aggregation as the indicators in a data set often have different measuremnt units. There has been a lot of literature talking about normalization methods. These methods include the standardization, ranking, min-max, cyclical indicators, percentiles of annual differences over consecutie

years, and so on (Freudenberg, 2003; Jacobs *et al.,* 2004). The choice of a suitable method deserves special attention to eventual scale adjustment (Ebert & Welsh, 2004) or transformation highly skweed indicators (OECD, 2005). In this study, these measures were normalized to avoid the aggregation of different measures in a single composite index, using standardization (or Z-scores). Standardisation converts indicators to a common scale with a mean of zero andstandard deviation of one. This method finds of each sub-index by subtracting the value of the arithmetic mean from the index value and dividing the result by the standard deviation of all the index values. The formula for normalization is as follows :

$$I_{qc}^t = \frac{x_{qc}^t - x_{qc=\bar{c}}^t}{\sigma_{qc=\bar{c}}^t}$$

I_{qc}^t : Normalized value of the sub-indicator q for country c at time t.

x_{qc}^t : The value of sub-indicator q for country c at time t.

$\bar{c}$: The reference country.

$\sigma_{qc=\bar{c}}^t$: Standard deviation among countries

To show the degree of of the correlation among the mentionned variables, we compute the Cronbach Coefficient Alpha (Cronbach, 1951). This satistic is recognized as the most common estimate of internal consistency of items in a model or survey-reliability analysis (Cortina, 1993; Miller, 1995). After making all the sub-indicators have the same scale and taking care that all of them are moving in the same direction, whether positive or negative, and this is what required normalization and reverse trends of indicators opposite to the other indicators, the value of the Cronbach coefficient alpha is 0.885. This value remains acceptable.[3] There is evidence that sub-indicators are mesauring the same underlying construct. Therefore, our sub-indicators measure well the latent phenomeon.

5.3.4. Weightings

Indicators have been aggregated and weighted according to the underlying theoretical basis. After that, correltions among indicators was considered to more treat the SDGs achievement index and its features. The weight according to each component can have a significant impact on the overall composite indicator and therefore on the country ranking in the context of benchmarking framework. The existing literature offers many weighting methods all have pros and cons, such as principal component analysis (PCA), factor analysis (FA), data envelopment analysis (DEA), budget allocation processes

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[3]0.7 is an acceptable starting point for the alpha coefficient. Some researchers use 0.75 or 0.80 as threshold values; others tolerate 0.6. In general, this value varies from study to study.

(BAP), coinjoint analysis (CA), etc.PCA revals how different variables change in relation to each other, or how they are associated. It could be used to group individual indicators according to their degree of correlation. The PCA technique transforms correlated original variables into linear combinations of uncorrelated new varaibles using the covariance matrix. The new variables appear in descending order according to amount of variance they account for in the original variables (see Jolliffe, 1986; Jackson, 1991 for more detailed review).For theses reasons we use PCA method in this study.

5.3.5. Aggregation

The literature shows a variety in the aggregate methods such as the linear aggreagtion and the geomtric aggregation. In this study, the additive aggregation methods is used to combine sub-indices since the geometric aggregation is suitable when we want some degree of non compensability between individual indicators or dimensions, which doesn't much with our purpose. The aggreagtion method is based on the collection of weights multiplied by the normalized values of the sub-indices as follows:

$$CI_c = \sum_{q=1}^{Q} w_q I_{qc}$$

Where:

CI_c : Value of the composite indicator for country c

w_q : Weight associated to individual indicator q

I_{qc} : Normalised value of individual indicator q for country c.

Q=1,… , Q : Individual indicator.

C=1,… , M : Country

The time idication is omitted since all variables have the same time dimension.

The SDGI has six components, which contibute differently to the overall index : Health, Service, Education, Employment, Equality, and Environment. To profile SDGs achievemet, each component has been further disaggregated. The individual indicators are used to show sternghts and weakness.

5.4. Result of Composite Indicator

5.4.1. The overall index SDGI

Composite indicators should be transparent and fit to be decomposed into their underlying indicators or values. The overall index can be used in the policy-making decison while the decomposition into sub-indicators and individual indicators can extend the benchmarking analysis and therefore shed light on various dimensions of the performance. The SDGI is computed on the basis of the weights detected by the PCA.

Firstly, the overall score will be introduced and then the score and ranking for each dimension will be presented. Finally, the correaltions among the dimensions will be shown.

The results of the composite indicator indicate a clear disparities in the values of this indicator for the MENA countries, which is reflected in their ranking according to the indicators and standards used and which were prepared according to the approved methodology.

In the graph below the scores of the SDGI are presented. Overall, it can be seen that the majority of Gulf countries score higer, especially Qatar, Bahrain, Emirates, and Kuwait. The exception to this trend is the Saudi Arabia and, in a lesser degree, Oman. For the overall composite and the three six dimensions of the melleinum development index Saudi Arabia ranks in the middle (Appendix 3). In the domain of Education, however, Saudi Arabia is ranked 4th. Oman ranks 10th both for Health and Education components and 20th for Environment component.

The highest performer countries are followed by countries with diversified economies. Among them, the highest score is recorded by Lebanon and Tunisia, followed by Morocco and Jordan. The rest of diversfied economies plus Lybia are ranked from 12 to 16th position and they perform much better than the group of LDCs. Finally, in general, they are Yemen, Mauritania, and Somalia that figure in the lower of the ranking.

Fig. 1: Ranking of MENA Countries by Composite Composite Index "Social Development"
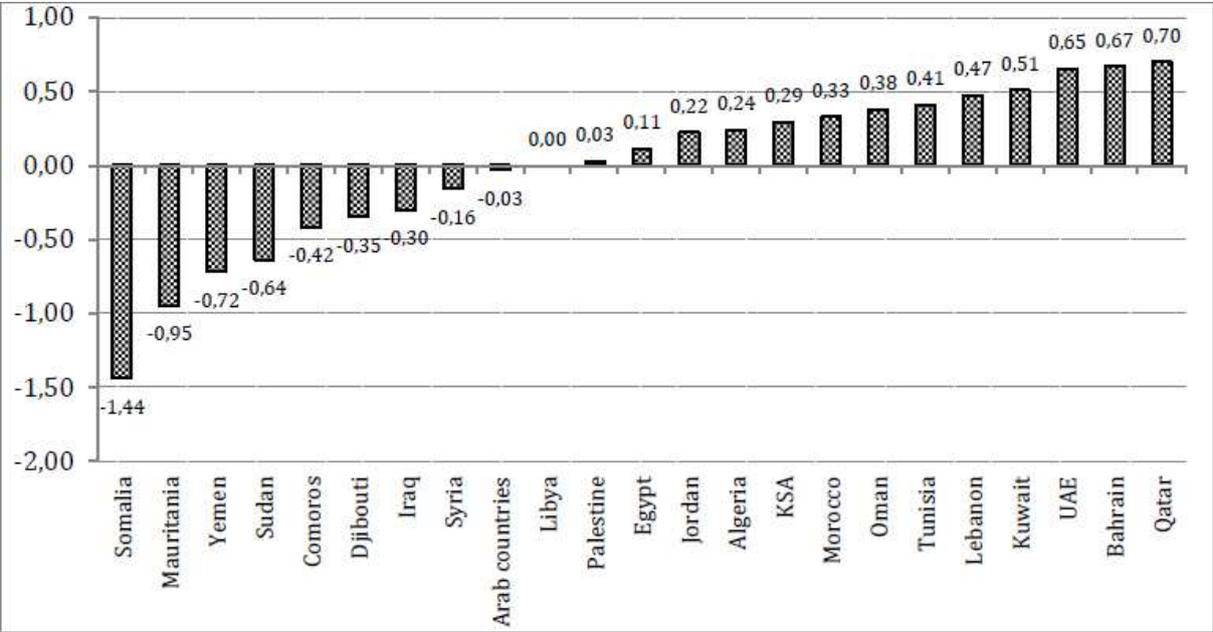
Source: Study result provided by SPSS.

Qatar topped the list with an index of 0.70 followed by Bahrain, UAE and Kuwait. Lebanon and Tunisia each scored 0.47 and 0.41 respectively. The performance of these

two countries is remarkable given their limited natural resources and the economic difficulties they face.

The index of Egypt, Palestine and Libya is close to the index of the MENA countries, which was in the range of -0.03. A negative sign does not mean a decline or fall of the index but it is a move below the average. Syria, Iraq, Djibouti, Comoros, Sudan, Yemen, Mauritania and Somalia have a score of -0.16 at best case and -1.44 in the worst one. These countries have weak economic growth or are experiencing continuous conflicts.

5.4.2. The components

To know the contribution of each component to the composite indiactor of social deveopment, the last one was divided into six components: Health index, Service index, Education index, Employment index, Equality index, and Environment index. The method of PCA of these indicators gives different weights which are 0.216, 0.212, 0.198, 0.160, 0.124 and 0.090, respectively. All these indicators were adopted to match with the Sustainable Development Goals (Appendix 3). Each component contributes to varying degrees in the composition of the final composite index and contributes to showing strengths or weaknesses. For example, Gulf countries have high employment ratios. While countries with diversified economies have identified many problems in the labor market and improved health care for the population. The least developed or conflict-prone countries are known to have major imbalances in most of their indicators. The results among the different dimensions are shown in the below graph.

Fig.2: Contribution of components to the overall Mellenium Development Goals composite indicator (SDGI)
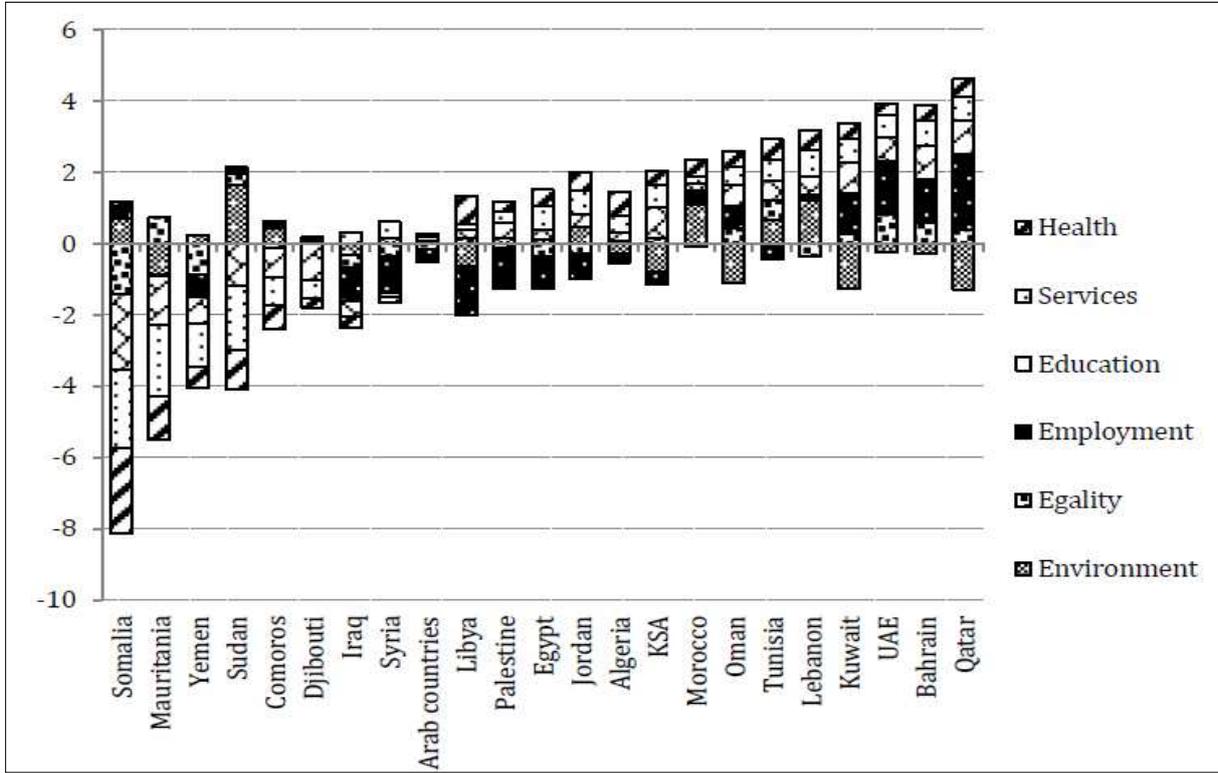
Source: Study result provided by SPSS.

In general, Gulf countries (except Saudi Arabia and Oman) show top performances in all the different dimensions, especially in terms of employment, presenting a valuable consistency in their performances. In contrast, Saudi Arabia, Oman and countries with diversified economies show performances with different profiles. These countries improved Health care and Service providing for the population. Although having consistent performances in Education, North Africa countries compensate for low score in the dimension of Employment with outstanding performance in Equality.

The dimension of Health shows a slighly different picture. Maghreb countries achieved high scores as well Gulf countries. Improving Maternal health, and especially in terms of contraceptive prevalence increasing and adolescent birth reduction are the driving force of the result. These two indicators out of six explain roughly 42% of the total dimension of Health. The low position of Gulf countries is expalained by the low index of contraceptive and high index of adolescent births, althoug the high performance in terms of births attended by skilled health staff. Maternal and infant mortality ratios score high in the LDCs countries and in conflict countries where access to health services is difficult. However, there is no extreme difference in immunization rates between MENA countries. The corresponding weight is 0.19, the lower component for Health dimension. This is can be explained by the fact that the worldwide organizations have made and still make incredible improvements in terms of delivering vaccines and immunization services as parts of their commitments to child survival in developing countries.

The dimension Services shows a different patterns. While the oil-based economies and diversified economies achieved high scores, the LDCs are at the buttom of ranking. The driving forces of the disparities in this result are, succesively, improved sanitation facilities, electricity access, and improved water source access.

The dimension of Education shows slighly different patterns. All the six indicators which compose this component have roughly equal contribution to this dimension that ranges between 13 and 19%. The high or low position for a country can be explained by one or more of the considered variables. Golf countries achieve high scores along with Tunisia and Lebanon. For the net enrollment ratio in primary education, MENA countries demonstrated fewer regional distinctions. In contrast to other variables, completion and abundant rates could be considered relevant. The position of LDCs countries results from its lower scores on the indicator of technolgy users and lower scores of pupil-teacher ratio.

For the dimension Employment, the main driving force is youth unemployment. The countries with diversified economies have experienced high and increased level of unemplyment rate which reached more than 35% in some countries like Tunisia or Syria. Female unemployment scores low in the majority of MENA countries.

Moreover, looking at the Egality dimension, the best perforems are Emirates, Mauritania, Bahrain and Tunisia. The inequality in education is still high in the majorty of MENA countries. Also the inequality in employment and in public life still far from the MGDs objective, wherereas some countries achived significant advances. The contribution to the overall index is 12.5%.

Finally, in the Environment dimension, the Gulf countries, Mauritania, and Lybia, where extractive industries thrive and where desertification increase, have low scores and they are followed by coastal countries. The higher-scoring countries are Sudan and Lebanon.

5.4.3. Correlation coefficicents

It is not necessary for these six subgroups to be statistically independent from each other, but the associations between them have strong connotations. The various links help to understand the driving force behind the overall composite index and facilitate the process of determining the appropriate weights for different factors (Appendix 4).

There is a strong correlation between the indices of Education and Health. Pearson statistics indicate a value of 0.922 which is very close to one at a significant level of 1%. This strong relationship can be explained, in part, by the culture on health that women acquire through the educational system, which allows them to avoid premature birth, to enjoy a nutrition-oriented health, and prevention programmes more successfully, to improve childhood health and other benefits (Culter & Lireas-Muney, 2010; Feinstein & al. 2006).

Also, the index of Equality is linked to the Education and Employment indicators where Pearson's statistics indicate values respectively of 0.482 and 0.403 at a significant level of 5%. Indeed, educated women and/or women who haev a job are more aware of the issue of equality.

The Environment index is often characterized by weak correlations with other indicators. This explains why environmental problems do not represent a major obstacle to social development in the MENA countries. Indeed, the proportion of air pollutants in the MENA region is one of the lowest at the international level, due to the low industrialization efforts in the region. (UNDP, 2009).

For the correlation ratios for pairs of dimension of the SDGI, the results show that the SDGI has the highest correlation with the dimension of Education ($r \approx 0.96$). High correlation is also found with the dimension of Health ($r \approx 0.91$) and with the dimension of Services ($r \approx 0.91$). However, the level of correlation between the overall SDGI and Equality is medium ($r \approx 0.55$). The level of correlation between overall index and the other dimensions is not strong. All dimensions and SDGI index seems to move together, except for the Environment.

5.4.4. Leading countries

The following graph shows the leading MENA country in the field of social development (Qatar) compared to the weakest country (Somalia), to a medium performer (Tunisia) ; and also the average performance of the total MENA countries.

Fig.3: Leader/laggard decomposition presentation
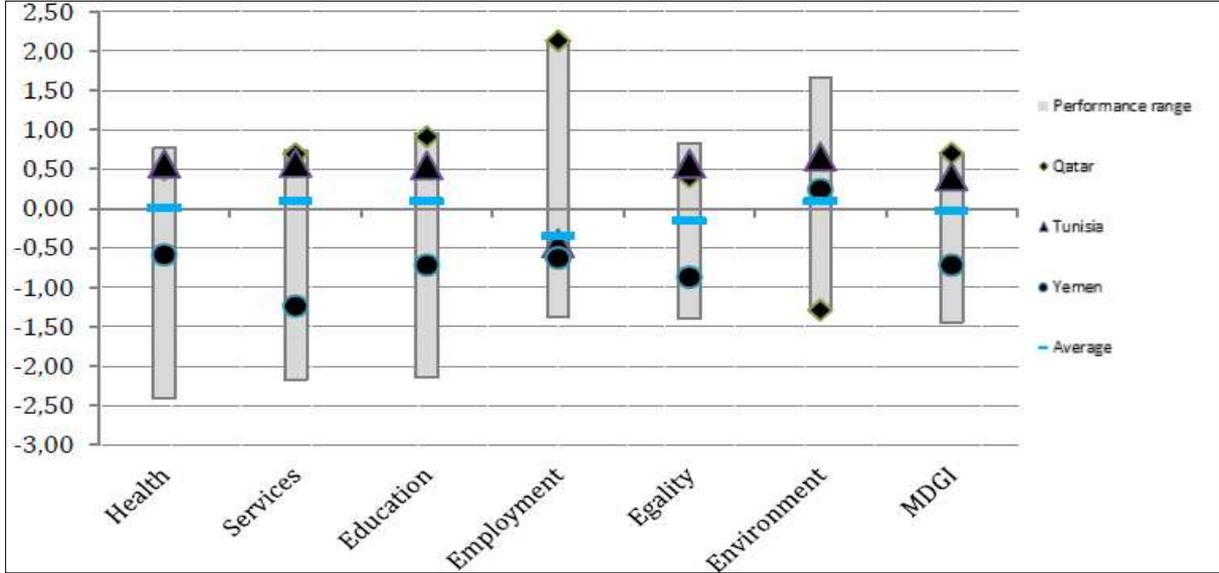
Source: Study result and athor's calculations.
Note: Qatar (Oil-based economy), Tunisia (Diversified economy) and Yemen (LDCs or conflict country) are used as examples. The gery area shows the range of values for particular component. The average of all MENA countries is illustrated by the blue line.

The gap between the MENA countries' performance is clearly shown. Qatar received the best values for all the indicators related to the components of social development. The only weakness in the country was related to the environmental field. The results yielded a value of -1.29 for the environment index for Qatar. Its contribution to the overall index remains weak as indicated previously.

The SDGI indicator for Somalia was the weakest, especially in education, health and basic living facilities, which explains the size of the multidimensional difficulties faced by the MENA LDCs, not only catching up with high-performing countries; but whose performance is close to the avearge performance of the region which is already remaining below the hoped-for.

This picture also shows that the application of the Sustainable Development Goals to all countries in the same approach remains unconvincing given the deep differences in social development.

5.5. Consistency between social and economic development

The attemps now is to identify linkages between the SDGI and GDP per capita. Indeed, composite indicators are often compared to concepts that are associated with a known and measurable phenomenon, for example the development of purchasing power,

productivity growth, per capita income or others. These links can be used to test the explanatory power of the composite indicator.

The SDGI helps to assess a country's position relative to other countries on social development achievements. It is expected that improving social development will lead to improved wealth creation; i.e countries with a high index have a high per capita GDP.

The following figure shows the correlation between the composite index and GDP per capita (PPP):

Fig.4: Link between the composite indicator SDGI (social development) and GDP per capita
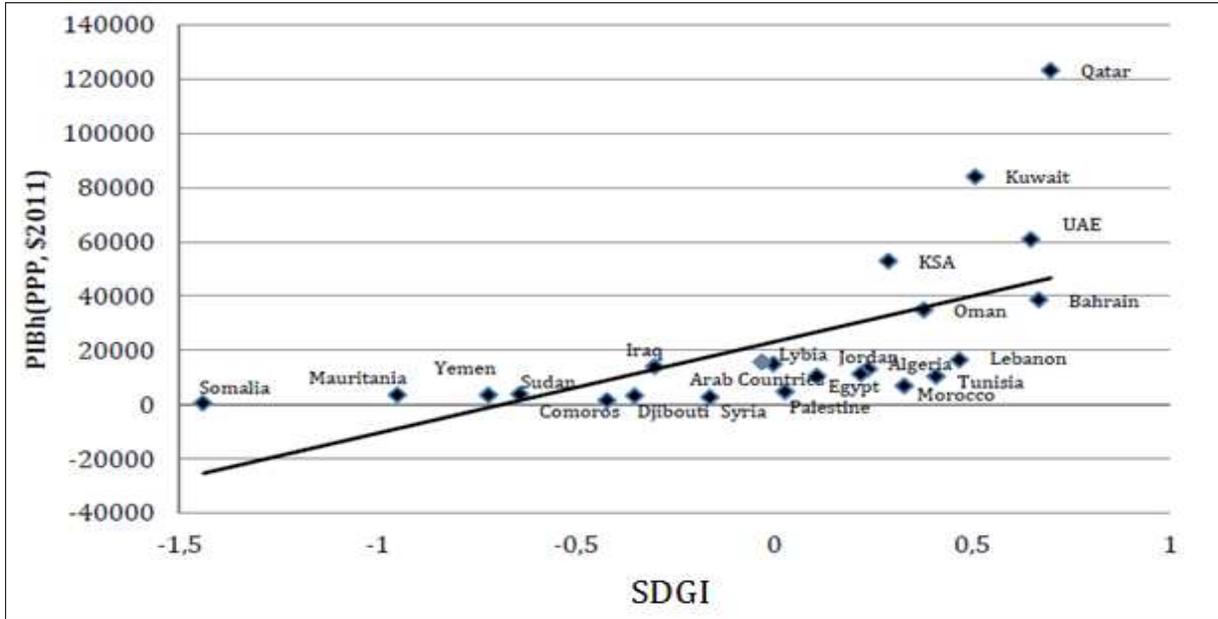
Source: Study result
Note: The correlation is significantly different from zero at the 1% level and R^2 between GDP (PPP, $) and SDGI (unitless) equals 0.37. Only MENA countries are included in the correlation, as correlation with very heterogeneous groups tends to be misleading.

Most countries are close to the trend line. Only GCC countries seem to be out of the way, especially Qatar, Kuwait and the UAE (rising income level) and Saudi Arabia (the composite index is far from the rest of the Gulf countries). The coefficient of determination R^2 is 0.37. If we consider only the rest of the MENA countries, i.e those approaching the line of correlation, R^2 become 0.45. This indicates the strength of correlation between the two indices of these countries; unlike the Gulf countries (R^2 equals 0.20 if we consider only GCC countries). SDGI

The correlation analysis should not refer to a causal relationship between the two indicators. The correlation simply indicates that the difference in the two sets of data is similar. The change in the income index does not necessarily change the composite index and vice versa. Countries with high GDP growth may invest more in social development to achieve SDGs; or improved social indicators may result in higher GDP per capita. So the causal relationship is unclear when analyzing the correlation. More detailed econometric analyzes can be used to determine the causal relationship, for example, the Granger Causality test. However, Granger's causality tests require time

series for all variables, which are often not available in the case of MENA countries. Also, the weights adopted or the method of normalization, or others, affects the degree of correlation between the composite index and any other variable, i.e, the relationship between the composite index and measurable phenomenon can be increased or decreased by selecting an appropriate set of weights.

It should be noted that composite indicators often include some interrelated indicators, leading to double counting when examining the correlation between the composite index and any measurable phenomenon. To avoid this problem, no indicator of individuals' income was considering during the construction of the composite index "social development".

At this stage, it is important to consider some of the factors that affect the income of individuals when examining the difference between countries such as demographic growth, with the highest population growth rate in Qatar, UAE and Kuwait and the lowest population growth in Tunisia, Morocco and Algeria. Gulf countries remain among the least populated MENA countries. The pressure of the population pyramid is another challenge: the rise in the proportion of young people aged 14-25 years, with 60% of the population under the age of 25, and thus the MENA region is among the most youthful in the world. This segment of the population consumes many resources to become economically productive (UNDP, 2010).

6. CONCLUSION

This article has tried to assess SDGs achievement by MENA countries. A framework was developed which combine the six dimensions of Health, Education, Services, Employment, Equality and Environment. The UNDP dataset 2014 provided the best data coverage available for SDG targets and covered 22 MENA countries. There were some high quality measurements for SDGs achievement, such the human development index. It did, however, lack measurement of an overall index that combines as much as possible the various targets. For this purpose, a composite indicator (SDGI) was built using weights derived from the PCA technique. In total 24 indicators were selected. The composite indicator enabled us to rank the countries according to their performance. The resulting SDGI was statistically reliable. The result showed that some of oil-based economies, Liban and Tunisia have the highest score. The problem for countries with diversified economies is employment. The problem for oil countries is equality in some countries and environment. However, for environment, the weight is not high. The LDCs countries have diffculties in majority of dimensions. For the link between SDGI and GDP per capita, results showed no consistency for GCC countries and a more consistency for the rest. Indeed, some contries have high index despite the low income.

SDGI is not considered an end in itself. By monitoring SDGs achievemnt indicators, effective guidance on social develoment outcomes can be achieved. Based on the mentionned findings, the study proposes the following recommendations: First, the study recommended in particular the importance of education in both quantitative and

qualitative terms, as education is an essential pillar for reducing poverty, improving the nutrition and health of mothers and children and helping prevent HIV / AIDS. Also, there is an urgent need to accelerate progress towards the sustainable development in some countries, especially the least developed and in some sectors. In this context, it is necessary to adopt an approach to poverty eradication based on sustained economic growth, social development and environmental protection. On the other hand, the reinforcement of comittment toward social justice and cohesion remains an essential factor for human development, through the full participation of women on an equal footing and equal opportunities. In the health field, the development of the sector remains possible because the region has the resources to make this change. Technical support in the health sector, especially for the least developed countries, and the increase in financial investment remain a factor in bridging the gap and joining the rest of the region. The importance of strengthening links between the health sector and other areas of development is also highlighted by poverty, education, environment and others. The failure of some countries to achieve some of the basic objectives remains unacceptable, as it may compound the economic, social and environmental risks facing the MENA region. Failure to achieve some of the goals does not mean stopping the development process, but rather means continuing to work with changing strategies and strengthening cooperation between the countries of the region and other countries to help complete the sustainable achievement and enhancig the Sustainable Development Goals. This means in particular the need to focus on the development of integrated solutions to provide decent work opportunities especially for youth and women, build capacity and progress on the path of poverty alleviation, social welfare and protection of natural resources and other aspects of development.

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Country	2007	2008	2009	2010	2011	2012	2013	2014	Share of youth unemployment-2014	% of feamle labor force participation
Jordan	13.1	12.7	12.9	13.4	13.4	12.8	12.6	11.9	46	15
UAE	3.2	4.0	4.3	4.0	4.3	4.2	4.2	4.1	35	-
Tunisia	14.1	14.0	13.3	13.0	18.9	16.7	15.3	15.3	35	37
Algeria	13.8	11.3	10.2	10.0	10.0	11.0	9.8	10.6	41	16
KSA	5.6	5.0	5.4	5.3	5.4	5.5	5.6	5.7	41	21.5
Syria	8.4	8.4	9.2	8.4	8.1	25.0	35.0	35.0	58	-
Palestine	21.7	26.6	24.5	23.7	20.9	23.0	23.4	23.4	38	15
Qatar	0.5	0.5	0.8	0.7	0.4	0.5	0.3	0.3	34	52
Kuwait	1.7	1.7	1.6	2.1	2.1	1.7	1.8	1.7	64	44.8
Egypt	8.9	8.7	9.4	8.9	11.9	13.0	13.1	13.4	57	26
Morocco	9.8	9.6	9.1	9.1	8.9	9.0	9.2	9.9	37	37.5
Yemen	15.9	15.7	15.0	16.0	18.0	18.0	17.4	n.d	51	-

Source : Wold Bank, Women, business, and the law, Report 2016.

Appendix 2: Variables used in the study

1-Edcation	2-Helath	3-Service
-1-1Primary Education ►School enrollment, primary (% net) **[0.161]** ►Primary completion rate, total (% of relevant age group) **[0.191]** ►Pupil-teacher ratio in primary education (headcount basis) **[0.172]** ►Primary school graduation rate **[0.180]** 1-2-Youth education ►Literacy rate, youth total (% of people ages 15-24) **[0.136]** ►Individuals using the Internet (% of population) **[0.160]**	2-1-Maternal health ►Births attended by skilled health staff (% of total) **[0.121]** ►Contraceptive prevalence, any methods (% of women ages 15-49) **[0.219]** ►Adolescent fertility rate (births per 1000 women ages 15-19) **[0.198]** ► Maternal mortality ratio (modeled estimate, per 100000 live births) **[0.143]** 2-2-Infant health ►Immunization, DPT (% of children ages 12-23 months) **[0.190]** ►Mortality rate, infant (per 1,000 live births) **[0.129]**	►Improved water source (% of population with access) **[0.294]** ►Access to electricity (% of population) **[0.351]** ►Improved sanitation facilities (% of population with access) **[0.355]**
4-Employment	**5-Equality**	**6-Environment**
►Labor force participation rate for ages 15-24, total (%) **[0.322]** ►Unemployment, youth total (% of total labor force ages 15-24) **[0.378]** ►Unemployment, youth female (% of female labor force ages 15-24) **[0.300]**	►School enrollment, primary (gross), gender parity index (GPI) **[0.421]** ►Labor force participation rate, female (% of female population ages 15+) **[0.292]** ►Proportion of seats held by women in national parliaments (%) **[0.286]**	►Forest area (% of land area) **[0.338]** ►energy depletion (% of GNI) **[0.382]** ►CO2 emissions (metric tons per capita) **[0.279]**

Note: The values between [ ] are the weights of the sub-indices calculated by the PCA method.

Country	Components												SDGI	
	Health [0.216]		*Services* [0.212]		*Education* [0.198]		*Employment* [0.160]		*Equality* [0.124]		*Environment* [0.090]			
	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank
Qatar	0,49	6	0,69	2	0,91	2	2,13	1	0,4	6	-1,29	22	0,70	1
Bahrain	0,44	8	0,68	4	0,95	1	1,21	3	0,59	3	-0,29	14	0,67	2
UAE	0,31	13	0,65	7	0,68	5	1,47	2	0,83	1	-0,24	13	0,65	3
Kuwait|	0,42	11	0,67	5	0,88	3	1,14	4	0,27	8	-1,24	21	0,51	4
Lebanon	0,56	4	0,73	1	0,53	8	0,16	10	-0,35	17	1,2	2	0,47	5
Tunisia	0,57	3	0,58	9	0,55	7	-0,44	15	0,57	4	0,66	5	0,41	6
Oman	0,43	10	0,53	10	0,58	6	0,64	5	0,41	5	-1,1	20	0,38	7
Morocco	0,47	7	0,18	15	0,19	14	0,41	7	-0,09	13	1,09	3	0,33	8
KSA	0,4	12	0,64	8	0,87	4	-0,35	14	0,14	10	-0,79	18	0,29	9
Algeria	0,68	2	0,44	12	0,27	11	-0,24	13	0,06	11	-0,29	15	0,24	10
Jordan	0,51	5	0,67	6	0,35	10	-0,71	17	-0,27	16	0,47	6	0,22	11
Egypt	0,44	9	0,69	3	0,26	12	-0,9	18	-0,37	19	0,12	11	0,11	12
Palestine	0,27	14	0,33	13	0,42	9	-1,12	21	-0,13	15	0,16	9	0,03	13
Lybia	0,77	1	0,18	16	0,24	13	-1,37	22	0,15	9	-0,64	17	0	14
Syria	-0,16	15	0,46	11	-0,13	15	-1,02	20	-0,35	18	0,15	10	-0,16	15
Iraq	-0,31	17	0,31	14	-0,41	16	-0,93	19	-0,39	20	-0,3	16	-0,3	16
Djibouti	-0,28	16	-0,5	17	-1,02	19	0,06	11	0,05	12	0,08	12	-0,35	17
Comoros	-0,67	19	-0,81	18	-0,82	18	0,19	9	-0,11	14	0,44	7	-0,42	18
Sudan	-1,12	20	-1,81	20	-1,17	20	0,2	8	0,28	7	1,66	1	-0,64	19
Yemen	-0,59	18	-1,24	19	-0,72	17	-0,63	16	-0,87	21	0,24	8	-0,72	20
Mauritania	-1,24	21	-2	21	-1,35	21	-0,03	12	0,73	2	-0,88	19	-0,95	21
Somalia	-2,41	22	-2,17	22	-2,15	22	0,48	6	-1,4	22	0,7	4	-1,44	22
MENA countries	0,01	-	0,1	-	0,09	-	-0,35	-	-0,16	-	0,09	-	-0,03	-

Note :The values between [ ] are the weights of the SDGI's components calculated by the PCA method.

Appendix 4: Correlation between composite partial indicators - Pearson statistic

	Health	Services	Education	Employment	Equality	Environment
Health	1	0.915**	0.922**	-0.019	0.444*	-0.286
Services	0.915**	1	0.924**	0.036	0.306	0.310-
Education	0.922**	0.924**	1	0.195	0.482*	-0.388
Employment	-0.019	0.036	0.195	1	0.403	0.254-
Equality	0.444*	0.306	0.482*	0.403	1	-0.406
Environment	-0.286	0.310-	-0.388	0.254-	-0.406	1

**sig at 0.01 level.
*sig at 0.05 level.