World Inequality Lab – Technical Note N° 2022/05

2022 DINA Regional Update for Middle East

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October 2022

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Technical Note – 2022 DINA regional update for the Middle East

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This note presents the latest changes made in the construction of Distributional National Accounts (DINA) for Middle East countries, detailing each step of the method, in the direct continuity of Bajard and Moshrif (2021) and Moshrif (2020). Combining household surveys, national accounts, and income tax data, we construct income distribution for the period 1980-2021 The first attempt at creating distributional accounts for the Middle East was done by Alvaredo et al (2017). Using the same household survey data, we have revised the methodology for distributing missing capital income and updated the series with recently published survey data.

As demonstrated by the cases of Saudi Arabia - which had to be regionally imputed last year- and Oman - which only has one survey year available -, we still face some limitations in measuring income inequality due to a lack of data transparency for both survey and fiscal data, and the low quality of available survey data.

Step 1: Preparing tabulated and micro survey data

Our data presents itself in various ways. Since tax data is only available for Lebanon in the Middle East, for years 2005 to 2014, most of our series are derived from income and consumption surveys, that can either be obtained in the form of microdata (Syria, Yemen, Egypt, Iraq, Jordan, and Iran) or tabulated data (all others), see Table 1 for details. It is important to point out that for some countries, we have combined those micro survey data with tabulated data to cover as many years as possible for the 1980-2021 period. For the 2022 update, we have included an additional year (2019) for Egypt, from the national survey on income and consumption, and updated the Turkish tabulated income data, from the national survey, for years 2016-2021, I hence replace PovcalNet estimates done in the previous update.

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a. Household micro survey data

Using Household micro survey data, we first estimated the full income distribution. However, to avoid having negative income values at the bottom of the distribution or missing income at the top of the distribution (the smaller percentiles within the top 1%), we trimmed the top 0.01% and the bottom of the distribution. Then, we used generalized Pareto interpolation[3] to estimate the distribution shapes and output them in the form of 127 generalized percentiles distributions. This correction yields the same income share for the top 1% and does not alter the income shares for the rest of the distribution. Also, for years when both micro and tabulated survey data were available, we used micro survey data to estimate the income distribution.

b. From consumption to income tabulated surveys

Some of the surveys in our sample presented data on consumption instead of income, which is the case of Bahrain, Kuwait, Qatar, and UAE. To correct it, we need to harmonize the income concept for all countries and years. Thus, we started by computing income-consumption ratios from series where both concepts were available, and then we applied them to consumption series from regions with similar characteristics (e.g. Gulf countries ratios were used to derive Kuwait's income distributions).

c. Integrating PovcalNet data

In 2021, Bajard and Moshrif (2021) combined PovcalNet estimates with survey tabulation/microdata to extend the inequality series. PovcalNet is tabulated survey data, mostly measured in terms of consumption. To integrate this data with the existent inequality series, we derive the ratio between the two sources on common years and rescaled the PovcalNet series to match the estimates based on survey data. When no common years were at hand, we compute the ratio on any two close years (e.g. for UAE, the ratio was computed from the 2009 imputed income and the 2013 PovcalNet survey consumption).

For Iran, inequality estimates using PovcalNet data overlapped with inequality estimates using micro survey data. For that reason, we combined directly both datasets to produce the full income distribution, without rescaling the former.

[3] For generalized Pareto interpolation the online tool gpinter can be used (https://wid.world/gpinter/) or the eponymous R package. For details on the procedure see Blanchet et al. (2021).

Step 2: Top fiscal correction using Lebanese tax data

We take advantage of the availability of fiscal data from Lebanon (Assouad, 2017) to account for the underestimation of top incomes that is inherent to survey data, because of its self-reporting nature. Correction factors are computed for every g-percentile, ranging from 1 below the 80th percentile to around 2.5 at the very top. We then multiply bracket averages and thresholds by these coefficients.

Step 3: Missing capital income

The distribution of missing capital income follows the latest recommendations of the DINA Guidelines. Retained earnings of corporations are distributed following the quantile ratio method, using a finer quantile function (hyperbolic) than in previous years, which avoids extreme values near the bottom of the distribution. This method links the labor income distribution to the capital income distribution, which we must estimate externally using wealth data from France and the US since it is not available for any country of our sample. Surprisingly, this step decreases inequality in most of the countries in our sample. This is due to the base series being extremely unequal and French and US wealth distribution thus flattening the distribution.

Step 4: Imputation of missing years

As the data suffers from huge gaps between conducted surveys, we linearly interpolate the bracket averages and thresholds for the years we have no data for. Second, we extrapolate both backward and forwards to cover the whole period from 1980 to 2021 for each country assuming constant inequality levels. This implies we have the same inequality levels for countries that have only one year of survey data (Oman). Moreover, we average Gulf countries' distributions to impute the Saudi Arabia distribution, and the Middle East series is constructed by aggregating all our series and reranking them in 127 g-percentiles.

Step 5: Rescaling to match national income

In the distribution of retained earnings, we use aggregate variables to rescale the average income to match national income and wealth. National wealth is derived from a globally computed wealth-income ratio.

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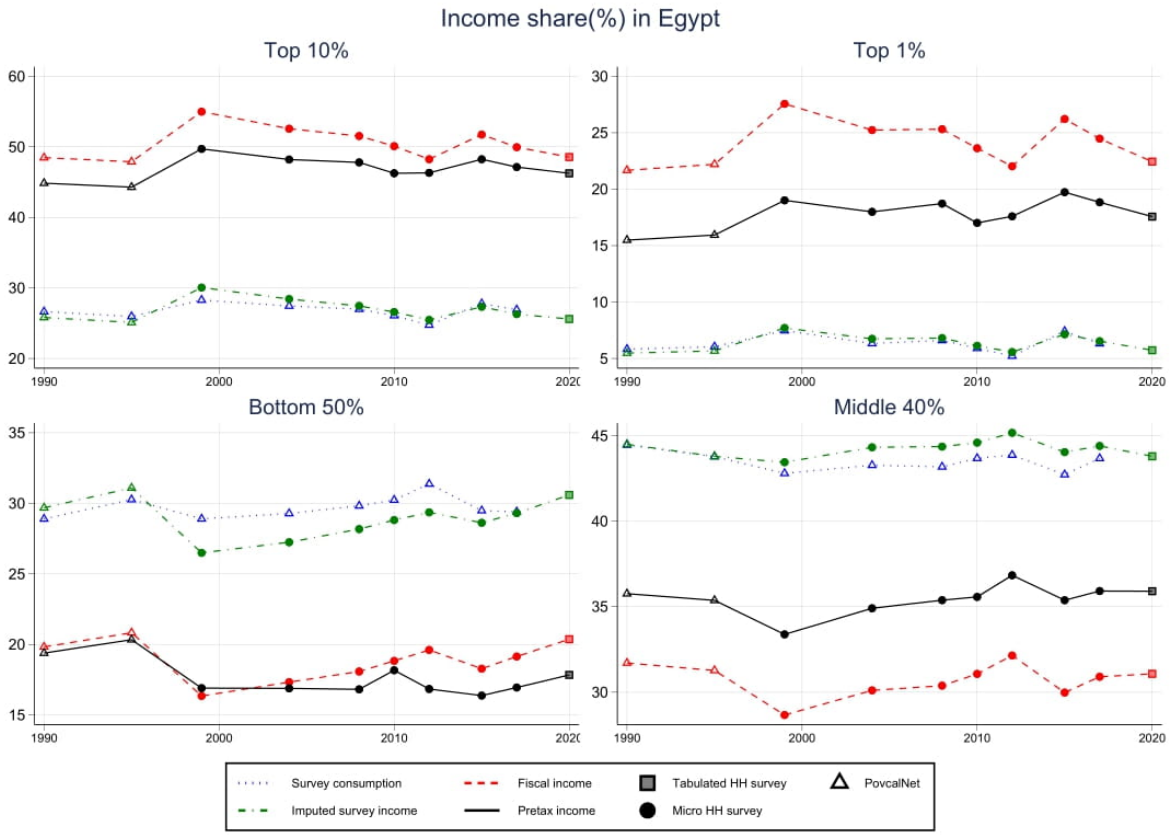
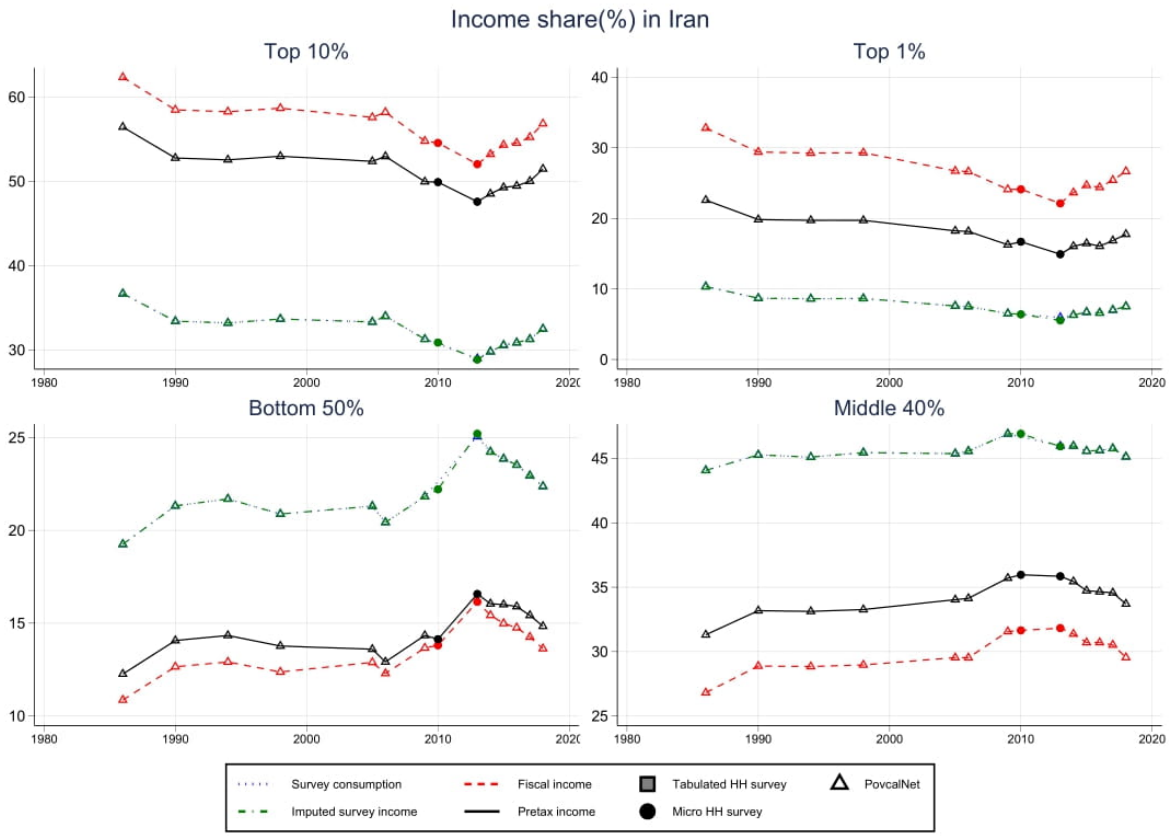
Table 1: List of survey availability in the Middle East

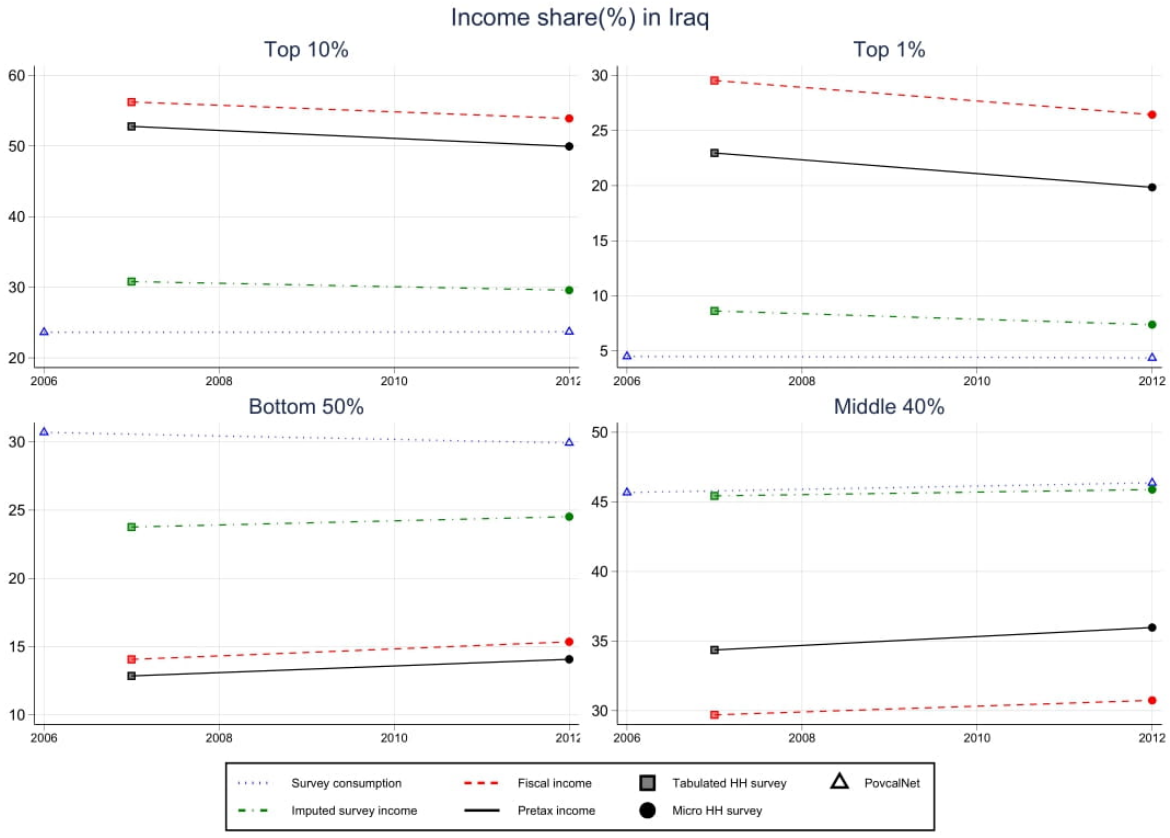
Country	Survey years	Format	New tabulation (2022's update)
Lebanon	2007-2016	Tabulation	
Jordan	1986, 1992, 2002, 2006, 2008, 2010, 2013	Micro-data and tabulation	
Palestine	1996-1998, 2004-2007, 2009-2011, 2016	Micro-data and tabulation	
Iran	1986, 1990, 1994,1998, 2005, 2006, 2009, 2010, 2013-2018	Micro-data and tabulation	
Turkey	1987, 1994, 2002-2021	Micro-data and tabulation	2017-2021
Egypt	1990, 1995, 1999, 2004, 2008, 2010, 2012, 2015, 2017, 2019	Micro-data and tabulation	2019
Iraq	2007, 2012	Micro-data	
Syrian Arab Republic	1996, 2003, 2004	Micro-data and tabulation	
Yemen	1998, 2006, 2014	Micro-data and tabulation	
United Arab Emirates	1998, 2009, 2013, 2014, 2018	Tabulation	
Bahrain	1995, 2005, 2015	Tabulation	
Oman	2010	Tabulation	
Qatar	2007, 2012	Tabulation	
Kuwait	2007, 2013	Tabulation	

Saudi Arabia	None	None
Israel	1979, 1986, 1992, 1997, 2001, 2005, 2007, 2010, 2012, 2014, 2016	Tabulation

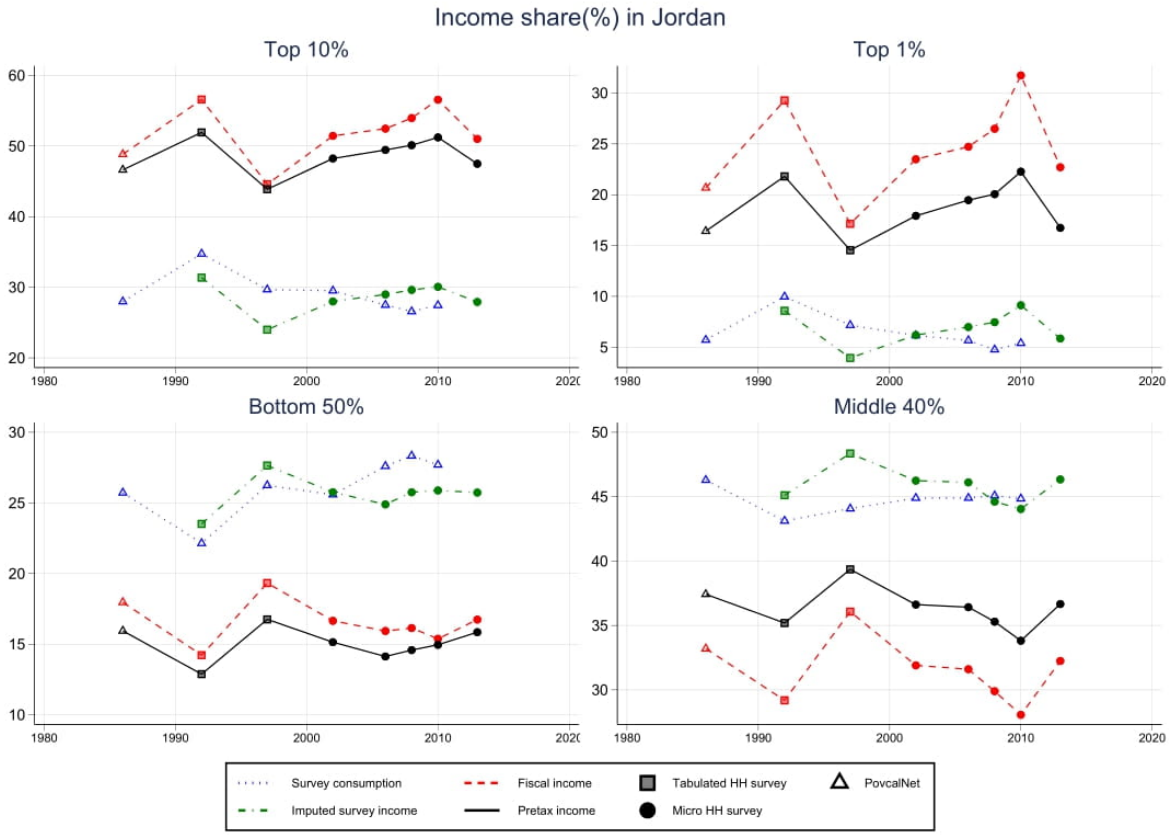
Income share(%) in Bahrain
Top 10%
Top 1%
Bottom 50%
Middle 40%
Survey consumption
Fiscal income
Tabulated HH survey
PovcalNet
Imputed survey income
Pretax income
Micro HH survey

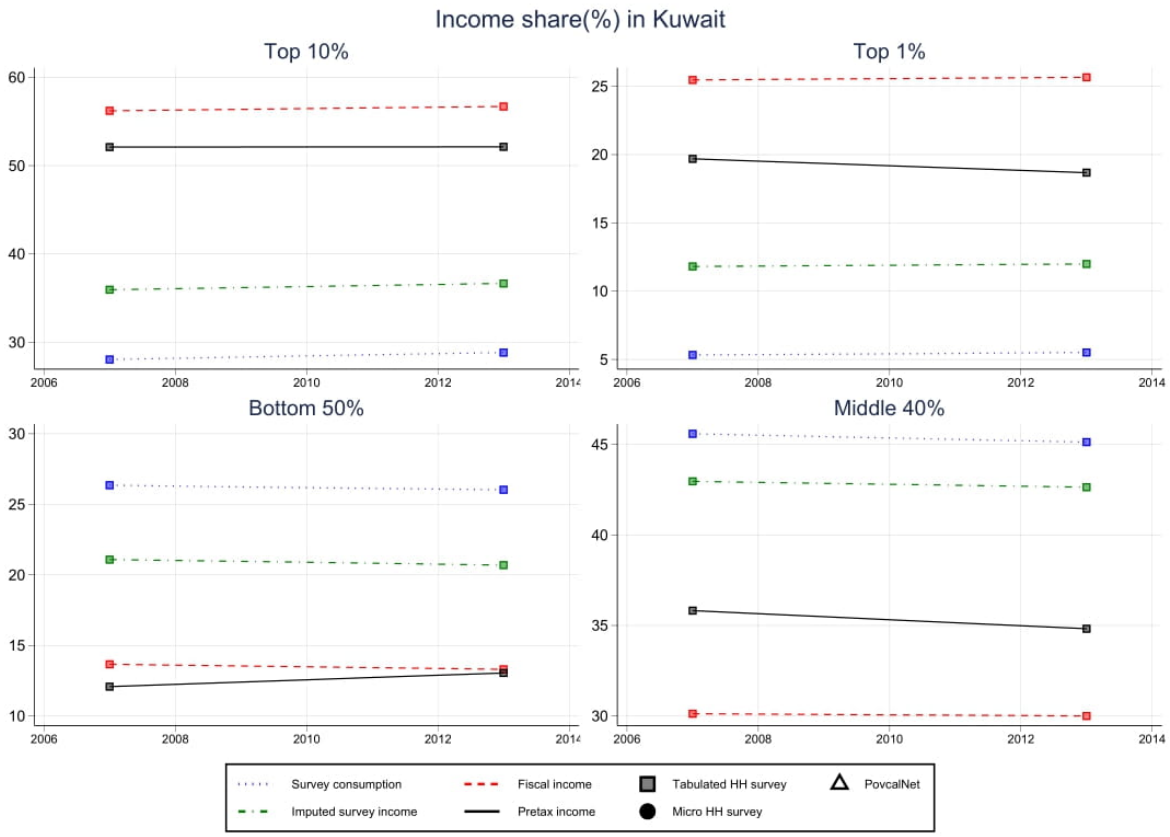

Income share(%) in Egypt
Top 10%
Top 1%
Bottom 50%
Middle 40%
Survey consumption
Fiscal income
Tabulated HH survey
PovcalNet
Imputed survey income
Pretax income
Micro HH survey

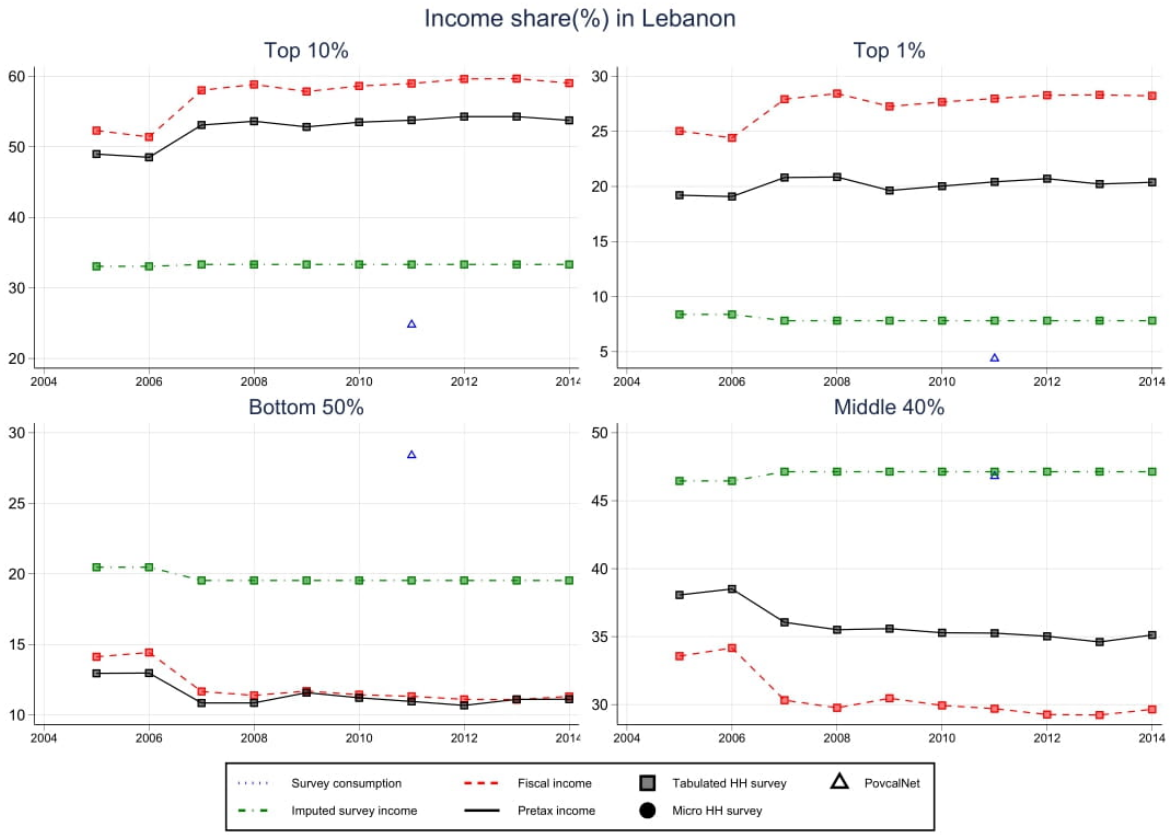

Income share(%) in Iran
Top 10%
Top 1%
Bottom 50%
Middle 40%
Survey consumption
Fiscal income
Tabulated HH survey
PovcalNet
Imputed survey income
Pretax income
Micro HH survey


Income share(%) in Iraq
Top 10%
Top 1%
Bottom 50%
Middle 40%
Survey consumption
Fiscal income
Tabulated HH survey
PovcalNet
Imputed survey income
Pretax income
Micro HH survey

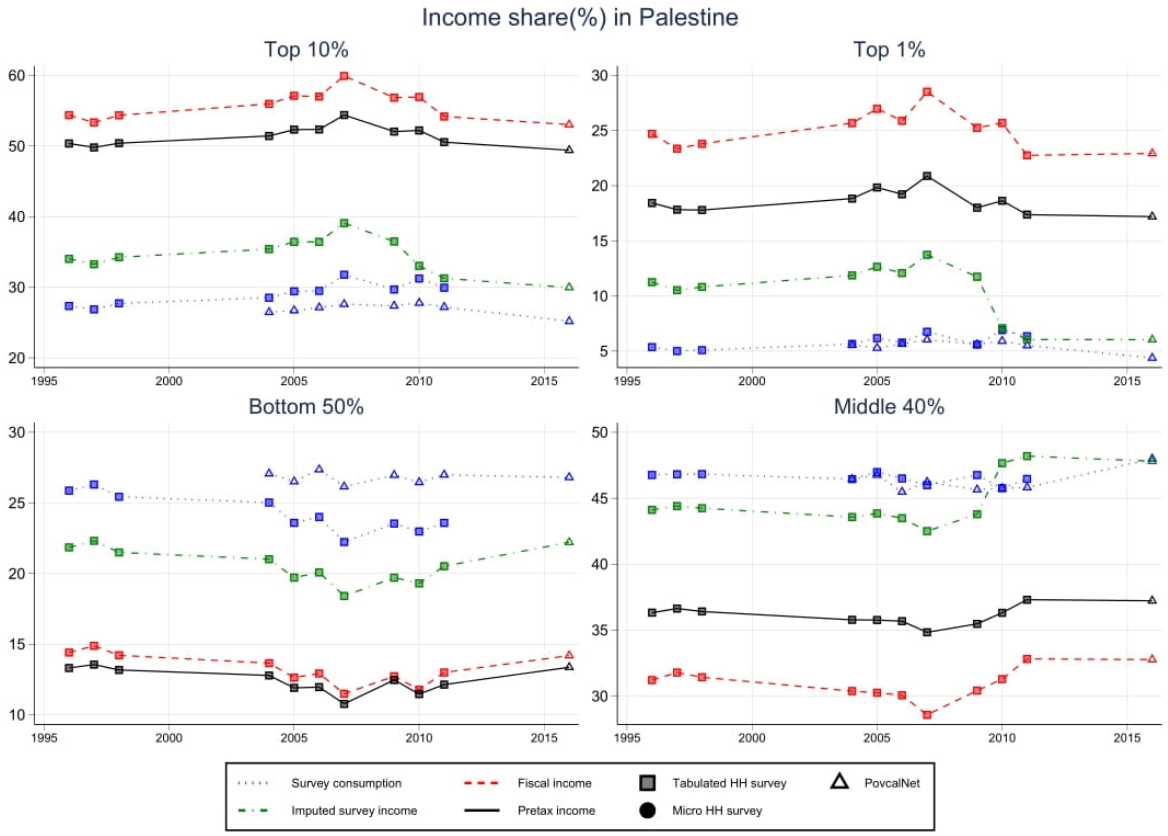
Income share(%) in Israel
Top 10%
Top 1%
Bottom 50%
Middle 40%
Survey consumption
Fiscal income
Tabulated HH survey
PovcalNet
Imputed survey income
Pretax income
Micro HH survey

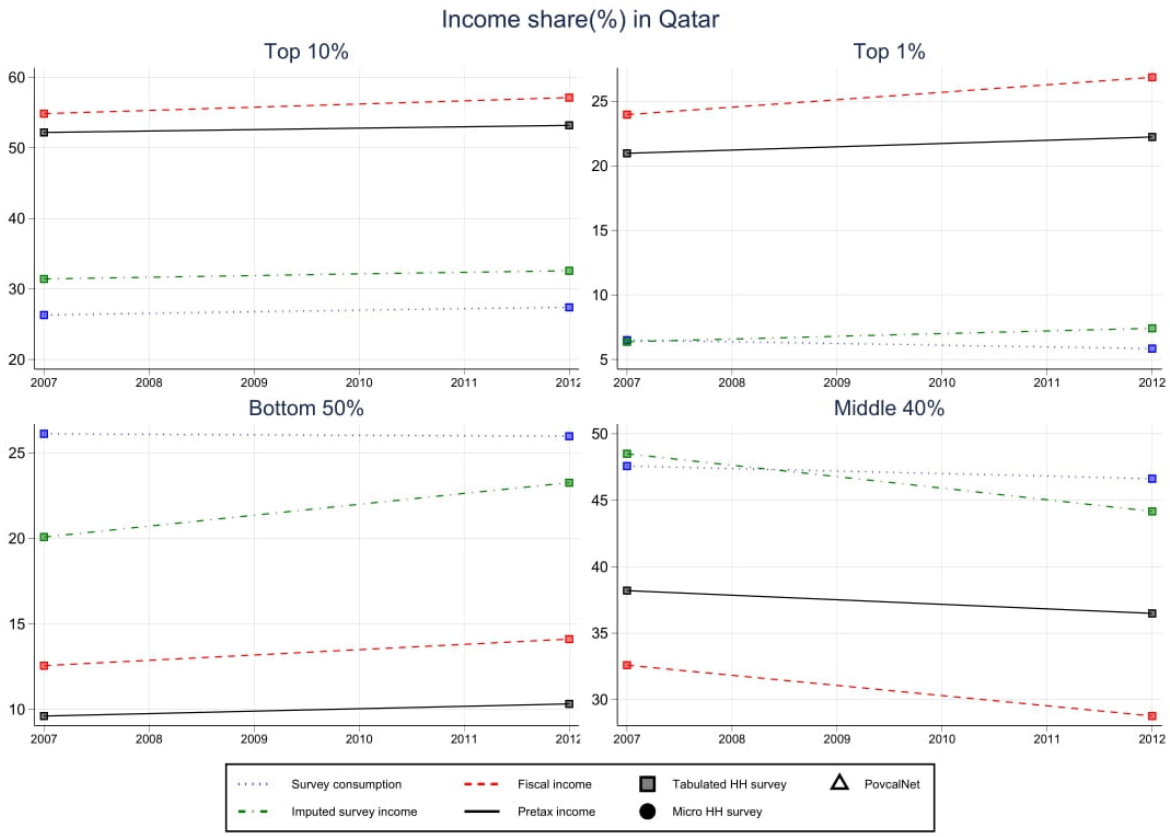

Income share(%) in Jordan
Top 10%
Top 1%
Bottom 50%
Middle 40%
Survey consumption
Fiscal income
Tabulated HH survey
PovcalNet
Imputed survey income
Pretax income
Micro HH survey

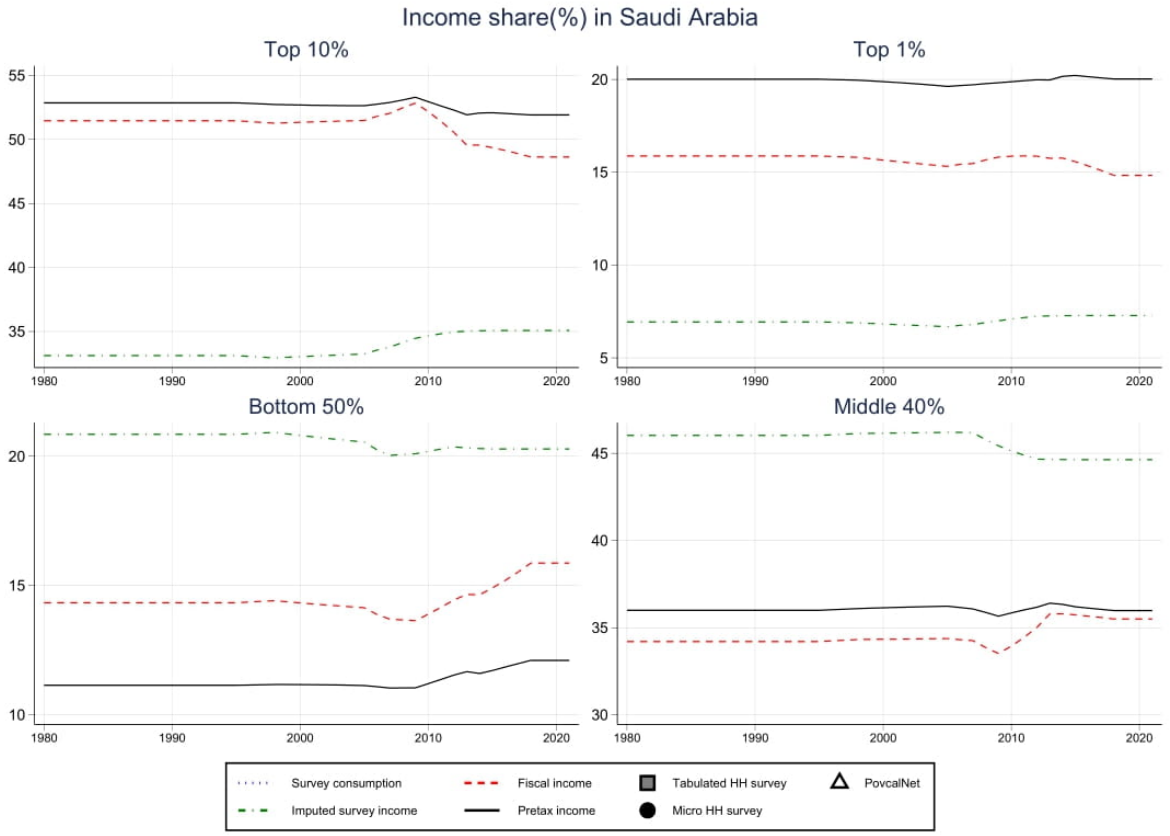

Income share(%) in Kuwait
Top 10%
Top 1%
Bottom 50%
Middle 40%
Survey consumption
Imputed survey income
Fiscal income
Pretax income
Tabulated HH survey
Micro HH survey
PovcalNet

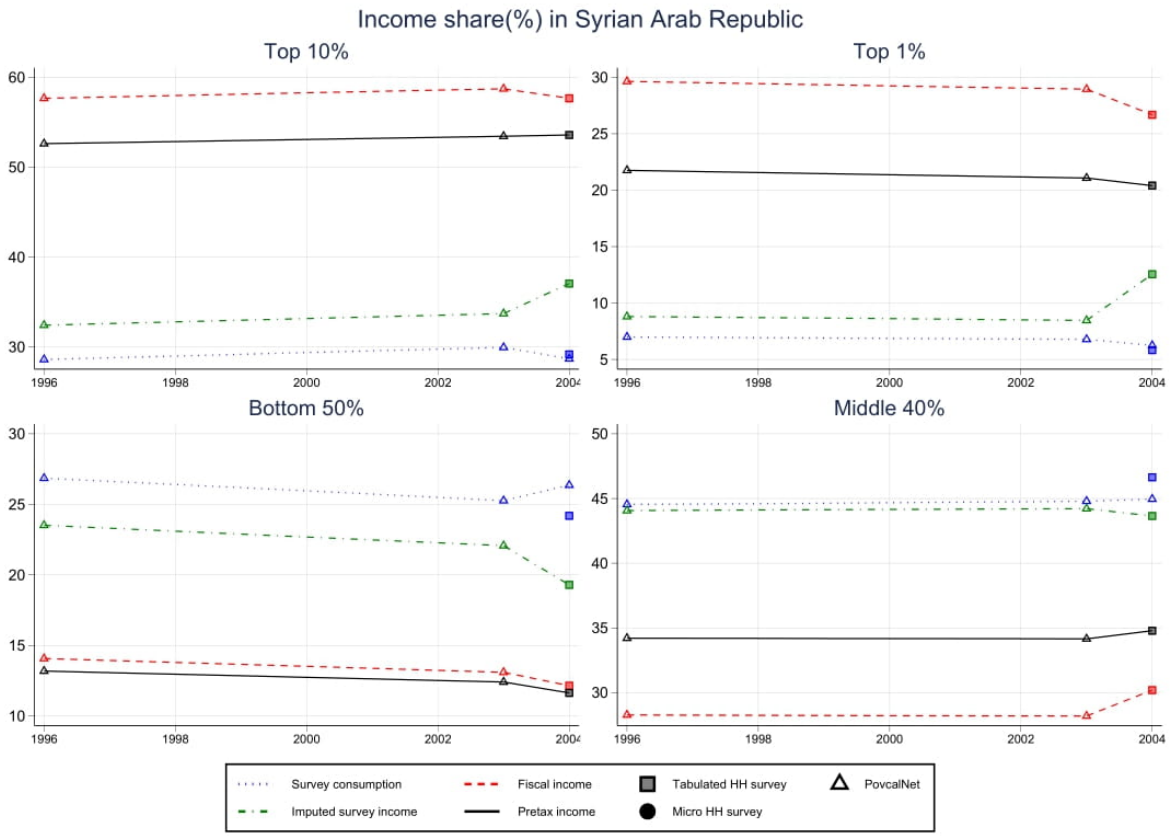

Income share(%) in Lebanon
Top 10%
Top 1%
Bottom 50%
Middle 40%
Survey consumption
Imputed survey income
Fiscal income
Pretax income
Tabulated HH survey
Micro HH survey
PovcalNet

Income share(%) in Oman
Top 10%
Top 1%
Bottom 50%
Middle 40%
Survey consumption
Fiscal income
Tabulated HH survey
PovcalNet
Imputed survey income
Pretax income
Micro HH survey

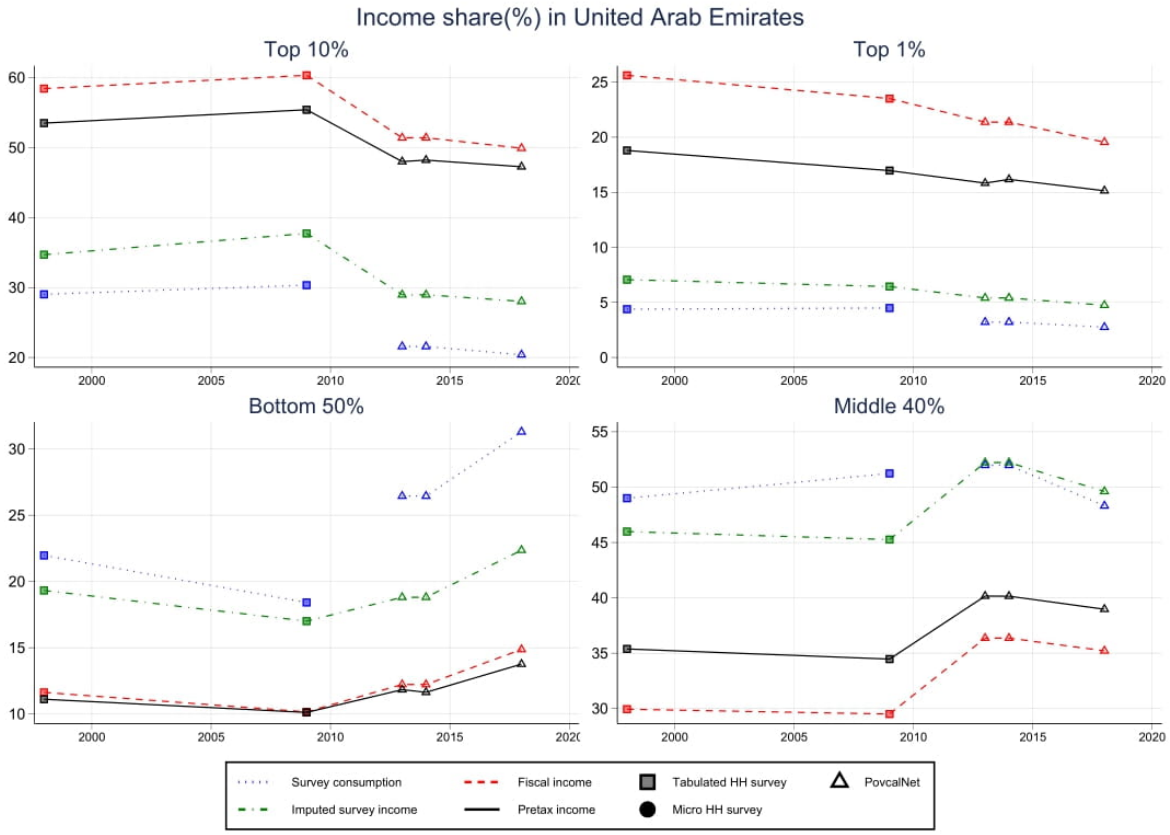

Income share(%) in Palestine
Top 10%
Top 1%
Bottom 50%
Middle 40%
Survey consumption
Fiscal income
Tabulated HH survey
PovcalNet
Imputed survey income
Pretax income
Micro HH survey

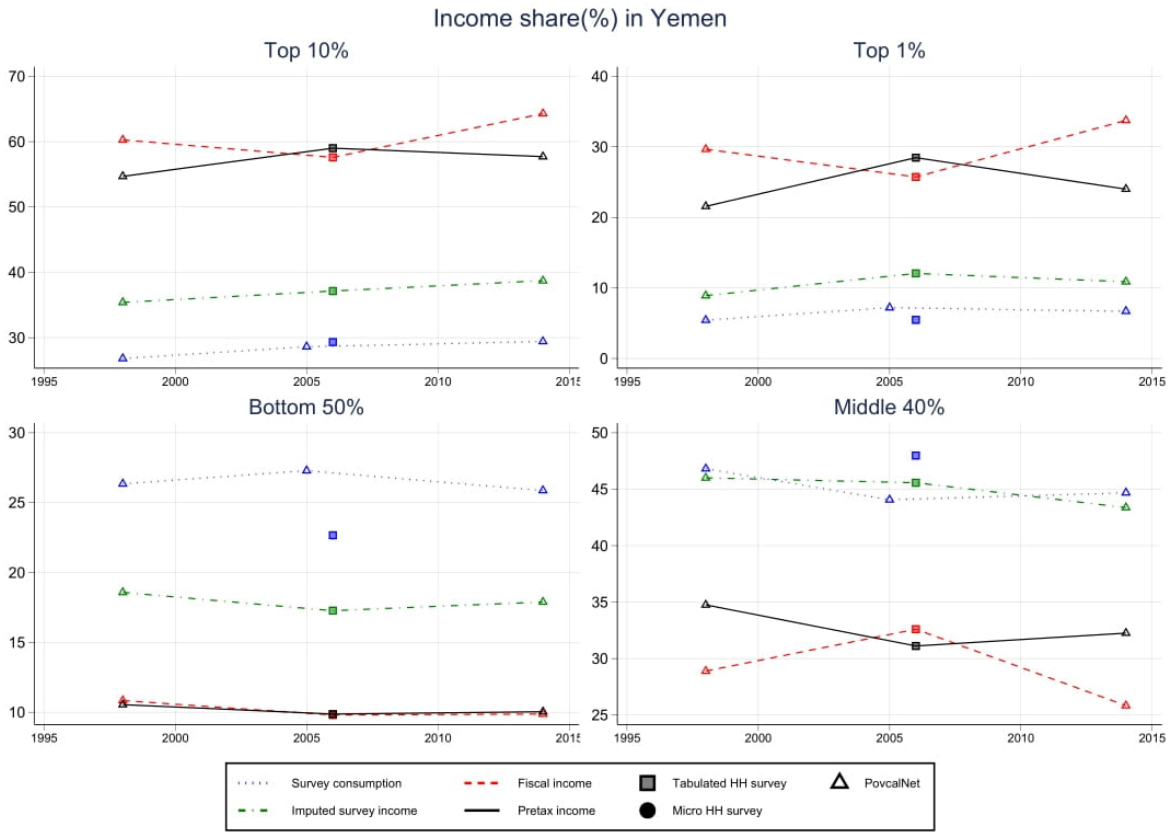

Income share(%) in Qatar
Top 10%
Top 1%
Bottom 50%
Middle 40%
Survey consumption
Fiscal income
Tabulated HH survey
PovcalNet
Imputed survey income
Pretax income
Micro HH survey


Income share(%) in Saudi Arabia
Top 10%
Top 1%
Bottom 50%
Middle 40%
Survey consumption
Fiscal income
Tabulated HH survey
PovcalNet
Imputed survey income
Pretax income
Micro HH survey


Income share(%) in Syrian Arab Republic
Top 10%
Top 1%
Bottom 50%
Middle 40%
Survey consumption
Fiscal income
Tabulated HH survey
PovcalNet
Imputed survey income
Pretax income
Micro HH survey

Income share(%) in Turkey
Top 10%
Top 1%
Bottom 50%
Middle 40%
Survey consumption
Fiscal income
Tabulated HH survey
PovcalNet
Imputed survey income
Pretax income
Micro HH survey


Income share(%) in United Arab Emirates
Top 10%
Top 1%
Bottom 50%
Middle 40%
Survey consumption
Fiscal income
Tabulated HH survey
PovcalNet
Imputed survey income
Pretax income
Micro HH survey


Income share(%) in Yemen
Top 10%
Top 1%
Bottom 50%
Middle 40%
Survey consumption
Fiscal income
Tabulated HH survey
PovcalNet
Imputed survey income
Pretax income
Micro HH survey

Income share(%) in Middle East
Top 10%
Top 1%
Bottom 50%
Middle 40%
Survey consumption
Imputed survey income
Fiscal income
Pretax income
Tabulated HH survey
Micro HH survey
PovcalNet