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FOOD SECURITY, POVERTY, AND ECONOMIC POLICY IN THE MIDDLE EAST AND NORTH AFRICA

Hans Lofgren
International Food Policy Research Institute, Washington, DC, USA

Alan Richards
University of California at Santa Cruz, Santa Cruz, California, USA

Trade and Macroeconomics Division
International Food Policy Research Institute
2033 K Street, N.W.
Washington, D.C. 20006, U.S.A.

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ABSTRACT

In MENA, household food insecurity, which is closely related to poverty and undernourishment, is most severe in rural areas and concentrated within Iraq, Sudan, and Yemen. 25% of the MENA population may be poor and 7% undernourished. The key to increased national and household-level food security is pro-poor growth, driven by export-oriented, labor-intensive sectors. Agricultural sector policies should be subordinate to the pro-poor growth goal and not to the goal of food self-sufficiency. Such a strategy requires conflict resolution; macroeconomic stability; physical and human capital accumulation; reliance on markets and the private sector, and diffusion of ecologically friendly farming practices.

JEL Classification Codes: O13, O53, Q18

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I. INTRODUCTION

Food security fears loom large in public policy discussions in Middle East and North Africa (MENA).[1] Food security may be analyzed for units at different conceptual levels: regions, countries, households, and individuals. Much analysis of the topic has focused on the macro level: food production in the region as a whole (and most of its countries) falls far short of food requirements, making it necessary for most countries to turn to imports for a large share of domestic food consumption. As a result, the ability of most countries to maintain national food security depends on import capacity. On the micro level, food security depends on the ability of individual households to meet their food requirements. In the low- and middle-income countries of the region, millions of households are food insecure, largely as a result of poverty. In the years to come, policymakers will face difficult decisions as they try to improve national and household food security, while simultaneously striving to achieve other economic and political goals.

In this paper, we analyze the state and evolution of food security in the MENA region and discuss policies aimed at improving it. Although this chapter surveys the entire region, our main focus is on food security in low- and middle-income countries, and particularly on low-income households within those countries. The analyzed unit may be defined as being food secure if the probability that its food needs will be met are above some minimum "acceptable" level. This formulation helps underscore the obvious but crucial point that uncertainty and risk are inherent in any food security strategy. There are always risks with respect to the future, no matter how food is obtained. Any sensible, practical food security strategy is essentially a strategy to manage different risks.

For all the complexity of agricultural systems and policy issues, only three ways of obtaining food exist: own production, trade, and grants. The analyzed unit can produce its own food, produce something else and trade it for food, or receive food from someone else (without exchange and thus as a gift). Each approach has its costs (including risks) and benefits. These vary with the level of the analysis and the specific time and place.

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[1] In this chapter, the MENA region includes all countries classified in this region by the World Bank with the exception that Sudan and Turkey are included while Malta and Djibouti are excluded. Israel (not part of the MENA region), in most respects an advanced industrial economy, is not covered.

Conflating national food security with food self-sufficiency implicitly (but, in a drought-prone region, often implausibly) assumes that domestic production is a less risky mode for satisfying domestic demand than is dependence upon international trade.

A wide range of factors, including government policies, influences the food security of a country and its households. At the household level, the issue of food security is primarily a problem of income poverty: households with sufficient per-capita purchasing power are food secure.2 Government safety nets and poverty alleviation measures can play an important role in mitigating household food insecurity while policies that support sustainable pro-poor growth can reduce household food insecurity over time. At the country level, the capacity to generate a sufficient food supply via domestic production or imports is influenced by government policies, most directly by measures that influence agricultural production and external balances. The availability of natural resources, both those used in agricultural production (especially land and water) and those that can generate foreign exchange earnings (including petroleum and natural gas) are important parts of the general environment under which the economy and government policies function. The relative attractiveness of the different modes of obtaining food is also affected by the global trading regime (including WTO rules), over which individual countries have a limited (although not necessarily negligible) influence.

In our exploration of these issues, we will proceed as follows. To provide context, Section 2 briefly surveys the economies of the MENA region. Section 3 examines at the current state of food security in the region and how it has evolved since the 1970s. Section 4 discusses elements of a strategy for improved food security in the low- and middle-income countries of the region. Section 5 presents our conclusions.

II. A BRIEF SURVEY OF THE MENA ECONOMIES

Tables 1 and 2 provide statistics on the broader economic and trade structures of most countries in MENA. The countries of the region are quite heterogeneous. On the

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[2] To understand food security at the individual level, we also need to know about the allocation of food within the household. On the topic of intrahousehold resource allocation, see Haddad *et al.* (1997).

basis of Gross National Income (GNI) per capita, they may be divided into two groups. The first group includes high-income countries (in Tables 1 and 2 represented by Kuwait, Libya, Saudi Arabia and the UAE but also including some other countries on the Arabian Peninsula) whose economies are dominated by petroleum products and natural gas. In 1999, GNI per capita in these countries ranged from US$10,000 to US$20,000 [at 1995 purchasing power parity (PPP) prices]. Hydrocarbon exports provide the foreign exchange needed to finance a wide range of imports. The economies of this first group of countries are very open, as measured by the value of total trade (sum of exports and imports in goods and services) relative to Gross Domestic Product (GDP). The shares in employment, value-added and exports for their agricultural sectors and the rural population shares are all quite low. Illiteracy rates are higher than those in middle-income countries, in part a reflection of the fact that, before the 1970s, the income levels and educational opportunities for the citizens of these countries were more limited.

The second group, the low- and middle-income countries of the region, accounts for around 90% of the total population. Gross National Income (GNI) per capita in these countries is lower, in 1999 in the range from US$700 to US$6,000 (at 1995 purchasing power parity prices). With some exceptions (Jordan, Lebanon and Turkey), illiteracy rates are markedly above the average of all middle-income countries. The agricultural sector tends to be more important in these countries although its significance varies as a reflection of natural resource constraints (especially a lack of water) and strength of other sectors. The countries in the second group are also relatively open. Among goods exports, fuel, ore and metals (largely petroleum, natural gas and phosphates) are significant in most countries. Except for Tunisia and Turkey, the share of manufactures in goods exports is below the average for middle-income countries. Imports are dominated by manufactures. For most countries, imports of food and agricultural products are substantial, ranging between 11% and 34% of total goods imports. For the main staple, wheat, this includes heavy reliance on imports to cover domestic consumption. At the regional level, wheat imports cover around two thirds of wheat consumption (see Table A.1 for additional details). Worker remittances tend to represent a significant share of GDP. The primary sources of these remittances are the energy-rich countries of the Arabian Peninsula (for the Mashreq countries) or Europe (for Turkey and the Maghreb

countries). These remittances are often critical to the economic survival of poor households (Tzannatos, 2000, p. 7).

Figure 1 shows annual growth in real household consumption per capita for since the mid 1970s to the late 1990s, dividing the period into two sub-periods.[3] For all countries except Syria, growth in per-capita consumption was lower (and in some cases negative) in the second half of this period. Although a wide range of factors determine consumption growth, for many countries the slow-down in growth was driven by changes in energy markets (rapid price increases in 1973/74 and 1979/80, and a rapid decline in the mid 1980s) which were in turn linked to changes in worker migration (a rapid expansion in the number of workers from the mid-1970s to early 1980s and, for the group as a whole, probably relatively stagnant numbers since then). For Algeria, Egypt, Iran, Jordan and Syria a large portion of export earnings come either from energy sales or labor migration linked to energy production. Being heavily dependent on worker remittances, Jordan was hurt particularly hard by the exclusion of its workers from the Kuwaiti labor market after the Iraqi occupation of Kuwait in 1990. By contrast, the demand for workers from Egypt and Syria on the Arabian Peninsula remained high and may have increased. The reasons were political – unlike Egypt and Syria, Jordan did not participate in the international coalition against Iraq. Syria's consumption growth was also supported by good agricultural performance and continued access to labor migration and investment opportunities in Lebanon. For Morocco and Tunisia, which depend heavily on the EU for export revenues (primarily food, agriculture, and manufacturing exports) and worker remittances, growth is only marginally related to changes in energy markets.

Only sketchy data are available on poverty in MENA. Existing information is also quite contradictory, which is hardly surprising. After all, "poverty" is the modern equivalent of classical political economy's "subsistence," defined as some set of commodities without which a person or household is thought to be sufficiently deprived

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[3] To eliminate the influence of year-to-year variations, the figure shows the annual growth rates between different points represented by five-year averages. In addition to the consumption data that appear in Figure 1, Table A.2 summarizes the evolution of GDP growth.

as to be defined as "poor." Reasonable people differ sharply over the definition of the "necessary basket of commodities."

Serious issues also bedevil the selection of an appropriate price vector to be used in calculating the cost of the basket (e.g., do the poor actually pay the "national average" price?). Given these disagreements, it is not surprising that different studies use different poverty lines. And these difficulties are limited to an estimate for a single time period. In the MENA region, considerable rainfall variability and occasional political and economic turmoil make it difficult to draw conclusions about long-term trends from data for a few years.

Since the World Development Report (WDR) of 1990, the World Bank has used the "$1 PPP" or "$2 PPP" measures of poverty.[4] Data from two World Bank sources – World Development Indicators (2001) and van Eeghen (1995) – are summarized in Table 3. They suggest that, at the international poverty line of $1 in expenditure per person per day at 1985 PPP, the poverty rates are low except for Yemen, a country with one of the lowest per-capita income levels in the region.5 For the six countries covered by van Eeghen — Algeria, Egypt, Iran, Jordan, Morocco, and Tunisia — the 1990 aggregate poverty rate was around 6%. Using this measure, poverty in MENA appears to be relatively limited compared to other regions in the developing world (van Eeghen, 1995, p. 6; Ali and Elbadawi, 2000a, pp. 8-9). With a poverty line of $2 the rates jump, an indication that a substantial population share lives on expenditures between $1 and $2 per person per day. Using the $2 poverty line, van Eeghen estimates an aggregate poverty rate of around 25%. National poverty lines vary widely; on average they tend to be closer to the $2 line.[6]

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[4] The $1 PPP poverty measure shows the proportion of the population living below $1 per day when domestic per-capita expenditure data are converted into US dollars using an exchange rate that is based on the number of units of the country's currency that are required to buy the same amount of goods and services in the domestic market as a U.S. dollar would buy in the United States

[5] When 1993 prices are used instead of 1985 prices, the $1 and $2 poverty lines at 1985 PPP prices have been adjusted for inflation to $1.08 and $2.15, respectively (World Bank, WDI 2001, p. 67)

[6] van Eeghen (1995, p. 38) converts selected national poverty lines into 1985 PPP.

In fact, the Bank's $1 PPP poverty line, which was designed to reflect the standards of what it means to be poor in a poor country (Ravallion, 2002), seems too low for most MENA countries. The $1 line is far below average $PPP per capita incomes for most countries: the ratio of per capita GNP to the poverty line, both measured in PPP dollars, is unreasonably high when compared with a similar calculation for the U.S. In the U.S, GNI per capita is about 6.5 times greater than the poverty line, whereas corresponding MENA figures are: Egypt (9.9), Jordan (11.4), Morocco (8.8), and Tunisia (13.8) (Danzinger and Weinberg, 1994; World Bank, 2001b).[7] In addition, there are other problems with the World Bank's estimates, perhaps most importantly related to the lack of data that are needed to construct price indices for the consumption baskets of the poor.[8] Reddy and Pogge (2002) find that simulations using alternative PPP indices can raise estimates of poverty by 25% to 100%.

While there are disagreements on poverty headcount levels, something of a consensus is emerging on poverty trends: most analysts agree that aggregate poverty rates in MENA fell during the years of the oil boom (from the mid 1970s to the early to mid 1980s) but started to rise after that (Tzannatos, p. 5; van Eeghen and Soman, 1997; Kossaifi, 1998, p. 5). Such an observation is compatible with the observed decline in growth in per-capita household consumption (cf. Figure 1) and empirical research on the MENA region that shows negative growth elasticities of poverty (van Eeghen, 1995, p. 19; Ali and Elbadawi, 2000a, pp. 9-10). A growing body of empirical research attests that this relationship holds across most developing countries. At the level of individual MENA countries, Adams and Page (2001) note that Jordanian poverty, which rose precipitously 1988 to 1992, has fallen but still remains higher than in 1988. Other analysts also find that, despite the decline in Jordanian poverty from 1992 to 1997, poverty in the latter year "remained far higher than it was in 1988" (Shaban *et al.*, 2001, p.2). Similarly, a Ford Foundation review of the lively debate over poverty trends in Egypt concludes that there was a large rise in the poverty headcount from 1981/2 to 1990/1 (from 29.7% to 42.4%) and that, although the rate of poverty increase slowed

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[7] In 1992, the US poverty line was $14,335 for a family of four (Danzinger and Weinberg, 1994).

[8] For a critique and a response to this critique, see Reddy and Pogge (2002) and Ravallion (2002), respectively.

down during the 1990s, by 1995/96 (the last year for which there are data) the poverty headcount stood at 48% of households (Ford Foundation, 1998). A study of poverty in Yemen found that the number of families suffering from malnutrition rose from 9% in 1992 to 27% in 1999 (El-Maitamy, 2001). An IDRC report concludes that "the proportion of people living in poverty appears to be rising in most of the region's middle and lower income countries" (Rodenbeck, 2000). Finally, some of the countries for which data are missing – most importantly Iraq and Sudan – have large populations and relatively high poverty rates (although the exact magnitudes are not known).

There are other reasons to believe that, despite the difficulties of definitions and data, the problem of poverty may be worsening in the region. Ali and Elbadawi (2000b, p. 7) cite three factors that seem likely to be the key drivers of the rise in poverty. First, unemployment, whose measurement is also, of course, subject to many difficulties, seems not only high, but also rising in many countries. Second, most job creation has occurred in the low-wage informal sector, not in higher paying formal sector employment. And finally, there is much evidence of falling real wages in formal sector urban employment. One might add that in some countries, including Egypt, real wages in agriculture have been falling (Richards, 1994; Datt and Olmsted, 1998).

Who are the poor in MENA? In studies that distinguish between rural and urban poverty (based on national poverty lines) rural rates generally exceed urban rates, although the size of these gaps vary considerably. For the MENA region as a whole, 70% of the poor may live in rural areas, a share that is similar to the worldwide share and far above the rural population share in the region of 43% (World Bank, 2001a, p. 1; Bishay, 1998). Given continuous rural-urban migration, the share of rural areas in overall poverty is likely to decline. The poor in MENA are similar to the poor in the rest of the developing world in other respects: they lack education, control little land and capital, and have a below average nutritional status. In the MENA context, it is also important to note that populations in war and conflict zones are overrepresented among the poor (van Eeghen, 1995, p. 13; Bishay, 1998, pp. 18-19; Kossaifi, 1998, p. 26).

In summary, although some measures of poverty suggest that levels of poverty in MENA are relatively low, other data contradict this picture. Further, the consensus on the worsening trend strongly suggests that the challenge poverty poses to a sustainable food

security strategy cannot be ignored. In the long run, sustainable household food security requires poverty reduction. The fact that poverty remains high and may be increasing in many countries strongly suggests that an acceleration of pro-poor growth will be a necessary component of any sustainable long-term food security strategy.

III. FOOD SECURITY: CURRENT STATE AND EVOLUTION SINCE 1970

The concept of food security is separate from but related to standard economic indicators of the type discussed in Section 2. In a recent paper, Diaz-Bonilla *et al.* (2000) use cluster analysis to classify the countries of the world into three different groups: food insecure, food neutral, and food secure.[9] For most countries, their analysis was based on data for 1993-1997. Table 4 shows the classification of the MENA countries covered by their analysis. Their definition of food security is based on the following indicators: food production per capita (measuring the ability of a country to feed itself); the ratio between total export earnings and food imports (showing its ability to finance food imports); calories per capita and protein per capita (important explanatory variables for changes in malnutrition); and the non-agricultural population share (aimed at showing the extent of immunity from global changes in trade and agricultural policies) (Diaz-Bonilla *et al.*, 2000, pp. 6-9). Trade-stress (high food imports relative to export earnings) tends to contribute to a lack of food security in MENA more than in other regions.

Figures 2-5 summarize the long-term evolution of food security in the region since the mid 1970s, in part drawing on data used by Diaz-Bonilla *et al.*[10] To reduce the influence of year-to-year variations, we typically compare five-year averages.

Figure 2 shows values and changes since the 1970s for per-capita food production (in constant 1989-91 US$), a macro indicator of food security. For the region as a whole,

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[9] Only countries with missing data were omitted from their analysis. The primary purpose behind their work was to analyze whether country classifications recognized by the WTO (developed, developing, least developed, and net food importing) capture the extent to which countries are food secure.

[10] We did not use one of the indicators in Diaz-Bonilla *et al.*, the non-agricultural population share (since it seemed peripheral to our notion of food security). We tested whether their import-stress indicator (food imports divided by exports of goods and non-factor services) was sensitive to the addition of worker remittances to the denominator. However, this made little difference in terms of over-all trends. The evolution of protein consumption, which is not reported here, is similar to that of calorie consumption.

the trend is positive: in each decade, the population-weighted average for all sample countries grew at an annual rate of 0.5-0.7%. Among individual countries, the picture is mixed: the value was higher in 1993/97 than in 1973/77 for eleven countries out of sixteen and virtually unchanged for one (Tunisia). Three out of the four countries with declines face serious food-security problems.

Figure 3 summarizes data for another indicator of macro food security, the ratio between food imports and the sum of earnings from exports of goods and non-factor services. This indicator of food import stress declined drastically for the countries with the highest initial values (Egypt, Jordan, and Morocco) but increased substantially for Sudan and, to a lesser extent Algeria. Without exception, the energy-rich countries (Kuwait, Libya and Saudi Arabia, and the UAE) experienced increased stress, a reflection of a decline in petroleum and natural gas prices. Data were not available for Iraq and Yemen.

Figure 4 displays the evolution of per-capita calorie consumption per day. In the absence of strong distributional shifts (a topic about which little is known), this indicator can serve as a proxy for changes in calorie consumption across all households, including those that are food insecure. The over-all trend is positive. The high level of average calorie consumption indicates that deficiencies in this area are not a serious problem. For the period as a whole, the value increased in all countries except the UAE where it remained at a very high level by international standards throughout the period. For the countries with the lowest levels in 1993/97 (Iraq, Sudan, and Yemen; all below 2500 calories), growth in per-capita consumption was below average for the period as a whole. The incomplete data that is available for Iraq (covering the level of per-capita food production and calorie consumption) suggest that the country is food insecure.

Finally, Figure 5 shows the incidence of undernourishment, based on FAO data. Household food security (the ability of households to meet their food requirements) may be seen as a necessary but not a sufficient condition for the absence of undernourishment.[11] For the aggregate of all countries in Figure 5, the share of

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[11] To avoid undernourishment, it is necessary that food secure households (those able to meet food requirements) use this ability to actually provide nutritionally adequate food supplies to each individual household member in a setting with adequate health and care practices (cf. FAO, 2000, pp. 15-16).

undernourished in the total population declines over time, from 8.8% in 1979/81, to 7.2% in 1990/92 and 6.9% in 1997/99. This decline was not sufficient to reduce the absolute number of undernourished, which grew from 20.9 millions in 1979/81 to 26.7 million in 1997/99. In 1997/99, the rates of undernourishment were relatively high in three countries, Iraq (13.8%), Sudan (21.1%) and Yemen (33.7%) – with 18% of the total population, they recorded an undernourishment rate of 21% and accounted for as much as 56% of the undernourished. The aggregate undernourishment rate for the other countries was 4%.

This continued decline in the rate of undernourishment over time and increased per-capita calorie consumption seem to contradict the conclusion in the preceding section that poverty rates have been on the increase since the mid 1980s. One plausible explanation for this is the continued (albeit reduced) presence in most countries of food subsidy programs in spite of structural adjustment programs aimed at reducing budget deficits.[12] Although often declining, such subsidy programs have protected the food security for many at-risk households that have experienced increased poverty.

To sum up, in the second half of the 1990s, available indicators suggest that food insecurity at the national and household levels was a serious problem in Iraq, Sudan, and Yemen, countries that also are likely to have the highest poverty rates in the region. At the household level, the performance of food security indicators was more positive up to the mid 1980s than in more recent years. For the national-level indicators, the picture is mixed. For the region as a whole, some of these indicators (per-capita food production and food import stress) show stronger gains since the mid 1980s whereas others (including per-capita calorie consumption) improved less strongly in more recent years. Finally, the influence of political instability and conflicts (internal and external) in on food security is obvious from the records of Iraq, Kuwait, and Lebanon. Continued strife makes the challenge of improving food security much greater for the cases of Iraq and Sudan.

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[12] For a sample of seven Middle East countries, the GDP shares of spending on food subsidies varied from 0.9% to 4.9% (Tzannatos 2000, p. 19). For a detailed study of the Egyptian case, see Ahmed *et al.* (2001).

IV. POLICIES FOR FOOD SECURITY AND POVERTY REDUCTION

The preceding section shows that, even if it is difficult to come up with a precise figure, millions of people in MENA remain food insecure. Since the mid-1980s, no significant dent has been made in these numbers. A majority of the food insecure live in the rural areas of the region's low- and middle-income countries. What strategies are best suited to reduce food insecurity in countries where this is a serious problem? This section will attempt to address this question. While recognizing that the details of any strategy are country-specific, we will look for common denominators.

At the outset, it should be stressed that strategies for improved food security have to transcend pure economic considerations. For many countries, it is essential to strive for solutions to the external and internal conflicts that plague the region. Although all conflicts cannot be easily resolved (for some parties they may be a struggle for existence), those involved should recognize that these conflicts are pursued at high costs in the form of less growth, poverty reduction, and food security.

In order to address economic considerations, it is helpful to return to the point that food can be obtained from three sources, own production, trade, and grants. At the national level, the choice is essentially between the first two (excluding periods of extreme crisis when food aid in grant form may be important). With a few exceptions (for instance Turkey), it is not feasible for MENA countries to become food secure through exclusive reliance on domestic production, even if this striving were limited to basic foodstuffs. Arid zones with variable rainfall cannot escape weather or geography: domestic production is highly risky and severely limited by the constraints of nature. The MENA region is the driest in the world. Renewable water resources are 1,250 cubic meters per capita, corresponding to a mere 17% of the world average and 38% of the value for the second driest region. Water availability also varies widely within MENA, with several countries having less than 200 cubic meters per capita. [13] In most of the populous countries of the region, problems of water *quality* are also serious (World Bank 1994).

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[13] These figures do not include Turkey, a country that is relatively well endowed with water resources.

In recent years, production growth has been underpinned by irrigation expansion; for the countries covered in Table 1, the total irrigated area increased at an annual rate of 2.0% between 1984-86 and 1997-99, reaching 36% of the total cropland (World Bank, 2001b).[14] This suggests that the domestic production route will be even more difficult in the future, as competition from non-agricultural demands for domestic water supplies will increase, severely limiting the room for irrigated agriculture. Hence, although much of the food that is consumed domestically will continue to come from domestic sources, reliance on trade is crucial for national food security in the face of long-run domestic trends for demand and supply and short-run variability in domestic supply. For basic grains (which are at the center of calls for self-sufficiency), reliance on imports is made increasingly attractive by a long-run downward trend in world prices that is expected to continue in the future (Rosegrant *et al.*, 2001, p. 64).

The main reason evoked for food self-sufficiency is that reliance on imports makes countries vulnerable to external pressure and embargoes in times of international conflict. Although the concern is valid, the efficacy of the remedy is doubtful: the empirical record suggests that cuts in domestic supplies due to droughts are far more significant (cf. Hazell *et al.* in this volume) than cuts in import supplies due to embargoes. We would suggest that, to reduce the likelihood of being exposed to international blackmail, countries should strive to resolve conflicts, contribute to a rule-based international trading system, nurture alliances with different country groups, diversify trade (including food imports) across multiply countries, and maintain sufficient food stocks. In short, for most countries, measures other than attempts to increase domestic supplies are key to enhancing national food security also in times of international conflict.

Households can obtain food security through a combination of own production, market purchases of food, and grants. Grants (explicit in the form of transfers or implicit in food subsidies) can play a significant role by protecting vulnerable or chronically food-insecure households, exemplifying how, at any given income level, complementary policies can boost food security. However, the key to reduced food insecurity is higher

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[14] The 36% figure is for the MENA region, as defined by the World Bank.

incomes for groups that suffer from food insecurity. Policies aimed at food self-sufficiency as an objective in its own right, for producing households and/or for the nation, may come at the cost of reduced household poverty and food insecurity as low-income producers forego the higher incomes that can be realized from high-value products (fruits, vegetables, or livestock products), sold in domestic or foreign markets.

Against this background – risky domestic production, limited scope for domestic production growth, likely contradictions between staple food production and reduced household food insecurity, and a long-term downward trend in international grain prices – we propose that, for the low- and middle-income countries of the MENA region, a strategy for national and household food security should be a strategy for pro-poor growth that generates enough foreign-exchange earnings to complement domestic food supplies with imports, i.e. a trade-based strategy for food security. Labor-intensive exports can play a crucial role, not only as a source of foreign exchange but also by boosting real wages of poor people. Agricultural sector policies should be subordinate to the goal of rapid, pro-poor growth, not food self-sufficiency.

What are the main ingredients of a trade-based strategy for food security? What lessons can be learned from the literature on growth and poverty reduction in developing countries in general and in the MENA region in particular? A large and growing body of empirical research strongly shows that, in the recent history of developing countries, more rapid growth is the key to poverty reduction. On the basis of household survey data from the 1980s and the 1990s for a wide cross-section of countries, Ravallion (2000, p. 8-9) computes a growth elasticity of poverty of –2.5: for every 1% increase in mean household income, the proportion of the population living on less than $1 per day (at 1993 PPP) declines by 2.5%. Empirical research also shows negative growth elasticities of poverty for the subset of the MENA countries for which the required data exist (van Eeghen, 1995, p. 19; Ali and Elbadawi, 2000a, pp. 9-10).

What are the factors that together boost growth? There is a broad consensus that the list of growth-promoting factors includes the following core: macroeconomic stability; rapid accumulation of physical and human capital; and reliance on the private sector for the production of most goods and services (Rodrik, 1999; Dollar 2000). Other factors that are more controversial but have been important in specific contexts include

the growth-enhancing roles of openness to trade and export orientation, reliance on market forces, and the removal of price distortions. Together this latter set of factors may enhance the efficiency of resource allocation and facilitate the application of appropriate technologies.

Table 5 shows the performance of the MENA countries in relation to some of the growth-promoting factors that were referred to in the preceding paragraph, comparing average values for 1997-99 and 1984-86.[15] On the positive side, the numbers suggests that, for the region as a whole, macro stability has increased – inflation, budget deficits, and debt service have declined for most countries – while trade restrictions (indicated by import duties as share of imports) have declined. On average, the structure of government spending (indicated by shares of GDP allocated to the government wage bill and its spending on education) has changed little. On the negative side, the GDP shares of investment and manufacturing exports have declined. Countries n the MENA region are distinguished by their lack of success in developing manufacturing exports, their allocation of more resources to government employment (and government consumption), and their smaller foreign debt service burden.[16]

These averages hide significant differences between different countries. Egypt is perhaps the country with the most positive changes, as indicated by improved macro stability, reductions in the government wage bill, and reduced trade barriers. However, its investments in human and physical capital have not increased and manufacturing exports are stagnant. Jordan and Tunisia also show improvements according to most indicators, including more successful performance then Egypt in terms of investments and manufacturing exports. In Tunisia, manufacturing exports accounted for 23% of GDP at the end of the 1990s. Compared to Egypt, Iran's performance has been less successful in

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[15] The reader should keep in mind that it is an over-simplification to infer from aggregate data whether growth-promoting changes have occurred or not. For example, human and physical capital accumulation depends not only on the level of spending on education and investment but also on the efficiency of the spending that takes place. Moreover, the growth impact on the resulting capital accumulation depends on the extent to which various complementary factors are present.

[16] The GDP shares for government consumption declined on average from 24% to just below 20% for the countries that appear in Table 5. The strongest declines were registered for Egypt, Syria, and Saudi Arabia (for the latter from a very high starting point). The averages for the comparator groups of low- and middle-income countries were considerably lower, at 11% and 14%, respectively (World Bank, 2001b).

terms of macro stability but the country has managed to increase both investment and government spending on education. Information on the share of total investment originating in the private sector is available for a few of the MENA countries. Among these, the private share has increased noticeably in Egypt and Morocco but changed little in Iran and Tunisia.

More basically, the region's disappointing economic performance may reflect shortcomings in terms of more fundamental determinants of economic growth, most importantly the functioning of the government and other institutions that define the environment in which private agents function [*cf.* Hall and Jones (1999) on the role of these factors in growth]. There is a growing realization that, in most countries of the MENA region, governments have failed in critical core functions (*inter alia*, assuring that the education is universal and of high quality, and establishing an enabling framework for private sector investment and production). At the same time, governments have expanded into areas in which they lack a comparative advantage, such as directly producing standardized commodities. Moreover, by promulgating excessive regulations that are impossible to enforce, governments are often actively destructive, protecting relatively privileged groups (including large state-owned enterprises or corporations and their employees) at the expense of the majority of workers who are completely unprotected.[17] For countries pursuing export-oriented strategies, the development of a flexible institutional structure is particularly important, given the need to respond rapidly to changes in highly discriminating international markets. Such a strategy puts difficult demands on governments, forcing them to embark on new activities, abandoning some of the activities they have pursued historically. Important, new roles governments should play include the setting of quality standards, the provision of modern infrastructure (physical, social and legal), the maintenance of a competitive exchange rate, and the training of the labor force in basic skills.

While more rapid growth typically is associated with more rapid poverty reduction, it is also the case that, at any given growth rate, the rate of poverty reduction

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[17] As an example, in Egypt, a citizen wishing to obtain a piece of desert land, build a dwelling unit, and register the property must go through 77 bureaucratic procedures, a process that can take between 6 and 14 years (de Soto 1997, p. 13).

may vary widely across countries and time periods depending on structural conditions and policies pursued. In addition to promoting growth, any strategy for poverty reduction has to focus on boosting incomes the poor earn from their assets, by raising the quantity of assets they control, by improving asset productivity, and/or by raising demand and prices for the services produced by these assets. If inequality is lower, the poverty-reducing effects of any given rate of mean income growth is higher (Ravallion, 2000, pp. 19-21). When designing a policy for poverty reduction, policymakers should, of course, consider the characteristics of the poor. In the MENA regions (as in most other parts of the developing world), the poor lack education and control little or no land and capital. Predominantly, they live in rural areas. The labor market can play a crucial role in reducing poverty (Ali and Elbadawi, 2000a, p. 15; Tzannatos, 2000, p. 5). Education policies, sensitive to the demands of the labor market and improving the human capital of the poor can contribute to growth in labor productivity and real wages. Given the fact that the region is lagging in human capital accumulation, increased efficiency in the education sector and, perhaps, increased spending on education should be a higher priority (cf. Table 5).[18] The challenge of raising the wages of the poor is made more difficult by rapid labor force growth: between 1985 and 1999, the total labor force for the MENA countries in Table 1 grew by 2.7% per year as opposed to 1.9% for the group of all low- and middle-income countries (World Bank, 2001b). On average and for most individual countries, current GDP growth rates are considerably below the rates of 5-6% that are needed to absorb new labor force entrants and reduce the existing high levels of unemployment (ERF, 2000) (cf. Table A.2).

Significant real wage growth will be difficult without rapid expansion of labor-intensive exports. Given the limited room for agricultural expansion, most of the growing labor force will have to be absorbed by manufacturing and, to a lesser extent, services. From this perspective, it is troublesome that, with the exception of Tunisia, none of the low- and middle-income countries have managed to develop significant manufacturing exports (cf. Table 5). Consequently, the countries in the region need to develop new areas

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[18] Shafik (1994) notes that, in the Arab countries, human resource development is poor in spite of relatively high public spending on education. *Inter alia*, she proposes that spending inefficiency may be a major reason behind this paradox.

of comparative advantage, considering country-specific conditions and access to export markets. The analysis of Devlin (in this volume) suggests that high-value agriculture (involving a reallocation of agricultural production) and manufacturing based on agriculture and natural resources are promising export sectors for many countries.[19] Rapid export expansion in these sectors would require integrated foreign and domestic policies. In the foreign policy area, there is a need to improve market access (especially for targeted export sectors) through more aggressive and coordinated positions in the context of WTO and Euro-Med Partnership negotiations. Growth dynamics would also be enhanced by intra-Arab trade liberalization. In the domestic policy area, a major obstacle to more rapid export growth is high transactions costs. These costs can be brought down by investments in improved infrastructure, reduced red tape, and unilateral removal of trade barriers for producer services (including finance, transportation and storage services). In most country settings, other complementary domestic policies include the maintenance of a competitive exchange rate, a general lowering of import barriers (reducing costs via improved access to imported inputs and improving export incentives via the resulting devaluation). Together with improvements in infrastructure, refined water policies and investment in improved water, land, and range management practices are needed to better realize the potential contribution of agriculture to growth and poverty reduction. From a poverty perspective, improvements in rural infrastructure (including and telecommunications) would have the advantage of inducing a general reduction in rural transactions costs and, thereby, improve rural terms of trade (the ratio between the prices at which rural areas sell and buy in their trade with urban areas and the rest of the world).

Such policies are particularly important for crafting a sustainable food security strategy. Here, as elsewhere in the world, the problems of raising food production and rural incomes in the coming decades are made more complicated by increasingly tight ecological constraints. There are reasons for concern that some agricultural sectors in the region are already approaching, or have exceeded, ecological limits. For example, the use of fertilizers per hectare in Israel, Jordan, and Palestine are among the highest in the

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[19] The rest of this paragraph draws on Devlin (in this volume).

world; consequently, the concentration of nitrate in the coastal aquifer of Gaza and Israel has doubled during the past two decades (Brooks, 2000). The problem of soil salinity is acute in many of the region's most productive irrigated lands, such as in Egypt, where the problem afflicts perhaps 30% of the cultivated area (Postel, 2001). Overpumping of groundwater is equally endemic.

The problems of sustainability may be most acute in one of the region's poorest countries, Yemen. The area irrigated by wells rose from 37,000 hectares in 1970 to 368,000 in 1996. Government policy strongly encouraged this development. Until 1995, diesel fuel was priced around $0.02 per liter, while international prices ranged from $0.15 and $0.20 per liter. Agricultural borrowers also enjoyed generous interest subsidies on investments in wells (paying interest rates of 9-11% compared to market rates of 50-60%). Consequently water was priced at $0.04 per cubic meter, although covering only the marginal cost of extraction would have required a price three to five times higher. Finally, the government protected the domestic fruit and vegetable market, and did nothing to restrict the boom in *qat* (a mildly narcotic drug, which uses some 30% of all irrigation water in the country) (Ward, 2000). Unsurprisingly, IWMI (International Water Management Institute) experts describe the groundwater situation in the country as a "basket case." Extraction now exceeds recharge by 400%, and "Yemen is probably the only country where groundwater extraction exceeds recharge for the country as a whole" (Shah *et al.*, 2000, p. 1). Water tables have fallen dramatically, as wells have been deepened two to four times in the Sa'adah basin (Liechtenthaeler and Turton, 1999). The very respectable growth of Yemeni agriculture during the past decade (5.0% per year) is clearly unsustainable, which has serious negative implications for the welfare of the country, where roughly 75% of the labor force works in agriculture. In Yemen, and throughout the region, a viable food security strategy will have to pay more attention to using natural resources sustainably.

Finally, in addition to enabling the poor to earn higher incomes in production, there is invariably a need for a social safety net which provides a minimum standard of living on an intermittent basis for large parts of the population and on a permanent basis for the small pockets of the population that, for structural reasons, are unable to earn a satisfactory living (including, among others, people with handicaps and illnesses). The

means to achieve this may include targeted food subsidies, public works programs, as well as pensions and various kinds of cash transfers.

V. SUMMARY AND CONCLUSIONS

The economies of the MENA region are diverse in terms of economic structure, living standards, and food security. They may be divided into two groups, high-income countries, whose entire economies are dominated by petroleum and natural gas, and low- and middle-income countries with more diversified economic structures, including a more significant agricultural sector. Across these differences, most of the economies of the region, especially in the Middle East, are heavily dependent on the energy production, either directly as the major source of export revenues or indirectly though remittances from laborers working on energy-rich countries.

For most countries in the region, growth in household real per-capita consumption was rapid between the mid 1970s and the mid 1980s, but has since slowed down, in some cases becoming negative. These trends were mainly driven by swings in international energy prices. The data on poverty in MENA is sketchy and contradictory. On balance, available evidence indicates that poverty remains a serious problem in the low- and middle-income countries of the region. When, relative to average income, sensible poverty lines are used (in terms of PPP dollars, more close to $2 than $1 per day), 25% of the total population may be classified as poor. In MENA (as well as elsewhere in the developing world) poverty is disproportionately a rural phenomenon: although rural areas only house 43% of the total population, as many as 70% of the poor may be located in rural areas. Geographically, poverty problems appear to be most severe in Iraq, Sudan, and Yemen; in each of these countries, internal and/or international wars have retarded economic progress and aggravated poverty. Most analysts agree that, in the context of growing unemployment and stagnant wages, poverty rates have been on the increase since the mid 1980s.

Food security may be analyzed for units at different conceptual levels; our focus is on the country and household levels. A country or a household is food secure if the probability that it fails to meet its food needs falls below some cut-off point. The two

major ways of meeting food needs are own production and trade, in some cases supplemented by grants.

The MENA region suffers from a scarcity of rain and water resources, putting severe limits on future growth in agricultural production (barring technological breakthroughs). In response to growth in population and per-capita incomes, the region has turned to imports when trying to satisfy the demand for food. This is not necessarily an indication of food insecurity. On the contrary, in a drought-prone region like MENA, reliance on trade for a substantial share of food consumed is likely to enhance food security. However, for some countries in the region, the fact that food imports correspond to a large share of total export earnings is an indication of country-level food insecurity. Food security is also challenged by some unsustainable farming practices (e.g., overpumping of groundwater, salinization, rising pollution of aquifers).

At the household level, food security is closely related to the absence of poverty and undernourishment. From this perspective, the poverty trends that were referred to above are a source of concern. The undernourishment indicator has the advantage of being available for most countries at multiple points in time. The numbers suggest that, since 1979/81, the share of the MENA population that is undernourished has declined (from 8.8% to 6.9%) but the number of undernourished has increased (from 21 to 27 million). The numbers show that undernourishment is concentrated in countries with the most severe poverty problems – Iraq, Sudan, and Yemen. These three countries account for 56% of the undernourished but only 18% of the MENA population. Their rate of undernourishment is 21% as opposed to merely 4% for the rest of the MENA region.

The paths toward less poverty and more food security in the MENA region are full of challenges. The countries of the region are diverse in terms of their current economic structure, geographical location, and growth prospects. Nevertheless, for most of the low- and middle-income countries in the MENA region, the key to increased food security, both at the national and household levels, is rapid, pro-poor growth, driven by expansion in export-oriented, labor-intensive sectors and complemented with safety nets to protect those who cannot share in the benefits. Such a strategy would enhance household level food security by raising labor demand and wages, i.e. boosting the

returns that accrue to the main asset of the food insecure. It would enhance national food security by generating the foreign exchange that is needed to finance food imports.

It is essential to let trade play a major role in improving future food security. Given the very tight region-wide water constraint, a strategy aimed at meeting expected growth in food demand (driven by growth in population and, hopefully, incomes) from domestic supplies is unlikely to succeed. In the context of this strategy, a large share of domestic demand would continue to be met by domestic production. However, the role of the agricultural sector would be subordinate to the goal of rapid, pro-poor growth, not food self-sufficiency.

For most countries, the core, integrated elements in such a strategy include resolution of external and internal conflicts; macroeconomic stability; rapid accumulation of physical and human capital; and, relative to the current situation, increased reliance on market forces and the private sector, and rapid diffusion of more ecologically-friendly farming practices. The policies of the outside world can facilitate economic progress in the MENA region in many ways, perhaps most importantly by providing market access to the region's exports and contributing to equitable and lasting solutions to the region's conflicts.

During the last decade, many MENA countries have improved macroeconomic stability. The role of markets and the private sector have become more significant. However, many elements of the strategy are still only weakly present in much of the region. For most countries, physical and human capital investments, and manufacturing exports remain low compared to other regions. More fundamentally, there are many signs that governments in MENA have failed in critical core functions while performing certain activities that are destructive and reinforce existing inequalities.

Finally, many countries, in particular those with the most severe food insecurity problems, are bogged down in conflicts. Conflict resolution would accelerate capital accumulation by channeling resources to productive (or non-destructive) uses and encouraging investments (instead of brain drain and capital flight). A more peaceful environment would also reduce the likelihood that countries pursuing trade-based food security strategies would be exposed to international blackmail. Diversified trade and

political alliances, food stocks, and support for a rule-based international trading system would serve the same end.

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Table 1. Selected indicators of economic structure and living standards in MENA.

						GDP by sector (% of total)				Current account (% of GDP)					
	GNI p.c ('000PPP 1995 $)	Adult illiteracy (%)	Popul-ation (mill)	Rural popul-ation (%)	Agricultural labor force (% of total)	Agri-culture	Manuf-acturing	Other Industry	Services	Goods exports	Service exports	Goods imports	Service imports	Openness (Exports+ Imports)	Worker remit-tances
High-Income Countries															
Kuwait	19.6	18.1	2	2.4	1.2	0	11	43	46	41.5	5.7	22.7	14.4	84.2	
Libya		20.9	5	13.9	10.9										
Saudi Arabia	10.1	23.9	20	15.0	19.2	7	10	38	45	36.4	3.9	18.5	9.4	67.7	
UAE	18.1	24.9	3	13.6	7.8	2	8	50	40				65.4	131.3	
Low- and Middle-Income Countries															
Algeria	4.4	33.4	30	40.4	26.1	11	10	41	38	26.6	0.8	14.8	8.5	51.0	2.0
Egypt	3.2	45.4	63	54.7	34.0	17	20	12	51	5.0	10.2	19.0	5.3	40.4	4.2
Iran	5.0	24.3	63	38.9	23.0	21	17	14	48	11.5	1.2	12.1	4.4	37.6	0.4
Iraq		45.2	23	23.5	16.1	..	..		..						
Jordan	3.5	10.8	5	25.0	5.9	2	16	10	72	22.5	21.1	42.9	18.9	105.4	20.6
Lebanon	4.1	14.4	4	11.5	7.3	12	10	12	66	4.9	5.6	47.1	3.9	61.7	15.6
Morocco	3.0	52.0	28	45.1	36.0	15	17	15	53	21.5	8.9	28.4	5.7	64.3	5.5
Sudan		43.1	29	64.8	69.0	40	9	9	42	8.0	0.5	12.4			4.7
Syria	3.2	26.4	16	45.1	28.2	25	28	4	43	19.6	8.5	18.5	21.6	69.0	2.5
Tunisia	5.2	30.1	9	37.0	21.6	13	18	10	59	28.0	13.9	38.3	5.8	86.0	3.6
Turkey	5.9	15.4	64	26.1	43.0	16	15	9	60	15.8	8.8	21.4	5.5	50.1	2.4
Yemen	0.7	54.8	17	75.7	61.0	17	11	30	42	23.8	3.3	34.9	10.5	84.0	18.1

Source: World Bank (2001b)

Note: Data are for 1999 or for the most recent preceding year with available data

Table. 2. Merchandise trade structure 1993-99, selected MENA countries (%).

	Exports*			Imports*		
	Food & Agriculture	Fuel, Ore & Metals	Manuf-acturing	Food & Agriculture	Fuel, Ore & Metals	Manuf-acturing
Kuwait	0.5	86.9	12.7	16.8	2.4	80.9
Libya	0.4	95.6	4.0	21.6	1.2	77.2
Saudi Arabia	0.9	89.5	9.6	16.2	3.7	80.2
UAE	8.6	48.7	42.7	12.9	5.6	81.5
Algeria	0.7	95.7	3.6	32.9	2.7	64.4
Egypt	15.6	45.0	39.3	32.1	6.2	61.7
Iran						
Iraq						
Jordan	23.3	26.4	50.3	23.9	14.6	61.5
Lebanon						
Morocco	32.9	14.8	52.3	23.0	18.8	58.2
Sudan	96.3	0.6	3.1	20.0	17.2	62.7
Syria	22.9	66.3	10.8	22.7	4.6	72.7
Tunisia	10.4	9.8	79.8	13.7	9.8	76.5
Turkey	19.9	3.7	76.4	10.5	16.4	73.0
Yemen	4.8	94.6	0.7	33.9	8.6	57.5
Low income						
Middle income	12.5	17.1	70.4	10.8	12.5	76.7

Source: World Bank (2001b)

*Sectoral shares sum to 100 (after minor scaling to remove data errors)

Data are average of last 5 years with data (1993-1999)

Table 3. Poverty estimates for selected MENA countries.

	International poverty line				National poverty line (1)				
	<$1/day	<$2/day	year	source	rural	urban	national	year	source
Algeria	1.8		1985	2	16.6	7.3	12.2	1988	1
	1.2		1990	2	30.3	14.7	22.6	1995	1
	1.6		1994	2					
	<2.0	15.1	1995	1					
Egypt	7.5		1985	2	23.3	22.5	22.9	1995-96	
	5.6		1990	2					
	6.1		1994	2					
	3.1	52.7	1995	1					
Iran	6.5		1985	2					
	8.9		1990	2					
	6.9		1994	2					
Jordan	4.2		1985	2			15.0	1991	1
	12.6		1990	2			11.7	1997	1
	13.8		1994	2					
	<2.0	7.4	1997	1					
Morocco	7.1		1985	2	18.0	7.6	13.1	1990-91	1
	2.5		1990	2	27.2	12.0	19.0	1998-99	1
	1.6		1994	2					
	<2.0	7.5	1990-91	1					
Tunisia	4.6		1985	2	29.2	12.0	19.9	1985	1
	2.9		1990	2	21.6	8.9	14.1	1990	1
	1.6		1994	2					
	<2.0	10.0	1995	1					
Turkey	2.4	18.0	1994						
Yemen	15.7	45.2	1998		19.2	18.6	19.1	1992	

Sources:
1 = World Bank (2001b)
2 = van Eeghen (1995, p. 5)

Table 4. Food security in MENA, 1993-1997.

Food Security Group	Countries
Insecure (74)*	Sudan, Yemen
Neutral (51)*	Algeria, Egypt, Iran, Jordan, Kuwait, Lebanon, Libya, Morocco, Syria, Tunisia
Secure (37)*	Turkey, UAE

Source: Diaz-Bonilla et al. (2000, pp. 55-57)

*The numbers in brackets show the total number of countries in the world that belong to the group.

Note: Iraq and most of the countries of the Arabian Peninsula (except for Kuwait and the UAE) were not included in this analysis because of a lack of data.

Table 5. Macro and growth indicators for selected MENA countries.

	Inflation* (%)		Budget deficit (% of GDP)		Gov. wages (% of GDP)		Gov educ spending (% of GDP)		Import duties (% of imports)		GFCF (% of GDP)		Manuf exports (% of GDP)		Debt service (% of exports)	
	1997-99	Δ	1997-99	Δ	1997-99	Δ	1997-99	Δ	1997-99	Δ	1997-99	Δ	1997-99	Δ	1997-99	Δ
Algeria	4.5	-5.9	0.3		7.5	0.0	5.4	-2.3			26.0	-7.0	0.7	0.4	36.0	-6.9
Egypt	4.0	-13.7	1.0	-10.0	6.2	-3.2	4.7	-0.8	16.1	-12.4	19.0	-5.7	1.8	0.7	9.4	-15.3
Iran	18.4	6.6	2.3	-3.0	11.9	0.8	4.7	0.9	11.3	-14.4	23.0	5.3			25.0	19.9
Jordan	2.7	0.4	3.7	-3.3	14.8	-3.5	7.6	2.4	12.3	-3.0	22.3	0.7	7.7	1.7	15.0	-1.6
Kuwait	1.3	0.1	3.7	21.0	15.1	3.2	5.9	0.1	3.2	-0.5	14.0	-7.0	7.6	-7.4		
Lebanon	8.5		20.7		7.6		2.4		14.0		27.5				10.1	
Morocco	1.5	-8.1	2.5		11.0	0.8	5.3	-0.7	18.4	4.9	22.3	0.0	3.5	-3.1	24.9	-8.1
Saudi Arabia	-0.6	2.0	5.5				5.7	-2.6			17.7	-7.3	1.3	1.0		
Sudan	26.6	-8.1					1.0	-1.8			17.3	5.7	0.1		8.4	-8.2
Syria	-0.3	-21.1	0.3	-3.0			3.8	-2.1	31.6	25.5	27.3	4.0	1.7	-0.5	7.4	-18.2
Tunisia	3.2	-4.3	2.0	-3.7	11.2	1.2	6.3	0.7	16.6	-11.6	25.0	-3.3	23.1	13.1	15.7	-9.7
Turkey	78.4	35.8	9.7	4.3	8.1	4.3	3.0	1.2	2.3	-4.0	24.3	9.0	10.5	4.1	23.4	-9.4
UAE	1.3		0.0	-0.5	3.7	-0.7	2.0	0.1			23.3	-4.3	0.0	-21.9		
Yemen	14.5		2.3		10.9		5.5		13.5		21.0		0.1		3.6	
Middle East & North Africa							5.2	-0.8			21.7	-2.7	1.3	0.2	13.6	-2.5
Low income			3.7	-1.3			3.9	-0.2			21.0	1.7	5.9	2.6	19.7	-2.2
Middle income			3.0	-2.7	4.2	-2.6	4.9	1.0			24.0	1.3	14.3	11.7	18.7	-4.4

Source: World Bank (2001b)

Notes:

If not available, data for 1997-99 have been replaced by data for less recent three-year period in the 1990s.

Δ = value for 1997-99 minus value for 1984-86

Data are not available for Iraq and Libya

*CPI except for Lebanon and the UAE. 1996-98 for Lebanon, UAE and Yemen.

Table A.1. MENA self-sufficiency in wheat, 1983-87 and 1995-99 (%).

	Average 1983-87	Average 1995-99	Δ
Algeria	24.8	29.1	4.2
Egypt	23.2	48.3	25.1 C
Iran	73.2	69.7	-3.5
Iraq	23.9	44.4	20.4 C
Jordan	15.3	7.0	-8.2
Kuwait	0.0	0.1	0.1
Lebanon	7.5	12.7	5.2
Libya	21.5	9.9	-11.6
Morocco	55.9	52.8	-3.0 C
Saudi Arabia	107.1	109.5	2.5
Sudan	20.7	46.7	26.0 C
Syria	61.4	112.4	51.0 C
Tunisia	50.9	50.3	-0.6
Turkey	100.6	97.7	-2.9
UAE	0.8	0.1	-0.7
Yemen	8.1	7.2	-1.0
MENA	61.7	65.2	3.5
Low-Income Countries	85.6	86.1	0.4

Source: FAO (2000)

Note:

1. self-sufficiency = 100*[production]/[consumption] where consumption is the sum of production and net imports
2. data are averages of individual year self-sufficiency rates
3. MENA self-sufficiency rates are computed using data on total production and trade for the countries in the table

Table A.2. Annual growth in GDP at factor cost in MENA (constant LCU) (%).

	1978-1988	1988-1998
Algeria	3.5	1.6
Egypt	6.4	4.2
Iran	-1.0	4.8
Jordan	6.0	3.0
Sudan	1.2	6.4
Tunisia	4.3	4.6
Turkey	3.6	3.8

Source: World Bank (2001b).
Note: Growth rates are computed using three-year moving averages (1978 = 1977-79, etc.)

Figure 1. Growth in household consumption per capita in selected MENA countries, 1974/78 - 1995/99.

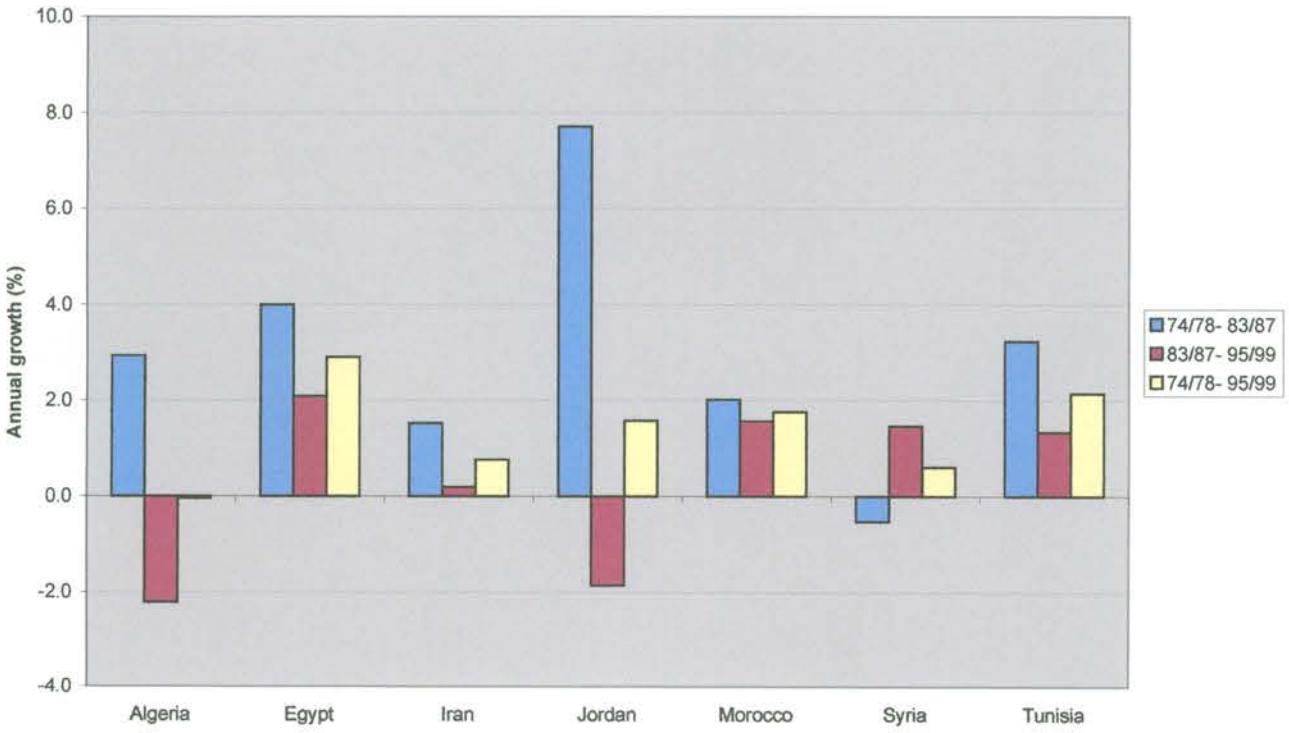


Figure 2. Food production in MENA, 1973/77 - 1993/97.

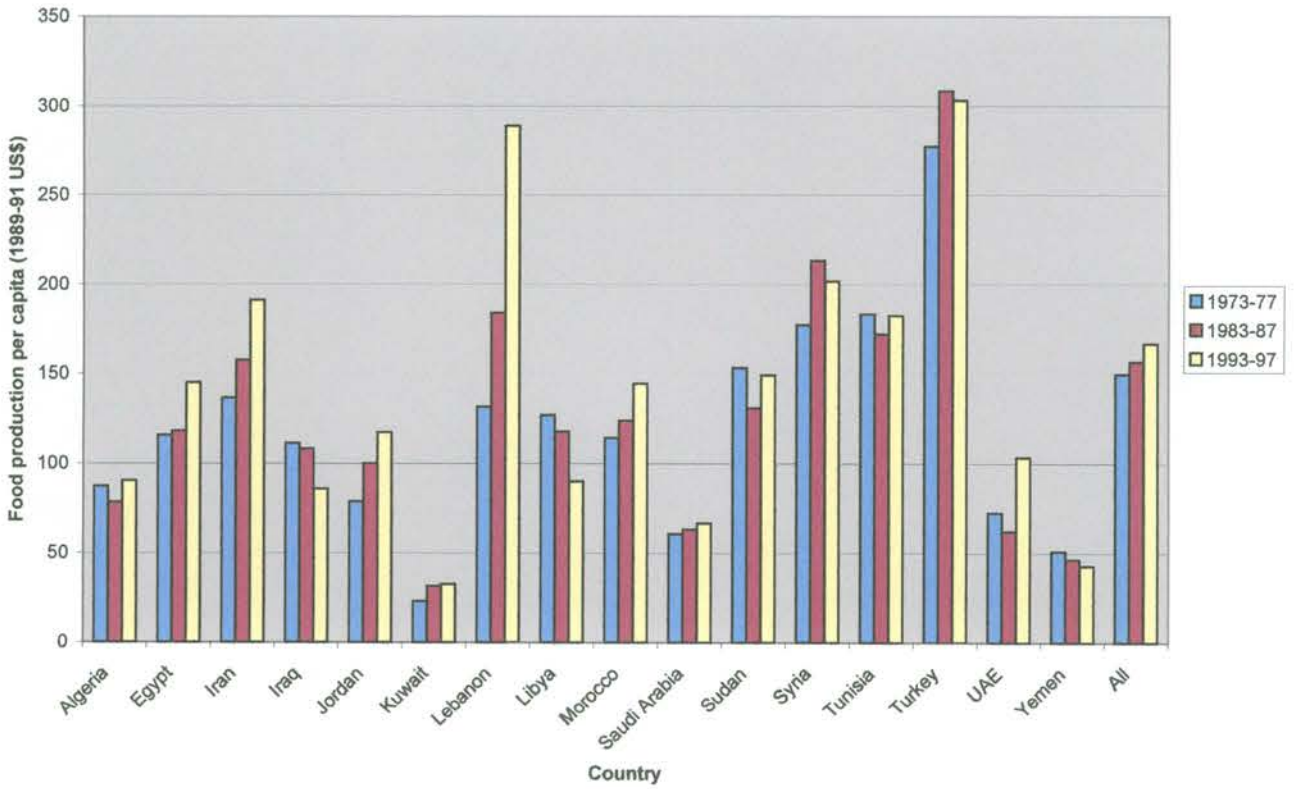


Figure 3. Food import stress, selected countries in MENA, 1973/77 - 1993/97.

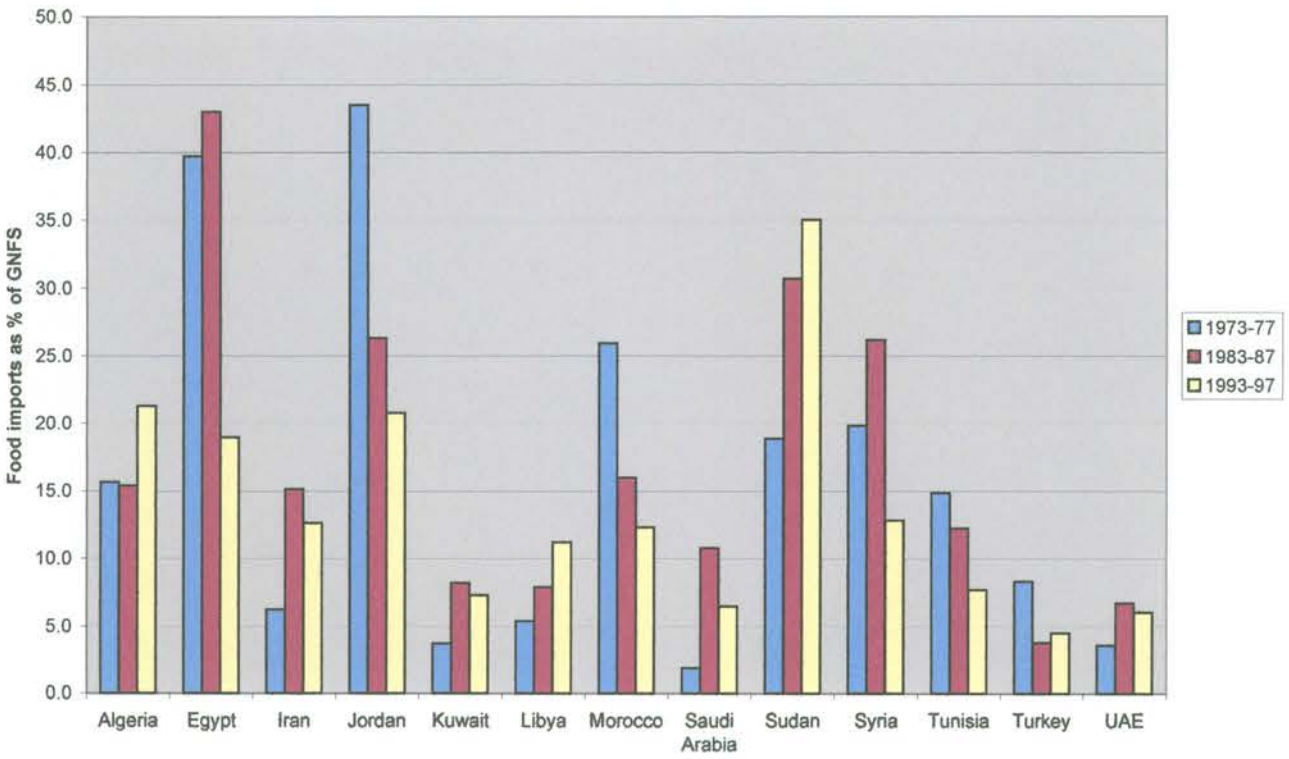


Figure 4. Calorie consumption in MENA, 1973/77 - 1993/97.

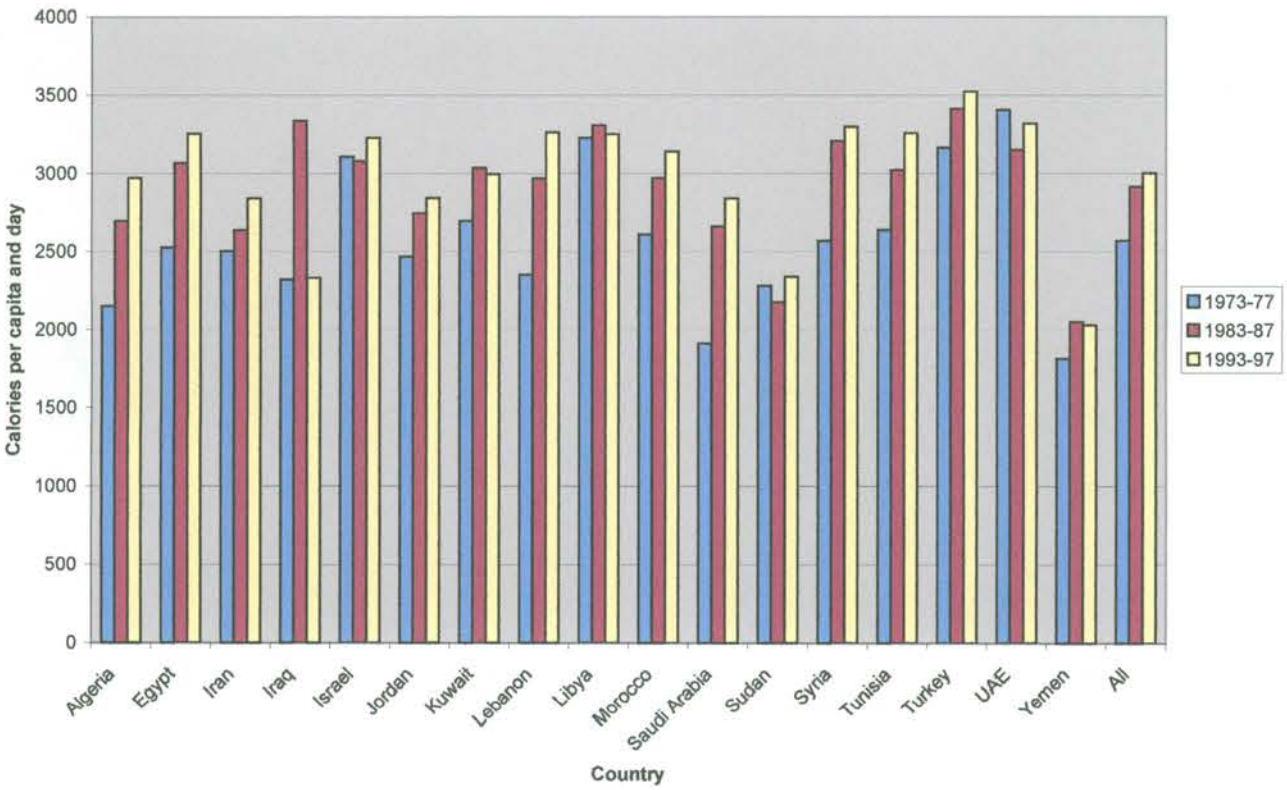
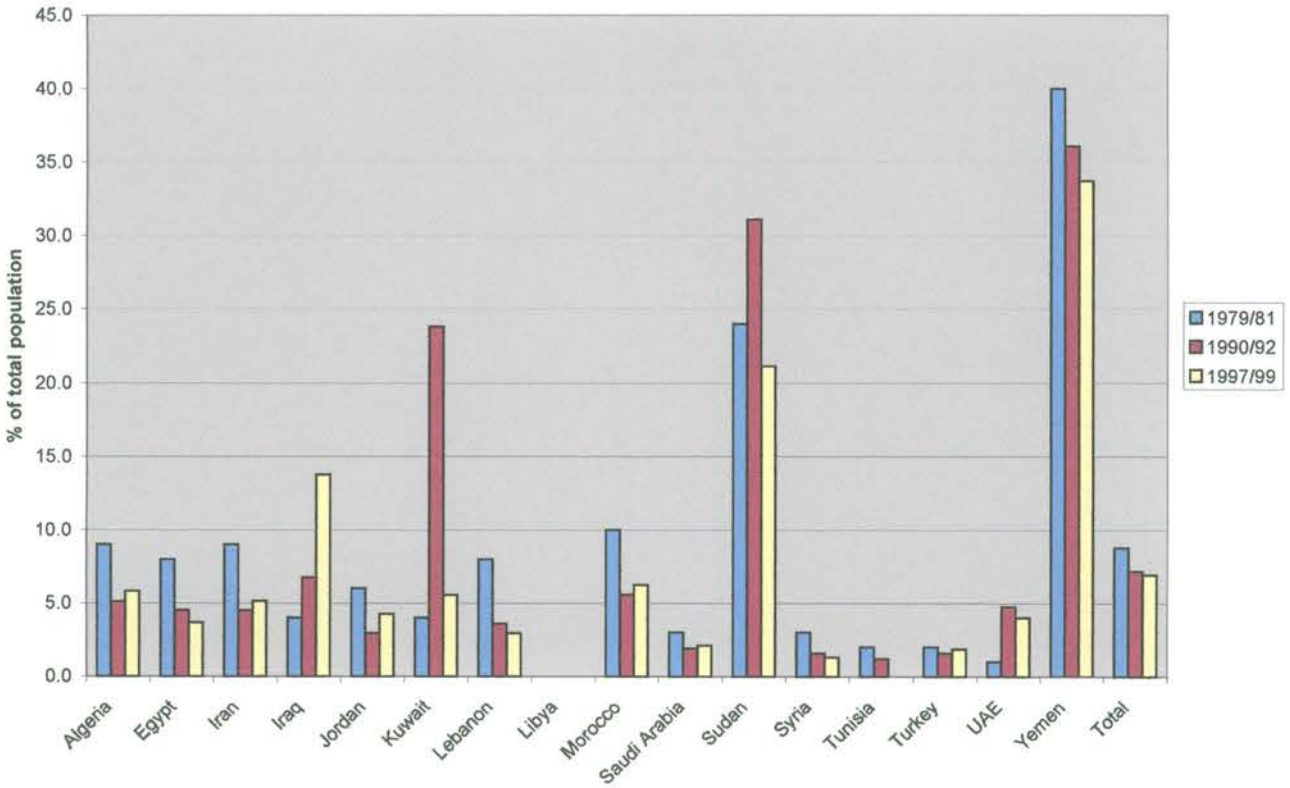


Figure 5. Undernourishment in MENA, 1979/81 - 1997/99.



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