Inequality in the Southern Mediterranean:
A survey of selected countries

Prof. Dr. Heba El Laithy

Abstract

This paper addresses the issues of current levels of inequality: their trends, determinants and future scenarios, demonstrating that welfare levels are measured by per capita consumption. Location, educational attainment and employment status have been identified as the key factors affecting levels of welfare and its distribution. A benefit incidence analysis was performed to investigate benefits of different deciles of per capita expenditure from education and health services. The inequality patterns in countries under investigation present significant variations; countries such as Turkey, Morocco and Tunisia show relatively high inequality while others, such as Egypt or Syria, show moderate to low inequality. Inequality in human development was addressed using the inequality-adjusted human development index (IHDI), introduced by Global HDR 2010. The average loss in the HDI due to inequality in all Arab countries under investigation is about 20%. Two reference scenarios (optimistic and pessimistic) were used to project future paths up to 2020 and 2030. The impact of positive growth is increasing inequality and a shrinking middle class. Results show that the rich benefit most from this growth path. The opposite trend is observed for the pessimistic scenario.

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1. Introduction

Issues concerning levels of inequality, changes in inequality and their determinants remain at the heart of the development agenda both in theoretical debate and policy discussions. Several factors account for this strong interest. First, human development cannot be built on the exploitation of certain groups by others or on greater access to resources and power by some groups. Inequitable development is not human development, confirms the "Human Development Report, 2010". Second, empirical studies have shown that poverty can be reduced through enhancing growth or reducing inequality or both; pro-poor growth strategies are more effective at reducing poverty. Third, several studies have shown that reducing inequality – both in the population as a whole and across gender and other groups – can improve overall outcomes in health and education, economic growth and vice versa. Fourth, it has been increasingly acknowledged worldwide that reducing poverty and inequality means increasing people's access to productive and decent employment. It also means enhancing their human capital by increasing social investment in health and education.

Welfare is a multi-dimensional concept not only concerning material living standards (where these can be seen primarily as the outcome of consumption preferences as revealed by the choices people make in the market), but also about how non-material goods and services are distributed among households. The standard monetary solution of increasing individual income levels ignores the fact that some household members are discriminated against and may not be given a proportional share of household income. For instance, when children work, a family's income often rises above the poverty level. These children are deprived, yet, according to the traditional income approach, they would not be considered as poor. Hence, **inequality in income and other dimensions of welfare should be addressed.**[1]

2. Income inequality

Policy-makers and scholars have usually computed the effectiveness of policy changes on the basis of general Lorenz-based inequality criteria. Recent literature, however, stresses the multi-faced aspects of income distribution.

The consumption-based measure is the internationally accepted indicator to measure living standards and is based on data collected in the national Household Income, Expenditure and Consumption Survey (HIECS). The focus is placed on consumption – rather than income – because it is much easier to measure and households are less reluctant to reveal their consumption than their income. Both food and non-food items are included, but public services and home-produced services are not. Because consumption is only measured at the level of the household rather than the individual, it can only provide information on the consumption of the average household member rather than for individuals within the household, such as women or children.

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[1] The paper covers the following countries: Israel, Libya, Tunisia, Jordan, Turkey, Algeria, Egypt, Syria and Morocco.

There are many ways to measure inequality. This study relies mostly on three types of inequality measures: i) quantile ratios; ii) Gini coefficients; and iii) Theil inequality measures.

Quantile ratios are straightforward indicators of inequality that are easy to interpret. The most common quantile ratio is the 80/20 ratio, which is the equivalent consumption at the 80th percentile of the equivalent consumption distribution divided by the equivalent income at the 20th percentile.

This measure is easy to interpret. For example, if the 80/20 ratio is equal to 4, then the poorest person of the richest 20% of the population consumes 4 times as much as the richest person of the poorest 20%. Quantile ratios are insensitive to outliers either in the very top or the very bottom tail of the consumption distribution. However, quantile ratios do not reflect what happens in other parts of the distribution. For example, no change in inequality anywhere between the 21th and the 79th percentile would ever be reflected in 80/20 ratio. To address this shortcoming, we also use Gini and Theil coefficients.

The Gini coefficient is defined, graphically, as the area between the Lorenz curve (which graphs the cumulative fraction of income versus the cumulative fraction of the population arranged in ascending order) and the line of perfect equality. The Gini coefficient is bounded between 0 and 1, with 0 indicating absolute equality and 1 indicating absolute inequality. The Gini coefficient is especially sensitive to changes in inequality in the middle of the equivalent consumption distribution.

Another widely used class of inequality indicators is the generalised entropy class developed by Theil. Within that class, we use *Theil mean log deviation index* $E(0)$ *and* the *Theil entropy index* $E(1)$. Both measures are zero for perfect equality. For complete inequality (one person consumes everything), $E(0)$ goes to infinity while $E(1)$ reaches $n\ln(n)$. The two Theil inequality measures differ in their sensitivity to inequality in different parts of the distribution. The entropy measure, $E(1)$, is most sensitive to inequality in the top range in the distribution, while the mean log deviation measure, $E(0)$, is most sensitive to inequality in the bottom range of the distribution.

Gini coefficient

The inequality patterns in countries under investigation show significant variations across countries, with countries such as Turkey, Morocco and Tunisia showing relatively high inequality while others, such as Egypt or Syria, show moderate to low inequality. Data presented in Table 1 and Figure 1 broadly confirm this conclusion. The former, which compiles the values of the Gini coefficients for eight countries based on various sources, indicates that only a slight change in the distribution of expenditure was detected for the majority of countries over the past two decades.

In addition, with a few exceptions, inequality within countries is generally sluggish over time. This is broadly confirmed by the trends based on the most recent data available on expenditure inequality. Table 1 reveals that the Gini coefficient ranged from a level of 0.30 in Egypt (2008/09) to 0.4323 in Turkey (2005), followed by Morocco (0.4088 in 2007). The country-specific Gini coefficient fluctuated within the 1990-2009 period, but always fell between 0.30 and 0.43. Only a slightly change in the distribution of expenditure was detected for the majority of the countries under consideration. Initial inequality in the countries during the 1990s was also close to the global average. The median value of Gini coefficient among the eight countries in the 1990s was 0.39, in line with typical values usually provided for the world. In the period 2000-2009, Turkey, Tunisia and Morocco had the highest level of inequality, with the Gini coefficient exceeding 0.40. Egypt had the lowest initial equality, with a Gini coefficient of around 0.30. Starting from 1990, inequality rose in three countries (Turkey, Morocco and Tunisia) and remained unchanged in other countries (Table 1). Jordan experienced the largest decline in inequality, with the Gini coefficient falling by 6 percentage points within a 14-year span.

The consumption ratio of the richest quintile and the poorest quintile also tells the same story. Inequality is highest in Turkey, Tunisia and Morocco, where population consumption in the richest quintile is more than seven times the consumption level of the poorest quintile. Egypt, followed by Syria, experienced the lowest inequality level in terms of this ratio.

Figure 1. Gini Coefficient
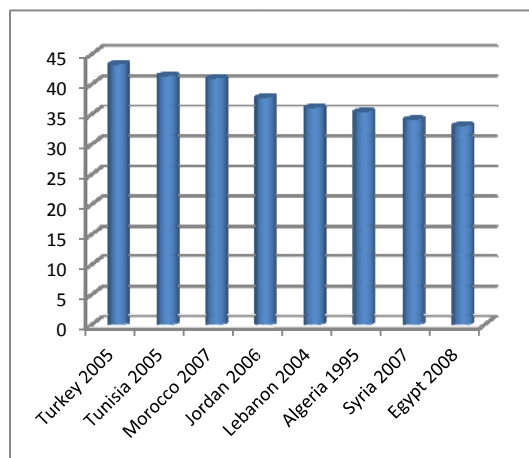
Figure 2. Percentage of the population considered as middle class
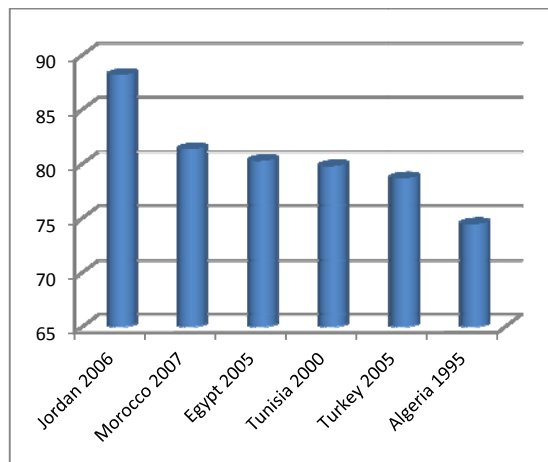
Source: Author's calculations, based on the PovcalNet website of the World Bank Group.

Polarisation[2]

Bibi and Nabli, 2008 argue that the conjecture that motivates studies of polarisation is that the more polarised a society is, the more likely it seems that a conflict can break out. Consequently, finding an increase in income polarisation could be a powerful means to detect and predict possibilities of social unrest and perhaps civil conflict.

As quoted by Bibi and Nabli 2008, Ayadi and El Lahga (2005) estimated an index of Duclos et al. (2004) and *Gini* index using 1975, 1980, 1990, and 1995 Tunisian household surveys. Their results reveal the existence of a curvilinear time trajectory of polarisation, with an increase, first during the 1980s followed by a notable decrease during the 1990s. Interestingly enough, the rise in the polarisation measures during the 1980s coincides with the bread riots in Tunisia, giving likely empirical evidence (though statistically questionable) between income polarisation and the generation of social tension. Further, the results show that the trends of inequality and polarisation exhibit different patterns, with a relatively constant level of inequality over the period of study.

A special aspect of income polarisation, the **middle class**, has been discussed intensively since the early 1980s. There is considerable debate about the issue of measuring the middle class. In a recent study, Ravallion (2009) uses a measure of the middle class that is comparable across developing countries: the households with consumption per capita of between $2 and $13 a day at 2005 PPP level: the lower bound being the median poverty line of developing countries while the upper bound is based on the US poverty line. He finds that in 1990 about one in three persons in the developing world belonged to the middle class, and the proportion had risen to one in two by 2005. For the MENA region, which includes most of the Arab countries and Iran, Ravallion (2009) finds that it has the largest proportion of the population, which can be considered middle class. This share, which was 75.5% of the population in 1990, increased only slightly to 78.7% in 2005.

As Table 1 and Figure 2 show, the size of middle class ranged from 88 % of the Jordanian population in 2007 to 78% of the Moroccan population in 2005. All countries under consideration experienced an

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[2] Income polarisation means the extent to which a population is clustered around a small number of distant poles. A population displaying high inequality, with few persons appropriating most income, is not a polarised society simply because most people are concentrated around the same pole in the income space.

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increase in the middle class share, except Turkey. Jordan exhibited the biggest change, where the share of the middle class had been expanded by 10 percentage points in Jordan, over the 1992-2006 period.

Growth Incidence Curves

GIC can explain trends in income distribution and their relation to overall growth. GIC shows the rate of change in real consumption at different points in the distribution. The horizontal axis shows the expenditure group arranged in percentile increments from poorest to richest. The vertical axis shows growth in expenditures, in percent, for the particular expenditure group between two particular dates.

Kheir-El-Din and El-Laithy (2006) estimated the Egyptian GIC using the 1991, 1995, 1999 and 2004 household surveys. They noted that the mean real per capita expenditure has been declining over the whole period of study, as well as during the first and third sub-periods. It increased only during the second sub-period (1995–1999). GIC for the whole period decreases over all quintiles, implying that inequality declined, as higher quintiles decline more rapidly than lower quintiles. The annualised percentage rise in per capita expenditure is estimated to have exceeded 10% for the poorest two percentiles, declined steadily, to reach zero around the 30th percentile and turned negative to reach -2 % (the average growth of per capita expenditure) around the middle of the eighth decile and continued to decline thereafter. This indicates that over the whole period under consideration, expenditure distribution has markedly improved, with a clear decline in poverty incidence. However, in the subsequent period of 2005-2009, all of GIC curve lies below 0, (see figure 3) suggesting that in terms of ability to buy 'poverty basket', the purchasing power of the population fell. The curve has an inverted U-shape. It means that the very poor and the very rich were the main losers, but the rich were the worst, changes in welfare levels of the middle of the distribution were kept at the average level. From the poverty perspective the distribution has deteriorated sharply with losses for the poorest among the poor (those who already was barely meeting their basic needs).

El-Laithy and Abu-Ismail (2005) have shown that income distribution in Syria increased between 1996 and 2004. This increase can be explained by noting that growth rates at the national level were not fairly distributed among the population. For instance, the lower percentiles of the expenditure distribution grew at a lower annual rate than the average rate, indicating that growth was accompanied by a rise in expenditure inequality. However, the period of 2004-2007 saw a trend in the opposite direction, where GIC shows that on average real per capita expenditure declined over the period 2004-2007, the bottom percentiles experienced gains in their welfare and the richest percentiles experienced large losses, which were particularly pronounced at the top decile; see Figure 3.

Figure 3. Growth Incidence Curve for 2004/5-2008/9

Egypt

All Syria *Urban* *Rural*
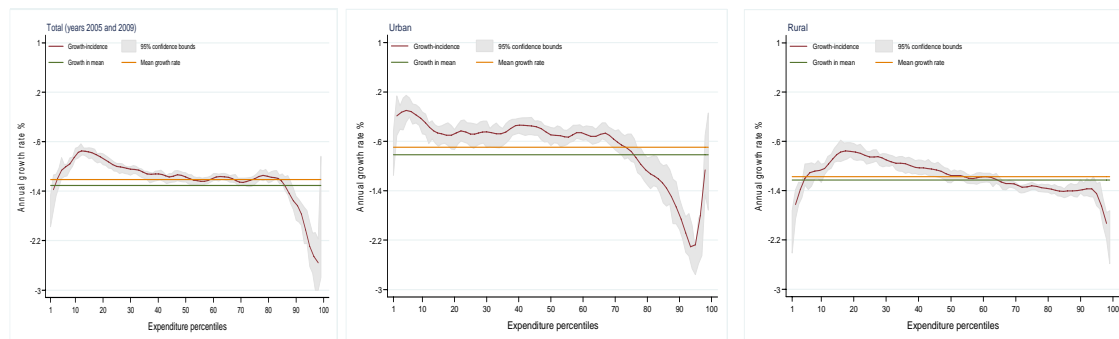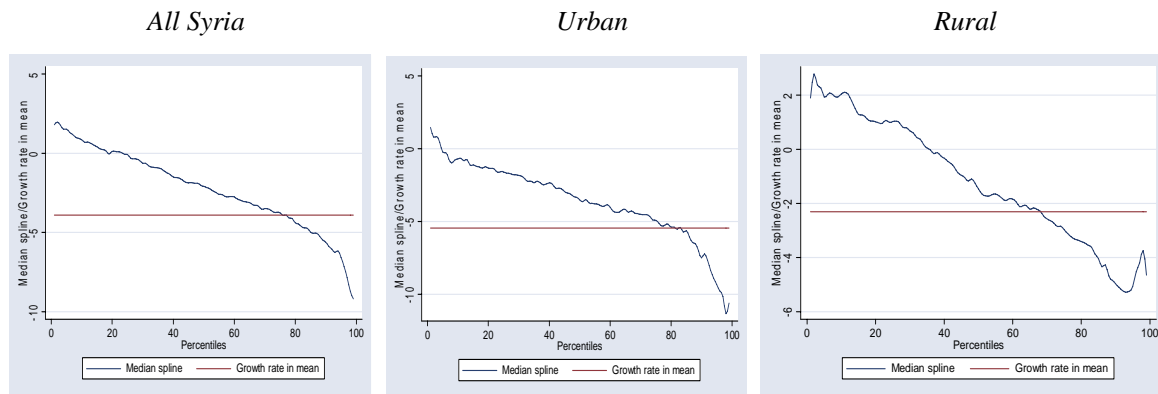
3. Break-down of inequality

There are major socio-economic indicators directly correlated to welfare. These indicators reflect the income earning and survival opportunities of individuals. Typically, these relate to the socio-demographic characteristics, such as age and household composition, educational attainment and employment status. The distribution of welfare in any society depends on differences in characteristics of its population (e.g. illiteracy rate, % of skilled labour) and on their earning capacity.

Inequality can be broken down into two dimensions. One can decompose total inequality in income into the contribution of each income source in overall inequality. This decomposition can be performed using the Gini coefficient. The second way of decomposing inequality is to view it in terms of inequality within population subgroups and between subgroups. This decomposition can be performed using the Theil indices.

Decomposition by population group allows us to look more closely at the causes of inequality. Following Bourguignon (2007) and Shorrocks (1982), we decompose total inequality into a component that is due to inequality across population subgroups, and into a component that is due to inequality within these subgroups.

As the effort levels are expected to vary within each group, the within-groups component of overall inequality could be deemed as the natural outcome of individuals' efforts variability, and thus, it is the result of individuals' responsibility; which is beyond the scope of justice. On the other hand, between-groups inequality reflects only the variability of circumstances across individuals, thus we can use it as an estimate of the inequality of opportunities. Therefore, inequality of opportunity is beyond the individuals' responsibility, and should be reduced, through appropriate social and economic development policies.

Location, educational attainment and employment status have been identified as the most important factors affecting welfare level and its distribution. First, regions differ not only in their natural resources, but also in the provision of public services. Second, education is a key determinant of command over resources. Education determines the command of individuals over income-earning opportunities through access to various types of employment. Education was typically found to have a high explanatory power on observed patterns of income distribution. The correlation between education and welfare has important implications for policy, particularly for the distributional impact. Third, changes in employment structure and its productivity can influence both determinants of change in income and its distribution. Growth in employment and its productivity can improve the growth rate of the economy. Moreover, changes in employment structure and its productivity can improve income distribution by pushing up the relevant segment of the Lorenz distribution. This can come about only by increasing employment and its remuneration.

Based on direct access to micro-data for Egypt, Syria and Lebanon, we decompose overall expenditure inequality into inequality between and within subgroups. We investigated inequality by location, education attainment and employment status for different years.

Tables 2 to 10 report the results of our decomposition exercise for Egypt, Syria and Lebanon. In **Egypt,** we first take the country as a whole and ask how much of the overall inequality is attributable to the between-group component in a series of settings. Decline in overall Theil inequality index E(0) from 0.171 to 0.157 is mainly due to a decline in inequality in urban areas (by 1.4 percentage points) We observe that if one breaks Egypt down into an urban and rural sector, only 20% of overall inequality can be attributed to the difference in average consumption between these two areas, in 2008. Most inequality would remain if this difference in averages were removed. The conclusion holds, irrespective of the inequality measure being used. A slight reduction has been observed in the contribution of inequality measures due to urban/rural differences, indicating smaller differences between urban and rural areas in 2008 compared to 2004 (from 20.4% to 20.05%). The stagnant of inequality between urban and rural areas raises concerns about the rural development process and calls for further investigations in order to infer their determinants.

If Egypt were broken down into the seven regions (Metropolitan, Urban Lower, Rural Lower, Urban Upper, Rural Upper, Urban Border, Rural Border), disparities due to differences between regions averages; between regions component; reaches 27.5% in 2008-09. The decomposition of inequality suggests that the reduction in inequality would be lower – around 27.5%, if differences in average consumption across all regions were removed. However, data show that differences between regions have been widened during the period 2004-05 to 2008-09, as the contribution of between regions differences in overall inequality has increased from 26.5% to 27.5%.

In **Syria**, where overall inequality is much higher than in Egypt, between-urban and rural disparities contributed a much lower share, (7.4% in 2003-04 and 4.9% in 2006-07). Within-urban/rural inequality had increased, where its contribution to overall inequality increased from 92.6% to 94.6%. Moreover, reduction in inequality is mainly due to decline in urban inequality, where the Theil index declined from 23.6% to 17.7%.

The Theil index is decomposed through education levels, within- and between-subgroups; inequality is computed for Egypt, Syria and Lebanon. In all countries, the within-group component is always the most important. Between-education levels component – reflecting disparities between education levels – is the highest in Egypt; constituting 16% of overall index of overall index. The within-education group contribution to overall inequality, on the other hand, appears naturally the most important and displays little trend mainly over the period 2004-05 to 2008-09. The impact of education level in Syria on inequality is less important, as the share of between groups component in overall inequality reached 9.5-% in 2006-07. For both Egypt and Syria, inequality in each educational category had declined except for individuals with a qualification higher than a university degree. Moreover, in both countries, inequality increases as we move from a lower to higher level of education. In Lebanon, as in the other two countries, disparities between education level averages explain only 10.4% of overall inequality, but there is no clear relationship between educational level and inequality.

Decomposition of the Theil index by employment status shows that most of the observed inequality in all countries and in all years is 'within' (as opposed to 'between') groups. In Egypt, there was a slight decline in inequality 'between' employment groups. There was also a slight increase in within-group inequality for both Egypt and Syria. Variation within wage workers and employer categories is much higher compared to other employment categories. These were categories that witnessed the largest decreases in inequality.

Social expenditure, human capital and inequality

Public expenditure on infrastructure, health and education are usually expected to improve equality in opportunities, total factor productivity, and growth. In the countries under consideration, high expenditure on social services such as education, health and other infrastructure has always been seen

as a major re-distributional mechanism. In turn, these mechanisms have helped to achieve large gains in terms of access to these services and poverty reduction.

Van de Walle (2004) considers the geographical aspects of poverty and social outcomes in relation to the impact of public spending programmes in Morocco. She finds that social programmes are well targeted toward the rural poor, who obtain substantial benefits, but not to the urban poor.

The more common approach to assess the impact of social expenditures on inequality in developing countries is the so-called *benefit incidence* analysis. It shows distribution of social spending across the household expenditure ladder. In Egypt, a 2008/09 benefit incidence analysis was performed to investigate benefits of different deciles of per capita expenditure from educational subsidies. The distribution of children by decile of per capita expenditure was compared with the distribution of direct beneficiary students from public schools and thus the proportion of total public funding of education going to each decile of the Egyptian population was estimated. Table 11 shows the results of this analysis, and Figure 4 illustrates them graphically in the form of a cumulative distribution curve, the benefit incidence curve.

In the benefit incidence curve, the horizontal axis represents the cumulative percentage of the population from the poorest to the left to the richest to the right. The vertical axis is the cumulative distribution of those who actually benefited from public education spending. The 45-degree line from bottom left to top right is a benchmark for equal access to public spending on education across the entire vulnerability score distribution. Thus the benefit incidence curve plots the percentile of all the children below that level against the percentile of the public spending beneficiaries below it. When the benefit incidence curve lies above the 45° line, it shows that (for example, when the 20th percentile of public spending beneficiaries falls within the 10th percentile of all children), public spending on education was being allocated progressively, targeting the relatively poor. Whereas when the benefit incidence curve lies below the 45° line, it indicates that public spending on education is being allocated regressively, targeting the (relatively) less vulnerable.

Table 11 and Figure 4 show that public spending on basic education is almost neutral where all deciles get almost equal shares. The poorest 10% of households gained 9.5% of the total public basic education subsidies, and the richest 10% gained 9.5%. One should argue that benefits should be well targeted to the vulnerable so that children in the lower deciles should receive more benefits. This is quite apparent from Figure 4, where the benefit incidence curve is identical to the neutral curve (45° line).

Figure 4. Benefit incidence curves in public schools3

| *a) Basic education* | *b) Secondary education* | *c) Higher education* |
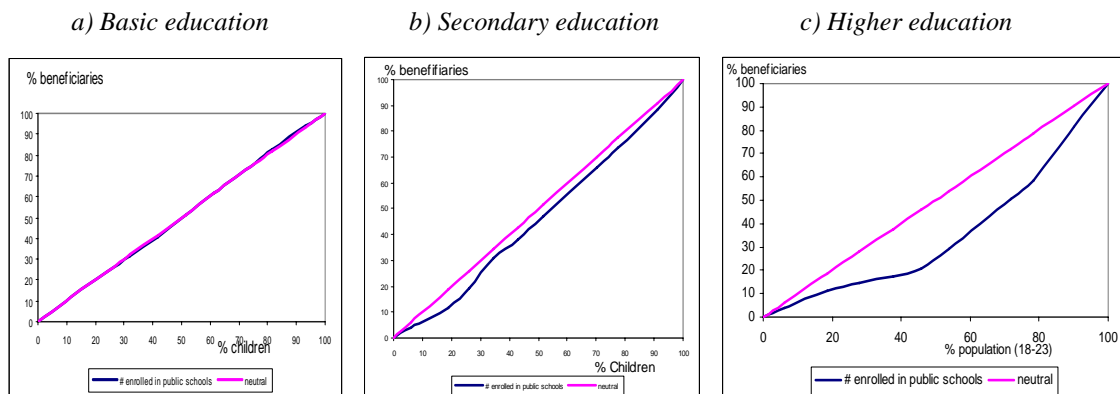
The benefit incidence curve describes the percentage shares of benefits in relation to population shares. If benefits are equitably distributed, the share of benefits for any population group equals its population share. When benefit incidence curve is higher than the 45 degree line, poorer population groups receive higher benefits share than its population share.

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However, the degree of equity in the benefit-incidence analysis differs by level of education. While public spending on basic education favours the poor, spending on secondary public schools and universities is heavily tilted toward the rich. Incidence curves for both secondary and higher education are below the neutral curve (45° line), especially for higher education, indicating that public spending for these stages is progressive where the rich obtain more benefits. The poorest decile benefited with 6% as opposed to the richest decile, which gained 12% and 20% for secondary and higher education, respectively.

Figure 5 illustrates the progressive nature of public health services more obviously. Benefit incidence curves of all types of government institutions are above the neutral line, indicating that the poor receive more benefits than the better off. It seems that self-targeting mechanisms work well in health subsidies; the poor choose this kind of cheap or free health care as they have no other alternative. On the other hand, the better off were kicked out as a result of low quality of health services provided by government institutions. In fact, households have to consider the trade-off between the cost of medical services and the quality of services they obtain.

Figure 5. Benefit incidence curve for public health expenditure

| *a) Government Hospitals* | *b) Government Health Units* | *c) Any Government Institution* |
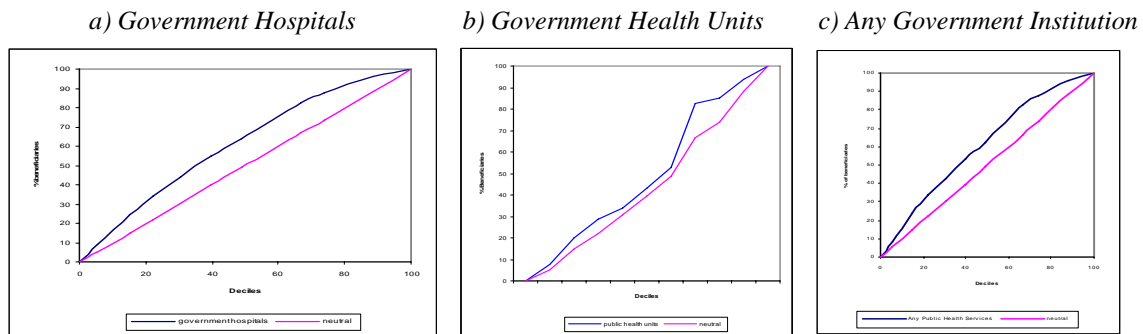
Source: Author's calculations.

4. Inequality in Human Development

The Global Human Development Report 2010 rightly stated that:

> "Human development cannot be built on exploitation of some groups by others or on greater access to resources and power by some groups. Inequitable development is not human development. Equity and the HDI are systematically related: countries that do well on the HDI tend to be more equitable. This result is consistent with research that shows how reducing inequality – both in the population as a whole and across gender and other groups – can improve overall outcomes in health and education, as well as economic growth".

Adjusting the Human Development Index for inequality

HDR 2010 introduces the inequality-adjusted HDI (IHDI), a measure of the level of human development of people in a society that accounts for inequality. The IHDI takes into account not only a country's average human development, as measured by health, education and income indicators, but also how it is distributed. We can think of each individual in a society as having a 'personal HDI.' If everyone had the same life expectancy, schooling and income, and hence the average societal level of each variable, the HDI for this society would be the same as each personal HDI level and hence the HDI of the 'average person.' In practice, of course, there are differences among people, and the average HDI differs from personal HDI levels. The IHDI accounts for inequalities in life expectancy, schooling and income, by 'discounting' each dimension's average value according to its level of inequality. The IHDI will be equal to the HDI when there is no inequality across people, but falls further below the HDI as inequality rises. In this sense, the HDI can be viewed as an index of

'potential' human development (or the maximum IHDI that could be achieved if there were no inequality), while the IHDI is the actual level of human development (accounting for inequality). Under perfect equality the HDI and the IHDI are equal. When there is inequality in the distribution of health, education and income, the HDI of an average person in a society is less than the aggregate HDI; the lower the IHDI (and the greater the difference between it and the HDI), the greater the inequality. The difference between the HDI and the IHDI measures the 'loss' in potential human development due to inequality.

Figure 6. HDI & Inequality-adjusted Human Development Index
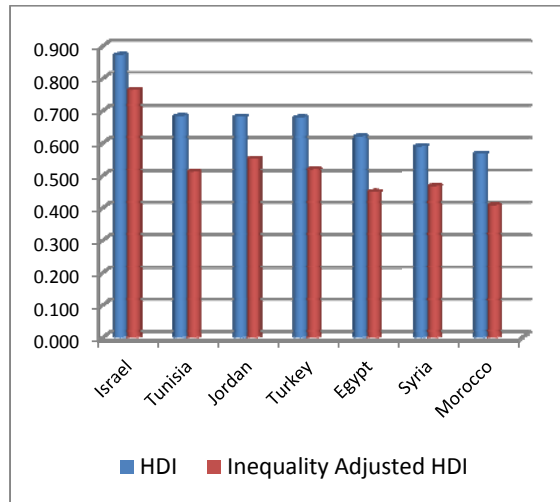
Figure 7. Percentage of overall loss due to inequality
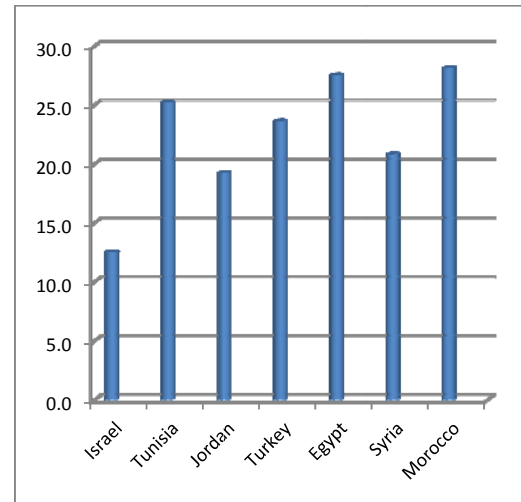
Source: Human Development Report, 2010.

Figure 7 and Table 12 show the HDI and inequality adjusted HDI and the corresponding losses. The average loss in the HDI due to inequality in all Arab countries under investigation is about 20 %. Losses range from 12.5 % (Israel) to 28.1 % (Morocco). Morocco, Egypt and Tunisia lost more than 25 %. Egypt and Tunisia lost 7 and 6 positions, respectively, due to inequality in human development dimensions. In these two countries, the human development index was reduced by 17 percentage points due to inequality. On the other hand, due to their relative equity in human development dimensions, Jordon and Syria moved to better position.

People in Morocco suffer the largest HDI losses because of substantial inequality across all three dimensions, followed by Egypt and Tunisia. Egypt and Morocco, for example, each lose 28% of their HDI largely because of inequality in education. Countries under investigation show the highest inequality in education dimension, followed by income dimension. The health dimension shows the fewest losses. Considerable losses can generally be traced to the unequal distribution of education, which is very high by all means. Losses in the education dimension ranged from 25% to 43.6% in Egypt. The loss of income dimension is smaller than the educational loss, but it is also substantially high. People in Turkey suffer the biggest loss; 26.5%, and Egypt has the smallest loss of 15.6%. Inequality-adjusted life expectancy at birth index, which is mainly driven by infant and child mortality, shows the fewest losses in all countries. Egyptians experienced the largest loss of 19.8% while Syrians suffer of only 11.1% loss.

In all countries inequality in education and income exceeds that of health. Syria experienced the smallest losses in health and income indices. Tunisia, Jordon and Turkey have very close HDI values, yet their inequality adjusted HDIs are different. IHDI is higher for Jordon than for Tunisia and Turkey; in fact people of Jordon suffer smaller losses in education and income dimensions.

These findings show the value of a truly multidimensional measure of inequality and point to potential policies. Dispersion in health and education is a major challenge for policy-makers.

For health, programmes are needed to reduce the gap in access to public services, such as vaccination programmes, between the rich and the poor. And, as most schooling is publicly provided, greater efforts are needed to promote equitable access to education services.

Measuring gender inequality – the Gender Inequality Index

The disadvantages facing women and girls are a major source of inequality. Measures of the disadvantages for women raise awareness of problems, permit monitoring of progress towards gender equity objectives and keep governments accountable.

Gender inequality index (GII) introduced by the global HDR2010, includes educational attainment, economic and political participation and female-specific health issues and in accounting for overlapping inequalities at the national level. A full set of GII estimates for all countries for which data are available is in Table 13.

The GII increases when disadvantages across dimensions are associated – that is, the more correlated the disparities between genders across dimensions, the higher the index. This takes account of the fact that the dimensions are complementary and that inequality in schooling tends to be correlated with, say, access to work opportunities and maternal mortality. Overlapping disadvantages are an important aspect of gender inequality, and capturing them is a major advantage of the GII. The method also ensures that low achievement in one dimension cannot be totally compensated for by high achievement in another.

The risk of death in childbirth is reduced through basic education, adequate nutrition, and access to contraceptives, antenatal health services and skilled attendants at birth. However, such services are still denied to too many women, even though many are inexpensive.

Among the countries under investigation, the Gender Inequality Index ranges from 0.332 to 0.714 (reflecting percentage losses in achievement of 33 % to 71 %).The Gender Inequality Index is the highest in Egypt 0.714, indicating that the gap between men and women in Egypt is the largest in all human development dimensions. Egypt is followed by Morocco and Syria. Egypt lost 7 positions because of gender inequality. On the other hand, and according to data in the global HDR 2010, Libya has the least gender inequality index among all Arab countries under investigation, at 0.504.

The correlation is strong (0.93) between gender inequality and the loss due to inequality in the distribution of the HDI. This suggests that countries with an unequal distribution of human development also experience high inequality between women and men and that countries with high gender inequality also have an unequal distribution of human development. Among the countries doing badly on both fronts are Morocco and Egypt, each with losses of more than 40% (inequality) and 70% (gender).

Countries exhibit enormous variations in maternal mortality ratios, even countries at similar human development levels. Algeria and Tunisia have a similar HDI to that of Jordon and Turkey, but Algeria's maternal mortality ratio is more than three times that of Jordon. Morocco has the highest maternal mortality ratios (280 deaths for 100,000 live births), followed by Algeria and Lebanon.

Women have traditionally been disadvantaged in the political arena at all levels of government. To capture this disadvantage, the Gender Inequality Index (GII) uses the ratio of female to male representatives in parliament. National parliamentary representation, which reflects women's visibility in political leadership and in society more generally, has been increasing over time, even though the global average is still only 16%. In 2008 Tunisia's parliament became the first to have a majority of women; 19.9 % of all parliamentary seats are held by women, and Egypt has the least representation of women, at 3.7%. Women's representation in parliament is less than 10% in seven out of ten countries.

Higher educational attainment expands women's freedoms by strengthening their capacity to question, reflect and act on their condition and by increasing their access to information. Educated women are more likely to enjoy satisfying work, participate in public debate, care for their own and their family's health and take other initiatives. The Gender Inequality Index (GII) focuses on differences in secondary and higher educational attainment. About one fifth of women in Morocco have a secondary and higher educational attainment, as opposed to 57% in Jordon. The percentage of women with a secondary and higher degree exceeds the corresponding percentage of men in Libya, Syria and Israel. The gap between men and women in this respect is the widest in Morocco, followed by Turkey and Tunisia.

Female labour force participation, which includes both the employed and unemployed (actively looking for work) as well as those seeking part-time work, stagnated at around 51% in 2008. Women in the Arab States increased their participation by about 9 percentage points since 1980, to 27% in 2008, which is still only about half the global average. While useful, labour force participation neglects occupational segregation in the labour market and the gender wage gap.

Concerning the countries under investigation, the participation rate ranged from 17% in Occupied Palestinian Territories and 38.2% in Algeria. All countries except Algeria have participation rates of less than 30% and the participation rate for women is less than 25% in five countries. Moreover, women's participation in the labour market represents almost one third of the corresponding rate for men; see Table 13 and Figure 10.

Figure 8. Gender Inequality Index
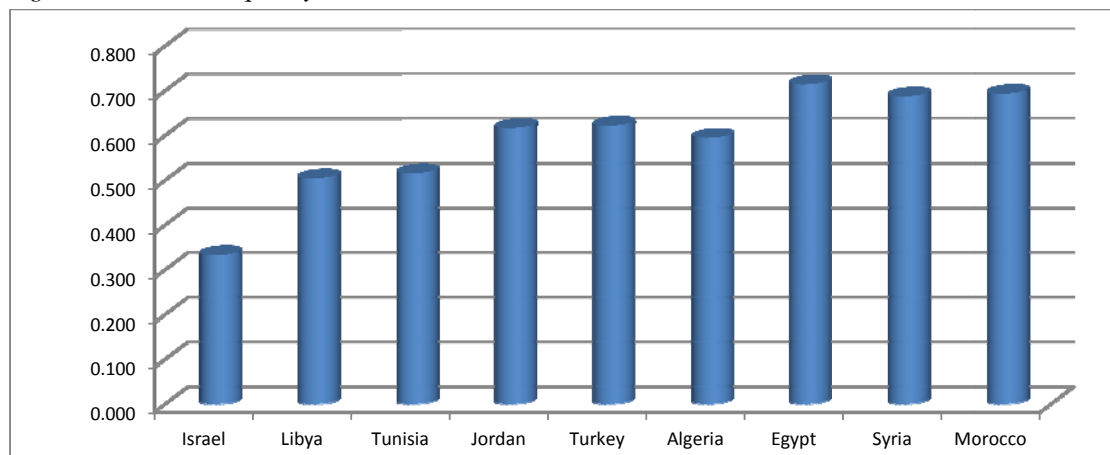
Figure 9. Percentage of people with secondary and higher degree
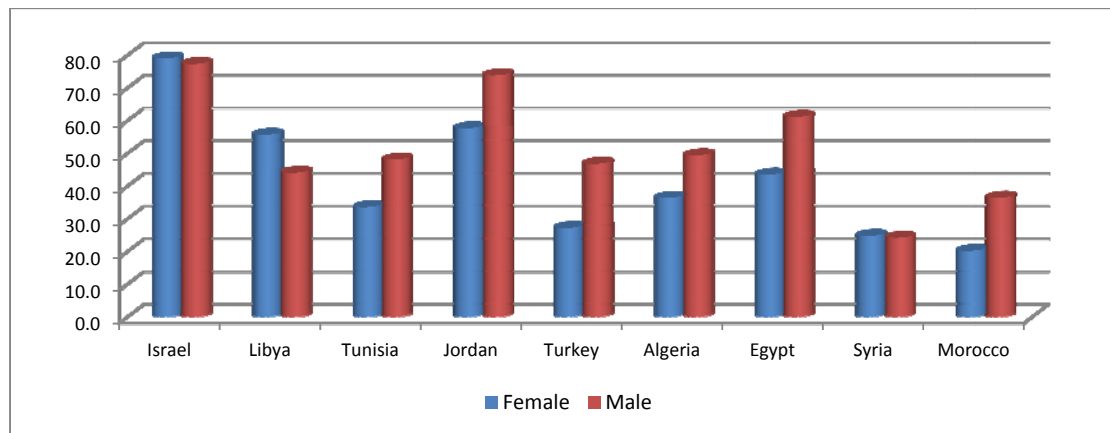
Figure 10. Labour force participation rate
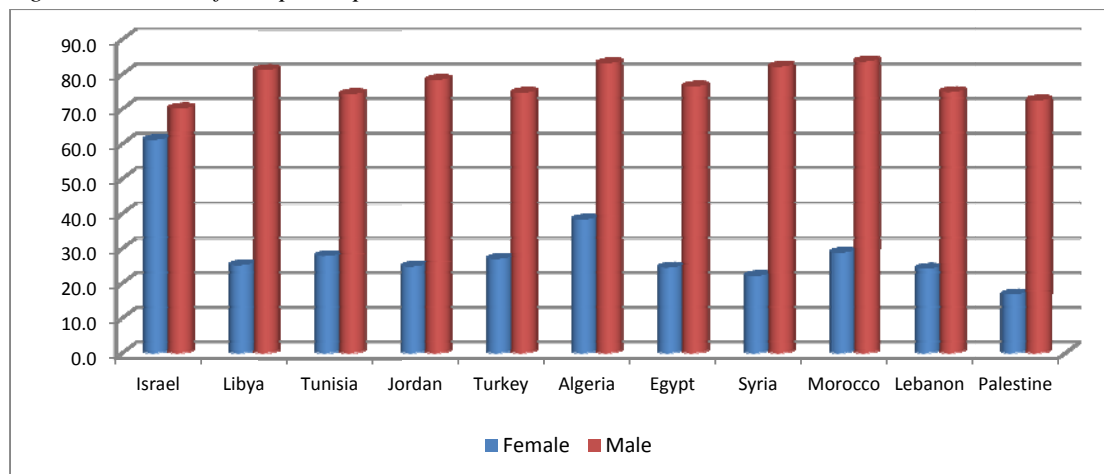
5. Projected scenarios

Two reference scenarios: optimistic and pessimistic, were used to project future paths up to 2020. The optimistic scenario assumes that per capita consumption of countries under consideration grows at a rate of 2% per annum, while change in per capita consumption is -2% under the pessimistic scenario.

The impact of positive growth is increasing inequality and the shrinking of the middle class. More precisely, the Gini coefficient increases from 37.8 to 40.7 and the ratio of consumption of the richest to the poorest quintile increases from 6.9 to 8.1; the middle class represents 72% of the overall population, whereas it represented 79% in the base year. This result shows that the richest class benefits most from this growth path. An opposite direction is observed for the pessimistic scenario.

Tables 16 and 17 show changes in private consumption from the reference scenarios, in percent, for the years 2020 and 2030. The first step in the derivation and the analysis of the results has been the estimation of elasticities[4] of changes in inequality measures with respect to changes in private consumption. These tables summarise the estimation results under two economic growth scenarios for 2020 and 2030.

Overall, the estimation results suggest that over the period up to 2030 the projected economic growth of the seven countries under consideration is associated with higher inequality. This is mainly due to high inequality in both Tunisia and Turkey. Change in inequality is found to be positively associated with a marginal change of the GDP.

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[4] Using Povcal Software.

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Tables

Table 1. Income inequality measures

	Year of Survey	Gini (expenditure)	Ratio richest / poorest quintile	% of middle class
Algeria	1988	40.1	7.21	73.86
	1995	35.3	6.12	74.42
Egypt	1990	32	4.71	71.21
	1995	30.1	4.2	72.74
	1999	32.8	4.7	79.33
	2004	32.1	4.6	80.24
	2008	33		
Jordan	1986	36	6.01	87.38
	1992	43.4	8.44	78.89
	1997	36.4	5.92	84.77
	2002	38.9	6.92	82.62
	2006	37.7	6.29	88.15
Lebanon	2004	36	6.14	
Morocco	1984	39.2	6.87	69.7
	1990	39.2	7.03	78.87
	1998	39.5	7.22	72.28
	2000	40.6	7.48	71.97
	2007	40.9	7.34	81.31
Syria	1997	33.7	5.32	
	2004	37.4	5.67	
	2007	34		
Tunisia	1985	43.4	9.28	70.6
	1990	40.2	7.85	76.93
	1995	41.7	8.5	74.12
	2000	40.8	7.98	79.75
	2005	41.3	8.13	
Turkey	1987	43.57	8.47	83.84
	1994	41.53	8.22	81.17
	2002	42.71	8.65	80.69
	2005	43.23	9.42	78.64

Table 2. Inequality decomposition by educational attainment: Egypt

	2008-09			2004-05		
Group	Entropy index	Population Share	Relative **contribution**	Entropy index	Population Share	Relative **contribution**
Illiterate	0.112	0.217	0.155	0.112	0.224	0.146
Literate (no diploma)	0.124	0.125	0.099	0.138	0.130	0.105
Primary/ preparatory	0.132	0.160	0.135	0.151	0.158	0.139
Secondary	0.141	0.189	0.170	0.150	0.181	0.159
Above secondary	0.138	0.021	0.019	0.154	0.021	0.019
University	0.224	0.068	0.098	0.245	0.067	0.096
Above university	0.267	0.002	0.003	0.257	0.002	0.003
Within			0.679			0.668
Between			0.160			0.171
Population	0.157	1	1	0.171	1	1

Table 3. Inequality decomposition by employment status: Egypt

	2008-09			2004-05		
Group	Entropy index	Population Share	Relative **contribution**	Entropy index	Population Share	Relative **contribution**
Wage-earner	0.168	0.199	0.213	0.191	0.196	0.219
Employer	0.176	0.049	0.055	0.187	0.054	0.059
Self-employed	0.110	0.056	0.039	0.115	0.066	0.045
Unpaid worker	0.072	0.057	0.026	0.079	0.054	0.025
Unemployed	0.138	0.018	0.016	0.154	0.021	0.019
Out of labour force	0.162	0.445	0.460	0.177	0.440	0.454
Not working age	0.153	0.176	0.172	0.157	0.169	0.155
Within			0.981			0.975
Between			0.019			0.025
Population	0.157	1	1	0.171	1	1

Table 4. Inequality decomposition by location: Egypt

	2008-09			2004-05		
Group	Entropy index	Population Share	Relative **contribution**	Entropy index	Population Share	Relative **contribution**
Urban	0.185	0.411	0.486	0.199	0.434	0.503
Rural	0.083	0.589	0.314	0.089	0.566	0.293
Within	---	---	0.799	---	---	0.796
Between	---	---	0.201	---	---	0.204
Population	0.157	1	1	0.171	1	1

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Table 5. Inequality decomposition by region: Egypt

Group	2008-09			2004-05		
	Entropy index	Population Share	Relative **contribution**	Entropy index	Population Share	Relative **contribution**
Metropolitan	0.202	0.170	0.220	0.212	0.187	0.231
Lower Urban	0.114	0.115	0.084	0.120	0.121	0.085
lower Rural	0.066	0.318	0.134	0.071	0.307	0.128
Upper Urban	0.178	0.115	0.131	0.203	0.119	0.140
Upper Rural	0.085	0.266	0.144	0.094	0.254	0.139
Borders Urban	0.153	0.010	0.010	0.083	0.007	0.003
borders Rural	0.086	0.005	0.003	0.214	0.005	0.007
Within			0.725			0.735
Between			0.275			0.265
Population	0.157	1	1	0.171	1	1

Table 6. Inequality decomposition by educational attainment: Syria

Group	2006-07			2003-04		
	Entropy index	Population Share	Relative **contribution**	Entropy index	Population Share	Relative **contribution**
Illiterate	0.187	0.076	0.074	0.205	0.176	0.158
Literate without diploma	0.189	0.156	0.154	0.201	0.245	0.214
Primary	0.164	0.279	0.239	0.202	0.351	0.308
preparatory	0.183	0.115	0.110	0.228	0.105	0.105
secondary	0.184	0.072	0.069	0.217	0.066	0.062
above secondary	0.184	0.029	0.028	0.229	0.031	0.031
university	0.196	0.025	0.026	0.290	0.027	0.034
post graduate	0.321	0.002	0.003			
unspecified	0.173	0.003	0.002	0.100	0.000	0.000
Within			0.704			0.912
Between			0.095			0.088
Population	0.192	1	1	0.229	1	1

Table 7. Inequality decomposition by educational attainment: Syria

Group	2006-07			2003-04		
	Entropy index	Population Share	Relative **contribution**	Entropy index	Population Share	Relative **contribution**
Wage-earner	0.189	0.154	0.152	0.230	0.154	0.154
Employer	0.255	0.019	0.025	0.275	0.020	0.024
Self-employed	0.179	0.072	0.067	0.223	0.071	0.069
Unpaid worker	0.176	0.033	0.030	0.184	0.039	0.031
Unemployed	0.208	0.012	0.013	0.189	0.027	0.022
Out of labour force	0.195	0.464	0.472	0.239	0.439	0.457
Within	---	---	0.760	---	---	0.757
Between	---	---	0.033	---	---	0.027
Population	0.192	1	1	0.229	1	1

Table 8. Inequality decomposition by location: Syria

| | 2006-07 | | | 2003-04 | | |
Group	Entropy index	Population Share	Relative **contribution**	Entropy index	Population Share	Relative **contribution**
Urban	0.177	0.541	0.499	0.236	0.508	0.522
Rural	0.187	0.459	0.447	0.188	0.492	0.404
Within	---	---	0.946	---	---	0.926
Between	---	---	0.049	---	---	0.074
Population	0.192	1	1	0.229	1	1

Table 9. Inequality decomposition by educational attainment: Lebanon

| | 2004-05 | | |
Group	Entropy index	Population Share	Relative **contribution**
Illiterate	0.186	0.079	0.062
Literate without diploma	0.206	0.045	0.039
Primary	0.187	0.185	0.147
Intermediate	0.179	0.140	0.107
Secondary	0.186	0.092	0.073
University	0.219	0.070	0.066
Within	---	---	0.494
Between	---	---	0.104
Population	0.235	1	1

Table 10. Inequality decomposition by employment status: Lebanon

| | 2004-05 | | |
Group	Entropy index	Population Share	Relative **contribution**
Wage-earner	0.254	0.184	0.199
Self-employer	0.234	0.014	0.014
Self-employed	0.209	0.085	0.076
Unpaid worker	0.223	0.008	0.008
Unemployed	0.208	0.025	0.022
Out of labour force	0.247	0.015	0.016
Within	---	---	0.335
Between	---	---	0.026
Population	0.235	1	1

Table 11. Distribution of Egypt's public spending on education by deciles, 2008

Per capita expenditure Deciles	Basic Education	Secondary Education	Tertiary
10	9.58	5.87	5.84
20	19.49	12.41	10.45
30	29.53	23.90	15.51
40	39.76	34.86	20.12
50	49.85	44.83	25.78
60	59.99	55.15	33.47
70	70.47	62.62	45.76
80	81.08	75.05	64.05
90	90.50	88.10	80.92
100	100	100	100

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Table 12. Inequality-adjusted human development index

	Human Developm ent Index (HDI)	Inequality-adjusted HDI			Inequality-adjusted life expectancy at birth index		Inequality-adjusted education index		Inequality-adjusted income index		Income Gini coeffici-ent
	Value	Value	Overall loss (%)	Change in rank	Value	Loss (%)	Value	Loss (%)	Value	Loss (%)	
	2010	2010	2010	2010	2010	2010	2010	2010	2010	2010	2000-2010
Israel	0.872	**0.763**	**12.5**	-11	0.922	4.8	0.799	7.9	0.603	23.7	39.2
Libya	0.755	**..**	**..**	..	0.759	12.1	..	..	..	..	..
Tunisia	0.683	**0.511**	**25.2**	-6	0.751	12.7	0.378	38.7	0.469	21.8	40.8
Jordan	0.681	**0.550**	**19.2**	7	0.729	13.3	0.508	25.1	0.450	18.7	37.7
Turkey	0.679	**0.518**	**23.6**	1	0.690	16.5	0.405	27.4	0.498	26.5	41.2
Algeria	0.677	**..**	**..**	..	0.688	17.9	..	..	..	..	35.3
Egypt	0.620	**0.449**	**27.5**	-7	0.641	19.8	0.304	43.6	0.465	15.9	32.1
Syria	0.589	**0.467**	**20.8**	4	0.769	11.1	0.312	31.5	0.424	18.3	..
Morocco	0.567	**0.407**	**28.1**	2	0.670	18.3	0.246	42.7	0.409	20.7	40.9

Table 13. Gender inequality index

	GII	Maternal mortality ratio	Adolescent fertility rate	Seats in parliament (%)	Population with at least secondary education (% ages 25 and older)		Labour force participation rate (%)	
				Female	Female	Male	Female	Male
Country	2008	2003–2008	1990–2008	2008	2010	2010	2008	2008
Israel	**0.332**	4	14.3	14.2	78.9	77.2	61.1	70.1
Libya	**0.504**	97	3.2	7.7	55.6	44.0	25.1	81.1
Tunisia	**0.515**	100	6.9	19.9	33.5	48.0	27.7	74.2
Jordan	**0.616**	62	24.5	8.5	57.6	73.8	24.7	78.3
Turkey	**0.621**	44	38.8	9.1	27.1	46.8	26.9	74.6
Algeria	**0.594**	180	7.3	6.5	36.3	49.3	38.2	83.1
Egypt	**0.714**	130	39.0	3.7	43.4	61.1	24.4	76.4
Syria	**0.687**	130	61.1	12.4	24.7	24.1	22.0	82.1
Morocco	**0.693**	240	18.9	6.2	20.1	36.4	28.7	83.6
Lebanon	**..**	150	16.2	4.7	..	..	24.1	74.8
Palestine	**..**	..	78.7	..	..	..	16.7	72.4

Table 14. Inequality measures for base year

	Gini Coefficient	ratio of richest /poorest quintile	% of middle class
Algeria	35.33	6.12	74.42
Egypt	32.14	4.6	80.24
Jordan	37.72	6.29	88.15
Morocco	40.88	7.34	81.31
Syria	35.78	5.92	84.77
Tunisia	40.81	7.98	79.75
Turkey	43.23	9.42	78.64
Overall	37.76	6.87	79.74

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Table 15. Projected inequality measures for 2020

	Optimistic reference scenario				Pessimistic reference scenario			
	Growth per annum	Gini	ratio of richest /poorest quintile	% of middle class	Growth per annum	Gini	ratio of richest /poorest quintile	% of middle class
Algeria	.02	38.883	7.433	67.374	-0.02	32.478	5.066	80.075
Egypt	.02	35.589	5.161	72.643	-0.02	29.372	4.149	86.337
Jordan	.02	41.514	7.639	79.804	-0.02	34.675	5.207	94.848
Morocco	.02	44.991	8.915	73.612	-0.02	37.580	6.076	87.489
Syria	.02	39.378	7.190	76.744	-0.02	32.892	4.901	91.211
Tunisia	.02	39.037	7.081	72.199	-0.02	42.233	8.702	85.810
Turkey	.02	45.340	11.383	71.194	-0.02	41.536	7.844	84.616
Overall		40.713	8.094	72.191		35.397	5.892	85.800

Table 16. Projected inequality measures for 2020 and 2030: Optimistic scenario

	2020				2030			
Country	%Change from optimistic reference scenario	Gini	ratio of richest /poorest quintile	% of middle class	%Change from optimistic reference scenario	Gini	ratio of richest /poorest quintile	% of middle class
Algeria	-0.24	38.030	7.118	69.065	-0.23	40.899	8.178	63.377
Egypt	-0.06	35.382	5.128	73.099	-0.12	38.317	5.606	66.632
Jordan	-0.08	41.210	7.531	80.472	-0.13	44.438	8.679	73.371
Morocco	-0.16	44.334	8.663	74.843	-0.31	46.654	9.551	70.498
Syria	-0.04	39.234	7.139	77.065	-0.07	42.592	8.324	69.577
Tunisia	0.28	38.540	6.829	70.085	0.19	36.515	5.802	61.461
Turkey	1.21	47.894	13.759	62.185	1.03	51.950	17.532	47.876
Overall		41.202	8.719	69.909		44.234	10.331	61.237

Table 17. Projected inequality measures for 2020 and 2030: Pessimistic scenario

	2020				2030			
	%Change from Pessimistic reference scenario	Gini	ratio of richest /poorest quintile	% of middle class	%Change from Pessimistic reference scenario	Gini	ratio of richest /poorest quintile	% of middle class
Algeria	-0.24	33.163	5.319	78.718	-0.23	31.670	4.768	81.678
Egypt	-0.06	29.538	4.176	85.971	-0.12	28.080	3.939	89.183
Jordan	-0.08	34.919	5.294	94.312	-0.13	33.305	4.720	97.863
Morocco	-0.16	38.108	6.278	86.500	-0.31	37.085	5.887	88.416
Syria	-0.04	33.008	4.942	90.954	-0.07	31.303	4.340	94.755
Tunisia	0.28	42.632	8.904	87.507	0.19	43.633	9.411	91.770
Turkey	1.21	39.487	5.938	91.846	1.03	37.499	4.088	98.859
Overall		35.005	5.391	87.631		33.512	4.600	91.902

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About MEDPRO

MEDPRO – Mediterranean Prospects – is a consortium of 17 highly reputed institutions from throughout the Mediterranean funded under the EU's 7th Framework Programme and coordinated by the Centre for European Policy Studies based in Brussels. At its core, MEDPRO explores the key challenges facing the countries in the Southern Mediterranean region in the coming decades. Towards this end, MEDPRO will undertake a prospective analysis, building on scenarios for regional integration and cooperation with the EU up to 2030 and on various impact assessments. A multi-disciplinary approach is taken to the research, which is organised into seven fields of study: geopolitics and governance; demography, health and ageing; management of environment and natural resources; energy and climate change mitigation; economic integration, trade, investment and sectoral analyses; financial services and capital markets; human capital, social protection, inequality and migration. By carrying out this work, MEDPRO aims to deliver a sound scientific underpinning for future policy decisions at both domestic and EU levels.

Title	MEDPRO – Prospective Analysis for the Mediterranean Region
Description	MEDPRO explores the challenges facing the countries in the South Mediterranean region in the coming decades. The project will undertake a comprehensive foresight analysis to provide a sound scientific underpinning for future policy decisions at both domestic and EU levels.
Mediterranean countries covered	Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, Palestine, Syria, Tunisia and Turkey
Coordinator	Dr. Rym Ayadi, Centre for European Policy Studies (CEPS), rym.ayadi@ceps.eu
Consortium	Centre for European Policy Studies, **CEPS**, Belgium; Center for Social and Economic Research, **CASE**, Poland; Cyprus Center for European and International Affairs, **CCEIA**, Cyprus; Fondazione Eni Enrico Mattei, **FEEM**, Italy; Forum Euro-Méditerranéen des Instituts de Sciences Economiques, **FEMISE**, France; Faculty of Economics and Political Sciences, **FEPS**, Egypt; Istituto Affari Internazionali, **IAI**, Italy; Institute of Communication and Computer Systems, **ICCS/NTUA**, Greece; Institut Europeu de la Mediterrania, **IEMed**, Spain; Institut Marocain des Relations Internationales, **IMRI**, Morocco; Istituto di Studi per l'Integrazione dei Sistemi, **ISIS**, Italy; Institut Tunisien de la Compétitivité et des Etudes Quantitatives, **ITCEQ**, Tunisia; Mediterranean Agronomic Institute of Bari, **MAIB**, Italy; Palestine Economic Policy Research Institute, **MAS**, Palestine; Netherlands Interdisciplinary Demographic Institute, **NIDI**, Netherlands; Universidad Politecnica de Madrid, **UPM**, Spain; Centre for European Economic Research, **ZEW**, Germany
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