Wealth Inequality and Closing the Poverty Gap in Arab Countries

The Case for a Solidarity Wealth Tax

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Economic and Social Commission for Western Asia (ESCWA)

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Beirut

Executive Summary

The high inequality of wealth in the Arab region and unrelenting poverty, especially following the outbreak of the COVID-19 pandemic, highlight the need for stronger civic solidarity and shared responsibility by the public, the private sector and the State for lifting marginalized people out of poverty. The present study measures the distribution of wealth within and across Arab region countries, estimates the extent of poverty in pre- and post-COVID-19, and assess the feasibility of reducing poverty by introducing a solidarity wealth tax.

Advanced parametric methods are applied to wealth statistics from the Forbes billionaires lists and Credit Suisse wealth reports, and to poverty projections from PovcalNet and UNDESA, to identify the incidence of wealth and poverty, and compute the required poverty-reduction tax on the wealth of the top decile.

The analysis offers many key estimates on regional wealth distribution. The region's 37 billionaires (all men) held almost $108 billion in 2019, totalling 4 per cent of the region's gross domestic product (GDP). This is comparable to the GDP of Morocco, and higher than the combined GDP of the Arab region's two largest least developed countries (LDCs), the Sudan and Yemen. ESCWA estimates also show that the real wealth of the region's 37 billionaires is equivalent to the real wealth of the region's poorest 110 million adults (46 per cent of the adult population).

The Arab region holds $5.8 trillion in household wealth according to ESCWA calculations from Credit Suisse data in 2019. The top 10 per cent of the population account for $4.4 trillion: the bottom 46 per cent have an average wealth of $975, while the top 10 per cent have an average wealth of $182,939. The bottom 46 per cent are made up primarily of the nationals of LDCs, while the top 10 per cent largely hail from Gulf Cooperation Council (GCC) countries.

The pre-COVID-19 cost of covering the poverty gap in 2019, using the most recent nationally defined poverty lines, was $38.6 billion per year for 13 Arab countries where data is available and whose populations constitute over 90 per cent of the non-GCC Arab population. Most of this cost is in Egypt, the Sudan, the Syrian Arab Republic and Yemen. Factoring in the poverty impact of COVID-19, this figure rises to $45.1 billion in 2020. These numbers imply a solidarity wealth tax of around 2.6 per cent would cover the cost of closing the poverty gap in these countries in 2019. However, the proposed solidarity wealth tax is relevant mainly to middle-income countries, where the average estimated solidarity wealth tax was 0.9 per cent in 2019, rising to 1.2 per cent in 2020 when the COVID-19 impact on headcount poverty and wealth is taken into consideration.

Since tax buoyancy in the region is low relative to other regions of the world with similar income per capita, there is potential for the

implementation of a solidarity wealth tax. High debt and widening deficits in Arab countries also make tax reforms an urgency. Efforts to mobilize revenues have largely relied on regressive indirect taxation or broadening the tax base. Most tax reforms across the region do not target wealth, and tend to burden the poor and the middle class more than the richest part of population. Assessing the wealth of the ultrawealthy and the potential of a solidarity wealth tax therefore remains an unexplored issue (ESCWA, 2019).

Tax authorities should implement inspection and enforcement mechanisms to design appropriate wealth tax policies with a focus on property taxes, and mitigate rampant tax evasion. A key entry point is to require all individuals to file income tax returns, and design tax forms to capture estimates of taxable wealth. This would improve poverty targeting since ministries of finance, social affairs and other related domains could target individuals' accumulated wealth, not only income streams. The current COVID-19 crisis makes these measures all the more relevant. They would help secure fiscal space to support the rising social and economic costs of recession, and compensate for recent fiscal responses that relaxed taxes on small businesses and the middle class.

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Introduction

The juxtaposition of extreme wealth and destitution is vividly on display in the Arab region owing to, on the one hand, the concentration of oil wealth and, on the other, natural adversities, lack of public infrastructure and safety nets, and the recurrence of conflict (ESCWA and ERF, 2019). Wealth differences between the Gulf Cooperation Council (GCC) countries and their conflict-stricken neighbours, including the Sudan, the Syrian Arab Republic and Yemen, are severe. However, information on wealth distribution is sparse, not least because of rampant wealth hiding and tax evasion. The Panama Papers and Offshore Leaks offer a glimpse of the problem, linking thousands of regional residences, entities and officers to offshore accounts. Taking into account the hard-to-measure ultrawealthy, researchers have called the Middle East the most unequal region globally (Alvaredo and Piketty, 2014; Assouad, 2017; Van der Weide, Lanker and Ianchovichina, 2018; Alvaredo, Assouad and Piketty, 2019).

Given the lack of concrete information on top wealth, and the apparent between-country polarization of wealth in the region, the present study estimates the full distribution of wealth for residents within and across countries, and reports on wealth shares held by various quantile groups, and on wealth incidence across countries. It also contributes novel estimates of the extent of poverty based on national poverty lines in the region, and the cost of closing the poverty gap, both pre- and post-COVID-19. Lastly, it proposes the introduction of a solidarity tax on the wealthiest residents to cover the poverty gap, in recognition of the need for stronger civic solidarity and of the shared responsibility of the public, the private sector and the State for lifting marginalized people out of poverty. We estimate the appropriate solidarity wealth tax rate across the region's middle-income countries (MICs) and least developed countries (LDCs).

Section I introduces the data and methods used for estimating wealth distribution in the region and the cost of closing the poverty gap. Section II presents the main estimation results. Finally, section III discusses key lessons learned and potential limitations.

I. Data and methods

The present study relies on several specialized data sources on the distribution of wealth and incomes in the Arab region, and on two advanced parametric methods for estimating the distribution of wealth and the cost of closing the poverty gap.

A. Data sources

Information on people's wealth is considerably weak, because of the heterogeneity of financial, material and intangible capital that individuals amass to hold their savings, and because of the poor inventory of these types of capital and uncertainty over their value. These measurement problems affect the various parts of wealth distribution differently. While the poor are often cut off from the formal financial markets because of capital requirements, the ultrawealthy benefit from various schemes and instruments to optimize their capital portfolio, limit the risks of expropriation, and minimize their tax liability. The recent release of the so-called Offshore Leaks and the Panama Papers offered a glimpse of the extent of the wealth stow-away and tax evasion problems in the region. A total of 3,963 postal addresses, 10,115 entities, 6,369 officers, and 354 intermediaries referenced in the leaked files hail from the Arab region.[1]

Given these problems, neither national accounts nor tax authorities are reliable sources of data on national private wealth, particularly on the distribution of wealth across residential units.

Moreover, household budget surveys are not designed to provide a thorough inventory of households' asset holdings and their market values. The urgency of data confidentiality when it comes to wealth further complicates matters.

Consequently, existing research has typically used a small number of authoritative data sources on individual wealth. The Forbes magazine's annual rich lists have emerged as reliable snapshots of the top of the global and national wealth distributions, facilitating tracking of the fortunes of the ultrawealthy over time. Forbes relies on a variety of data sources, including self-reporting, and measures wealth as all types of assets, including stakes in public and private companies, real estate, art, yachts, planes, ranches, vineyards, jewellery, car collections, debt and charitable giving. To value private businesses, Forbes couple revenue or profit estimates with prevailing price-to-sales or price-to-earnings ratios for similar public companies, and apply a 10 per cent discount or more in cases where information is scarce. Wealth belonging to a member's immediate family is included if the wealth can be traced to a living founder of the fortune (Wang, 2019). The present study uses Forbes data to survey the Arab region's billionaires as of 2019.

According to the Forbes billionaires list dated March 2019, there were 27 billionaires in the Arab region, excluding ruling families and Heads of States, who are omitted by design. To this count we can add the 10 Saudis who were included in the 2017 billionaires list, but were

subsequently removed for logistical reasons. These 37 billionaires hold $107.6 billion (real 2019 United States dollars), constituting 4 per cent of the region's GDP ($2.7 trillion in 2018). This figure compares to the GDP of Morocco ($117.9 billion) and is significantly higher than the combined GDP of the region's two largest LDCs, Yemen and the Sudan ($26.9 billion and $40.8 billion in 2018, respectively).

Unfortunately, Forbes lists are restricted to the several dozen ultra-wealthy, and are known to be selective and non-representative. To study the full distribution of wealth and the prospect of wealth taxation, more consistent data is needed on country-wide private wealth. In 2010, Credit Suisse started compiling descriptive statistics of aggregate private wealth in all countries worldwide. This annual effort has given rise to a balanced panel dataset, tracking the year-to-year evolution of the level and distribution of national wealth. Credit Suisse defines wealth as the marketable value of financial assets plus non-financial assets (principally housing and land) less debts (Credit Suisse, 2019b). According to this definition, the average national wealth Gini coefficient is 73.6 in Arab countries, compared with 73.1 in other countries globally. Meanwhile, two Arab countries, Lebanon and Saudi Arabia, are reportedly among the top 20 wealth-unequal countries worldwide.[2]

The present study uses Credit Suisse data to impute the full distribution of national private wealth in the Arab region. This imputed distribution is linked to Forbes actual observations for the ultrawealthy, and to ESCWA estimates of the extent of poverty in the Arab region, and the resources needed to reduce it. In line with the Credit Suisse methodology, the unit of analysis in the present study is taken to be adults 20 years old or

above, since personal assets and debts are typically owned by named individuals, and may be retained by those individuals if they leave the household; household members may have an unequal say in the management of assets; and children have little formal or actual wealth ownership (Credit Suisse, 2019b).

To estimate the cost of closing the poverty gap, it is first necessary to estimate headcount poverty and poverty gap ratios. In the present study, these are based on the most recent national poverty lines for 14 non-GCC Arab countries, comprising the vast majority of the region's middle- and low-income population.

The country level and regional baseline headcount poverty and poverty gap ratios in 2018 are estimated using the World Bank's PovcalNet, which calculates poverty headcounts and poverty gaps by imputing full national income distributions parametrically (Datt, 1998; Minoiu and Reddy, 2009). United Nations forecasts of GDP and population growth are used to project these ratios to 2019 and 2020, based on the growth and distribution elasticities derived from the earlier procedure.

The projected cost of closing the poverty gap in 2019 and 2020 is simply the product of these estimated headcount poverty and poverty gap ratios and the size of population.

B. Wealth imputation

Using the Credit Suisse descriptive statistics of national wealth, we can approximate the entire distribution of wealth across adult individuals in each Arab country and region-wide. This is done through parametric modelling of the wealth distribution in a country using two-parametric distribution functions commonly used in

inequality research: the lognormal, or the Pareto. These distributions are suitable for the task because they are fully characterized by two statistics describing the empirical level and dispersion of wealth: the mean ($\overline{w}$), and the Gini coefficient (G) of wealth.

The estimation involves imputing wealth ($\widehat{w}$) for individuals at each percentile of the wealth distribution, $x \in \mathbb{R}(0;1)$, using the appropriate inverse cumulative distribution function $F'(\cdot)$. For the Pareto distribution, the inverse cumulative distribution function takes the form:

$$\widehat{w} = F'(x, w_0, \alpha) = {w_0}/{(1-x)^{\alpha^{-1}}} ,$$

where w_0 is the scale or location coefficient marking the lower threshold of the distribution, and α is the Pareto shape coefficient dictating the rate of decay of wealth. α is estimated as:

$$\hat{\alpha} = {(1+G)}/{2G} .$$

From this we can also derive the corresponding inverted Pareto coefficient β, which is often reported as an inequality measure in its own right:

$$\hat{\beta} = {\hat{\alpha}}/{(\hat{\alpha}-1)} .$$

The lower threshold for modelling the Pareto distribution, w_0, is selected using Hruschka and others (2015) as:

$$w_0 = (1 - \hat{\alpha}^{-1})\overline{w} .$$

Under the lognormal distribution, wealth imputation is undertaken analogously from the inverse lognormal cumulative distribution function, $F'_{lognormal}(x, \mu, \sigma)$, which is a function of the standardized mean μ and standard deviation σ. This standard deviation can be estimated from the inverse standard-normal

cumulative distribution function (aka., Gaussian or probit) $F'_{normal}(x)$:

$$\hat{\sigma} = \sqrt{2}\, F'_{normal}\left(\frac{G+1}{2}\right),$$

and the mean is derived as:

$$\hat{\mu} = \log(\overline{w}) - {\hat{\sigma}^2}/{2} .$$

Lastly, individuals' wealth is imputed as $\widehat{w} = F'_{lognormal}(x, \hat{\mu}, \hat{\sigma})$. In these expressions, country and year subscripts are omitted for clarity of presentation.

The log-normal distribution function is adopted for all but the highest 0.5 per cent of wealth values, in consideration of the extensive prior evidence of its relevance to the full domain of incomes and its ease of estimation (Aitchison and Brown, 1957; Jäntti, Sierminska and Van Kerm, 2015; Hlasny, 2020a). The top 0.5 per cent of wealth values in each country are imputed using the Pareto distribution, in line with the methodology of Credit Suisse (2019b, p. 114) and academic evidence (Harrison, 1979; Cowell and Van Kerm, 2015; Jäntti, Sierminska and Van Kerm, 2015; Eckerstorfer and others, 2016; Vermeulen, 2016). A convex combination of the two distributions was considered in line with Hruschka, Gerkey and Hadley (2015). However, in the absence of anchoring information that would help calibrate the combined distribution, we follow prior literature on using the distribution functions in their pure form on different income ranges.[3]

Imputed wealth is reported in year 2019 international United States dollars. However, top decile wealth, which is used to compute the solidarity wealth tax, is adjusted in 2020 to capture the potential impact of COVID-19. For 2020, we use the rule of thumb that the wealth level of the highest wealth decile has declined by 8 per cent from its October 2019 level. This is

consistent with the most recent ESCWA estimate of the wealth impact of COVID-19 (ESCWA, 2020b). It is also consistent with the estimate that the billionaire wealth in the region is declining by 16 per cent year on year.[4]

C. Poverty gap cost

Money-metric poverty can be measured using various indexes. The most common measures are the headcount ratio (the ratio of those with consumption expenditure below the poverty line to total population) and the poverty gap (the ratio showing the mean shortfall with respect to the poverty line across the entire population). The fundamental determinants of money metric poverty are the mean per capita consumption expenditure, the poverty line, and the distribution of consumption expenditure. The poverty headcount ratio is expected to decline (increase) as per capita consumption expenditure increases (decreases), or as the dispersion of consumption expenditures about the mean decreases (increases). Any change in the poverty rate over time can thus be linked to an economic growth component and a distribution component. Holding the growth in per capita consumption constant, the poverty rate is expected to increase as the degree of inequality increases.

With economic growth, the mean consumption changes in conjunction with changes in inequality. This means that the growth elasticity of poverty does not remain fixed. Following Kakwani and Son (2006), the methodology presented here takes account of changes in the growth elasticity of poverty over time by focusing on two measures: headcount ratio, and poverty gap ratio.

Suppose r is the growth rate of per capita mean consumption, and it is accompanied by a

$kr\%$ growth in the Gini index of consumption (Kakwani, 1980, p.174). If everyone receives the same proportional benefits of growth, the inequality of per capita consumption would not change over time. In practice, however, not everyone receives the same proportional benefits. Economic growth may be called pro-poor (anti-poor), if it is accompanied by a decrease (increase) in inequality – k is negative (positive). Growth is distribution neutral if k is 0.

Suppose x_{it} is the per capita consumption of the ith household in year t, and μ_t is the per capita mean consumption of all households. We can thus approximate:

$$x_{it} = [x_{it-1} + kr(x_{it-1} - \mu_{t-1})](1 + r),$$

where $\mu_t = \mu_{t-1}(1 + r)$.

Suppose z_i is the per capita poverty line for the ith household, assumed fixed over time. The present paper adopts absolute poverty lines, set at nationally defined levels.[5] These are superior to PPP-based poverty lines in three important respects. Firstly, as they are household specific, they are tailored to the local food consumption patterns of the poor. Secondly, they consider the demographic and other characteristics of the household in determining minimum caloric requirements and basic non-food needs. Thirdly, they evaluate the cost of these basic needs using prices at the local level. From a policy perspective, adopting national poverty lines tends to be more practical for Arab Governments as it applies nationally defined lines that are consistent with their own definitions. The results are therefore more relevant for estimating the impact of the COVID-19 crisis at the country level, and thus for forging national responses.

Given these arguments in favour of using the national poverty lines, the present paper uses the most recent household budget surveys to compute the relevant poverty headcount ratios in Arab countries in 2018, based on the PPP equivalent of these national poverty lines using Povcalnet.[6] The poverty headcount ratios are projected to 2019-2020 based on grouped data using: the projected growth rates in mean per capita household expenditure (United Nations Department of Economic and Social Affairs GDP forecasts); and assuming a 1 per cent increase in the Gini index and using country level elasticities of headcount poverty to the Gini as estimated in PovcalNet.

The headcount measure of poverty in year t is given by:

$$H_t = 100 \sum_n Prob[x_{it} < z_i] = 100 \sum_n 1(x_{it} < z_i) \,.$$

This expression, without calling for any probability relation, simply identifies people as falling under the poverty line or not, with probability 1 or 0. (Population weights attached to the ith sample household are omitted for clarity.) The poverty gap ratio in year t can then similarly be obtained as:

$$gap_t = \sum_n 1(x_{it} < z_i)[\frac{z_i - x_{it}}{z_i}] \,.$$

H_t and gap_t depend on the growth rate r and Gini elasticity k. Thus, we can impute poverty measures each year for any value of r and k.

Using the poverty gap ratio for nationally defined poverty lines, and given information on mean consumption expenditure, we can easily cost the resources required to close the poverty gap using national definitions, one of the main indicators for meeting Sustainable Development Goal 1. Multiplying a country's poverty gap ratio by both the poverty line and the total population in that country (pop_t) yields an estimate of the resources required to bridge the gap between the expenditure of the poor and what is required to lift them out of poverty. The cost of closing the poverty gap is converted into current international United States dollars. The solidarity wealth tax required to close the poverty gap (τ_t) is computed as the ratio of the aggregate current cost of closing the poverty gap to the cumulative wealth of the wealthiest-decile adults ($\sum_{i \in top\ 10\%\ w} w_i$).[7]

$$\tau_t = \frac{gap_t \times z_t \times pop_t}{\sum_{i \in top\ 10\%\ w} w_i} \,.$$

II. Results

By imputing the entire wealth distribution for each Arab country, and the region at large, we can first estimate the regional Gini coefficient of wealth. This stands at 83.9 for the 20 countries evaluated. We can also estimate the share of the poorest population collectively holding an equivalent amount of wealth as the 37 richest Arab men. We find that the 37 richest Arab men hold the equivalent of the real 2019 wealth of the poorest 110.4 million (46 per cent) of the region's adult population.[8]

Table 1. Billionaires and adult population shares in the Arab region

| Country	Forbes billion-aires (#)	Billionaire real wealth (2019$ bil.)	Real wealth per adult (2019$)	Adults ('000)	Gini (%)	Adults among region's poorest 46% ('000 [%])	Share of countries' adults appearing among region's poorest 46% (%)	Adults among region's richest 10% ('000 [%])	Share of countries' adults appearing among region's richest 10% (%)
Algeria	1	3.7	9,348	26,983	74.9	14,368.5 [13.0]	53.3	1,113.0 [4.6]	4.2
Bahrain			87,108	1,219	74.7	117.3 [0.1]	9.6	441.9 [1.8]	36.3
Comoros			5,155	423	78.3	297.7 [0.3]	70.4	7.9 [0.03]	1.9
Djibouti			2,936	583	72.9	453.3 [0.4]	77.8	3.6 [0.02]	0.6
Egypt	6	15.8	15,395	58,309	75.6	24,562.7 [22.3]	42.1	4,446.1 [18.5]	7.6
Iraq			16,540	19,788	63.3	4,551.2 [4.1]	23.0	1,706.7 [7.1]	8.6
Jordan			26,475	5,512	69.6	1,164.4 [1.1]	21.1	819.9 [3.4]	14.9
Kuwait	1	1.4	131,269	3,086	76.3	227.6 [0.2]	7.4	1,357.8 [5.7]	44.0
Lebanon	7	13.4	55,226	4,205	81.9	1,124.8 [1.0]	26.8	893.6 [3.7]	21.3
Libya			19,473	4,169	65.9	943.2 [0.8]	22.6	448.2 [1.9]	10.8
Mauritania			2,397	2,310	68.1	1,839.3 [1.7]	79.6	8.7 [0.04]	0.4
Morocco	2	3.8	12,929	23,613	76.6	11,304.7 [10.2]	47.9	1,475.8 [6.1]	6.3
Oman	2	4.3	43,291	3,608	78.6	911.0 [0.8]	25.3	708.1 [2.9]	19.6
Qatar	1	1.6	147,745	2,223	63.3	16.7 [0.0]	0.8	1,419.9 [5.9]	63.9
Saudi Arabia	10	43.9	67,032	23,208	83.4	6,121.1 [5.5]	26.4	5,337.8 [22.2]	23.0
Sudan			534	20,474	68.7	19,859.8 [18.0]	97.0	0.0 [0.00]	0.0
Syrian Arab Republic			2,179	9,664	69.9	7,936.6 [7.2]	82.1	36.2 [0.2]	0.4
Tunisia			13,853	8,111	70.5	3,021.3 [2.7]	37.3	557.6 [2.3]	6.9
United Arab Emirates	7	19.7	117,060	7,874	79.6	954.7 [0.9]	12.1	2,942.9 [12.2]	37.4
Yemen			4,926	14,580	79.8	10,588.7 [9.6]	72.6	273.4 [1.1]	1.9
Total	37	107.6	24,759	239,942	83.9	110,390.3	46.0	23,999	10.0

Source: Authors' analysis of Forbes (2019), Credit Suisse (2019b), and World Bank data.
Note: The State of Palestine is missing in the Forbes and Credit Suisse data.

Table 1 shows that the 37 billionaires in 2019 consisted of six Egyptians, seven Lebanese, 10 Saudis, seven Emiratis, two Moroccans, two Omanis, and one Algerian, one Kuwaiti and one Qatari. By contrast, the poorest 110.4 million are estimated to comprise 24.6 million Egyptians, 19.9 million Sudanese, 14.4 million Algerians, 11.3 million Moroccans, 10.6 million Yemenis, 7.9 million Syrians, 6.1 million Saudis, 4.6 million Iraqis, 3 million Tunisians, 1.8 million Mauritanians, 1.2 million Jordanians, and 1.1 million Lebanese. Notably, 22 per cent of the poorest are Egyptians, 18 per cent are Sudanese, 13 per cent are Algerians, 10 per cent are Moroccans, 10 per cent are Yemenis, and 7 per cent are Syrians (figure 1). As observed globally, the region's richest come from different countries than the region's poorest, and national wealth distributions are not aligned (figures 2-3). The Lorenz curve for the region, showing the cumulative wealth shares at different adult-population percentiles, confirms that there is little overlap between the Arab LDCs, MICs and GCC countries (figure 4).

Figure 1. Countries' share of the region's wealthiest 10 per cent and poorest 46 per cent (% share)
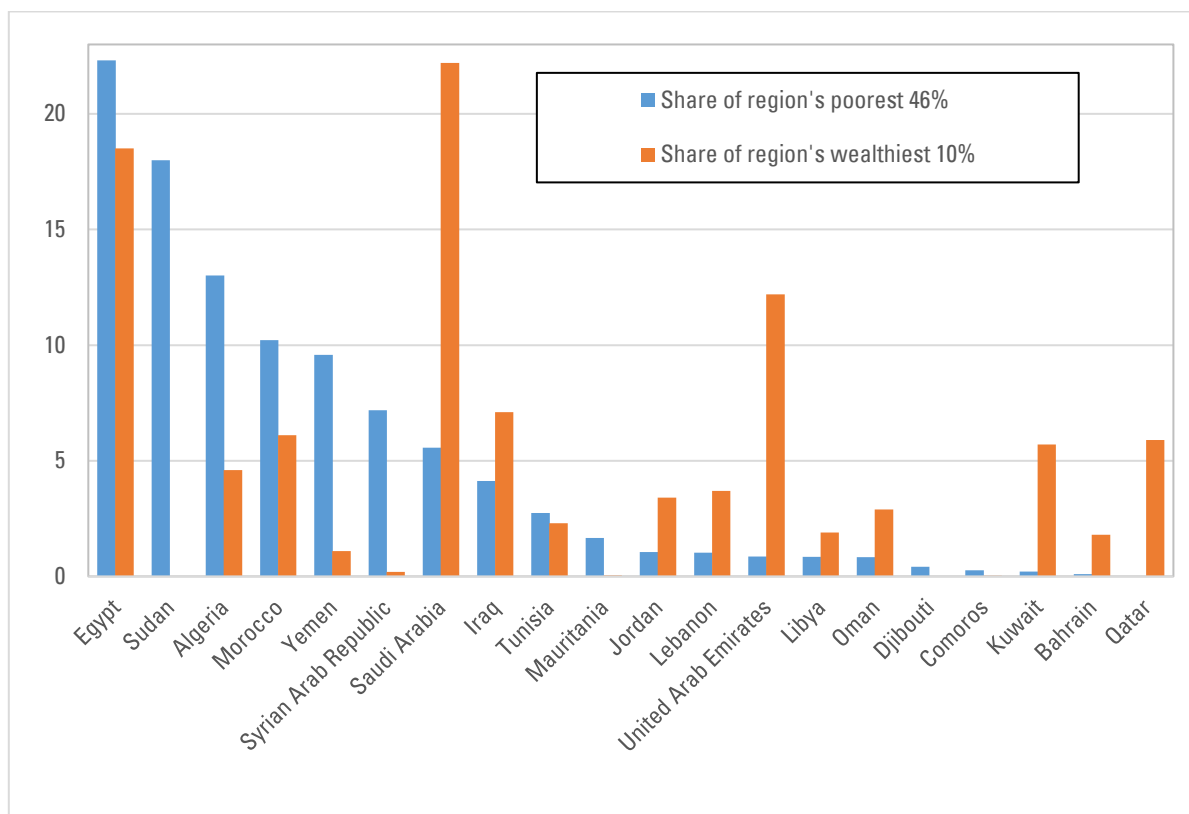
Source: Authors' imputation based on Credit Suisse (2019) data. Note: Countries sorted by their share among the region's wealthiest 10 per cent of adults in a descending order.

Figure 2. Share of countries' adults among the Arab region's wealthiest 10 per cent and poorest 46 per cent (% of countries' adult population)
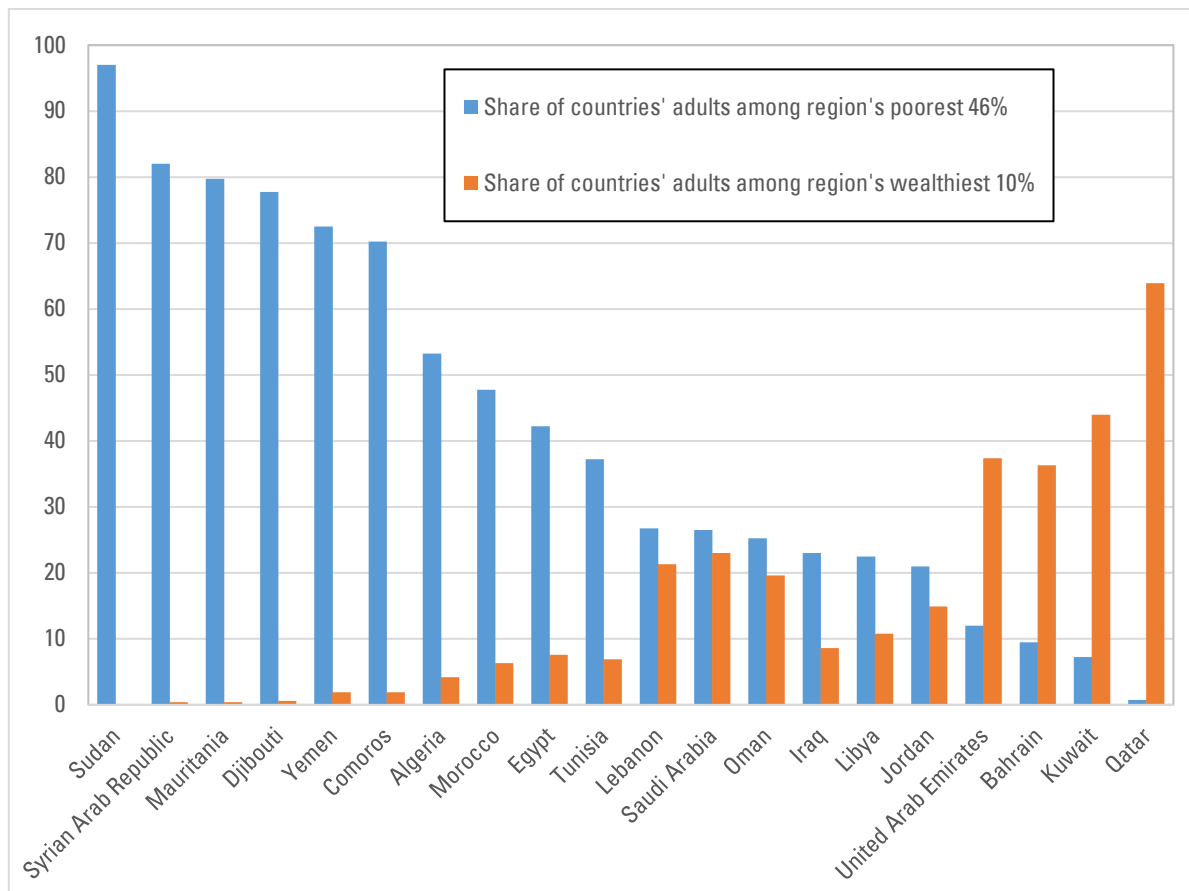
Source: Authors' imputation based on Credit Suisse (2019) data.

Note: Countries sorted by the share of their adults among the region's wealthiest 10 per cent of adults in descending order.

A regional divide exists separating countries into high- or middle-income groups, and a materially deprived group (ESCWA and ERF, 2019). The poorest 110.4 million adults in the region comprise 97 per cent of all adults in the Sudan, three-quarters of Comorians, Djiboutians, Mauritanians, Syrians and Yemenis (70, 78, 80, 82 and 73 per cent, respectively), half of Algerians, Egyptians and Moroccans (53, 42 and 48 per cent, respectively), and a quarter of Lebanese, Libyans, Iraqis, Omanis and Tunisians (27, 23, 23, 25 and 37 per cent,

respectively). These large population shares of 14 countries jointly hold an equivalent stock of wealth as the region's 37 billionaires, who reside in a different group of countries. Wealth density curves across the least-developed, middle-income and GCC countries illustrate that the population of the least-developed countries is bundled at the bottom of the region's wealth distribution (figure 2). By contrast, middle-income and GCC countries exhibit a more dispersed distribution of wealth (Hlasny and AlAzzawi, 2018).

Figure 3. Income density curves: LDC and conflict, middle-income and GCC countries
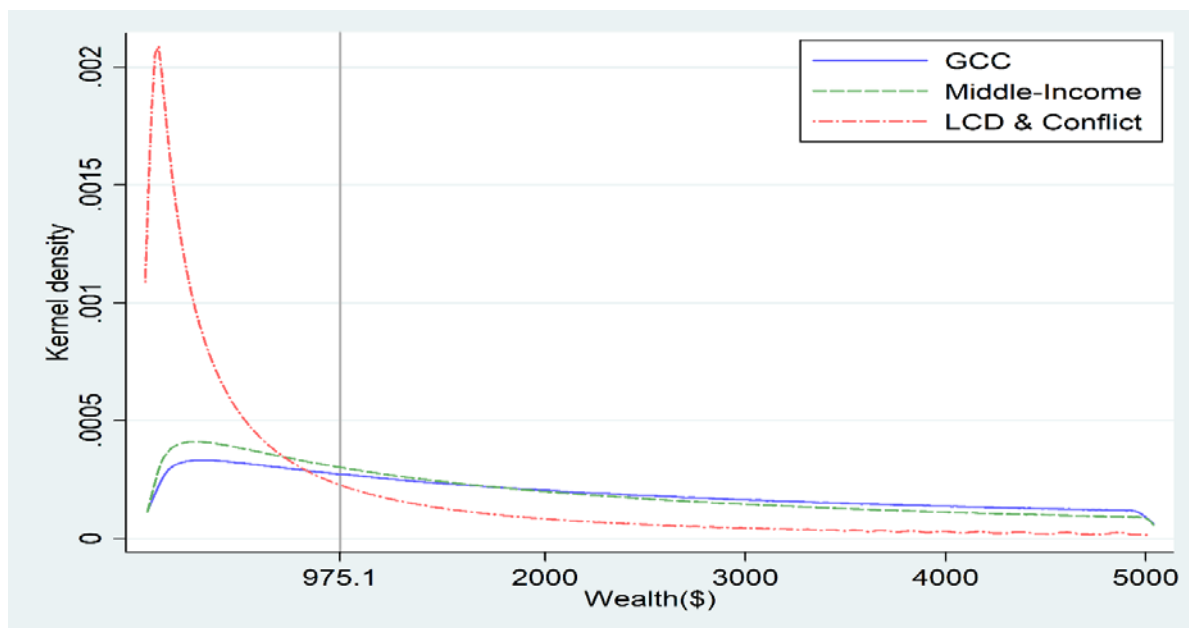
Source: Authors' imputation based on Credit Suisse (2019) data.

Notes: Density plots weighted by national population (Epanechnikov kernel, bandwidth 30), vertical line drawn at the forty-sixth percentile.

GCC countries include Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates. Middle-income countries include Algeria, Egypt, Iraq, Jordan, Lebanon, Libya, Morocco and Tunisia. LDCs and conflict-affected countries include the Comoros, Djibouti, Mauritania, the Sudan, the Syrian Arab Republic and Yemen.

Figure 4. Arab region's Lorenz curve: LDCs and conflict-affected countries, MICs and GCC countries
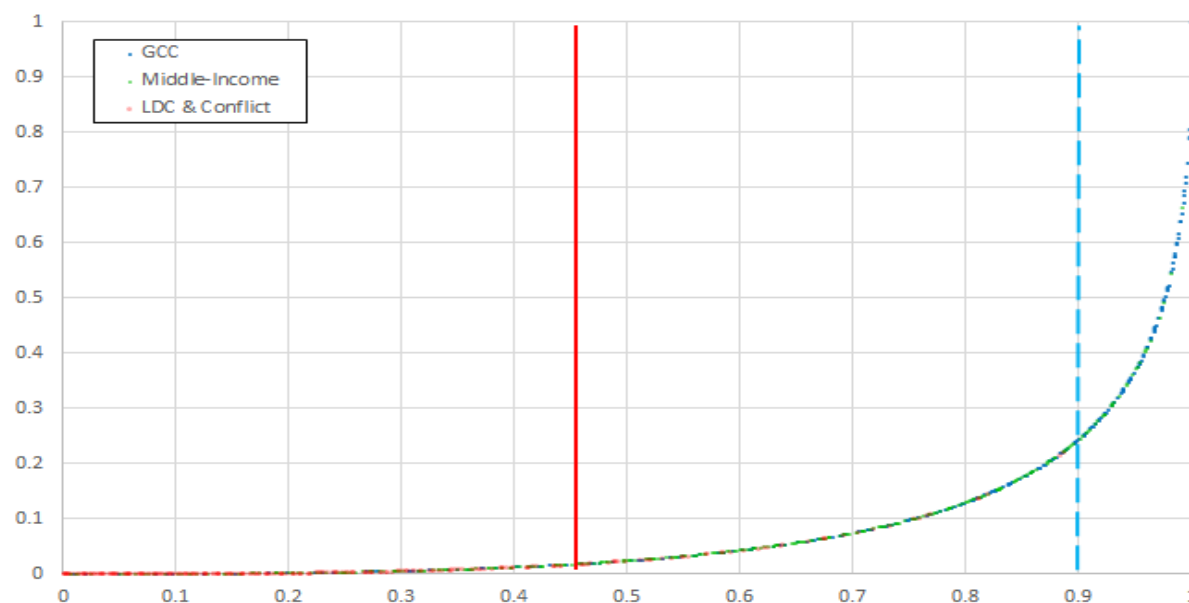
Source: Authors' imputation using log-normal (bottom 99.5 per cent) and Pareto (top 0.5 per cent) parametric distributions, based on Credit Suisse (2019) data.

Notes: The vertical solid red line demarcates the bottom 46 per cent of the region's adult population. The dashed blue line demarcates the top 10 per cent.

Our estimates show that the Arab region's population holds $5.8 trillion worth of wealth, which is comparable to the Credit Suisse (2019) figure of $5.9 trillion. The top 10 per cent of population accounts for $4.4 trillion, or 75.8 per cent of this total wealth. The bottom 46 per cent of population has an average wealth of $975, while the top 10 per cent holds on average $182,939.

In 2019, 101.4 million people (29.2 per cent of the population of the 14 countries included in the assessment) lived in poverty using the nationally defined money metric poverty lines (table 2).[9] Although countries set their national poverty lines using different methods, for many Arab countries the value of the national poverty lines according to most recent national poverty estimates reported by the World Bank are close to $3.5 per day in 2011 PPP terms (the population weighted average of national poverty lines is $3.51). As shown in tables 2 and 3, the bulk of the poor population (nearly 84 million), reside in four countries, namely Egypt, the Sudan, the Syrian Arab Republic and Yemen.

Table 2. Projected headcount poverty rates (%) using national poverty lines

Country	2018	2019	2020
Mauritania	30.9	28.9	31.6
Comoros	41.4	41.4	43.0
Djibouti	20.7	19.6	20.1
Algeria	3.1	3.1	4.0
Egypt	32.7	29.2	31.9
Iraq	18.0	17.9	23.2
Jordan	17.7	19.6	23.2
Lebanon	7.8	7.8	12.7
Morocco	3.1	2.3	3.3
State of Palestine	38.4	38.4	44.3
Sudan	46.0	48.2	53.4
Syrian Arab Republic	78.8	76.8	78.8
Tunisia	12.7	12.7	15.4
Yemen	73.6	73.7	79.0
Region	30.0	29.2	32.4

Source: Authors' estimates based on PovcalNet using the most recent reported national poverty lines and World Bank population projections from the World Development Indicators.

Table 3. Number of poor based on the headcount poverty ratio using national poverty lines (Millions)

Country	2018	2019	2020
Mauritania	1.4	1.3	1.5
Comoros	0.3	0.4	0.4
Djibouti	0.2	0.2	0.2
Algeria	1.3	1.3	1.7
Egypt	32.1	29.3	32.6
Iraq	6.9	7.0	9.3
Jordan	1.8	2.0	2.4
Lebanon	0.5	0.5	0.9
Morocco	1.1	0.8	1.2
State of Palestine	1.8	1.8	2.1
Sudan	19.2	20.6	23.4
Syrian Arab Republic	13.3	13.1	13.8
Tunisia	1.5	1.5	1.8
Yemen	21.0	21.5	23.5
Region	102.4	101.4	114.9

Source: Authors' estimates based on PovcalNet using most recent reported national poverty lines and World Bank population projections from the World Development Indicators.

For the 13 Arab countries where poverty and wealth data are available, the cost of closing the poverty gap in 2019 was approximately $38.6 billion in current prices ($40.3 billion including the State of Palestine). Table 4 shows the distribution of this estimate among the 13 countries. As expected, the bulk of the resource requirement is in Yemen ($9 billion), Egypt ($9 billion), the Syrian Arab Republic ($7.4 billion) and the Sudan ($8.6 billion). In order of magnitude, these numbers imply that an annual solidarity tax rate of 2.6 per cent on the wealth of the region's top decile group would cover the annual cost of closing the poverty gap in 2019. However, for the group of middle-income countries, the tax rate is only 0.9 per cent. Our

forecasts for 2020 show that the poor population will rise to 114.9 million, an increase of 13.5 million from 2019. The annual cost of closing the poverty gap also rises significantly, reaching $45 billion in 2020 ($47 billion including the State of Palestine). This causes the proposed solidarity wealth tax rate to rise to 3.2 per cent for the group of 13 countries.

Among the seven Arab MICs, the total wealth of the top national decile in 2020 was estimated at $1.3 trillion. Consequently, if there was perfect targeting of the poor in these countries, an average solidarity tax of 1.2 per cent in 2020 would suffice to close their poverty gap. The top wealth estimate for Arab

LDCs and the Syrian Arab Republic is far less ($66.8 billion) than Arab MICs, while the annual poverty gap cost is relatively higher ($29.5 billion), making the proposal of a solidarity tax more difficult to implement since it would amount to an average of 44.1 per cent of top-decile wealth. For example, in the Sudan, the country with the lowest top-decile wealth per adult, and second highest cost of poverty reduction ($10.2 billion), the required solidarity tax would reach 166.2 per cent of top-decile wealth in 2020. As such, emergency regional support is needed for the Arab LDCs and the Syrian Arab Republic. There simply is not enough wealth at the top in these countries to cover the cost of eradicating poverty, thus raising the need for other fiscal and tax revenue generation policies and, more importantly, for foreign assistance. Arab Governments are therefore called upon to establish a regional social solidarity fund to ensure a rapid response, and to address humanitarian needs and food shortages in these most vulnerable countries.

Table 4. Countries' cost of closing the poverty gap and wealth of the richest decile

Country	Mean wealth of top national decile, 2019 (2019$)	Adults in the top national decile, 2019 ('000)	Top decile wealth in 2019 (2019 $million)	Top decile wealth in 2020 (current $million)	Cost of poverty gap in 2019 (current $million)	Cost of poverty gap in 2020 (current $million)	Wealth tax on top decile needed to cover poverty gap, 2019	Wealth tax on top decile needed to cover poverty gap, 2020
Algeria	60,342	2,698	162,821	149,795	362	468	0.2%	0.3%
Egypt	99,771	5,831	581,755	535,214	8,952	10,075	1.5%	1.9%
Iraq	93,705	1,979	185,423	170,590	1,735	2,431	0.9%	1.4%
Jordan	163,214	551	89,964	82,766	816	1,031	0.9%	1.2%
Lebanon	360,069	421	151,409	139,296	381	643	0.3%	0.5%
Morocco	84,181	2,361	198,777	182,874	120	180	0.1%	0.1%
Tunisia	86,227	811	69,939	64,344	584	752	0.8%	1.2%
MICS	98,285	14,652	1,440,087	1,324,880	12,950	15,580	0.9%	1.2%
Comoros	33,734	42	1,427	1,313	211	226	14.8%	17.2%
Djibouti	18,685	58	1,089	1,002	49	50	4.5%	5.0%
Mauritania	14,521	231	3,354	3,086	529	609	15.8%	19.7%
Sudan	3,258	2,047	6,670	6,137	8,559	10,197	128.3%	166.2%
Syrian Arab Republic	13,477	966	13,024	11,982	7,365	8,015	56.5%	66.9%
Yemen	32,270	1,458	47,050	43,286	8,951	10,391	19.0%	24.0%
LDCs	15,117	4,803	72,615	66,806	25,665	29,489	35.3%	44.1%
Total	77,752	19,456	1,512,702	1,391,686	38,615	45,069	2.6%	3.2%

Source: Authors' estimates based on PovcalNet, using most recent reported national poverty lines and World Bank population projections from the World Development Indicators.

Note: The State of Palestine, with the cost of closing the poverty gap at $1.7 billion in 2019 and $2 billion in 2020, is missing in the Credit Suisse (2019) data, so the wealth tax cannot be computed.

III. Policy implications

The extreme concentration and polarization of wealth in the Arab region revealed by these figures should serve as a wakeup call to regional administrators. Household wealth – and the lack thereof – has implications for various socioeconomic outcomes, including children's health and education (ESCWA and ERF, 2019), labour force participation, and earnings (AlAzzawi and Hlasny, 2018; 2020). The COVID-19 pandemic is expected to exacerbate these figures. The economic slowdown caused by COVID-19 is projected to negatively impact wages and the flow of remittances. The consequences of this crisis could be particularly severe on vulnerable groups, especially women and young adults, and those working in the informal sector who have no access to social protection schemes and unemployment insurance. The challenge is further compounded by a lack of social protection floors in some Arab countries (ESCWA, 2020b). These development challenges, along with ESCWA findings on wealth inequality and the cost of poverty reduction, lead to a key policy recommendation for a solidarity wealth tax to support poverty reduction.

Nonetheless, it is important to recognize at the outset that this proposal is not suitable for all Arab countries. The high cost of poverty reduction in LDCs relative to their wealth level makes it a less feasible policy option. Given relatively limited fiscal space in these countries, external development assistance is indispensable to meet the rising cost of poverty reduction.[10] Consequently, the proposal for a solidarity wealth tax is of more practical relevance to Arab MICs.

To resolve the current economic crisis and maintain political stability in the Arab region, institutional reforms must be undertaken to redefine the social contract, and ensure social and economic inclusion (Kinninmont, 2015). Traditionally, even in the most fiscally redistributive Arab countries such as Qatar, oil revenues were used to fund welfare provision, but the programmes were channelled through distortionary tools, such as fuel and food subsidies (El-Katiri, Fattouh and Segal, 2011). In the current economic climate, this is unsustainable.

The good news is that direct taxation in general is low in the majority of Arab countries, suggesting significant untapped resources for financing development expenditures. To date, tax collection efforts have focused mainly on raising regressive indirect taxes, such as the value added tax, thus placing a higher burden on the poor than on the rich (Abu-Ismail, Roy and Ramos, 2012; ESCWA, 2018; ESCWA, 2019).

The share of taxes to GDP in Arab countries is less than half of the European Union's 40.3 per cent (Eurostat, 2019). Moreover, wealth and property taxes constitute a negligible share of total tax revenue in the region, even in oil-poor countries (figure 5). Globally, taxes on property form around 7 per cent of total tax revenue (Adly, 2020). As reported by the most recent data, the share of property tax to total revenue

was less than 1 per cent in Egypt and Tunisia in 2016 and 2017, respectively. Morocco was an exception, with 5 per cent in 2017.

A prominent feature of rentier States is that the bulk of their public revenues are generated from external sources such as oil-exports. However, as noted by Sarangi and Abu-Ismail (2018), while this may make sense for resource-rich countries, it does not explain why there is a persistently low tax to GDP ratio in Arab resource-poor countries, such as Egypt, Jordan and the Syrian Arab Republic. The broad explanation is that most Arab middle-income countries avoid high taxation to not stir popular demands for fiscal governance reforms, which would necessarily entail higher transparency, and voice and accountability. However, such a trade-off is no longer economically feasible, especially as the intra-regional spillovers from the oil-rich countries to oil-poor ones that may have relieved budget pressure in the past (official development assistance, foreign direct investment and worker remittances) significantly contracted for some countries after 2011, and their prospects for growth are minimal in the light of projected declines in oil rents (Abu-Ismail and Nehme, 2019).

As a result of rentier growth patterns and lax fiscal policies in the Arab region, the real estate sector attracts substantial investment, but contributes little to tax revenues. The higher return on property assets from low taxation gives rise to chronic balance-of-payments deficits, fiscal crises, especially in non-oil countries, and increasing inequality in income and wealth distribution. In contrast, a solidarity wealth tax is likely to have a positive impact on economic growth and decent work in the region, as it repatriates some of the offshore wealth back home, empowers the lower middle class,

and raises domestic consumption and investment with immediate benefits for local small and medium employers.

The relatively low tax burden on the top wealth decile, much less the top 1 per cent, leaves much potential to improve equity by raising taxes on property and wealth. The relevant policy question is how to roll out a solidarity wealth tax.

Firstly, make tax systems more progressive, and simplify administrative procedures for better tax compliance. Governments need to consider improving tax fairness by establishing more equitable, progressive and transparent systems that clearly rationalize exemptions. Experience from other countries shows that this is possible if there is political will. Even among lower-income countries, direct tax collection could increase by 2 to 4 per cent of GDP (ESCWA, 2018; ESCWA, 2019). More relevant to addressing the increasing wealth concentration, a well-designed property tax can be an effective tool to raise revenue and improve equity. Currently, these taxes are low and largely evaded. Another important benefit of a well-designed property tax or wealth tax is that it would dampen rent-seeking and speculative activities, and thus channel funds to more productive investments.

Secondly, poor tax records and complex tax procedures complicate tax compliance and tax-fairness analysis. Improving tax and customs administration, simplifying coding and regulation, and investing in technology to improve transparency can enhance compliance and increase the potential tax base. This would require upfront investment in administrative infrastructure, but better tax administration will support a broader culture of tax compliance and

greater revenues. One way to improve transparency and accountability is requesting that all citizens and residents file income tax, even if they are not actually required to pay tax – an approach encouraged recently in many developing countries, such as India (Sarangi and Abu-Ismail, 2018). Since these tax forms would include questions on transfers and rents received from properties and other wealth sources, they would also constitute an important resource to effectively design and implement an appropriate property tax policy that takes into account the need to raise revenues against the ability of taxpayers to pay. A mandatory reporting of wealth and income sources would also assist Arab countries in controlling tax evasion, tax avoidance and illicit financial flows. In 2014 and 2015, illicit outflows from the Arab region outstripped the combined inflows of foreign direct investment and official development assistance (ESCWA 2017).

Thirdly, select an appropriate tax rate. A variable tax rate can be useful to mitigate land and real-estate speculation, which is rampant in some Arab countries. For example, higher tax rates on vacant or underdeveloped land can reduce short-term speculative investment (Collier and others, 2017). However, introducing variable tax rates can, like exemptions, increase the complexity of the tax system, and raise associated administrative costs in its implementation. If administrative capacity is low, as in many Arab LDCs, a single rate may be the best option for policymakers. Countries can also collect tax rents from real-estate investment. In Egypt, real estate property is subject to a 10 per cent rate on the annual rental value, with exemptions for properties with a low rental value.

Fourthly, and perhaps more importantly, governance reforms, particularly in areas related to government and institutional effectiveness, and increased accountability and transparency are a key priority and prerequisite to achieving the desired objective behind the imposition of a solidarity wealth tax. For example, minimizing the inclusion and exclusion errors related to any expanded programme of social protection, such as poverty targeting, requires well designed and regular programme monitoring and evaluation over the implementation period. Such an outcome necessarily implies data gathering, transparency in sharing results and proper accountability mechanisms. Public trust to support the implementation of a solidarity wealth tax depends on the implementation of these reforms.

Figure 5. Composition of tax revenue in selected oil-poor countries (% share)

Individual income | Corporate income | Goods and services | Trade | Property | others
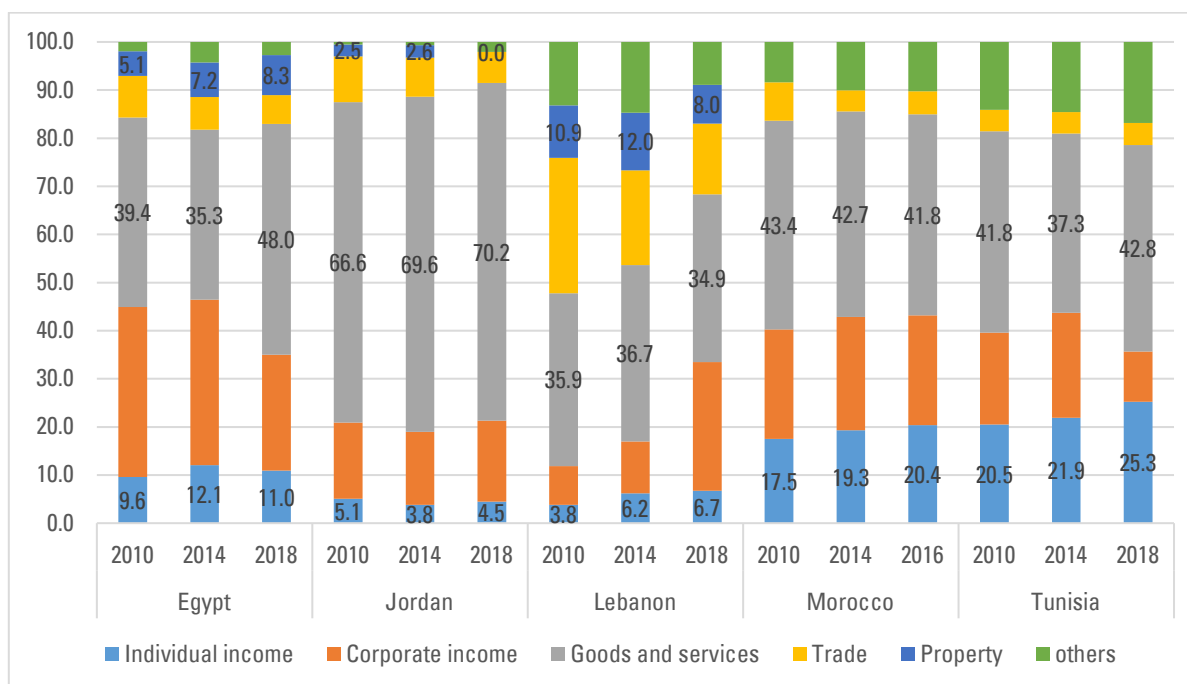
Note: Property taxes were not available for Morocco and Tunisia, and are subsumed in other taxes.

IV. Conclusions

The present study relies on data from Credit Suisse, Forbes, the United Nations Department of Economic and Social Affairs, and the World Bank – and from household budget surveys – to estimate the distribution of private wealth and the depth of poverty in the region, and to assess the prospect of using top wealth to close the region's poverty gap. This exercise and its results have a number of limitations. The data providers readily acknowledge that data quality is poor in some Arab countries. Combining the data across data sources, and across countries, may therefore not withstand the test of reliability. Illicit financing may also be rife in regional economies, as the Panama and Offshore leaks indicate, given that Arab countries remain disconnected from global investment markets.

With regard to estimating the cost of closing the poverty gap, evidence about the short- and long-term implications of the COVID-19 pandemic is being continuously revised. The present paper strives to incorporate the most updated projections, but precise results may change across successive versions of the study. For example, an earlier ESCWA brief, based on the more optimistic United Nations and World Bank growth projections in March, suggested a significantly lower estimate of the regional poverty impact (ESCWA, 2020a).

ESCWA acknowledges that there remains much speculation on the real economic impact of the pandemic, even for 2020. However, two restrictive assumptions can be made. Firstly,

that the current GDP per capita growth forecasts accurately reflect changes in the macroeconomy. Given the high volatility of economic growth in 2020 and uncertainty surrounding the potential impact of COVID-19, current forecasts should be considered with caution. Secondly, these forecasts are an adequate reflection of the change in mean consumption at the household level, which is a relatively strong assumption given that in many countries one may expect the impact to be more amplified at the household level.

Another major limitation is that no one really has an idea how the COVID-19 crisis will affect inequality. Although the COVID-19 crisis is expected to affect all income groups, the lower earning group is expected to be more directly and significantly subjected to consumption losses, because the heads of low-income households are more likely to be employed in the informal sector, which is strongly affected by the current recession. Low-earning households are less able to rely on their savings and wealth to smooth consumption during the current crisis, relative to higher income households. Consequently, the present paper conservatively assumes that the current crisis will lead to a mild increase in the population weighted Gini index, reaching 33.9 per cent in 2020 for the 14 Arab countries being assessed.

Based on recent capital market price data, the estimated mean wealth and distribution in 2019 is expected to change significantly as a result of the COVID-19. Although the assessment factors

this in by adjusting the wealth level of the top decile in 2020, the high volatility of capital market prices witnessed recently may also lead to significant changes in the estimated solidarity tax rate over the next few months.

Moreover, for various reasons related to rampant tax evasion and wealth underreporting in the region, it is probable that the assessment underestimates the top wealth in many Arab countries. A case in point is the group of LDCs and conflict-affected countries included in our analysis, such as the Sudan and the Syrian Arab Republic. Wealth distribution is unlikely to be represented well in these countries, given that the risk of violence or international sanctions prevent their citizens from disclosing their wealth. For this reason, these is a particular need for better tax data collection, and Arab countries should consider implementing mandatory annual tax reporting, as is the case in many developed and developing countries. This would also have significant impact on enhancing national efforts to achieve other development objectives, such as reducing informality and achieving better targeting of the poor and vulnerable groups.

Notwithstanding these limitations related to data sources and methodology, the findings offer important insights for further regional and national policy dialogue. The fact that that the region's 37 billionaires hold real wealth equivalent to that of the region's poorest half of the population should by itself be a wake-up call for policy action, regardless of COVID-19. In order of magnitude, the estimates are encouraging. The introduction of a solidarity wealth tax of 1.2 per cent on the wealthiest 10 per cent is all that is required to cover the poverty gap in middle-income countries, even when taking into account the potential impact of COVID-19 on poverty, income and wealth distribution.

Lastly, fiscal reforms are never a purely technical matter. Their effective implementation is contingent on foundations of solid governance, which should be accompanied by wide social dialogue. It is easy to introduce a wealth tax, but its ultimate success depends on the strength of existing governance systems, including trust in Government, institutional effectiveness and sound accountability frameworks.

Bibliography

Abu-Ismail, Khalid, Gihan Abou Taleb, and Racha Ramadan (2012). Rethinking Global Poverty Measurement. Working Paper, No. 93. Brasilia: International Policy Centre for Inclusive Growth, United Nations Development Programme.

Abu-Ismail, Khalid, and Manuella Nehme (2019). Falling rents should make way for institutional reforms in Arab states. *Economic Research Forum Blogpost*, 7 May. Available at https://theforum.erf.org.eg/2019/05/07/falling-rents-make-way-institutional-reforms-arab-states/.

Abu-Ismail, Khalid, and Niranjan Sarangi (2013). A New Approach to Measuring the Middle Class: Egypt. E/ESCWA/EDGD/2013/WP.2. Beirut: United Nations Economic and Social Commission for Wester Asia.

Abu-Ismail, Khalid, Rathin Roy, and Raquel Almeida Ramos (2012). Is there fiscal space for financing an Arab development transformation? Working paper No. 88 (February). Brasilia: International Policy Centre for Inclusive Growth, United Nations Development Programme.

Abu-Ismail, Khalid, and others (2005). *Investment Requirements and Macroeconomic Framework for Reducing Income Poverty to half by 2015 in Yemen*. United Nations Development Program.

Adly, Amr (2020). Property taxes are the Arab world's low hanging fruit, Bloomberg Opinion, 22 January, www.bloomberg.com/opinion/articles/2020-01-22/property-taxes-are-the-arab-world-s-low-hanging-fruit.

Aitchison, John, and James A.C. Brown (1957). The Lognormal Distribution. Cambridge: Cambridge University Press.

AlAzzawi, Shireen, and Vladimir Hlasny (2018). Household asset wealth and female labor supply in MENA. *The Quarterly Review of Economics and Finance*, vol. 73.

_____ (2020). Vulnerable employment in Egypt, Jordan and Tunisia: A perpetuation of misery. UN University Wider Working Paper.

Alvaredo, Facundo, Lydia Assouad, and Thomas Piketty (2019). Measuring inequality in the Middle East 1990-2016: The world's most unequal region? *Review of Income and Wealth*, vol. 65, No. 4.

Alvaredo, Facundo, and Thomas Piketty (2014). Measuring top incomes and inequality in the Middle East: Data limitations and illustration with the case of Egypt. Economic Research Forum Working Paper, No. 832.

Andersen, Jørgen Juel, and others (2017). Petro Rents, Political Institutions, and Hidden Wealth: Evidence from Offshore Bank Accounts. *Journal of the European Economic Association*, vol. 15, No. 4.

Assouad, Lydia (2017). Rethinking the Lebanese economic miracle: The extreme concentration of income and wealth in Lebanon 2005-2014. WID Working Paper Series, No. 2017/13. World Inequality Database.

Brzezinski, Michal (2014). Do wealth distributions follow power laws? Evidence from 'rich lists'. *Physica A: Statistical Mechanics and its Applications*, vol. 406 (July).

Chakraborti, Anirban, and Marco Patriarca (2008). Gamma-distribution and wealth inequality. *Pramana Journal of Physics*, vol. 71, No. 2.

Collier, Paul, and others (2017). Land and property taxes: Exploiting untapped municipal revenues. Policy Brief. International Growth Center. Available at https://www.theigc.org/wp-content/uploads/2017/08/Land-and-property-taxes-policy-brief_updated.pdf.Cowell, Frank A., and Philippe Van Kerm (2015). Wealth inequality: A survey. *Journal of Economic Surveys*, vol. 29, No. 4.

Credit Suisse (2019a). *Global Wealth Report 2019*. Switzerland: Credit Suisse Research Institute

_____ (2019b). *Global Wealth Databook 2019*. Switzerland: Credit Suisse Research Institute.

Dagum, Camilo (1999). A study on the distributions of income, wealth and human capital. *Revue Européenne des Sciences Sociales*, vol. 37, No. 113.

Datt, Gaurav (1998). Computational tools for poverty measurement and analysis. Food Consumption and Nutrition Division Discussion Paper, No. 50. International Food Policy Research Institute.

Eckerstorfer, Paul, and others (2016). Correcting for the missing rich: an application to wealth survey data. *Review of Income and Wealth*, vol. 62, No. 4.

El-Katiri, Laura, Bassam Fattouh, and Paul Segal (2011). Anatomy of an oil-based welfare state: Rent distribution in Kuwait. London School of Economics, No. 13. Kuwait Programme on Development, Governance and Globalisation in the Gulf States.

Eurostat Newsletter (2019). Taxation in 2018: Tax-to-GDP ratio up to 40.3% in EU, 30 October. Available at https://ec.europa.eu/eurostat/documents/2995521/10190755/2-30102019-AP-EN.pdf/68739572-f06a-51e4-3a5b-86e660a23376.

Forbes (2019). Billionaires: the richest people in the world, by country/territory, March 5. Available at www.forbes.com/billionaires/#1d31e782251c.

Harrison, Alan J. (1979). The Upper Tail of the Earnings Distribution: Pareto or Lognormal? *Economics Letters*, vol. 2.

Hlasny, Vladimir (2020a). Parametric Representation of the top of income distributions: Options, historical evidence and model selection. Commitment to Equity Working Paper series, No. 90.

_____ (2020b). Top expenditure distribution in Arab countries and the inequality puzzle. *Journal of Economic and Social Measurement*, vol. 44, No. 4.

Hlasny, Vladimir, and Shireen AlAzzawi (2018). Asset inequality in MENA: the missing dimension? *Quarterly Review of Economics and Finance*, vol. 73.

Hlasny, Vladimir, and Vito Intini (2015). Representativeness of top expenditures in Arab region household surveys. United Nations Economic and Social Commission for Western Asia.

Hruschka, Daniel J., Drew Gerkey, and Craig Hadley (2015). Estimating the absolute wealth of households. *Bulletin of the World Health Organization*, vol. 93, No. 7.

Jäntti, Markus, Eva M. Sierminska, and Philippe Van Kerm (2015) Modeling the joint distribution of income and wealth. *Research on Economic Inequality*, vol. 23.

Jenkins, Stephen P., and Markus Jäntti (2005). Methods for summarizing and comparing wealth distributions. ISER Working Paper, No. 2005-05. Institute for Social and Economic Research.

Kakwani, Nanak C. (1980). Income Inequality and Poverty. Washington, DC: World Bank.

Kakwani, Nanak, and Hyun Son (2004). Economic growth and poverty reduction: Initial conditions matter. Working Papers, No. 2. International Policy Centre for Inclusive Growth.

_____ (2006). How costly is it to achieve the Millennium Development Goal of halving poverty between 1990 and 2015? Working Papers, No. 19. International Policy Centre for Inclusive Growth.

Kennickell, Arthur B. (2006). A rolling tide: changes in the distribution of wealth in the US, 1989-2001. In *International Perspectives on Household Wealth*, Edward N. Wolff, ed. Cheltenham and Northampton MA: Edward Elgar Publishing.

_____ (2019). The tail that wags: differences in effective right tail coverage and estimates of wealth inequality. *Journal of Economic Inequality*, vol. 17.

Kinninmont, Jane (2015). Future trends in the Gulf. Chatham House Report: Royal Institute of International Affairs. Available at https://www.chathamhouse.org/publication/future-trends-gulf.

Minoiu, Camelia, and Sanjay G. Reddy (2009). Estimating poverty and inequality from grouped data: how well do parametricmethods perform? *Journal of Income Distribution*, vol. 18, No. 2.

Pareto, Vilfredo F.D. (1896). On the distribution of wealth and income, translation in Frank A. Cowell (ed.), The economics of poverty and inequality, vol. 2. Elgar Reference Collection, Cheltenham, 2003.

Ravallion, Martin, Shaohua Chen, and Prem Sangraula (2008). Dollar a day revisited. World Bank Policy Research Working Paper, WPS4620. Washington, D.C.: World Bank.

Sarangi, Niranjan, and Khalid Abu-Ismail (2018). Tax Reform for Equity and Fiscal Space in Middle Income Arab Countries. Economic Research Forum Blogpost, 6 March. Available at https://theforum.erf.org.eg/2018/03/01/tax-reform-equity-fiscal-space-middle-income-arab-countries.

United Nations Economic and Social Commission for Western Asia (2017). The Arab financing for development scorecard: overall results, Committee on Liberalization of Foreign Trade, Economic Globalization and Financing for Development, twelfth session (Financing for development), Beirut, 4-5 December 2017. E/ESCWA/EDID/2017/IG.2/5(Part I).

_____ (2018). *Rethinking Fiscal Policy for the Arab region*. E/ESCWA/EDID/2017/4. Beirut.

_____ (2019). Fiscal policy review in Arab States 2019. E/ESCWA/EDID/2019/WP.20. Beirut.

_____ (2020a). Mitigating the impact of COVID-19: Poverty and food insecurity in the Arab region. E/ESCWA/CL3.SEP/2020/Policy Brief.2. Beirut.

_____ (2020b). Regional emergency response to mitigate the impact of COVID-19. Available at https://www.unescwa.org/sites/www.unescwa.org/files/publications/files/20-00116_rer_mitigatingimpact_covid-19_eng_april8.pdf.

United Nations Economic and Social Commission for Western Asia, and Economic Research Forum (2019). *Rethinking Inequality in Arab Countries*. E/ESCWA/EDID/2019/2. Beirut.

Van der Weide, Roy, Christoph Lakner, and Elena Ianchovichina (2018). Is inequality underestimated in Egypt? Evidence from house prices. *Review of Income and Wealth*, vol. 64, No. s1.

Vermeulen, Philip (2016). Estimating the top tail of the wealth distribution. *American Economic Review*, vol. 106, No. 5.

Villasenor, Jose A., and Barry C. Arnold (1989). Elliptical Lorenz curves. Econometrics, vol. 40, No. 2.

Wang, Jennifer (2019). Forbes 400 methodology: How we crunch the numbers, 2 October. Available at www.forbes.com/sites/jenniferwang/2019/10/02/forbes-400-methodology-how-we-crunch-the-numbers/#1ac35d4a1715.

Zucman, Gabriel (2015). *The Missing Wealth of Nations*. University of Chicago Press.

Endnotes

1. This represents 2.6 per cent of the total 149,807 addresses, 3.3 per cent of the 307,181 entities, 3 per cent of the 212,540 officers, and 1.6 per cent of the 21,730 intermediaries with a known country referenced in the files.

2. The wealth Gini coefficient is 81.9 in Lebanon and 83.4 in Saudi Arabia. Other top countries are: Antigua and Barbuda (82.3); the Bahamas (82.8); Brazil (84.9); Denmark (83.8); Dominica (82.3); Germany (81.6); Grenada (82.7); India (83.2); Indonesia (83.3); the Netherlands (90.2); the Philippines (83.7); the Russian Federation (87.9); St. Vincent and the Grenadines (81.8); Suriname (83.2); Sweden (86.7); Thailand (84.6); Ukraine (84.7); and the United States of America (85.2).

3. Hruschka, Gerkey and Hadley (2015) use the geometric mean of the Pareto and the log-normal (Cobb-Douglas function with exponent 0.32). However, these distributions tend to perform poorly on lower incomes (Hlasny and Intini, 2015; Hlasny, 2020a, 2020b), and underestimate the dispersion of lower incomes in our exercise. Instead, we use the lognormal distribution alone for the bottom 99.5 per cent of individuals by wealth, and the Pareto (type I) distribution alone for the top 0.5 per cent. The shape and scale parameters of the lognormal and Pareto distributions are fitted based on wealth Gini and mean wealth per adult in each country. For completeness, other candidate parametric choices for the modelling of wealth include the Dagum and gamma distributions (Dagum, 1999; Jenkins and Jäntti, 2005; Chakraborti and Patriarca, 2008; Brzezinski, 2014; Kennickell, 2019).

4. The March 2020 Forbes update indicates that there may be 31 billionaires in the Arab region jointly holding $92.1 billion, representing a 16 per cent reduction in real terms from the 2019 value of $109.7 billion (2020 United States dollars).

5. Absolute poverty lines can be divided into two groups: nationally defined poverty lines that vary depending on the cost of basic needs evaluated in local prices; or poverty lines fixed (in real terms) by holding their value constant over time and across countries using purchasing power parity exchange rates (PPPs), as in the literature on global poverty comparisons. For calculations of the poverty line, see for example Ravallion and others (2008) and the references cited therein. Also refer to Deaton (2008), Minoiu and Reddy (2009) and Abu-Ismail, Abou Taleb and Ramadan (2012) on whether fixed poverty lines based on PPPs produce consistent and comparable results for extreme poverty across countries.

6. In cases where only grouped data is available, PovcalNet bases its poverty estimates on the parameterized Beta Lorenz Curve or the General Quadratic Lorenz Curve, proposed by Villasenor and Arnold (1989) and Kakwani (1980), respectively. Further details on the computational application and methods used in PovcalNet is documented in Datt (1998). The performance of the methods relative to microdata is reviewed in Minoiu and Reddy (2009).

7. One caveat on the use of this methodology is important to highlight. In general, the smaller the inequality as measured by the Gini index, the larger the rate of poverty reduction with respect to the mean income. For a given level of mean income, the incidence of poverty generally increases with the Gini index, but there is one exception. As highlighted by Kakwani and Son (2004), when the mean income is higher than the poverty line, the head count ratio decreases if the Gini index increases. This can be counter-intuitive because, at a given income level, poverty is expected to rise as inequality worsens. Thus, the poverty lines should not exceed the mean income, but this may occur in conflict affected countries such as the Syrian Arab Republic and Yemen where successive shocks to income have significantly lowered the mean expenditure over time relative to their fixed pre-conflict national poverty lines.

8. If this list is extended to two men who were on the Forbes list in 2018 but who have since been removed (one from Lebanon and one from Qatar), and if the wealth of one of the Saudis is increased using a 2019 estimate instead of the 2017 official figure, we obtain a sum total of $117.26 billion (real 2019 United States dollars using the United States GDP deflator). This amounts to the real wealth of the poorest 113.6 million (47.4 per cent) of the region's adult population.

9. Earlier estimates reported a figure of 93 million people in poverty, based on revised poverty lines for conflict-affected Arab countries.

10. See Abu-Ismail and others, 2005.