Rethinking the Lebanese Economic Miracle: The Extreme Concentration of Income and Wealth in Lebanon, 2005-2014

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Abstract

I combine household surveys, national accounts and unique personal income tax records to produce the first estimates of the national income distribution in an Arab country, Lebanon. I find that income is extremely concentrated over the 2005-2014 period: The top 1 and 10 percent of the adult population received almost 25 and 55 percent of national income on average, placing Lebanon among the countries with the highest levels of income inequality in the world. These results challenge a long lasting narrative according to which inequality levels are not that high in the Middle East. They also confirm results from a large literature that emphasizes how the Lebanese sectarian-based mode of governance has allowed the ruling elite to extract large rents for decades and at the expense of the majority of citizens.

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1 Introduction

How unequal are Arab countries? In the last decades, the Middle East has been characterized by an extreme predominance of violence, a rise of armed non-state actors and a consolidation of authoritarianism. In this context, it is important for policy makers and scholars alike to understand whether this extreme political instability is linked to the underlying distribution of economic resources and power. The popular uprisings that recently shook the region - from the 2011 "Arab Spring" to the 2019 protests - suggest that economic inequality might indeed be quite large, as more social justice was among the main demands of the protesters. Yet, existing studies and official inequality estimates in the region suggest that income and wealth inequality levels are not that high by international standards. In 2011, the Lebanese or Egyptian official GINI indexes were below 0.35 for example (World Bank's Povcalnet Database), meaning that both countries were as egalitarian as the most egalitarian countries in history such as Scandinavian countries in the 1980s (Hlasny and Verme, 2018). This somewhat surprising fact has been coined the "*Arab Inequality Puzzle*" (World Bank, 2015).

The goal of this paper is to provide an answer to this puzzle, by studying the Lebanese case. I collected unique and novel fiscal micro-data for the 2005-2014 period from the Lebanese Ministry of Finance. I combine them with existing survey data, national accounts, billionaires' wealth data and government finance reports in a systematic manner in order to produce the first estimates of the national income distribution in a Middle Eastern country. I follow the standardized methodology of the "*Distributional National Accounts*", developed by Alvaredo et al. (2020) and which was first applied to the United States (Piketty et al., 2017). This method proposes to distribute total national income across individual adults and has recently been applied to a growing number of countries, as reviewed in Alvaredo et al. (2018). This paper is the first to apply it to a Middle Eastern country, where data quality and transparency is arguably of lower quality compared to other world regions.[1]

The key feature of this methodology is to use fiscal data to correct survey-based esti-

[1]See Bibi and Nabli (2009) for a review of existing data sources in the region and an assessment of their quality, and the "Inequality Transparency Index" at the World Inequality Database.

mates of inequality, as it is now widely acknowledged that surveys fail to capture the top tail of the income distribution. The problem is particularly acute in developing countries and in regions of the world where inequality might be particularly high (Assouad et al., 2018). By linking the corrected income distribution to national accounts, this method produces series that are consistent with macroeconomic figures, homogeneous over time and comparable across countries. It also allows researchers to look at the entire national income distribution and to study the distribution of growth among all income groups.

I find that the top 1 and 10 percent of the adult population receive almost 25 and 55 percent of total national income, which places Lebanon among the countries with the highest levels of income inequality in the world, alongside Brazil, Russia, South Africa and the United States (Alvaredo et al., 2018). The Lebanese income distribution appears to be extremely polarized. The top 10 percent richest individuals receives almost four times as much as the bottom 50 percent of the population. The middle 40 percent of the distribution, which broadly speaking represents the middle class, is left with close to 30 percent of the total national income, which is far less than the top 10 percent. This is quite different from what we observe in Europe or in the United States, where the middle class receives more or about the same income share as the richest 10 percent over the same period. I implement various robustness checks and produce variant series for on each hypothesis made during the estimation procedure. In order to get an overall "confidence interval" of the inequality estimates, I replicate my procedure and choose the most or the least conservative assumptions.[2] I find that my benchmark results are subject to a large uncertainty, with almost 20 percentage point of variation between the lower and upper bound estimates. Nevertheless, they remain robust: In all specifications, even in the most conservative one, the 10 percent richest adults receive more than 45 percent of total national income.

This paper makes two main contributions. First, it provides the only reliable estimates of the national income distribution in the Middle East, and therefore contributes to answer the so-called "*Arab Inequality Puzzle*".[3] In the case of Lebanon, the puzzle went as far

[2] I do so even when such assumptions are not empirically credible. This nevertheless enables me to produce a decision tree that highlights the lower and upper bound estimates of my results.

[3] This study is the first to use fiscal data to correct the top of the survey income distribution in an Arab

as creating an opposite narrative, according to which Lebanon is paragon of economic success in the Middle East. According to this widespread narrative, sometimes coined the "*Lebanese economic miracle*", the country would economically perform better than its neighbors, despite numerous political shocks, and ensure a relatively high level of income per capita to its citizens.[4] This paper, by producing new inequality statistics, can inform public debates and shed new light on recent economic and political developments in the country, including the 2019 "October Revolution".[5]

The second contribution is methodological. Data quality in Lebanon is particularly low by international standards, despite the existence of micro-fiscal data. I propose to complement the standardized DINA methodology by a systematic sensitivity analysis that consists in clarifying each assumption made during the estimation procedure and how their combination impacts the results, which, to my knowledge, has not been done in other studies estimating inequality levels.

Related Literature This paper adds to the literature on the measurement of poverty and inequality in developing countries. There has recently been a growing interest for the study of income distribution, after a relative hiatus since Kuznet's seminal work in 1955. A first wave of this literature has constructed top income shares time series over the long run for more than twenty countries using fiscal data (Atkinson and Piketty, 2007; Atkinson et al., 2011). Recently, this literature has attempted to estimate the full distribution of national income, using fiscal data combined systematically with survey data and national accounts, in order to estimate "Distributional National Accounts". These series follow a standardized methodology, described in Alvaredo et al. (2020), that however needs to be

country. To my knowledge, the only other study correcting official survey estimates in the region is van der Weide et al. (2016), which uses housing price data to estimate the top tail of the income distribution in Egypt. They find that inequality levels are way higher than existing survey-based estimates. They however cannot recover the full distribution of national income in the absence of administrative fiscal data. Other studies have investigated the roots of the puzzle such as Devarajan and Ianchovichina (2018) who study complementary sources of dissatisfaction including dissatisfaction with the quality of public services, the shortage of formal-sector jobs, and corruption.

[4]The narrative lasted as there was actually no estimates of income inequality in the country before this study. The last income share figures published for Lebanon date back to 1960 (Ministry of Planning, 1960). The only recent study available is based on information on consumption from survey data and focuses on poverty (Laithy et al., 2008).

[5]As other protests in the region, more social justice was among the main demands of the Lebanese who took the streets in October, 2019. It is significant that the trigger of the uprising was a new tax on WhatsApp and other mobile applications, adding to a long list of austerity measures announced earlier in the year and which disproportionately affected the most vulnerable among the population.

adjusted depending on the data quality and availability in each specific country. When exhaustive micro-data are available (as in the US or in France), it is possible to derive "sophisticated" and precise DINA (Piketty et al., 2017; Garbinti et al., 2018). However, when data sources are limited, as in China, Russia, Brazil or in the Middle East, one needs to make more assumptions to derive "simplified" DINA (Piketty et al., 2019; Novokmet et al., 2018; Morgan, 2017; Assouad et al., 2018). My results on Lebanon belongs to the second category, and estimate a "simplified DINA" for the first time in an Arab country. While estimates are highly uncertain, the results on inequality are robust. This demonstrates that the relative high income per capita in Lebanon, as in other countries in the region such as Egypt or Jordan, might be driven by a rich and small group of people at the top, and hide high poverty levels.[6]

Second, this paper contributes to a political economy literature across social sciences that studies how specific institutional arrangements create incentives for elites to appropriate public resources and extract rents at the expense of the majority of citizens (Acemoglu and Robinson, 2008; Acemoglu, 2008; Atkinson, 2015). The results provide quantitative support to a large literature on the Middle East as a whole and on Lebanon in particular, which has long assumed that inequality was quite high in Lebanon, due the country's well-documented crony capitalism, sectarian clientelistic networks and extreme levels of corruption (Diwan et al., 2019; Rijkers et al., 2017; Traboulsi, 2012a; Gaspard, 2004).

The remainder of the paper is organized as follows. In Section 2, I describe the data sources and methodology used. Section 3 presents the results on the levels of income inequality in Lebanon between 2005 and 2014 and compares them to other countries. Section 5 concludes.

2 Data and Methodology

This paper uses five main data sources: household surveys, national accounts, public finance reports, wealth rankings and importantly newly available fiscal micro data. I combine these sources in a systematic manner, following the "Distributional National Ac-

[6]The fact that most countries in the region are officially classified as "middle income countries" might partly explain why the region is relatively understudied in development economics. Alvaredo et al. (2019) builds on the results for Lebanon to estimate inequality statistics at the regional level between 1990 and 2016.

counts" (DINA) guidelines (Alvaredo et al., 2020). This standardized methodology uses the same data-sources for all countries in order to produce estimates of the distribution of national income comparable across time and space. It broadly consists of three main steps: (1) estimating the country's income distribution using household survey data, (2) correcting the income levels at the top of the survey distribution with fiscal data and Pareto-Interpolation, (3) adjusting the final distribution to account for missing fiscal incomes (due to tax evasion, avoidance or exemptions), using national accounts and rich lists published by magazines. The approach adopted for Lebanon follows the same structure, with some adaptations due to the data format and quality described in the following sections. An online appendix that includes all raw data sources and computer codes is available at https://wid.world/country/lebanon/.

2.1 First Step: Estimating a Survey Income Distribution

Lebanese survey data are scarce. Three nationally representative surveys have been undertaken recently, in 1997, 2004 and 2007, but the Lebanese Central Administration of Statistics (CAS) is not allowed to share data with researchers. Only Laithy et al. (2008) got access to micro-data on consumption and could estimate the bottom of the consumption distribution.[7] The only existing figures on the entire income distribution date back from the first nationally representative survey conducted in 1960 and documents large income disparities, with the richest 4 percent receiving 32 percent of total income while the following 14 and 32 percent have respectively 28 and 22 percent. The remaining half of the population is left with 18 percent of the national income, including 2 percent for the poorest 9 percent (Ministry of Planning, 1960).

I unfortunately could not access micro-data on income. I therefore used two tables published in official report by the CAS and which indicate the household frequencies for thirteen income groups, for 2005 and 2007 (before and after the 2006 war). Using the generalized Pareto interpolation techniques developed by Blanchet et al. (2022), I estimate the full distribution of income expressed in generalized percentiles for the two years.[8]

[7] They document that nearly 8 percent of the population, that is 300,000 individuals, live under conditions of "extreme poverty" (less than US$ 2.40 per day) and are not able to meet most basic food and non-food needs. They however find a relatively low Gini coefficient of 0.37.

[8] Generalized percentiles (or g-percentiles) are 127 income groups along the income distribution: 99 for the bottom 99 percentiles, 9 for the bottom 9 tenth-of-percentiles of the top percentile, 9 for the

Limits Four main limitations should be stressed. The first one is related to the unit of observation. In order to follow the DINA guidelines, I take the adult individual (i.e. aged 20 and more) as the basic unit. However, there is no information on the average number of adults in each household, by income bracket. The information is available in reports published by the CAS for the 2004 surveys, and in more recent waves of the Gallup World Poll (2015-2020 waves). Tables A1 and A2 shows the estimates of the average number of adults by household along the income distribution in to the two sources. In 2004, poorer households have on average less adults, while between 2015-2020, poorer households have on average more adults (the pattern holds when looking at each wave of the Gallup Poll individually). It is however difficult to say whether the change in the pattern observed between 2004 and 2015-2020 corresponds to a real change or is a methodological issue (for example, due to a large difficulty to access poorer households in 2004). I therefore take as benchmark the average number of adults per household by income group given by the 2004 data (where the number of adults is smaller among poorer household, which yields to more conservative estimates). I also compute variants (1) assuming that income is equally split between adult household members across all income brackets or (2) assuming that the average number of adults by household by income group is given by the 2015-2020 World Gallup surveys (where high earners have fewer children than average, therefore yielding to higher inequality estimates).

Second, the survey tabulations do not provide detailed information on income categories. We therefore do not know which income type is included in the overall "household income" variable and how the income concept captured in the survey data matches the one from the fiscal data and from the national accounts.

The third issue concerns the years without data. I only use the 2007 survey data. More specifically, I use the tabulation titled "before the war" to estimate the 2005 and 2006 distributions and the tabulation "after the war" for the following years. I then anchor all income distributions to the relevant annual average income, that is for every year, I proportionally upgrade income levels for all percentiles so that per adult average income coincides with per adult average national income observed in the WID macroeconomic database. By construction this has no impact on income shares (inequality levels are the

bottom 9 one-hundredth-of-percentiles of the top tenth-of-percentile, and 10 for the 10 one-thousandth-of-percentile of the top one-hundredth- of-percentile. The interpolation code is available at http://wid.world/gpinter/. This method allows the estimation of income distribution using tables with even few income groups.

same for the 2005-2014 period). This means that I cannot draw robust conclusions on the dynamics of inequality, but only on the levels. In particular, the effect of the large Syrian refugees influx after 2011 on inequality is not taken into account, except through their aggregate effect on average income. I however use household tabulations for the year 2004 to estimate the income distribution in 2005 and 2006 instead, as robustness checks.

Finally, the ratio between total survey income and national income equals 37 percent in Lebanon, which is quite low by international standards. In many developing countries and in particular in regions with extreme levels of inequality, this ratio typically varies between 40-50 percent (Assouad et al., 2018). Lebanon has also a relatively lower coverage compared to other Middle Eastern countries.[9]

2.2 Second step: Fiscal Correction of the Survey Distributions

The second step consists in correcting the top of the survey distribution using fiscal data. Inequality statistics based on surveys are seriously downward biased, due to under-reporting, truncations, top coding problems and small sample bias (Bourguignon and Morrisson, 2002; Dowrick and Akmal, 2005; Lakner and Milanovic, 2015; Jordá and Niño Zarazúa, 2019). Besides, survey data often only covers a small share of total national income, especially in developing countries. To the extent that this missing income generally accrues to relatively small groups of the population, this implies that survey-based statistics may severely lead to biased estimates of income inequality. To tackle this issue, some studies have attributed all missing income to the top 10 percent income recipients, or use Pareto-type imputations to distribute the missing income (Lakner and Milanovic, 2015; Jenkins, 2017). Researchers have also increasingly used fiscal data to correct the top tail of the income distribution as they do not suffer from sampling errors given that each citizen has to file a tax return above a certain income level. If fiscal data also present loopholes, due to tax avoidance, evasion or exemptions, or due to the size of the informal sector, they nevertheless offer more precise inequality estimates than estimates based on survey data only (Atkinson and Piketty, 2007; Yonzan et al., 2021).

My strategy is therefore to combine survey and fiscal data using the "generalized Pareto interpolation" method developed by Blanchet et al. (2022). This strategy is par-

[9] See Table 2, p6 in Alvaredo et al. (2019), which displays the average ratio (total survey income)/(national income) for all countries in the Middle East with survey data.

ticularly suitable to the Lebanese case, as the micro-fiscal data I collected are of much higher quality than the survey data, which is rarely the case in other contexts. In the rest of this section, I briefly present the Lebanese personal income tax data and describe the correction procedure.

2.2.1 The Lebanese micro-fiscal data

The fiscal data used in this paper are micro tax records of incomes taxed under the Personal Income Tax (PIT) and which were shared for the first time by the Ministry of Finance. The Lebanese PIT, created in 1959, is a schedular, progressive and individual tax which taxes separately:

1. Labor income (salaries, wages, bonuses, allowances, life annuities, pension payments, and other benefits in cash and kind) at marginal rates ranging from 2 to 20 percent

2. Some business incomes (profits made by self-employed individuals, partners in partnerships and individuals in small corporations) at rates ranging from 4 to 21 percent

3. Rental revenues from built property, at rates ranging from 4 to 14 percent.

The database covers approximately 14 percent of the adult population. Each observation corresponds to the annual declaration of one taxpayer and the three sources of income listed above are reported separately. For business income and wages, gross income (before any deduction and gross of expenses) and taxable income (after deductions of charges and benefits) are reported. For rental revenues, only taxable income is reported.

The database therefore includes individuals with very low income - mostly low wages. These individuals are exonerated via family abatements and therefore not taxed.[10] When removing them, we are left with approximately 5 percent of the adult population. These individuals, however, are unlikely to represent the "true" 5 percent richest Lebanese or their real income levels. Some individuals within this top 5 percent group have only one source of income reported - mostly labor income - while richest individuals tend to

[10]Since 1999, family abatements are fixed at 7,500,000 LBP (5,000 US$ per year, 415 US$ per month) for all individuals, with an additional abatement of 2,500,000 LBP (1,660 US$ per year) if the individual is married and the spouse is not working, and a 500,000 LBP (330 US$ per year) compensation for each child, up to 5. If the spouse earns an income subject to the Income tax, each spouse benefits from the first abatement, and one of the two from the children compensations. Hence, the exemption thresholds vary between 415 US$ (for a single individual) and 690 US$ (for a married individual, whose spouse does not work and who has five children) according to the individual's family situation. (Corm, 2012, p.283) estimates with additional demographic data that the exoneration threshold equals 600 US$ on average.

receive income from several sources. More importantly, the PIT does not cover most capital incomes (imputed rental revenues of persons living in their own dwelling, dividends incomes, board member appropriations from profits and interest incomes, including interest on bonds and treasury bills), which are taxed under another regime at a flat rate or sometimes simply exonerated, as capital gains (Daher, 2002, p.77-81).[11] The database also does not cover some incomes due to tax avoidance or tax evasion. Given that these incomes often accrue to the richest individuals, the PIT is likely to underreport actual income levels.

Following recent research in inequality measurement by Yonzan et al. (2021), which has shown that the major source of discrepancy between survey and tax data is found in correspondence to the top 1 percent of the income distribution, I only focus on the top 1 percent individuals in the micro files, hereby following most empirical studies combining survey and fiscal data in other contexts (Novokmet et al., 2018; Piketty et al., 2019). The same caveat applies to this group, which might not represent the "true" 1 percent richest individuals either. However, this is the best that can be done to use fiscal data, and improve survey-based estimates. This means that the estimates derived should be regarded as lower bound estimates.

2.2.2 Correcting the top of the distribution

Given that the tax records only provide information on the total gross income of an individual or on its taxable income, I need to make assumptions to obtain the actual individual fiscal income (pre-tax, pre-deductions fiscal income but net of expenses). In my benchmark series, I assume that taxable income equals 80 percent of total fiscal income.[12] Next following other empirical works estimating "simplified DINA", I consider that the survey distribution estimated in step 1 is reliable for the bottom 80 percent of the distribution (below the 80th percentile, $p_1 = 0.8$) and that the fiscal data are reliable for the 99th percentile and above ($p_2 = 0.99$). In order to link the two distributions, I assume that the quantile ratio upgrade factor $f(p)$ rises piecewise-linearly from $f(p_1) = 1$

[11] Business incomes made by incorporated companies, such as joint stock companies and limited liability companies are either put in reserve and serve for the company self-financing - and therefore not taxed- or they are distributed as interests or dividends to the partners - in this case they are not taxed under the PIT, but subject to a flat tax rate for revenues from moveable capital (Daher, 2002)

[12] Total taxable income is the sum of taxable business income, wages and housing rents. See Section 3.5 for robustness checks on the impact of these two assumptions.

to the observed fiscal/survey ratio between p_1 and p_2, $f(p_2)$, so as to generate a smooth and convex Pareto curve (Blanchet et al., 2022). I then apply generalized Pareto interpolation techniques to the corrected tabulations to obtain the full distribution of fiscal income among equal-split adults, by g-percentiles, between 2005 and 2014.[13] While recent research has shown that survey and tax data seem to start diverging at $p = 0.90$, I choose to use the survey data up to the 80th percentile as it yields to more conservative estimates (Yonzan et al., 2021).

2.3 Third step: correcting for missing incomes

As mentioned above, the fiscal data miss most capital incomes as well as incomes which evaded taxation, exempted from taxation and incomes made in the informal sector. The last and final step of the estimation procedure corrects for the missing incomes. This third steps itself contains three main sub-steps described in the rest of this section.

2.3.1 Estimating and reallocating the amount of capital income missing

First, I estimate the size of the missing capital income in terms of national income. A natural way to recover the macroeconomic amount of missing income, including income not taxed under the PIT data, is to look at national accounts. However, in Lebanon, national accounts are of very poor quality and are not disaggregated enough. I therefore look at Public Finance reports, which give for each year the amount of tax revenues collected for each tax.[14] I recover the missing amount by dividing the revenues collected from the different income sources by the corresponding tax rate in force in the legislation.

I find that non-reported and tax-exempt capital incomes represent approximately 20 percent of national income. Then, to estimate the final distribution of total personal income (y_p), the sum of fiscal income (y_f) and missing income (y_m), I first assume that y_m follows the same distribution as wealth below for the estimation of the wealth distribution. As for the correlation structure between y_f and y_m, I use the family of Gumbel copulas, with Gumbel parameter $\theta = 2$ (Piketty et al., 2019; Novokmet et al., 2018).[15] In order to

[13] I also provide several variants based upon different piecewise-linear profiles for the upgrade factor between $f(p_1)$ and $f(p_2)$, and the share of the total distribution covered by the survey data (see Section 3.5).

[14] The Public Finance Reports are available online, on the website of the Lebanese Ministry of Finance, http://www.finance.gov.lb/en-us/Finance/Rep-Pub/DRI-MOF/PFR

[15] See the detailed computations in the Appendix and section 3.5 for variant series depending on the

compute the joint distribution of fiscal and non fiscal income, I therefore need to estimate the distribution of wealth in Lebanon as I assume that (y_m) follows the same distribution.

2.3.2 Estimating the Lebanese Wealth Distribution

Wealth data are scarcer than income data in Lebanon. I first use billionaires' lists, published by Forbes and the magazine Arabian Business to compute the ratio of billionaires' wealth to national income. I use this as a proxy to compare the "weight" of billionaires in various countries' economies. As displayed in Figure 1, billionaires' wealth represents 30 percent of total national income on average over 1990-2016, surpassing by far what we observe in other countries using the same data. The conclusion is similar if we look at the average between 1990 and 2005 or 2005 and 2016. This relative important "size" or weight of billionaires' wealth, expressed as a function of national income, suggests that wealth is more concentrated in Lebanon.

Then, given that there is no survey on wealth for Lebanon, I proceed as follows to estimate the Lebanese wealth distribution. I compute an average standardized distribution of wealth for the US, France and China, for which we have reliable estimates of wealth inequality. More precisely, I divide all thresholds and bracket averages for all percentiles by the average wealth, and compute the arithmetic average for the three countries.[16] Variations across countries and over time in these standardized wealth distributions mostly happen above p0=0.99, that is, for the bottom 99 percent of the distribution, average wealth is relatively stable. Therefore, I take the same normalized distribution for Lebanon below p0=0.99 as the average US-France-China normalized distribution, hereby assuming that wealth is at least as concentrated in Lebanon as in countries with available data.

Then, I need to estimate the Lebanese average wealth to derive the final wealth distribution. However, it is currently difficult to estimate total wealth, as no household survey or tax data with information on wealth are available, and national accounts are not disaggregated enough to provide estimates on total household wealth or total public wealth. I therefore also need to make some assumptions. I compute an annual average wealth/income ratio for all countries with available data on WID.world. I find that, on average, wealth represent at least 300 percent of total national income. I therefore consider that the average wealth in Lebanon for a given year t equals

total amount of missing capital income reallocated and the Gumbel parameter chosen.

[16] I take the data from WID.world, using the "*wid*" STATA command.

$\frac{Wealth/Income_{wid} \times NationalIncome_{Leb,t}}{AdultPopulation_{Leb,t}}$.

Once the average normalized wealth distribution computed and adjusted to match the estimate average wealth in Lebanon, I adjust the top of the wealth distribution to account for the relative weight of Lebanese billionaires. This is not obvious, as I need to link the 99th percentile to the few billionaires at the very top. To do so, I make assumptions on (1) the average number of adults per billionaire family n, to know how many individuals benefits from the Lebanese billionaires' wealth, and (2) on the correction profiles to link the normalized wealth distribution until the 99th percentiles towards the billionaires.

To summarize, this procedure consists in assuming that the Lebanese total wealth and wealth distribution are similar to what we observe in other countries on average, and to correct the top of the distribution by taking into account the relative importance of the Lebanese billionaires' wealth.[17]

2.3.3 Additional data sources: offshore wealth

I also look at the only other existing sources on wealth in Lebanon: statistics on offshore wealth shared (or leaked) by offshore financial centers. I use data from the Swiss National Bank, the Bank for International Settlements, and leaks from HSBC Switzerland (the "Swiss Leaks") and Mossack Fonseca (the "Panama Papers") analyzed by Zucman (2013) and Alstadsæter et al. (2018). These sources disclose bilateral information on the total amount of bank deposits held by foreigners from a given country in their banks.[18]

I follow Alstadsæter et al. (2018), who use these sources to distribute offshore bank deposits across countries, and I estimate the total amount of offshore wealth held by Lebanese. Lebanon was not included in Alstadsæter et al. (2018)'s work, as the authors assumed that all deposits registered as Lebanese were actually held by residents from other countries given Lebanon's status of tax haven (i.e they assumed 100 percent of bank deposits registered as Lebanese actually belong to shell companies owned by non-Lebanese). This assumption is extreme, and in practice, a share of these deposits actually belongs to Lebanese, although it is currently difficult to estimate this share. Relaxing this

[17] See section 3.5 for robustness check on the assumption made to estimate the Lebanese wealth inequality. This methodology is also used for other Middle Eastern countries in Alvaredo, Assouad and Piketty (2017) and for Russia (Novokmet, Piketty, Zucman, 2018).

[18] For a more detailed description of these sources and their limits, see Appendix section A.3.4 and (Zucman, 2013, Section III), (Alstadsæter et al., 2018, Section 3.1) and (Alstadsæter et al., 2019, Sections I.A and I.B).

assumption and assuming as benchmark that 75 percent of deposits in offshore centers registered as Lebanese are actually held by non-Lebanese, I build estimates of the amount of wealth held by Lebanon in all the world's offshore tax havens.[19] These estimates are likely to be lower bounds, as we do not have information on the total amount of Lebanese financial wealth not captured by these data sources.

I also look at a new and unique micro-dataset which details the ownership of about 800,000 properties in Dubai, analyzed by Alstadsæter et al. (2022) to document cross-border real estate investments pattern and non-financial offshore wealth. This source includes Lebanon and details the number of properties actually owned by Lebanese in Dubai, which allows the authors to estimate Lebanon's real estate investments in Dubai in absolute amounts and relative to its GDP.[20] Such investments are likely to be informative of total real estate offshore wealth as Dubai market constitute a sizable fraction of the offshore real-estate market. Alstadsæter et al. (2022) estimate the total market value of properties in Dubai at USD 533 billion in 2020, among which about 27 percent are owned by foreigners. This is twice as large as in London, although Dubai is only a third the size of London (Bomare, 2019).

What can these sources tell us about inequality levels in Lebanon? Financial offshore data can be used to directly improve inequality estimates when the amounts of wealth they report are matched to administrative income and wealth records. To my knowledge, this has been possible in Norway, Sweden, and Denmark only, thanks to a cooperation with Scandinavian administrations (Alstadsæter et al., 2019) and such an analysis is currently impossible to make in Lebanon. The size of total offshore financial wealth data can however be informative on the overall national (onshore) wealth accumulation in a given country. This, in turn, can shed light on the distribution of income and wealth as the rise in total wealth to national income ratio and in particular the rise in private wealth to income ratio has been associated with the rise in inequality levels globally (Piketty and Zucman, 2014; Alvaredo et al., 2018). In the Lebanese case, however, it is currently difficult to estimate total wealth as explained above. Still, in the same way as billionaires' total wealth can be informative, the size of Lebanon's offshore wealth relative to its economic and demographic size and compared to the rest of the world, could inform us on

[19] I also compute variants where this share equals 90%, 50% and 25%.

[20] The properties can be linked to actual Lebanese and the problem of ultimate beneficiaries that existed for financial offshore wealth due to Lebanon's tax haven status was not a problem for these estimations.

the total amount of (onshore) wealth in the country as well as on wealth concentration, as offshore wealth tends to be highly concentrated at the top of the wealth distribution in countries for which data exist (Alstadsæter et al., 2019). Besides, research has shown that large amounts of offshore wealth are more likely in presence of natural resources or in economies based on rents and in countries with high levels of corruption and instability, which are also associated with high levels of inequality (Alstadsæter et al., 2018; Andersen et al., 2017). As explained in more detail in Section 4, Lebanon's political economy fits all these criteria and is likely to generate large amount of income inequality.[21]

2.3.4 Adjusting the final series to macroeconomic average income

Figure 2 shows the share of the total national income covered by each data source. At the end of the three corrections, there are still 30 percent of the total national income missing, which is quite large but similar to other developing countries with relatively high levels of inequality (Assouad et al., 2018, Figure 1). The remaining 30 percent contains a combination of incomes that evaded taxation and incomes made in the informal sector. The latter are partly taken into account in the bottom on the distribution by the survey data, so a large share of this 30 percent should probably accrue to the top groups. I nevertheless chose in my benchmark to proportionally upgrade all income levels at all percentiles so that per adult average income always coincides with per adult average national income (therefore keeping the income distribution and shares constant).[22]

Limits My estimates of wealth inequality used in this step are highly uncertain. I simply assume that Lebanon should have a total amount and a concentration of wealth that are at least as high as what we observe in other countries. The only data used are the billionaires' worth list, which are particularly fragile and volatile in Lebanon (only 7 billionaires are reported, and some years do no have data). Using this data source to identify a trend in wealth concentration is impossible. Nevertheless, the stable and

[21] The link between the size of offshore wealth and inequality is not always straightforward. Amounts of offshore wealth are not easily explained by regime types or the tax structure for example which can be a strong predictors of inequality. For example, among countries with a large stock of offshore assets one can find high tax countries - Denmark, Norway- as well as low-tax countries - Korea, Japan (Alstadsæter et al., 2018, page 90).

[22] An alternative would be to allocate proportionally the 30 percent toward the bottom 50 percent income group. This implicitly assumes that this amounts mostly come from the informal sector and/or goes to the poorest, which is not credible. Doing so nevertheless does not affect much the main conclusions (Results available upon request).

high concentration revealed in the rich lists reflects something real about the Lebanese wealth distribution and the method might at least give a good first approximation of the concentration of wealth in the country. Given the political economy of the country, this assumption is credible and the high levels of inequality found not so surprising (see the discussion section 4). Reassuringly, estimates on wealth inequality are only used in the third step, which has a limited impact on the final income distribution, compared to the fiscal correction (see Section 3.5 and Figure A6 for the decomposition of the effect of each correction).

3 Results

3.1 Extreme income inequality levels

The main result of the paper is summarized in Figure 3. Income is extremely concentrated in Lebanon, with the richest 10 and 1 percent adults accounting for almost 55 and 25 percent of total national income, on average throughout the period. In contrast, the bottom 50 percent of the Lebanese population is left a bit more than half of what is accruing to the top 1 percent. Besides, the Lebanese income distribution appears to be extremely polarized. Figure 4 gives a sense of the extent of the concentration: the top 0.1 percent of the adult population, that is approximately 3000 individuals receives approximately the same amount of national income as the bottom 50 percent, that is 1,5 million individuals. The middle 40 percent of the distribution, which broadly speaking represents the middle class, is left with close to 30 percent of the total national income, which is far less than the top 10 percent. This is quite different from what we observe in Europe or in the United States, where the middle class receives more or about the same income share as the richest 10 percent over the same period (see Figure 5).

How should we interpret the permanent rise observed in 2007? The year 2005 marked the beginning of a large political instability and is therefore analyzed as a milestone in Lebanese modern history (Corm, 2012). During the following years, the country witnessed bombings, assassinations and attempted assassinations of politicians, public figures or journalists, while numerous government changes took place. This instability culminated in 2006 with the Israeli war, which might have impacted poverty and inequality through the massive destruction of infrastructures and houses it inflicted (more than 210,000 housings

and destroyed 25,000, leaving more than 300,000 people displaced and homeless) and the sudden stop in income flows from tourism, one of the Lebanon's main sources of income, and the unemployment it triggered (Verdeil, 2007).

The increase observed could as well be a methodological discontinuity and not linked to this political instability. The benchmark results are based on two income tabulations from the 2007 survey, reporting income "before and after the war". When using the 2004 survey income tabulations to estimate the bottom of the distribution in 2005 and 2006 instead, I do not find any discontinuity in 2007 (see Figure A3). I chose to use the 2007 survey to keep the same income definition and because results are more conservative. The most robust results are therefore about inequality levels and not the dynamics.

3.2 The distribution of economic growth

Between 2005 and 2014, real national income increased steadily, with a cumulated growth rate of almost 50 percent (Figure 6). However, if we look at the per adult national income, it follows a bell-shaped curve, increasing between 2005 and 2010 and then decreasing due a sharp population growth of 50 percent, mostly following the major inflow of Syrian refugees. We therefore observe a slight impoverishment of the Lebanese population after 2011, which lost on average 2 percent of its yearly real income. The series computed in this paper allow me to determine which income groups did or did not benefit from growth. Figure 7 shows that the bottom 90 percent of the adult population experiences a negative growth, far below the national average and lost almost 14 percent of their real income, while the top 10 percent enjoyed very large growth rates.[23] In order to understand the driving forces behind these high growth rates at the top, I examine the respective role of business income, labor income and rental revenues using the fiscal micro-data. Figure 8 decomposes top groups by income categories for the years 2005 and 2014. This figure should be interpreted with caution as it only captures capital incomes subject to the PIT tax.[24] The negative growth rate of the top 0.01 percent seems to come from a sharp decline in rental revenues over the period, which translated into an increase in the share of wages. This might be due to the major property destructions that

[23]Except for the top 0.001 percent (that is between 25 and 37 adults over the period), for which the rate becomes negative again.

[24]This probably means that the micro-files might not exactly represent the top 1 percent but rather fractions of individuals in top groups (perhaps within the top 10 percent), as discussed previously.

happened during the Israeli war, as discussed above. However, as early as 2007, a massive reconstruction effort was made and demand on housing kept increasing while real-estate prices and rental income skyrocketed.

3.3 International comparisons

Figure 9 compares the top 10 and 1 percent income shares in Lebanon with series for Brazil, China, France, Russia, South Africa and the United States.[25] The conclusion is clear: Lebanon has one of the highest records of income concentration in the world, alongside South Africa and Brazil, often described as the most unequal countries in the world. Tables 1 and 2 present the income thresholds and averages within the different income groups, in 2016 Euro PPP in Lebanon and in other regions of the world. To be among the 1 percent richest Lebanese, one needs to make at least 111,185 € per year in 2016, for an average income of 399,101€, levels comparable to Western Europe. The magnitude of concentration however increases drastically within top groups, with an average income for the top 0.1 percent of 548,991€. To get a sense of the skewness of the Lebanese distribution, it is interesting to compare the average income within each group in Lebanon and in Western Europe. Until the top 1 percent, the average income is systematically smaller in Lebanon, representing 40 percent of the corresponding average in Western Europe for the bottom 50 percent and 90 percent for the top 1 percent. Within top groups, the ratio reverses to reach 140 percent within the top 0.01 percent and even 225 percent within the top 0.001 percent. In other words, in Lebanon the richest are as rich or richer than their counterparts in Western Europe, while the poorest are way poorer. The average income of individuals at the very top of the distribution in Lebanon is higher that levels observed in Brazil or South Africa, other extremely unequal countries.

3.4 Wealth inequality

Figure 10 (a) reports statistics on the average concentration of wealth for the 1990-2016 period, obtained using data from the annual Forbes and Arabian business rankings

[25] Comparison countries are chosen from the World Inequality Database among countries for which inequality series following the same DINA (Alvaredo et al., 2020) methodology are available - Russia, China, the United States and France- and countries with the highest levels of inequality reported in the WID database, namely Brazil and South Africa. There are currently no inequality estimates in the Middle East, so it is impossible to situate Lebanon within the region.

that cover the wealthiest Lebanese individuals.[26] According to my benchmark estimates, wealth is on average extremely concentrated with the top 10 and 1 percent of the Lebanese adult population gathering almost 45 and 70 percent of total personal wealth respectively.[27] These levels are substantially higher than in China and France and slightly higher than in Russia and the United States in the recent period (Figure 10, b).

I then use the only other source on wealth for Lebanon, bilateral statistics provided by the BIS and SNB, and estimate the total amount of offshore wealth held by Lebanese following Alstadsæter et al. (2018). Table A3 replicates their main results but includes Lebanon.[28] The country appears to favor Switzerland rather than other offshore financial centers. As shown in Figure A1, Lebanon owns more wealth in Switzerland than its share of world GDP would imply.

Figure 11 (a) replicates the main results from Alstadsæter et al. (2018) and displays the ratio of offshore wealth to GDP by country. Lebanon appears to be an outlier with a ratio of 90 percent in the benchmark estimates, which assumes that 25 percent of deposits registered as Lebanese actually belong to Lebanese residents. If the fact that Lebanon is an outlier is probably due to its status of tax havens - and the fact that large amounts of funds assigned to Lebanon actually belongs to other countries, the ratio of Lebanese offshore wealth to GDP remains high (18 percent) in the most restrictive scenario, which assumes that 5 percent of deposits only are held by Lebanese. Figure 11 (b) displays similar results but focuses on MENA countries and including additional variants for Lebanon, depending on the assumptions made on the total amount of deposits actually held by Lebanese. If 10 percent of the deposits registered as Lebanese are indeed Lebanese, the ratio equals 35 percent, which is comparable to what is observed in Gulf countries.

Non-financial Lebanese wealth appears to be quite sizable as well. Figure 12 (a) reports the main results of Alstadsæter et al. (2022), who estimate the total value of real estate offshore wealth held in Dubai. Lebanon belongs to the top 20 countries by

[26] The only other existing estimates of wealth inequality in Lebanon are the one by Davies et al. (2016), which also use rich list and Pareto interpolation techniques. Unfortunately, as emphasized in Novokmet et al. (2018), their estimation technique is not explicit (one cannot replicate their results, and there is no online code available).

[27] Given the uncertainty surrounding the use of billionaires data, I only present averaged statistics over the period as the trends may not be reliable. In any case, the wealth share stay extremely high throughout the period, with a minimum for of 35 percent and 67 percent for the top 1 and 10 percent of the adult population (see Appendix A).

[28] I assume that 75 percent and not 100 percent of deposits registered as Lebanese are actually held by non-Lebanese.

size of Dubai property holdings to GDP, alongside other countries with extremely high levels of corruption by international standards and most often under autocratic rules or experiencing conflicts, such as Afghanistan, Syria, Yemen, Sudan, Eritrea, Azerbaijan, Tajikistan, or Kuwait, and Iran. Panel (b) shows average Dubai holdings per owner, expressed as a multiple of GDP per capita (a proxy for average income) in the investing country. These substantial amounts are concentrated in the hands of a small subset of Lebanese households (4,495 Lebanese owners, which corresponds to less than 0.1 percent of the adult population).

Despite the large uncertainty of the estimates, the amounts of financial and non financial wealth held offshore by Lebanese appears to be quite high, especially given the country's economic and demographic size.[29] This suggests that the total Lebanese wealth/income ratio is probably higher than average (and higher than the 300 percent assumed in this study) and that wealth inequality is probably quite large, given that offshore wealth tend to be concentrated at the top and to be high in countries with high levels of corruption and weak institutions (Andersen et al., 2017).

3.5 "Simplified" but informative DINA: sensitivity analysis and checks

Given the lack of data and relative low quality of some sources used, I complement the standardized DINA methodology by a systematic sensitivity analysis that consists in clarifying each assumption made during the estimation procedure and how their combination impacts inequality levels. Such sensitivity analysis can take the form of a decision tree, highlighting an upper and lower bound estimates. Figures A2 to A10 show the impact of each hypothesis on the final estimates, from the first to the third step. While these figures show that the estimation choices are rather conservative, they do not provide information on the overall impact of each of them. This is why I replicated the entire procedure, by taking at each step either the most conservative or the least conservative choice in order to see how they cumulatively affect my results. Figure 13 shows the decision tree of this procedure. Two facts stand out. First, there is a large uncertainty in the estimation pro-

[29] As noted above the main sources of uncertainty remains the precise share of deposits registered as Lebanese actually by Lebanese residents; how the total fraction of Dubai real estate offshore wealth correlates with the global real estate offshore wealth; the rest of Lebanese offshore wealth which is not covered by available data sources.

cedure, with a difference of 20 percentage point between the lower bound and the upper bound estimate, which is not surprising given the data limitation. Second, despite this high uncertainty, the main conclusions of the paper remain unchanged, with lower bound estimates that show extreme levels of inequality. It should be emphasized that the upper and lower bound estimates are not realistic. For an example, the lower bound estimates assume that there is only 10 percent of capital income missing, while government reports on tax revenues suggest that they should be at least as high as 20 percent.

4 Discussion: Why is inequality so high in Lebanon?

How did Lebanon reach such extreme levels of economic inequality? A large literature has shown how political institutions can shape development and the distribution of economic resources (Acemoglu and Robinson, 2008, 2019; Atkinson, 2015). The goal of this section is to review theoretical arguments explaining how specific institutional arrangements allow large inequality levels to emerge and persist. I will also systematically highlight how Lebanon fits these models, using existing empirical works mostly in political science and history.

4.1 Lebanon's consociational democracy and oligarchic system

One of Lebanon's most important features is its religious diversity. The country has eighteen officially-recognized religious groups, of which each Lebanese is identified as a member at birth. Lebanon is also the only society in the Middle East without a clear sectarian majority and with a large Christian population (Corm, 2012; Salibi, 1988). This specificity has led to the choice of establishing a consociational democracy at the country's independence in 1942. This system ensures the equitable sharing of power between the different groups, by imposing quotas in administrative and political institutions (Lijphart, 1969).

While designed to prevent civil conflict, such system can have perverse effects and seriously warp governance (Spears, 2002; Shapiro, 1996; Nordinger, 1972). In Lebanon, the consociational democracy led to the creation of a "party cartel", that is a coalition of elites whose political parties are ideologically at loggerheads but who have to share power, often through national unity governments. Due to their fragmented nature and ideological

disputes, such governments often fail to implement cohesive public policies, resulting in state paralysis (Parreira, 2020). They nevertheless manage to collude and form alliances to prevent any political opposition from emerging and to pass laws protecting their political and economic interests.[30] Theory suggests that when such political coalitions form and when there is diversity in preferences among the majority of citizens (which is the case in societies with strong religious cleavages), the wealthy elites' influence on policy choices is endogenously higher (Bandiera and Levy, 2011).

The result has been the development of rampant state-level corruption, allowing the elite to appropriate state resources for private gain to a higher degree than in other Arab countries (Leenders, 2012; Diwan et al., 2019).[31] It also led to the creation of mutually advantageous relationships with business elites (Traboulsi, 2012b; Diwan and Haidar, 2021). By getting richer, the Lebanese oligarchs had even more influence on public policy, which increased their incentives and ability to skew government policies in their favor and consolidate their electoral control (Stiglitz, 2013; Winters, 2012; Acemoglu, 2008). This dynamics can explain the extreme levels of inequality found. The next section details various policy choices that allowed the elites to get richer at the expense of the majority.

4.2 Mechanisms of elite predation and their distributional consequences

State retrenchment and low public good provision

A first consequence of the emergence of a party cartel is that Lebanon meets the definition of a corrupted and predatory state, where elites underinvest in public good provision and directly siphon state's resources (Parreira, 2020).

The Lebanese institutional system gives no incentives to the political elite to invest in societal welfare. Instead, the successive national unity governments provided meager public goods at a high cost, often through the procurement and allocation of state contracts

[30] There is a large theoretical debate on whether and under which conditions consociational democracy leads to the formation of a party cartel and create weak institutions. It is beyond the scope of this study to summarize this debate and to explain why a cartel did emerge in Lebanon. I take its formation as granted, and focus instead on the mechanisms through which it generated extreme levels of inequality. For more detail on this theoretical debate and on the historical conditions of the emergence of the Lebanese party cartel, see Parreira (2020)'s doctoral thesis and the historical works by Traboulsi (2012b).

[31] Lebanon's high levels of corruption, especially at the top of the state's institutions, has been widely documented (Leenders, 2012; Gaspard, 2004). Unsurprisingly, perception of corruption among citizens is among the highest in the world (Mahdi and Sanchez, 2019).

to politically connected enterprises (Leenders, 2012; Salti and Chaaban, 2010).[32] Despite being a middle-income country, Lebanon's infrastructure therefore ranks 113th out of 137 countries. Electricity provision is fourth worst in the world and only 15 percent of the country's roads are properly maintained (McKinsey, 2019). Waste management is highly inadequate by international standards, although the Lebanese governments spends seven times more per ton of trash on trash collection than spent in Syria or Jordan (Parreira, 2020). Almost 70 percent of the schools are private and the curriculum has not been updated since 1997.

An example illustrating the extent of elite predation is the direct looting of the Lebanese treasury, resulting in the third highest debt-to-GDP ratio in the word in 2019 (Halabi and Boswall, 2019; Salti, 2019). Since the 1990s, the state has issued public debt in the form of government bonds in Lebanese pounds. These bonds were mostly bought by domestic Lebanese banks and other public institutions, often owned by political elites, at extremely high interest rates. Most of the funds the state collected through the bonds were therefore used to repay the interests rather than to fund social welfare programs or public infrastructures. This direct profit scheme enriched bankers as well as anyone who bought the bonds, which included political elites who had issued them in the first place. Indeed, as much as 18 out of the 20 main Lebanese domestic banks have major shareholders linked to political elites, and 43 percent of assets in the sector could be attributed to political control (Chaaban, 2019).

Clientelistic welfare patronage

A consequence of the Lebanese political system and the state retrenchment it induces is the development of clientelistic relationships, that is the exchange of benefits and transfers from the elite against political support from citizens. Such arrangements can be used as informal insurance by vulnerable households and are therefore more likely to emerge when the central state does not provide sufficient public goods, as in Lebanon (Anderson et al., 2015; Bobonis et al., 2017). Clientelistic relationships are also more likely in societies with strong religious cleavages, where the fear of a change in the *status quo* at the benefit of one group motivates citizens to support patrons from their own community (Padró I. Miquel, 2007). In Lebanon, patrons can also rely on dense and long-standing religious

[32] Leenders (2012) gives detailed examples in the public health, mining, and state-owned airline sectors.

networks locally, which are key to maintain clientelistic undertakings, in the Lebanese and in other contexts (Cammett, 2015, 2014a; Finan and Schechter, 2012; Duarte et al., 2019; Anderson et al., 2015).

Clientelism can be associated with inequality levels in various ways. First, such arrangements have been shown to increase opportunities for rent-seeking locally and foster governance choices largely in the interests of the elite (Keefer, 2007). In Lebanon, they also exacerbated governmental allocative inefficiencies and religious biases in the distribution of public social spending in Lebanon (Cammett, 2014b; Salti and Chaaban, 2010). Finally, they contribute to reduce political accountability and maintain the *status quo* (Stokes et al., 2013; Padró I. Miquel, 2007), which allows the elite to extract large rents at the expense of the majority.

Advantageous fiscal laws and market concentration

The absence of constraints on the political elites also enabled them to design economic institutions that protect their interests.

First, Lebanon has a tax system that is more favorable to the richest. The system relies mostly on indirect taxation: Taxes collected indirectly represent 65 percent of total tax revenues in Lebanon, as opposed to 25 percent collected through direct taxation. Only 60 percent of the direct taxation is collected through a progressive scheme, via the Personal Income Tax (PIT) (Bifani et al., 2021). Additionally, as described in section 2.2.1 the PIT is schedular, which means that instead of taxing an individual's overall income, it taxes each income stream separately, which creates a lack of uniformity in the treatment of taxpayers. Specifically, the system taxes more individuals who draw all or most of their income from a single source, which is most often the case among low-income earners. Top marginal tax rates are also extremely low by international and historical standards, as shown in Figure 14. Finally, the fiscal law has many exemptions, benefiting mostly top income earners (Daher, 2002), and facilitates the use of offshore financial services by making Lebanon a tax haven itself and thanks to the bank secrecy in place in 1956. The relative large amounts of offshore financial wealth found are unsurprising in this light.

Second, since its independence, Lebanon has been alarmingly uncompetitive. The country has weak legal frameworks for promoting market competition and no indepen-

dent competition authority.[33] Half of Lebanon's domestic markets are considered either oligopolistic or monopolistic according to the latest available study commissioned by the Ministry of Economy and Trade (Gaspard, 2002; Wood et al., 2020).

Research has shown that higher levels of market concentration is a key driver of inequality (Harberger, 1954; Comanor and Smiley, 1975; Stiglitz, 2013; Atkinson, 2015). To give a concrete example, Lebanon's cement industry is dominated by three politically connected companies, which behave as a classic cartel and colluded to set prices (Wood et al., 2020). In 2019, a bag of cement in Lebanon cost around triples the international market price. This price was maintained as the cement cartel was able to create strong barriers to entry with the help of the government, which prevented the delivery of quarrying permits and blocked imports with high tariffs. As monopoly prices not only hurt consumers but also benefit shareholders, which are more likely to belong to top groups, such practices contribute to increase income inequality (Gans et al., 2019). Such practices have been documented by research and journalistic investigations in many other sectors, such as the pharmaceutical, airline, import-export and banking sectors (Leenders, 2012; Gaspard, 2004; Traboulsi, 2012b).

5 Conclusion

In this paper, I combine national accounts, survey, fiscal data and data on billionaire's wealth to estimate the national income distribution in Lebanon between 2005-2014. To the best of my knowledge, this paper is the first to use personal income tax records to study income inequality in a Middle Eastern country. I find that income and wealth are extremely concentrated and that the richest Lebanese caught the bulk of the national income growth under the period of study. The most plausible estimates found suggest that inequality is large and that this conclusion is robust to making alternative assumptions. These results put in perspective the so-called Lebanese economic miracle according to which Lebanon is a paragon of economic success in the Middle East with a relatively high average income per capita compared to other developing countries with similar structural characteristics. Such average is actually driven by top incomes and hides extreme levels

[33] Lebanon ranks 88th overall out of 141 countries in the 2019 Global Competitiveness Index by the World Economic Forum. For a detailed historical analysis on the emergence of the "financial and commercial oligarchy" that took control of Lebanon's economy with the help of the political class after the independence and until today, see Traboulsi (2012b)'s work.

of poverty. The study therefore contributes to answering the so-called "Arab Inequality Puzzle", by showing that low levels of inequality estimated in the region are probably due to large measurement error. It also contributes to a large literature in political economy that has often assumed that income inequality was high given the country's political economy and historically high levels of corruption, although the claim was not backed by data.

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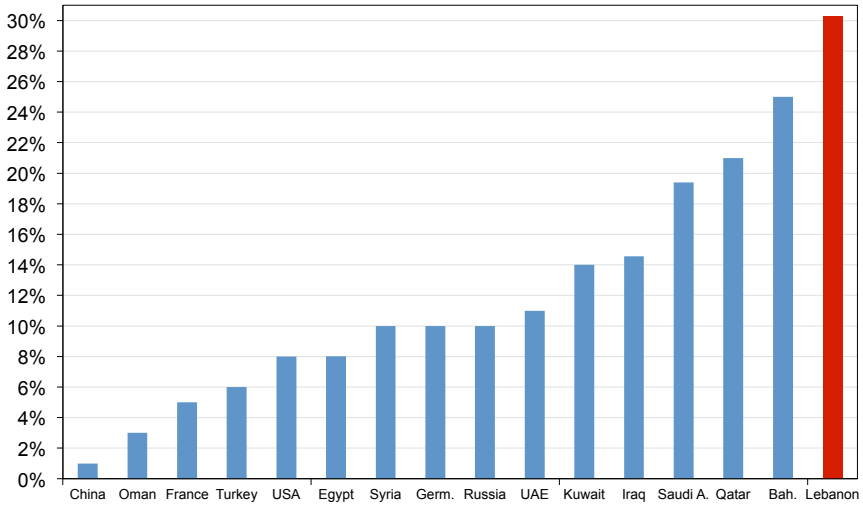
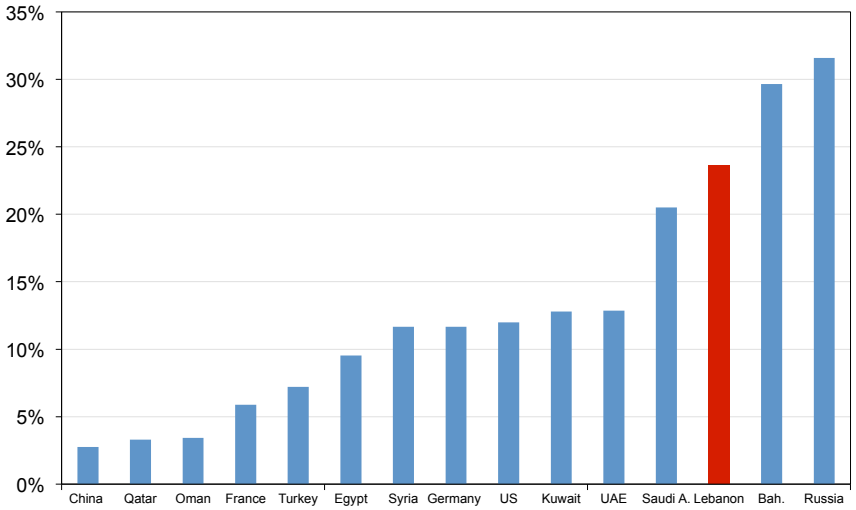
Figure 1: Billionaires' wealth as Share of National Income



(a) Average over 1990-2016 in selected countries



(b) Average over 2005-2016 in selected countries

Total billionaire wealth as a share of total national income (measured at market exchange rates), average over for 1990-2016 (a) and for 2005-2016 (b). For 1990-2005 Lebanon is ranked second below Qatar, with an average of 33 percent. Author's computation using rich lists from Forbes and Arabian Business magazines, for Middle Eastern countries.

Figure 2: From Survey to Taxable and Total National Income, 2005-2014

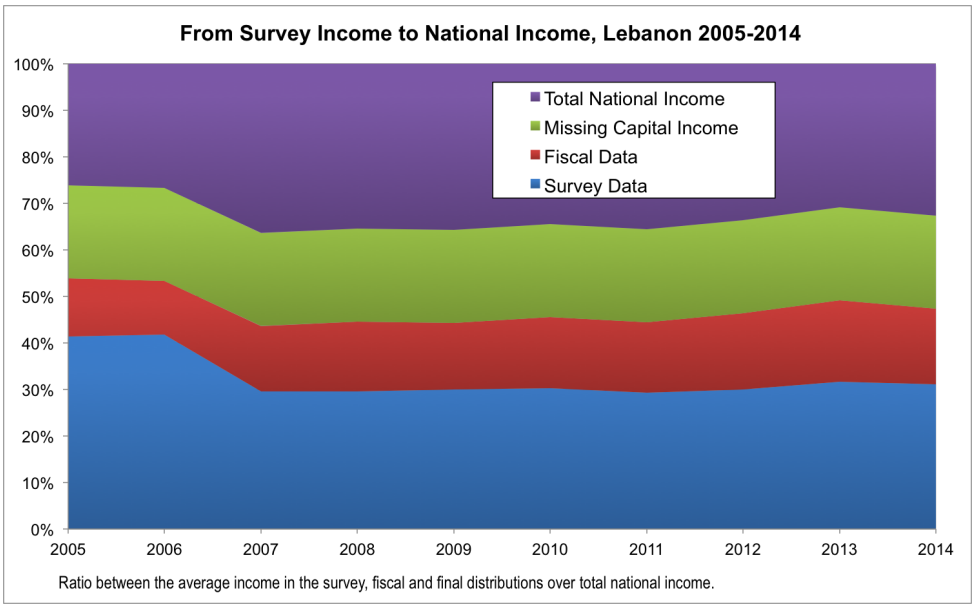
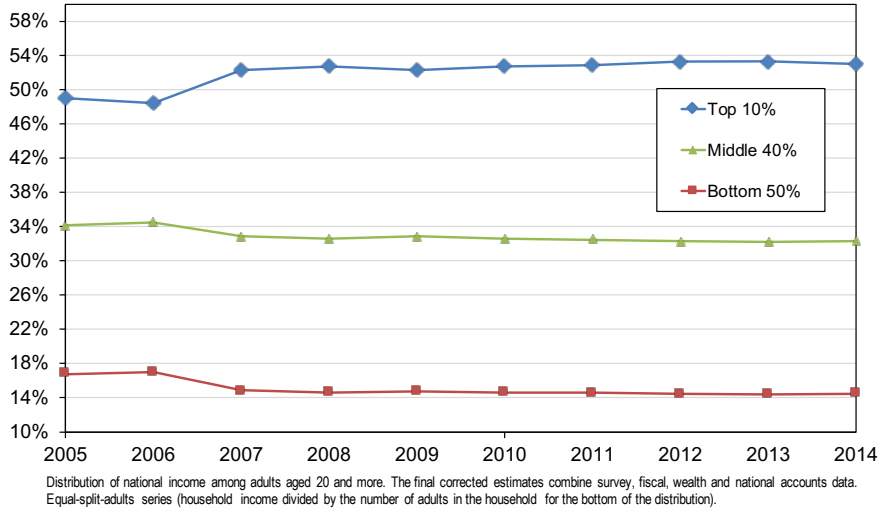


Figure 3: Income Shares in Lebanon, 2005-2014

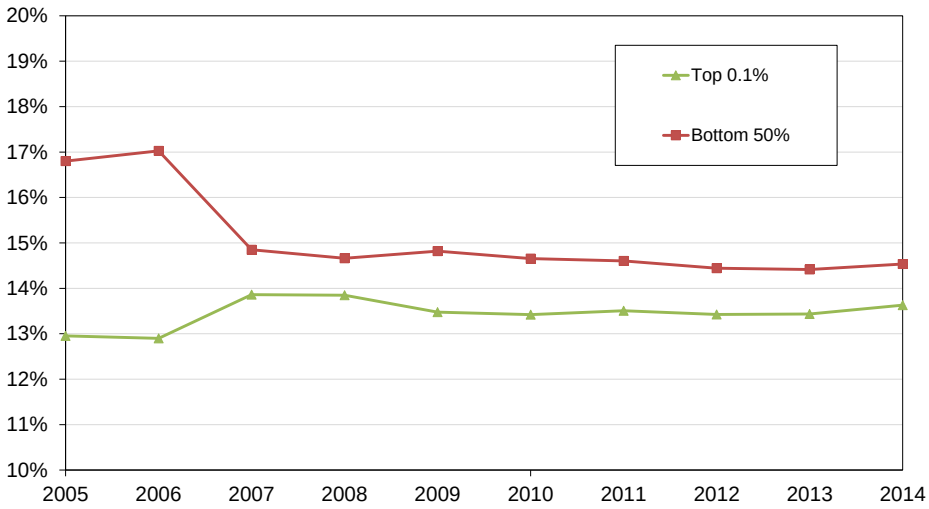


(a) Top 10%, Middle 40% and Bottom 50% income shares

(b) Top 1% income share

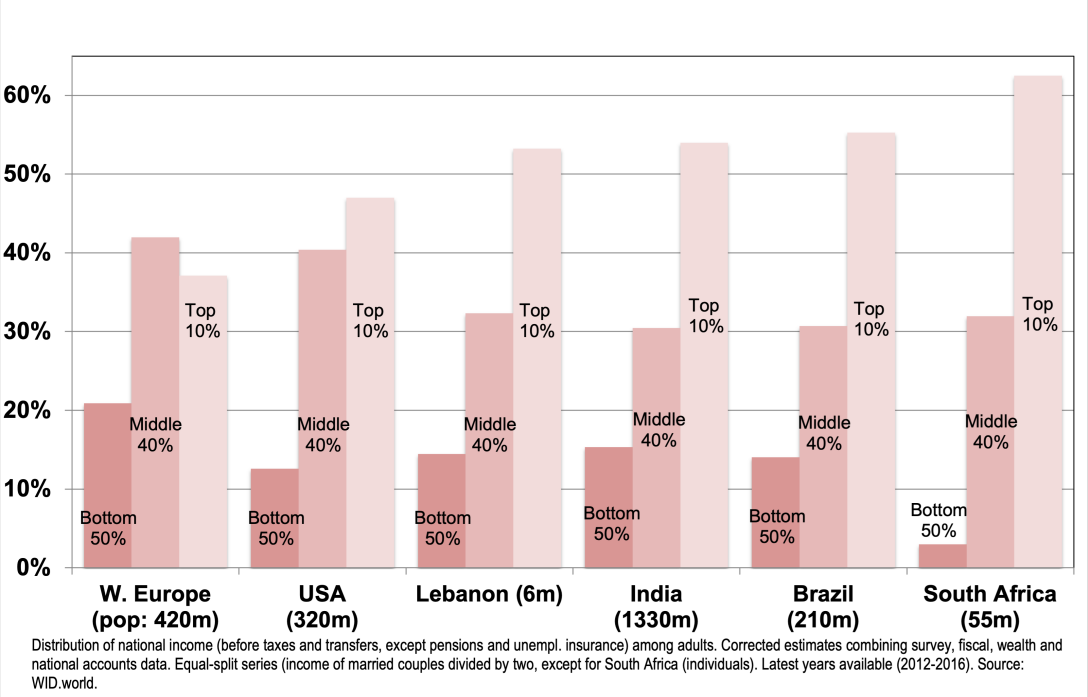
Distribution of national income among adults aged 20 and more. The final corrected estimates combine survey, fiscal, wealth and national accounts data. Equal-split-adults series (household income divided by the number of adults in the household for the bottom of the distribution).

Figure 4: Income Shares in Lebanon, 2005-2014: Top 0.1% vs. Bottom 50%



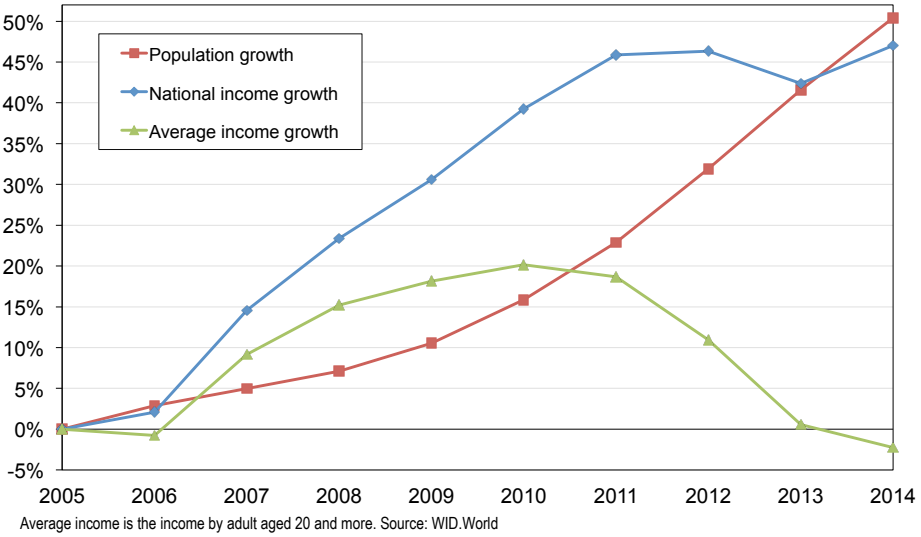
Distribution of national income among adults aged 20 and more. Corrected estimates combine survey, fiscal, wealth and national accounts data. Equal-split-adults series (household income divided by the number of adults in the household for the bottom of the distribution).

Figure 5: Income Shares in Lebanon, 2005-2014: International comparison



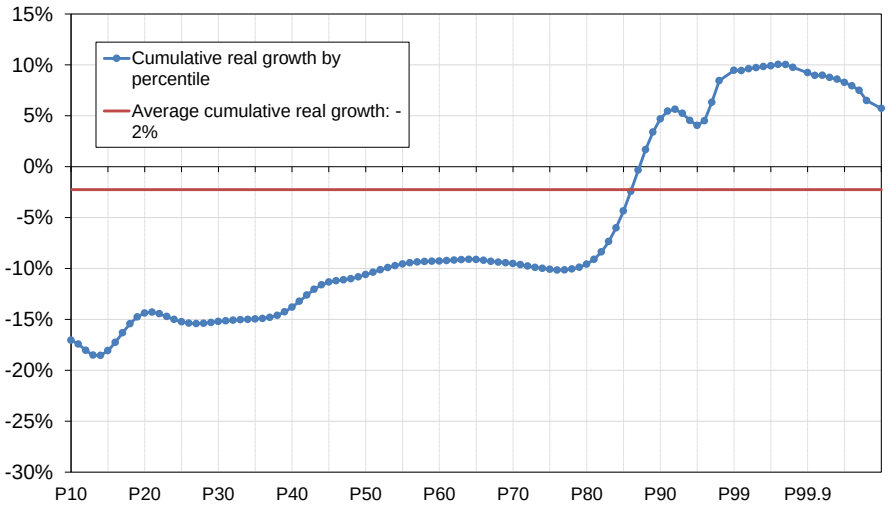
Source: World Inequality Database. For Lebanon: Distribution of national income among adults aged 20 and more. The final corrected estimates combine survey, fiscal, wealth and national accounts data. Equal-split-adults series (household income divided by the number of adults in the household for the bottom of the distribution).

Figure 6: Population vs. income cumulative growth since 2005



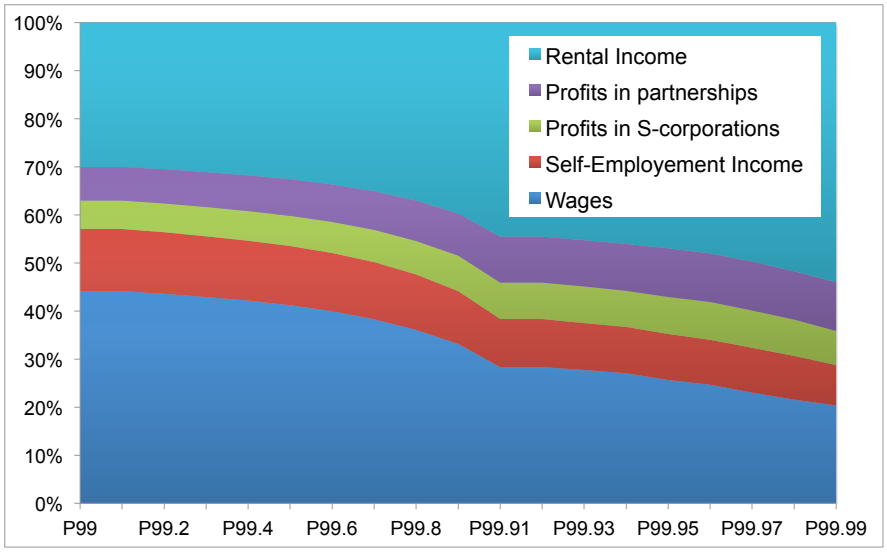
Average income is the income by adult aged 20 and more. Source: WID.World

Figure 7: Cumulative real growth by percentile, Lebanon 2005-2014

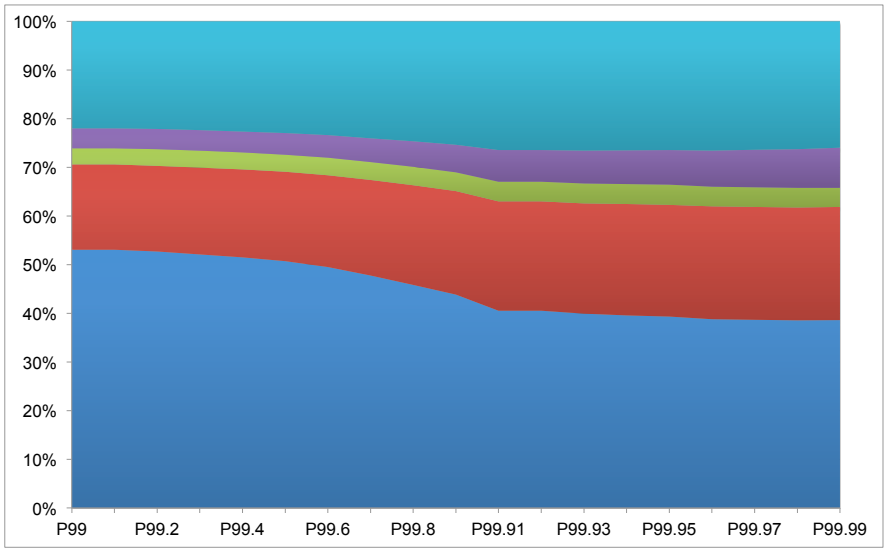


Distribution of national income among equal-split adults aged 20 and more (household income divided by the number of adults in the household for the bottom of the distribution). The final corrected estimates combine survey, fiscal, wealth and national accounts data. Equal-split-adults series

Figure 8: Composition of top income by income categories: 2005, 2014



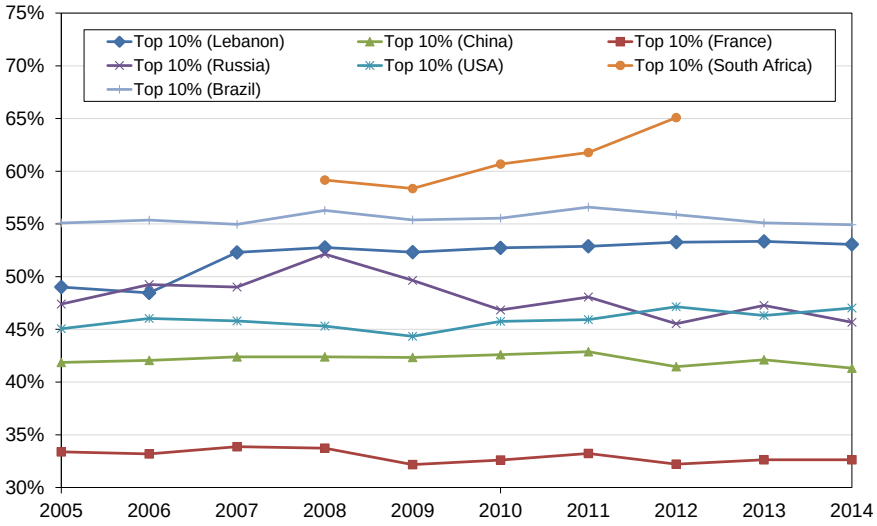
(a) 2005



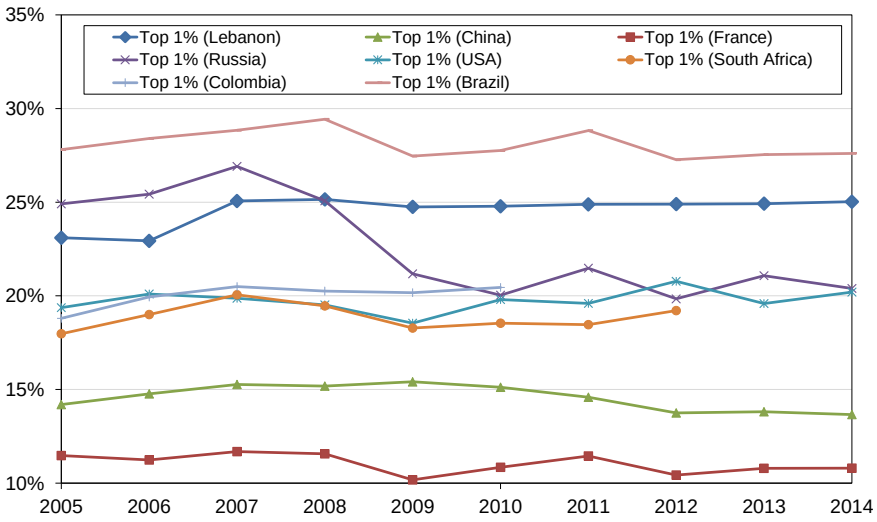
(b) 2014

Source: Author's computation using the fiscal micro files.

Figure 9: Top income shares: Lebanon vs. Selected countries, 2005-2014



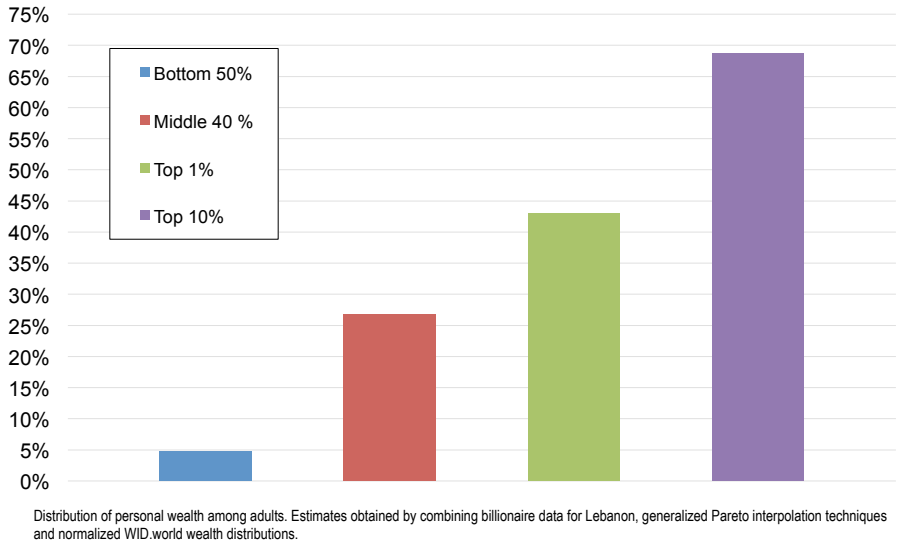
(a) Top 10% income share



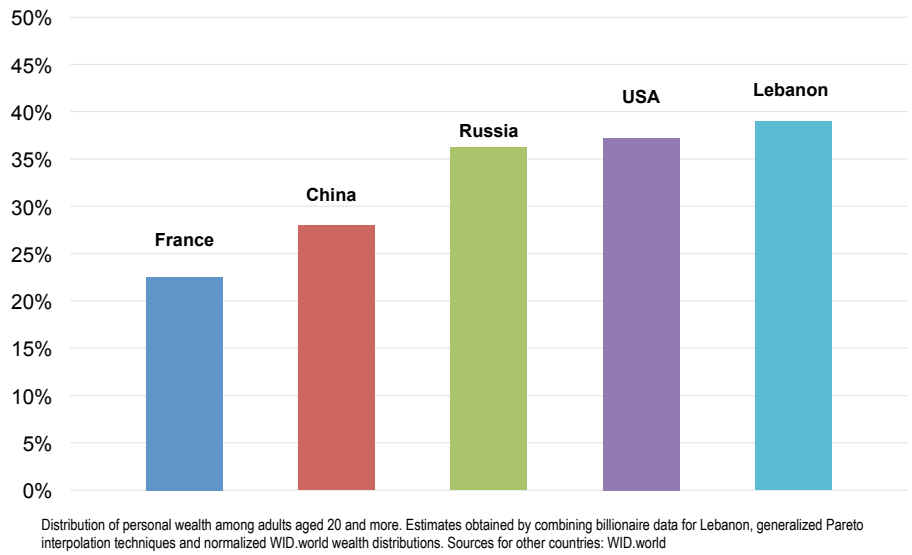
(b) Top 1% income share

Distribution of pretax national income (before taxes and transfers, except pensions and unempl. insurance) among equal-split adults (income of married couples divided by two) for all countries except South Africa. For South Africa, distribution of fiscal income. Sources for Brazil, China, Colombia, France, Russia, South Africa and USA: WID.world.

Figure 10: Wealth inequality in Lebanon and in selected countries

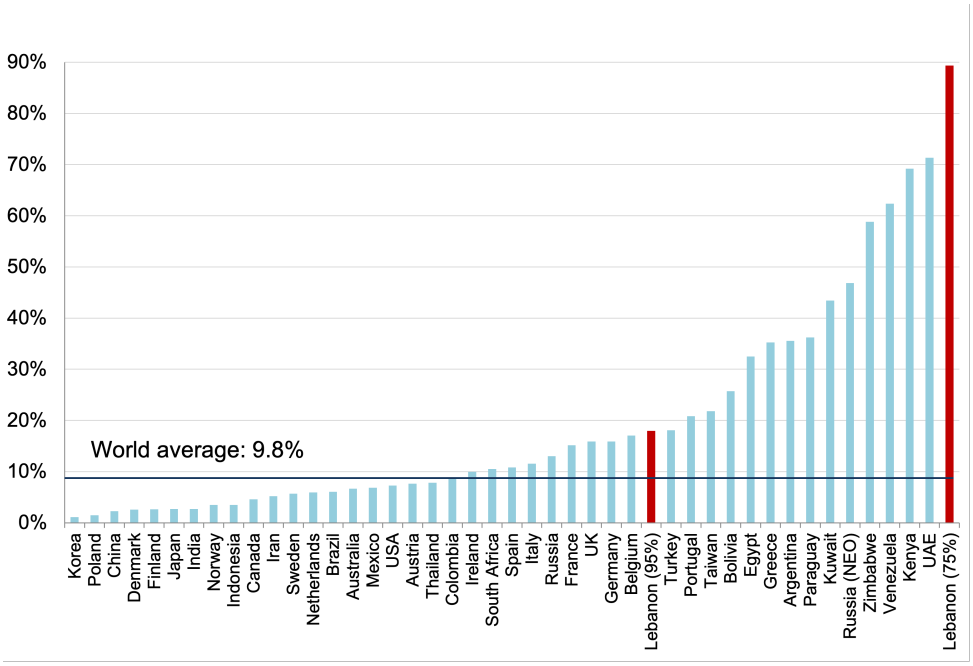


(a) Distribution of Wealth in Lebanon: average over 1990-2016

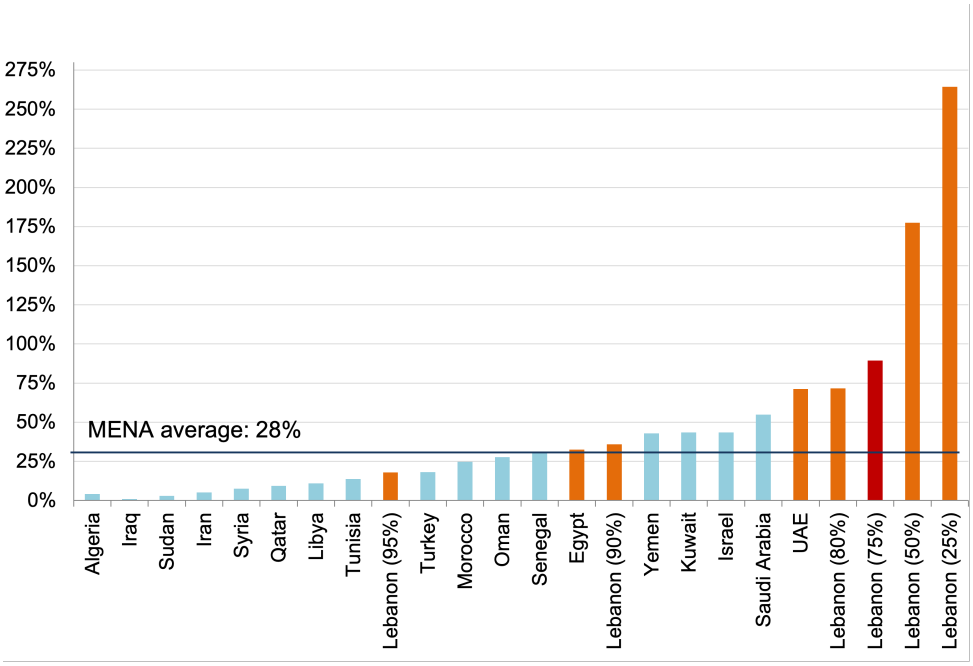


(b) Top 1% wealth share: Lebanon vs. Selected countries, Average over 2005-2014

Figure 11: Offshore wealth as % of GDP



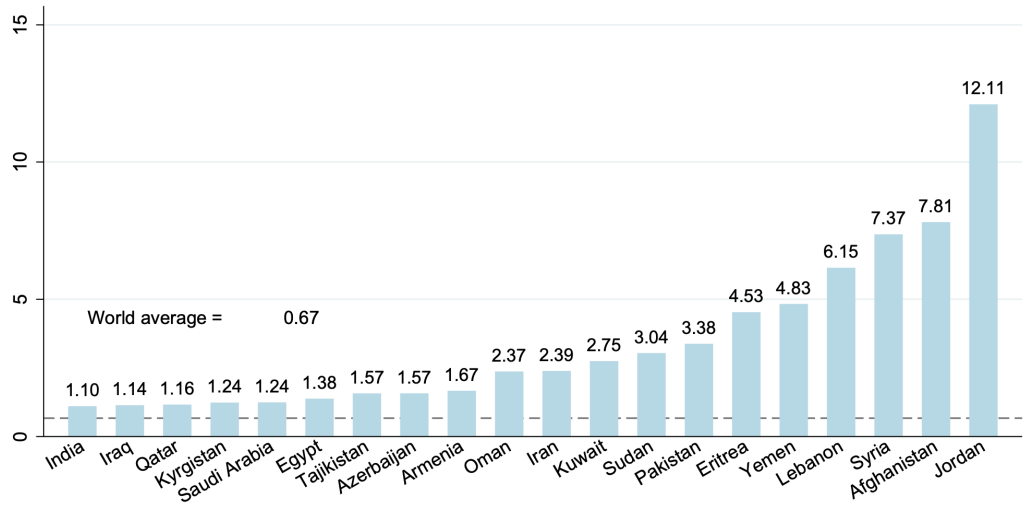
(a)



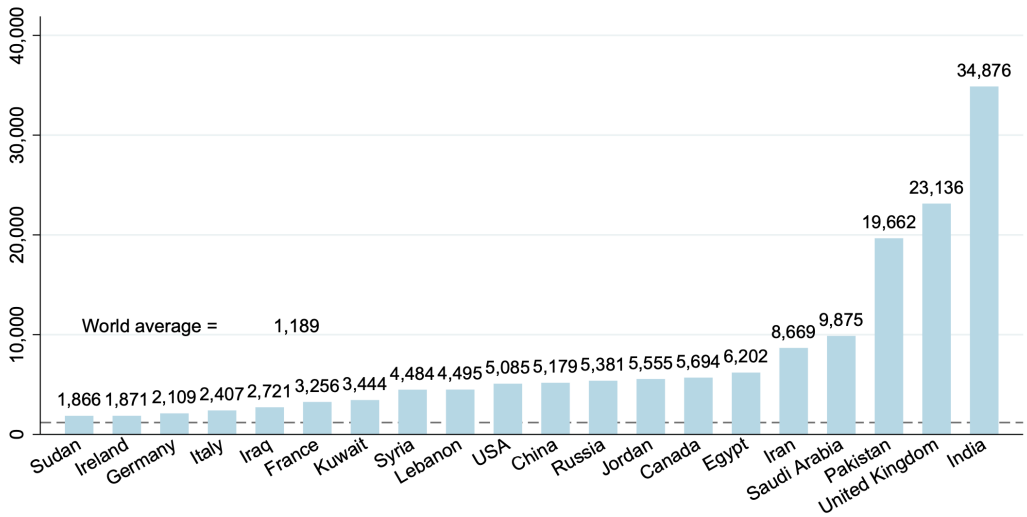
(b)

Source: Alstadsæter et al. (2018). This figure shows the amount of household wealth owned offshore as a percentage of GDP, in 2007. Offshore wealth is estimated by allocating the global offshore wealth estimated by Zucman (2013), on the basis of the geographical distribution of bilateral cross-border bank deposits in offshore centers. Estimates for Lebanon assume that 75% of deposits registered as Lebanese actually accrue to foreign countries. Alternative estimates assume that 95%, 90%, 80%, 50% or 25% of deposits assigned to Lebanon actually belongs to other countries. MENA average computed using the 75% benchmark estimates. Following Alstadsæter et al. (2018), I exclude Jordan that is a clear outlier with large amounts of offshore wealth recorded. These amounts probably accrue to other countries, although Jordan is not a tax haven. Source: Table A3.

Figure 12: Real Estate Held in Dubai in 2020, Relative to GDP: Top 20 Investing Countries, from (Alstadsæter et al., 2022)



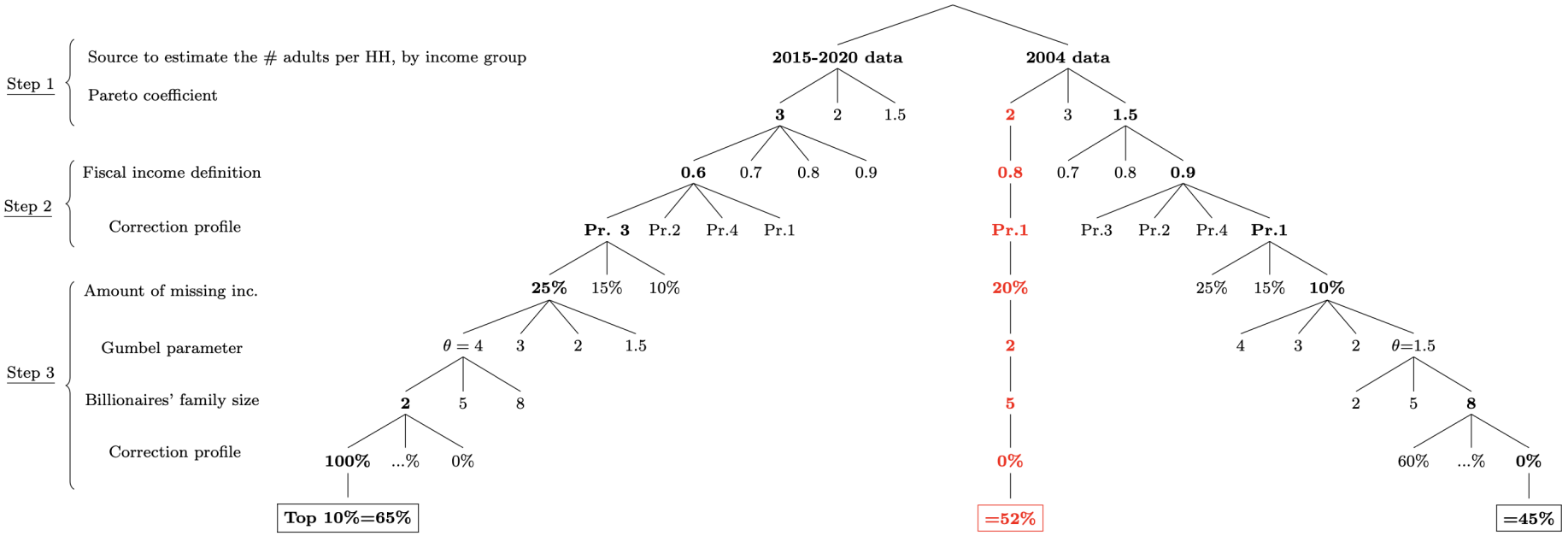
(a) Total Value (% of GDP)



(b) Unique Owners

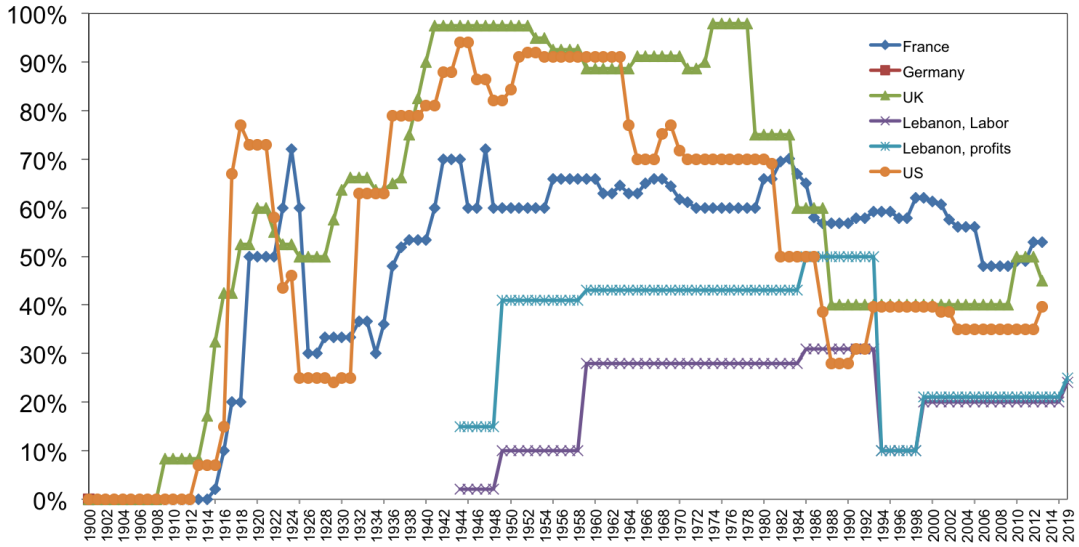
Source: Figure 6 in Alstadsæter et al. (2022). Notes: Panel (a) shows the value of properties owned in Dubai divided by GDP, for the top 20 investing countries excluding tax havens and citizenship by investment countries. Panel (b) shows how the average real estate values in Dubai compare to GDP per capita in the investing country, for the top 20 investing countries excluding tax havens and citizenship by investment countries. A value of 1,000 means that the owners from a country on average holds real estate in Dubai that amounts to 1,000 times the GDP per capita in that country. Countries with less than 5 unique owners of Dubai real estate are excluded from the figure. World average is the average for all non-UAE countries (with 5 or more unique owners of Dubai real estate), excluding tax havens and citizenship by investment countries.

Figure 13: Decision tree of the estimation procedure and implications for inequality, average for the 2005-2014 period



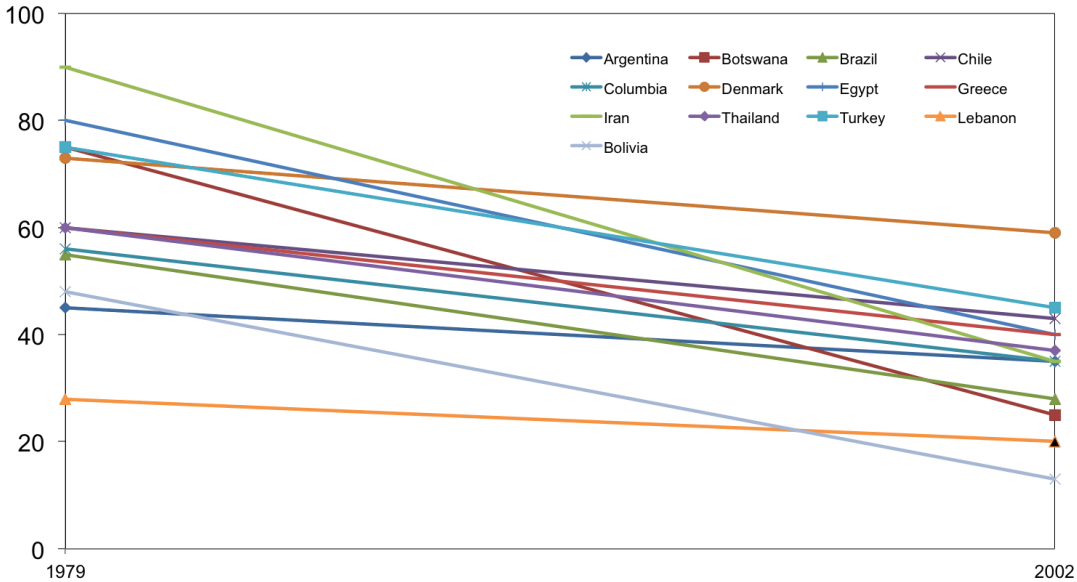
Source: Author's computations. The decision tree explicits the main hypotheses made in the estimation procedure: (1) Number of adults per household, by income group; (2) Choice of the Pareto coefficient in the last income bracket of the survey tabulation to estimate the survey distribution with gpinter; (3) Fiscal income definition ($taxableincome = 0.8 * fiscalincome$ etc.); (4) Correction profile used to link the survey data (at the bottom) to the fiscal data (at the top of the distribution); (5) Amount of missing capital income to reallocate; (6) Gumbel parameter, that defines the correlation structure between fiscal and non-fiscal income; (7) Billionaires' family size; (8) The weight of billionaires' wealth in the distribution: 20% means 20% of the correction factor adjustment is achieved at P99.9 etc. See appendix A for details on each hypothesis. At each node, the options on the left corresponds to the most unequal hypothesis. The branch on the left corresponds to the upper bond estimate, on the right to the lower bound estimate. The assumptions in red define my benchmark specification.

Figure 14: Evolution of Top marginal tax rates in Lebanon versus Selected countries



Source: Lebanon: Dagher, 1995; Himadeh, 1953; UNDP, 2000; Daher, 2002; Corm 2012. For other countries: Piketty (2014), dowloaded in OurWorldinData https://ourworldindata.org/grapher/top-income-tax-rates-piketty

(a) France, UK, US



Sources: Lebanon: Dagher, 1995; Himadeh, 1953; UNDP, 2000; Daher, 2002; Corm 2012. For other countries: Our World in Data, Top marginal income tax rates, selected countries (1979, 1990, 2002), available at: https://ourworldindata.org/taxation

(b) Other countries from the Global South

Table 1: Income thresholds and income shares in Lebanon, 2016

Income groups	Number of adults	Income thresholds	Average income	Income share
Full population	3,717,891	0 €	15,947 €	100.0%
Bottom 50%	1,858,946	0 €	4,636 €	14,5%
Middle 40%	1,487,156	6,541 €	12,917 €	32.4%
Top 10%	371,789	28,753 €	84,620 €	53,1%
incl. Top 1%	37,179	111,185 €	399,101 €	25,0%
incl. Top 0.1%	3,718	548,991 €	2,173434 €	13,6%
incl. Top 0.01%	372	3,326,905 €	11,573,216 €	7,3%
incl. Top 0.001%	37	18,7140,066 €	55,084,154 €	3,5%

Notes: Statistics on the distribution of income expressed in PPP €2016. Adult individual aged 20 and more; Equal-split assumption among adult members of a household. In 2016, 1 euro = 1641 LBP (market exchange rate) or 172.7 pound (PPP). Income corresponds to pre-tax national income. Fractiles are defined relative to the total number of adult individuals in the population. Corrected estimates (combining survey, fiscal, wealth and national accounts data), from 2014 adjusted for the price change between 2014-2016 (shares are not affected).

Table 2: Average incomes in Western Europe, USA, Brazil, India and South Africa: 2016 Euros (PPP)

Income groups	USA	Western Europe	Brazil	South Africa	India
Full population	**61,795€**	**34,214€**	**9,115€**	**8,439€**	**4,391€**
Bottom 50%	15,572€	14,308€	2,233€	848€	1,345€
Middle 40 %	62,387€	35,916€	7,387€	6,654€	3,343€
Top 10%	290,542€	126,938€	50,432€	53,538€	23,808€
incl. Top 1%	1,248,259€	417,501€	253,759€	154,877€	95,388€
incl. Top 0.1%	5,759,294€	1,553,248€	1,313,729€	486,861€	378,319€
incl. Top 0.01%	26,899,363€	6,143,396€	6,817,909€	1,457,794€	1,684,895€
incl. Top 0.001%	117,410,496€	24,494,358€	35,399,859€	4,286,839€	17,278,335€

Notes: Statistics on the distribution of income expressed in PPP €2016. Adult individual aged 20 and more; income of married couples is split into two. Income corresponds to pre-tax national income. Fractiles are defined relative to the total number of adult individuals in the population. Corrected estimates (combining survey, fiscal, wealth and national accounts data).
Source: Assouad et al. (2018)

Online Appendix

Rethinking the Lebanese Economic Miracle:
The Extreme Concentration of Income and Wealth in Lebanon, 2005-2014

A Data sources and Methodology

This section provides details on the data, method and assumptions made at each step of the estimation procedure, as already summarized in Section 2 of the main paper. An online appendix that includes all raw data sources and computer codes is available at https://wid.world/country/lebanon/.

A.1 Step 1: Household Survey Series

The first step consists in generating a first "raw" income distributions using survey data. There are three nationally representative surveys in Lebanon, in 1997, 2004 and 2007. As discussed in the paper, I could not access data for the 1997 survey, either in the form of tabulations by range of income, or in the form of micro data. For the 2004 and 2007 surveys, micro-data are also inaccessible. The Lebanese Central Administration of Statistics however publishes survey reports including tabulations for the 2004 and 2007 survey. The raw tabulations are available in the directory "/HouseholdSurveyData/" in the data files online.

I use two tables from the 2007 survey reports, giving the number of households in 13 income groups "before" and "after the Israeli 2006 war" (2005 and 2007). The DINA guidelines recommends to use the same unit of observation across country: the "adult" individual (aged 20 and more). To express income in terms of adults, I assume income is equally split between adult household members, that is I divide household income by the number of adults in each household. As no additional information is available, I apply households have the same size across income group, and I take the average adults/children ratio in the country: if high earners have fewer children than average, inequality is slightly underestimated. I then apply the generalized Pareto interpolation techniques developed by Blanchet et al. (2022) to both tables, to estimate the full distribution of income expressed in generalized percentiles (or g-percentiles) between for 2005 and 2007.

The generalized Pareto interpolation technique can be applied to tabulations providing three pieces of information: income thresholds, household frequencies and the average income per group. Unfortunately, the latter was not available in the Lebanese tabulations. To perform the estimation, I need to make an assumption on the form of the tail of the distribution at the top. In the benchmark estimates, I assume that the last group (approximately the top 0.5 percent in both tables) is characterized by an inverted Pareto coefficient of 2 . This assumption has no impact on the final series (this is why I do not display them). Most importantly, given that the top will be corrected with the fiscal data, this assumption has little effect. I nevertheless highlighted this step in the decision tree (Figure 13).

Finally, I simply upgrade the 2007 distribution by the ratio of per adult national income of a given year between 2008 and 2014 (divide by the average per adult national income and multiply by the average per adult national income in a given year), and get the 2005-2014 survey series. I use the 2005 distribution for the years 2005 and 2006, in

a similar way. By definition, inequality is constant between 2005 and 2006 and between 2007-2014. Figure A3 shows the effect of using only the 2007 survey versus the 2004 and 2007 survey.

A.2 Step 2: Fiscal Series

To estimate the fiscal series, I need to make two additional assumptions: the first concerns the definition of income; the second concerns the choice of correction profile to link the fiscal data to the survey distribtion.

A.2.1 Definition of income

As explained in the DINA guidelines, it is critical to be precise about the income concepts when combining survey, fiscal data and national accounts. Unfortunately, the survey data do not enable me to precisely define income. As for the fiscal data, they only provide information on the "taxable income" (i.e. income subject to income tax, after a number of deductions allowed by the tax legislation). The deductions are very extensive in the Lebanese case (see Section B.2 below). In particular, there are large lump-sum deductions for professional expenses of self-employment income. Additionally, taxable income, from which benefits and allowances are deduced, is significantly smaller than the fiscal income, defined as the sum of all income items legally subject to taxation, before any deduction (Alvaredo et al., 2020). I therefore assume for my benchmark estimates that the ratio between taxable income and fiscal income is equal to r=80 percent. I also estimate as robustness checks a number of variant using other ratios (r=70 and r=90 percent). Figure A4 shows the impact of the choice of the income definition on the final series. This assumption has a relatively sizable effect on the final series, mainly due to the small share of survey income in total national income. This is why I take a relatively conservative hypothesis (80 percent) given the deductions allowed in the Lebanese tax law.

A.2.2 Correction profiles

To correct the top of the survey distribution with fiscal data, I first need to make an assumption on the "ratio" of the national income distribution each source can reliably cover. Then, I need to make an assumption on how to link both sources. My benchmark correction is based upon the following assumption: the survey data is reliable below percentile p1 = 0.8, the fiscal data is reliable above p2 = 0.99 and I assume that the quantile ratio upgrade factor f(p) rises piecewise-linearly from f(p1) = 1 to the observed fiscal/survey ratio f(p2) between p1 and p2, with a small and rising slope between p1 = 0.8 and p=0.9 and a constant linear slope between p=0.9 and p2 = 0.99. I also consider other profiles: one where I assume the survey data to be reliable below percentile p1 = 0.9, the fiscal data to be reliable above p2 = 0.99, and a linear profile of f(p) between p1 and p2 (profile 2). In other profiles, I assume a concave (declining slope) and a convex (increasing slope) of f(p) between p1 and p2 (profile 3 and 4). As shown in Figure A5, the variants have also a non-negligible impact on the results, especially for the top 1 percent.[34] In any

[34]For the detailed definition of the four profiles and the corresponding factors, see the excel file "Comp-CorrectionCoeffLeb.xlsx", sheet "CompUpFactorLeb", in the online appendix. Unsurprisingly, the more the rising part of the f(p) profile is pushed toward p2, the smaller the total upgrade to the top 10 percent share; and the more the rising part of f(p) is pushed toward p1, the larger the total upgrade to the top

case, two remarks should be made: (1) the fiscal correction is the largest in magnitude and leads to a large upward correction of the survey-based distributions (see Figure A6 for the decomposition of the effect of each correction) (2) the variants on the fiscal correction can have a strong effect.[35]

A.3 Missing Capital income

Finally, I proceed to the last correction, which attempts to account for non-reported and tax-exempt capital income. There are two steps.

A.3.1 Estimating the amount of missing capital income

The first step consists in estimating the amount of missing capital income. Here again, important differences with Piketty, Yang and Zucman (2017) and Novokmet, Piketty and Zucman (2017), which use a similar methodology for China and Russia, should be noted. First, the amount of capital income absent from the Lebanese fiscal data are significantly higher. My correction needs to account for both tax-exempt and movable capital income, which are taxed but not reported in my datasource. Hence the denomination "missing" capital income as opposed to solely "non-fiscal". Second, national accounts are not disaggregated enough to estimate the missing amounts and do not display detailed enough subcomponents of national income. Only the generation and allocation of primary income accounts of the national economy (S1) are displayed, without details for the different sectors . The only sub-sectors present are the general government (S13) and Banks (S122). The amounts recorded are themselves not disaggregated enough to identify each income source. This is why I complement them with government reports on tax revenues and recover proxies for the amounts of income missing, by dividing the amount of taxes collected by the corresponding tax rates applied in the law. The idea is to recover the amounts of capital income generated in the economy by dividing the amount of taxes collected by the tax rates defined in the fiscal law. More precisely, I derive from the government reports: (1) the amount of capital gains and dividends accruing to the households, and taxed at flat tax rate of 10 percent under the third title of the personal income tax law (2) the amount of interest income received in the private sector in the total economy and hit by a rate of 5 percent (3) the imputed rents from housing taxed at 4 percent (4) undistributed profits of privately owned corporations. I find that they respectively represent 3, 8, 3 and 8 percent of national income on average over the period.[36] While I find that the missing income should represent approximately 22 percent of national income. If we recall Figure 2, this means that there remains uncertainty for 8 percent of total national income that

10 percent share. As long as there is no income tax data covering the entire top 10 percent, there is no way to be sure about this.

[35]Recent research by Yonzan et al. (2020) suggests that the appropriate cutoff might be 0.90,using data from the US, France and Germany. This corresponds to my profile 2. Given the impact of this hypothesis on the final estimates, I chose a more conservative hypothesis.

[36]Raw data from the reports and all computations can be found in the file "EstimatingMissingCapitalIncome.xlsx", in the directory GpinterIncome. In particular, as the total taxes on profits (taxed under the PIT and the corporate tax) are put together, I subtract from the aggregate tax revenues from profits the total amount reported in the fiscal data and divide by the corporate tax rate (of 15 percent) the remaining amount to get the total amount of profits subject to the corporate tax. Likewise, the taxes on property and on rental income are reported together, so I also remove first the total amount of taxes collected from build property revenues from my fiscal data and then apply the tax rate (of 4 percent) to the remaining amount.

are re-allocated proportionally. Table A4 sums up incomes the total amounts of income that can be inferred from the fiscal data, the national accounts or the finance reports. It also displays the amounts left (that encompass tax evasion, deductions and exemptions and other non-fiscal income and finally income from the informal sector, in part captured by the survey data). Figure A7 shows how the amount of missing capital income impacts the final estimates.

A.3.2 Estimating the joint distributions of fiscal and non-fiscal income

Next, in order to estimate the final distribution of total personal income (y_p), I need to make an assumption about the distribution of missing capital income (y_m) and about the structure of correlation between the fiscal income distribution (y_f) and the missing income distribution (y_m). Regarding the distribution of (y_m), I assume it follows the same distribution as the distribution of wealth which is standard in the literature.[37] Finally, I apply a proportional upgrade factor to transform the distribution of personal income $(y_p) = (y_f) + (y_m)$ into the distribution of national income y. By construction this has no impact on income shares (the objective is to make income levels comparable across countries and over time). Regarding the correlation structure between (y_f) and (y_m), I use the family of Gumbel copulas, characterized by the following functional form:

$$F(u,v) = exp[-((-logu)^{\theta} + (-logv)^{\theta})^{\frac{1}{\theta}}] \quad (1)$$

where $0 \leq u, v \leq 1$ are the ranks in the two distributions and $F(u,v)$ is the two-dimensional cumulative distribution, that is the fraction of the population with ranks below u in the first dimension and below v in the second dimension. If $\theta = 1$ then $F(u,v) = uv$, i.e. the two distributions are entirely independent. Conversely if $\theta = +\infty$ then both dimensions are perfectly correlated. On the basis of observed two-dimensional distributions in countries with high-quality fiscal data (such as the United States or France), it appears that the Gumbel parameters are typically in the 2.5-3.5 range. I use $\theta = 2$ for my benchmark estimates as a conservative assumption. The choice of the parameter has a relatively small impact on the final series (see Figure A8 for sensitivity checks).

A.3.3 Wealth Series

As explained in the main paper, the methodology used to obtain the Lebanese wealth distribution is similar to the one used by Novokmet, Piketty and Zucman (2017) for Russia. The data sources available to estimate wealth inequality in Lebanon are very limited and at this stage I only have billionaire data. I proceed as follows. First, I compute average standardized distributions of wealth for the US, France and China from WID.world series (that is, I divide all thresholds and bracket averages for all 127 generalized percentiles by average wealth, and I compute the arithmetic average for the three countries). Variations across countries and over time in these standardized wealth distributions mostly happen above $p_0 = 0.99$. Below p_0, the ratios of the different percentile thresholds to average wealth are relatively stable. Therefore I choose to use this average US-France-China normalized distribution for Lebanon below p_0. Second, I need to determine the Lebanese total personal wealth per adult, so as to adapt this average US-France-China normalized

[37] Capital income and incomes which evade taxes, tend to more unequally distributed than labor income. See Section A.3.3 for the estimation of the wealth distribution

distribution to Lebanon. Contrarily to the Russian case, there is for the moment no estimate of the total stock of personal wealth in Lebanon. I therefore take the average wealth/income ratios available in WID.world (which equals to 300 percent of national income), and apply it to the Lebanese national income. I hereby assume that (1) wealth is as concentrated in Lebanon as what is currently observable in other countries with adequate data and (2) that if, on average, countries own a stock of capital equals to 300 percent of their national income, Lebanon owns as least as much. Finally, I use information on Lebanese billionaires to adjust the top of the distribution and to take into account the extremely high share of billionaires' wealth, compared to the total national income. The difficult question is to know how to link the distribution from p_0 to the billionaire level, and also to make an assumption about the average number n of adults per billionaire family (sometime Forbes includes very large family groups in the same billionaire family, sometime it is just one individual or one married couple). I first re-estimate 127 generalized percentile within the top 1 percent of the normalized distribution in order to reach billionaire level. In the benchmark series I assume n=5 and a linear correction factor f(p) from p0=0.99 up to billionaire level (because this seems to work relatively well for the US, France and China). Figure A9 shows variant series based upon alternative assumptions for billionaires' family size: n=2,4,6,8 instead of n=5. The assumptions lead to relatively large differences in the wealth distribution (up to 2 percentage points). In any case, even the most conservative series lead to high wealth shares.

A.3.4 Financial Offshore Wealth

Several data sources have been used to analyze financial offshore wealth globally (Zucman, 2013; Alstadsæter et al., 2018). Published by major offshore financial centers, these sources disclose bilateral information on the total amount of bank deposits held by foreigners from a given country in their banks: (1) The **Swiss National Bank** (or SNB, central bank of Switzerland) dataset, which contains detailed statistics on the bank deposits, portfolios of equities, bonds, and mutual fund shares managed by Swiss banks on behalf of foreigners; (2) The **Bank for International Settlements** (BIS) dataset, which contain bilateral data on the amount of bank deposits that foreigners own in a number of prominent offshore financial centers, including Switzerland but also Luxembourg, the Channel Islands, and Hong Kong (contrarily to the SNB dataset); (3) **Lists leaked from offshore financial institutions**: HSBC Switzerland (the "Swiss Leaks") and Mossack Fonseca (the "Panama Papers"), which contain records of the wealth they managed, including details on their beneficial final owners and their nationality. For a more detailed description of these sourcessee (Zucman, 2013, Section III), (Alstadsæter et al., 2018, Section 3.1) and (Alstadsæter et al., 2019, Sections I.A and I.B).

B Lebanese Income Tax

B.1 Presentation of the Personal Income Tax Law

The Lebanese Income Tax was created in 1944 (Law 12/4/1944) and amended in 1959 (Decree-Law 144, 6/12/1959). The text of 1959 is still the basis of the current fiscal system. The 1959 income tax is a schedular, progressive and individual tax which taxes the different sources of income separately. It is divided into three main categories: a tax on profits from industrial, commercial and non-commercial activities levied according to

a real or lump sum scheme (Title I), a tax on wages and salaries (Title II) and a tax on built property revenues (Title III). Next to the PIT, incomes from movable capital including interests and dividends are taxed according to a flat rate. This section draws extensively from Daher (2002).

1. **Title I: tax on profits from industrial, commercial and non-commercial activities**: This concerns only the business income made by a sole proprietor (professional, individual company, individuals in small corporations) or by partners in partnerships. These profits are taxed at progressive rates between 4 percent and 21 percent.

2. **Title II: Salaries and wages and pension salaries**: this tax concerns all types of labor income: wages and salaries, including bonuses, commissions, compensation, allowances, grants, benefits in cash and kind, overtime hours, pensions and annuities (Article 46 of D.L. no. 144/1959), after deductions of the allowances and charges. The tax is levied at source and declared annually by the employers, at progressive rates between 2 percent and 20 percent (personal income, reported in the database).

3. **Title III: Built property revenues**: It is charged on the flow of income generated by the ownership of a built property, according to a progressive tax scale (4-14 percent), on built property (personal income, reported in the database). There exist also a tax on built property, which is charged on the stock (4 percent of the value of the real-estate, non reported in the database).

B.2 Income definition and deductions

In this section, I present in further detail the variables reported in the fiscal database, by referring to the Lebanese Income tax Law and the 2010 tax forms.[38] As explained in the main paper, three variables are reported for labor income, and business income:

1. **Salaries and wages**

   - **The labor gross income**, which comprises the main salary/daily wages, representation remuneration, bonuses, commissions and overtime, family compensation for the spouse, family compensation for the children, allowances given to bear the expenses of the activity (transportation compensation, car allowance, residence allowance, food allowance, clothing allowance), fund compensations, health insurances of all types, educational grants, marriage grants, birth grants, assistance in case of illness, assistance in case of death, other grants and benefits.
   - **The labor income subject to tax**, obtained after deducing from the gross labor income the compulsory social contributions, the allowances covering expenses linked with the professional activity and all the grants and benefits.[39]
   - **Total amount of tax paid**

2. **Self-employment income**

[38] See Figure A11 for the general tax form.

[39] Article 50, Law 144 (06/12/1959) modified by Laws 27 (07/19/1980), 7 (08/10/1985) and 89 (09/07/1991). See Tax form R6, Figure A12.

- **Total turnover** made in a given year
- **The corresponding profit subject to tax**, equal to the turnover multiplied by a given rate in order to take into account charges and expenses endured during the activity.[40] Self-employment incomes are taxed according to a lump-sum scheme. The rate applied varies between 3 percent and 65 percent depending on the activity.[41] In the database, the effective coefficient applied is on average 30 percent for all years.

3. **Other business incomes**. For partners in partnerships and individuals in small corporations:

   - **The actual total revenue**, defined as the turnover plus the overall financial and non-financial investment revenues.[42]
   - **The corresponding profit subject to tax**, which is equal to actual total revenue minus the expenses and costs incurred during the activity[43], minus the exonerated incomes (grants and donations). The non-deducible revenues are capital interests, investments and expenses made to earn capital gains, taxes paid to a foreign government, losses incurred by branches settled abroad, representation remuneration distributed to employees and exceeding 10 percent of there wages

4. **Built property revenues**, excluding persons living in their own dwelling: the taxable income after deduction and amount of tax paid are available.

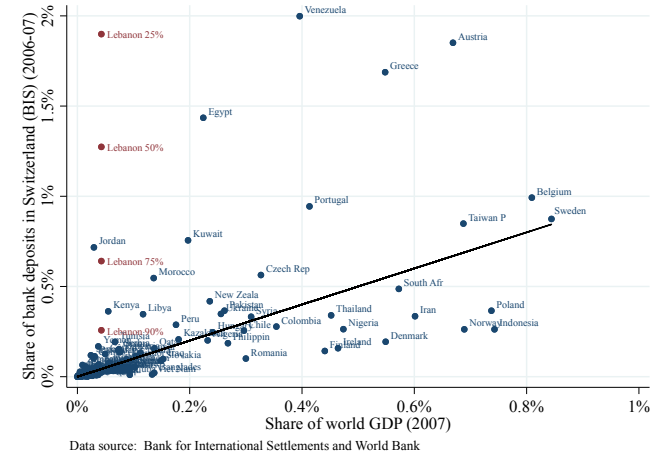
[40] The charges are "Sales of merchandise, consumption material, wages, salaries and other benefits, employees and wage-earners insurance, social security subscriptions, commissions paid to third parties, car and transportation expenses, banking commissions, interests and expenses, legal expenses, consultancies and similar expenses, maintenance and repair expenses, rent or investment, other office expenses, taxes, fees, and permits, accommodation, traveling expenses, promotion and advertisement, institution/profession activity insurance expenses, amortization" (see tax form F3, Figure A13).

[41] Decree 4169/1 (8/16/1993) modified by the Decree 5/1 (11/1/2000).

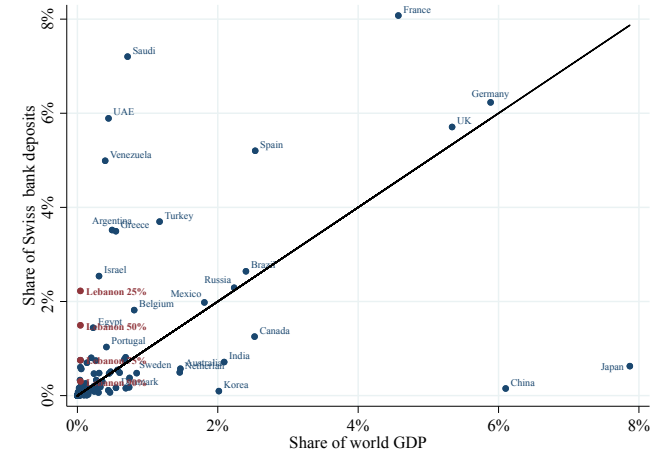
[42] Common operations dividends, placement and participation bonds revenues, net profit from placement bonds wavering, revenues from other movables, similar interests and revenues, positive exchange rate differences, recoveries from financial provisions (tax forms F16-1 and F16-2, Figures A14 and A15).

[43] The costs comprise: "the overall cost (sold merchandise, sold production, work and services provision cost), external services (royalties, rents etc.), employees charges (including social security contributions), tax fees and charges, the depreciation and investment provision allocations, interests on loans for the company's needs".

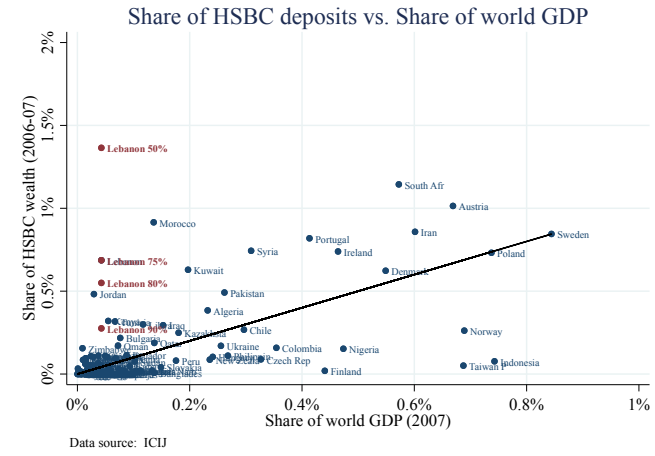
Figure A1: Lebanese wealth held in Swiss offshore centers as % of world GDP, Variants depending on the share of deposits accruing to Lebanese residents



(a) Share of deposits in Switzerland (BIS) vs. Share of world GDP



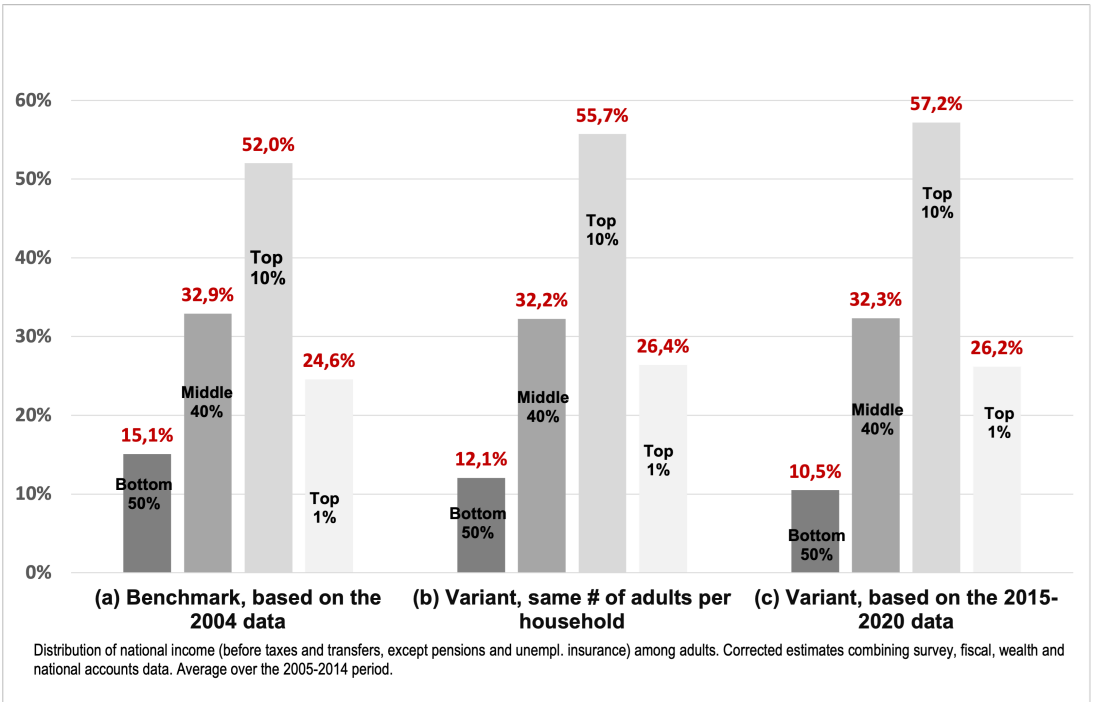
(b) Share of deposits in Switzerland (SNB) vs. Share of world GDP



(c) Share of HSBC deposits vs. Share of world GDP

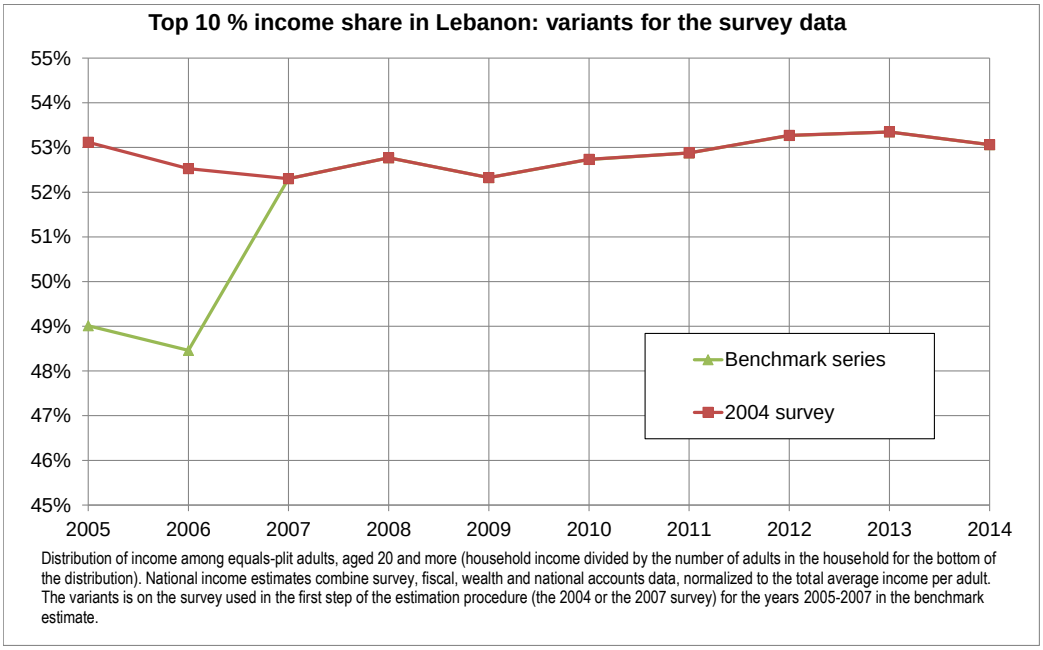
Notes: This figure plots for each country its share in the total amount of offshore wealth managed by Swiss banks against its share in world GDP. The black line is the 45-degree line. Countries above the 45-degree line own more wealth in Switzerland, as recorded in the three main sources, than their share of world GDP would imply, and vice versa for countries below the 45-degree line. All data are for 2007. Source: SNB, BIS, HSBC and Alstadsæter et al. (2018).

Figure A2: Variants for Step 1: Effect of the Assumption on the number of adults per household, by income bracket

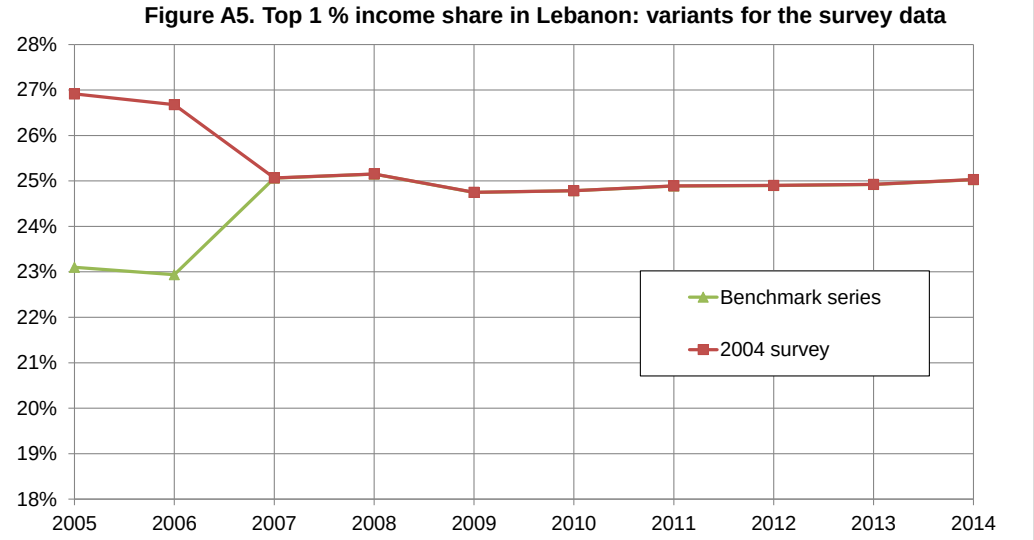


Distribution of national income among adults aged 20 and more, combining survey, fiscal, wealth and national accounts data. Equal-split-adults series (household income divided by the number of adults in the household for the bottom of the distribution). Panel (a) displays the benchmark results, which uses the average number of adults per household by income bracket as given in the 2004 survey; Panel (c) uses the average number of adults as given in the 2015-2020 survey. Panel (b) assumes that the average number of adults per household is constant throughout the income distribution.

Figure A3: Variants for Step 1: Effect of the Survey Source

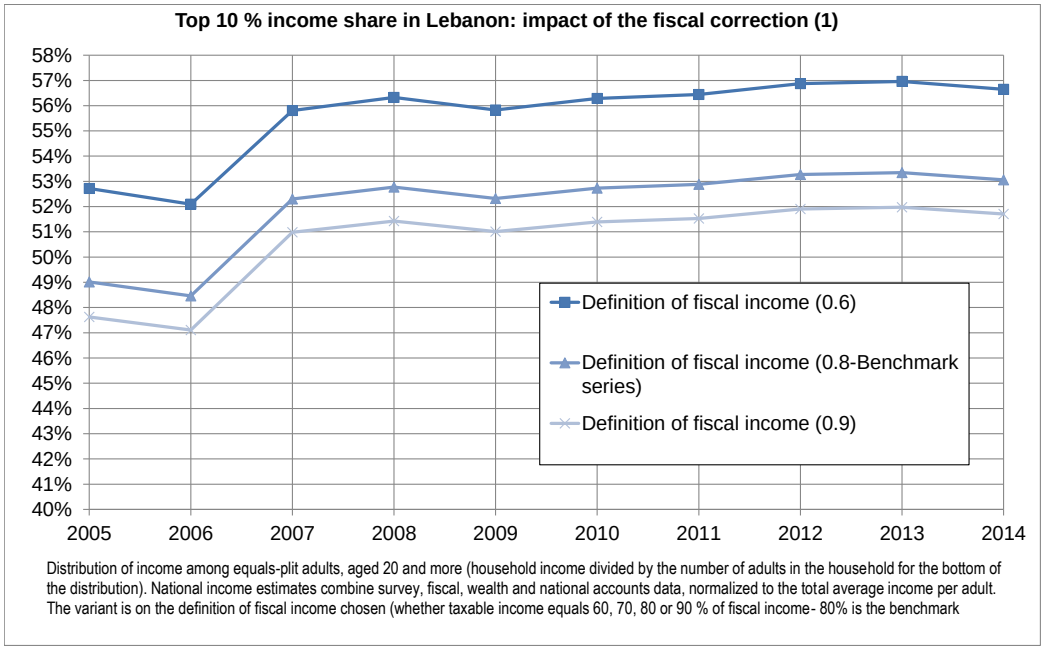


Distribution of income among equals-plit adults, aged 20 and more (household income divided by the number of adults in the household for the bottom of the distribution). National income estimates combine survey, fiscal, wealth and national accounts data, normalized to the total average income per adult. The variants is on the survey used in the first step of the estimation procedure (the 2004 or the 2007 survey) for the years 2005-2007 in the benchmark estimate.



Distribution of income among equals-plit adults, aged 20 and more (household income divided by the number of adults in the household for the bottom of the distribution). National income estimates combine survey, fiscal, wealth and national accounts data, normalized to the total average income per adult. The variants is on the survey used in the first step of the estimation procedure (the 2004 or the 2007 survey) for the years 2005-2007 in the benchmark estimate.

Figure A4: Variants for Step 2: Effect of the Fiscal Income Definition



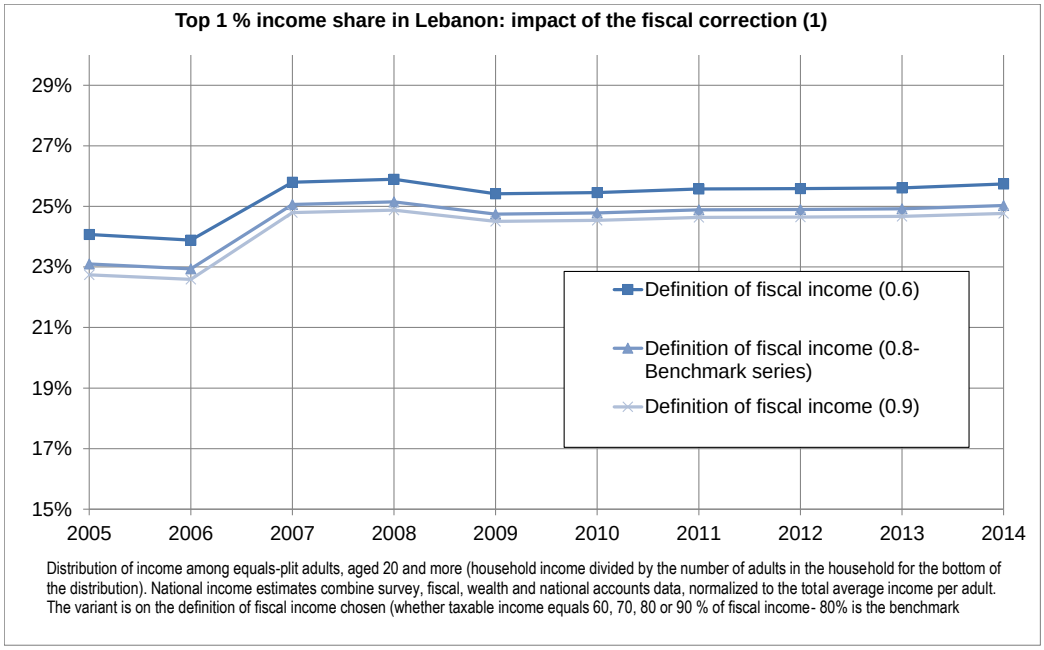
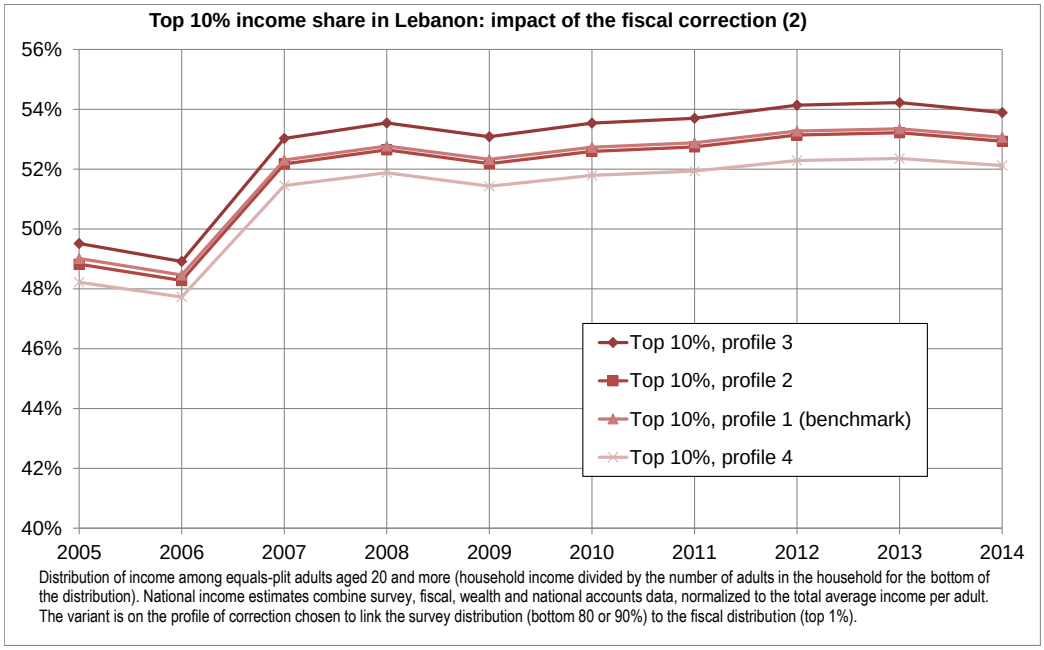
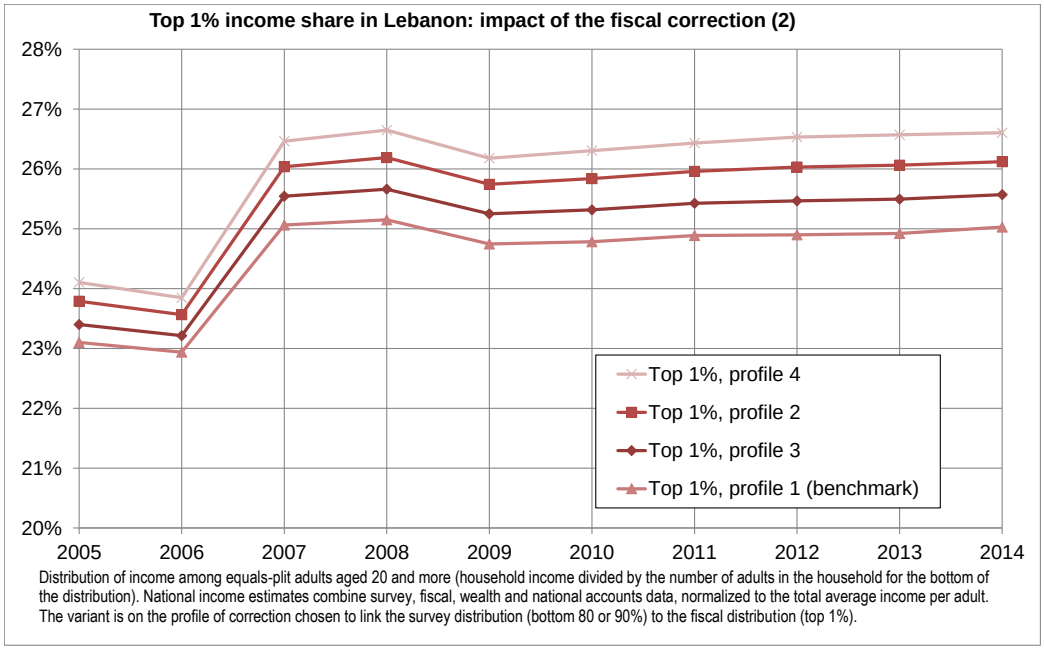


Figure A5: Variants for Step 2: Effect of the Correction Profile

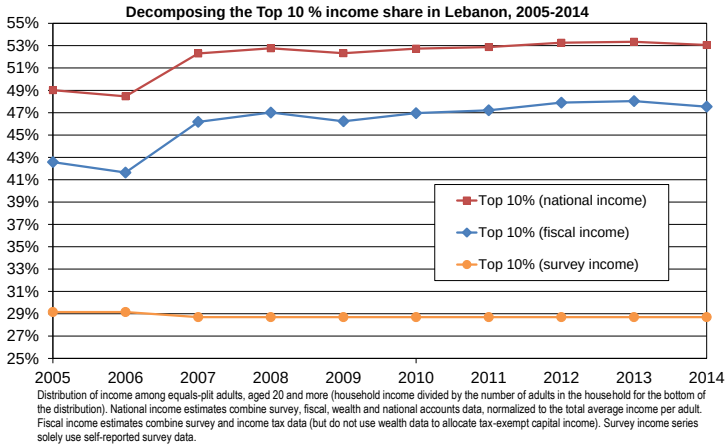


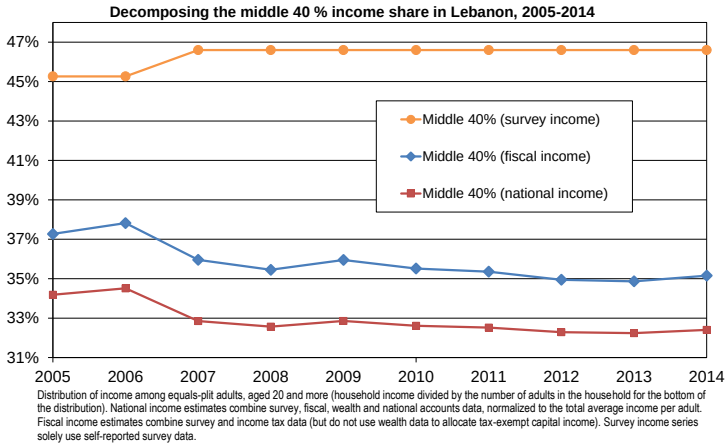
Distribution of income among equals-plit adults aged 20 and more (household income divided by the number of adults in the household for the bottom of the distribution). National income estimates combine survey, fiscal, wealth and national accounts data, normalized to the total average income per adult. The variant is on the profile of correction chosen to link the survey distribution (bottom 80 or 90%) to the fiscal distribution (top 1%).



Distribution of income among equals-plit adults aged 20 and more (household income divided by the number of adults in the household for the bottom of the distribution). National income estimates combine survey, fiscal, wealth and national accounts data, normalized to the total average income per adult. The variant is on the profile of correction chosen to link the survey distribution (bottom 80 or 90%) to the fiscal distribution (top 1%).

Figure A6: Impact of each correction on the Lebanese income share, 2005-2014





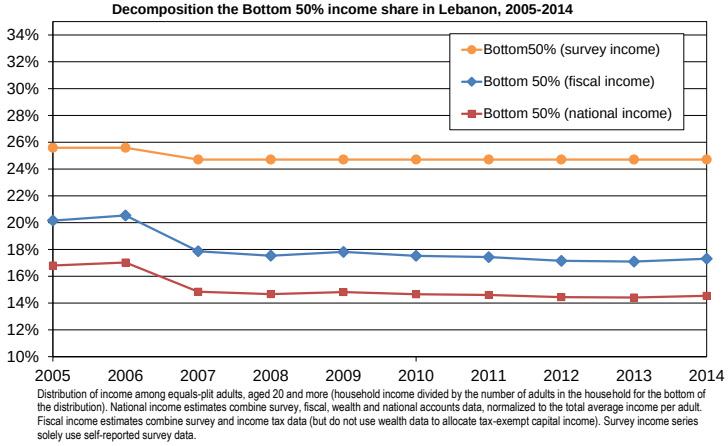
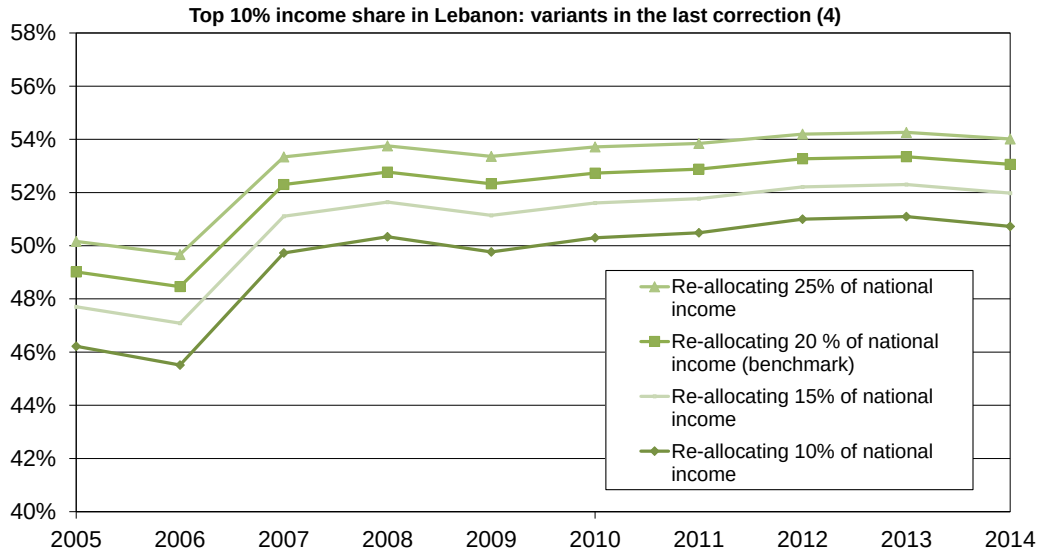
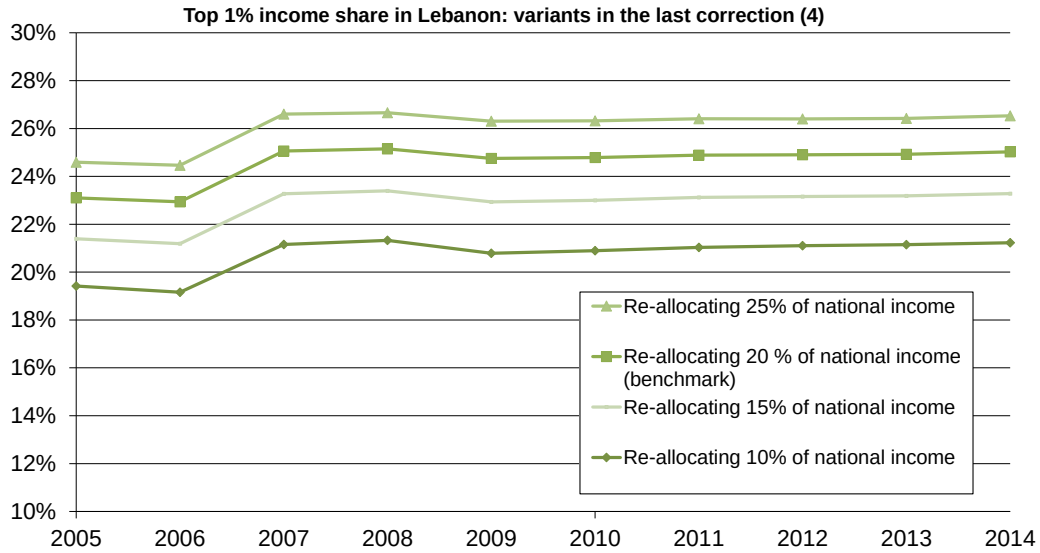


Figure A7: Variants for Step 3: Effect of the size of the missing amount of re-allocate

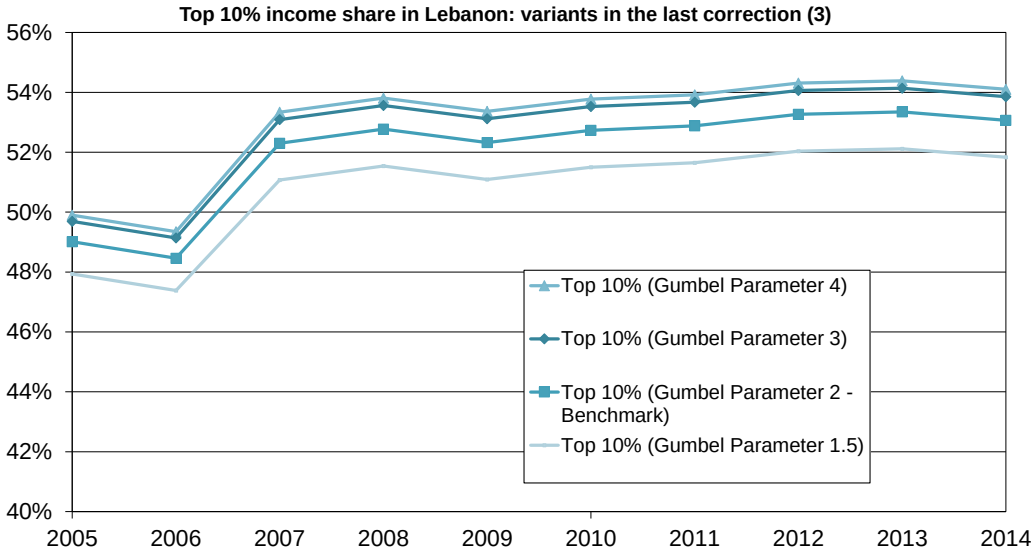


Distribution of income among equals-plit adults (household income divided by the number of adults in the household for the bottom of the distribution). National income estimates combine survey, fiscal, wealth and national accounts data, normalized to the total average income per adult. The variant is on amount of missing capital income re-allocated in the last correction.

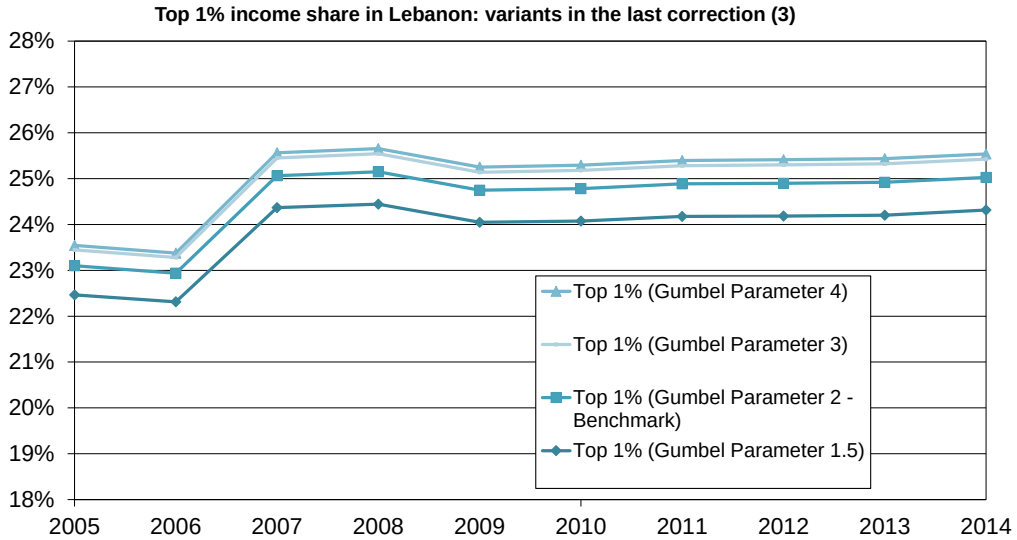


Distribution of income among equals-plit adults aged 20 and more (household income divided by the number of adults in the household for the bottom of the distribution). National income estimates combine survey, fiscal, wealth and national accounts data, normalized to the total average income per adult. The variant is on amount of missing capital income re-allocated in the last correction.

Figure A8: Variants for Step 3: Effect of the choice of Gumbel Parameter

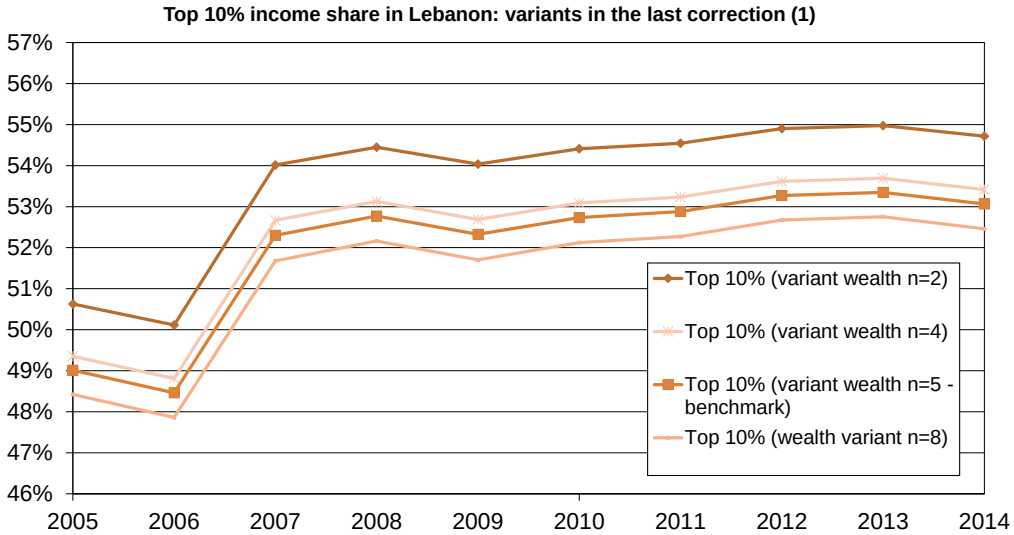


Distribution of income among equals-plit adults aged 20 and more (household income divided by the number of adults in the household for the bottom of the distribution). National income estimates combine survey, fiscal, wealth and national accounts data, normalized to the total average income per adult. The variant is on the Gumble Parameter that determines the joint distribution of fiscal and missing capital income.

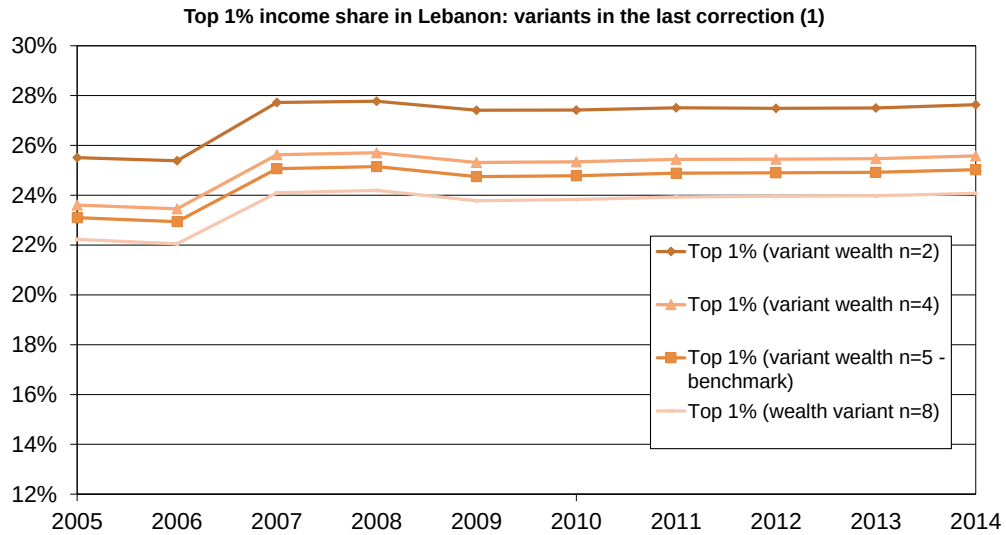


Distribution of income among equals-plit adults aged 20 and more (household income divided by the number of adults in the household for the bottom of the distribution). National income estimates combine survey, fiscal, wealth and national accounts data, normalized to the total average income per adult. The variant is on the Gumble Parameter that determines the joint distribution of fiscal and missing capital income that is the final series.

Figure A9: Variants for Step 3: Effect of the billionaires' family size

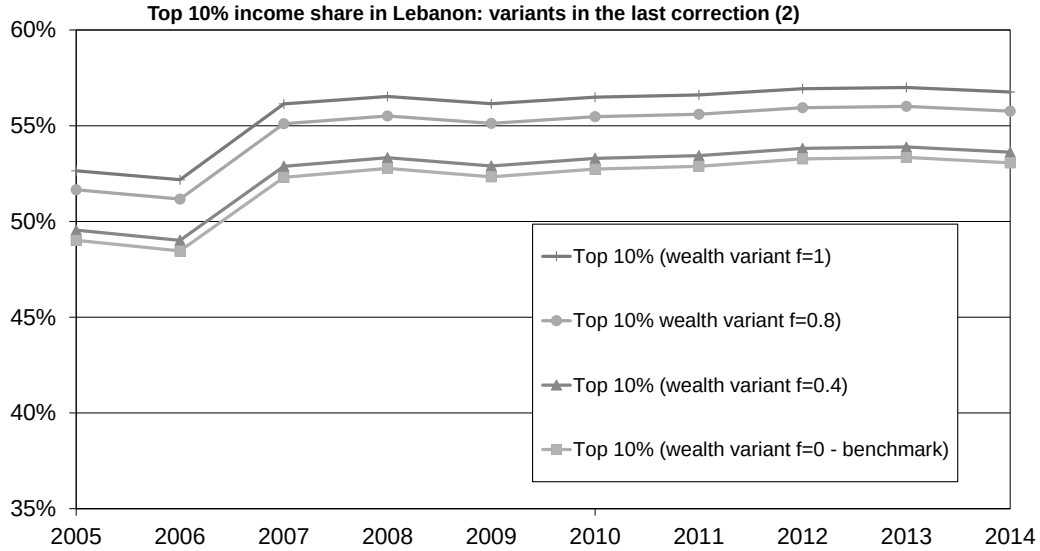


Distribution of income among equals-plit adults (household income divided by the number of adults in the household for the bottom of the distribution). National income estimates combine survey, fiscal, wealth and national accounts data, normalized to the total average income per adult. Fiscal income estimates combine survey and income tax data (but do not use wealth data to allocate tax-exempt capital income). The variant is on the size of billionaires' families (2 or 8 adults), that defines different wealth distributions, used to re-reallocate missing capital in the last correction.

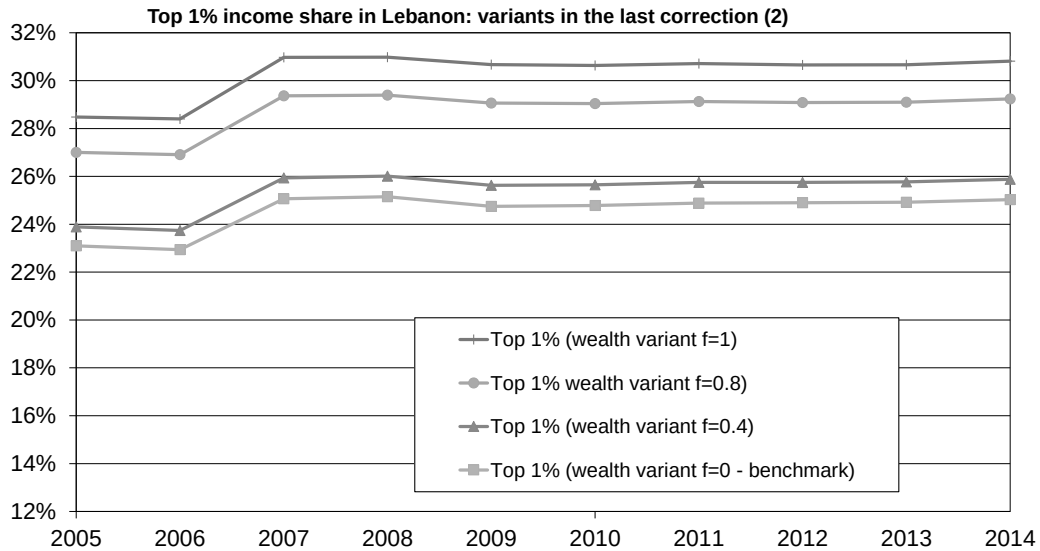


Distribution of income among equals-plit adults (household income divided by the number of adults in the household for the bottom of the distribution). National income estimates combine survey, fiscal, wealth and national accounts data, normalized to the total average income per adult. Fiscal income estimates combine survey and income tax data (but do not use wealth data to allocate tax-exempt capital income). The variant is on the size of billionaires' families (2 or 8 adults), that defines different wealth distributions, used to re-reallocate missing capital in the last correction.

Figure A10: Variants for Step 3: Effect of the correction profile chosen to estimate the wealth distribution



Distribution of income among equals-plit adults aged 20 and more (household income divided by the number of adults in the household for the bottom of the distribution). National income estimates combine survey, fiscal, wealth and national accounts data, normalized to the total average income per adult. The variant is on the profile of correction chosen to link the normalized US-France-China wealth distribution with the Lebanese billionaires listed in magazines. They define different wealth distributions, used to re-reallocate missing capital in the last correction.



Distribution of income among equals-plit adultsaged 20 and more (household income divided by the number of adults in the household for the bottom of the distribution). National income estimates combine survey, fiscal, wealth and national accounts data, normalized to the total average income per adult. The variant is on the profile of correction chosen to link the normalized US-France-China wealth distribution with the Lebanese billionaires listed in magazines. They define different wealth distributions, used to re-reallocate missing capital in the last correction.

Figure A11: Main Tax form, Personal Income Tax

Republic of Lebanon F1
Ministry of Finance (Individual)
Directorate General of Finance
Directorate of Revenues – Income Tax Page 1/4

Personal Declaration – Income Tax

Full Name of taxpayer: …….. (name) …….. (father's name) …….. (family name)

Position: Please tick the appropriate case

- ☐ Lump-sum profit individual taxpayer
- ☐ Real profit individual taxpayer
- ☐ Partner taxpayer in a partnership

Personal registration number (at the Ministry of Finance) … … … … … … … … …
Region of Activity: ……..
For the year: …….

Is it the first declaration of the taxpayer? Yes No
Is it the last declaration of the taxpayer? Yes No. If yes, please mention the reason:

Marital status: ☐ Single ☐ Married ☐ Divorced ☐ Widow Number of dependent children:	Spouse: S/He works ☐ Yes ☐ No In case s/he works, personal registration number (at the Ministry of Finance): … … … … … … … … …
Personal Address Mohafazat …….. Caza …… Region-Locality …. Real Estate Region …… District ……..… Street ……. Building …… No of Lot/Section ……. Floor ……..… Phone ……. Fax ……..… Phone …… PO Box: ……. Region …….. Email: ……	Correspondence Address Mohafazat …….. Caza …… Region-Locality …. Real Estate Region …… District ……..… Street ……. Building …… No of Lot/Section ……. Floor ……..… Phone ……. Fax ……..… Phone …… PO Box: ……. Region …….. Email: ……
The person who contributed to filling the declaration: Full name: ……..... …….. …… Phone: ……	Registration number (at the Ministry of Finance): ..... Fax: ……

Declaration contents:	Yes	No
* Profit (or Loss) from partnerships	☐	☐
* Profit (or Loss) from individual institutions and professions- Real profit	☐	☐
* Profit from individual institutions and professions – lump sum profit	☐	☐
* Estimated profit	☐	☐
* Salaries and wages revenues	☐	☐
* Statement of the institution/the profession's revenues and expenses F3 Form (obligatory for lump-sum profit)	☐	☐
* Statement of amounts paid to experts, accountants, consultants, lawyers, engineers, etc. (lump-sum profit taxpayers-F4 Form)	☐	☐
*Statement of deficit to be carried forward – for real profit taxpayers (F21)	☐	☐
*Statement of paid amounts to non-residents according to Articles 41, 42 and 43 for taxpayers on the basis of real profit and on the basis of lump-sum profit (F26)	☐	☐

(*) The natural or moral person is notified at the correspondence address given to the Tax Department. Therefore, read carefully Articles 27 and 28 of the tax procedures law No 44, dated 11/11/2008.

Figure A12: Tax form for labor income, Personal Income Tax

Republic of Lebanon R6
Ministry of Finance (Salaries)
Directorate General of Finance
Directorate of Revenues – Tax on Wages and Salaries

Individual Annual Statement of the Overall Revenues of the Employee/Wage-earner

Company/Institution name .....
Commercial name .....
Registration number (at the Ministry of Finance) … … … … … … … … … …

For the year ….
Number of employees/wage-earners …..

Employee number … out of …. (total number of employees)

Employee/Wage-earner's name ..... Father's name …… Family name …….
Personal registration number (at the Ministry of Finance) … … … … … … … … … Type of work ….
Type of wage* ☐ Monthly ☐ Daily ☐ Hourly
Family status* ☐ Single ☐ Married ☐ Widow ☐ Divorced
Number of children: ……..
Number of people benefiting from family rebate**: ……
Work duration from (D/M/Y) … / …. /… to (D/M/Y) … / … / …
Number of working days for beneficiary from daily rebate: …….

Employee/Wage-earner address:
Mohafazat …… Caza …… Region/Locality ……..
District …….. Street ……..
Building …… Floor…….. Phone …….. Phone ……
PO Box …….. Region …….. Fax …….. Email:

	Description	Total Revenues (1)	Tax Exempted Revenues (2)	Taxable Revenues (3)
100	Main salary/daily wages			
110	Representation remuneration			
120	Bonuses, commissions and overtime			
130	Family compensation for the spouse			
140	Family compensation for the children			
150	Transportation compensation			
160	Car allowance			
170	Residence allowance			
180	Food allowance			
190	Clothing allowance			
200	Fund compensations			
210	Health insurances of all types			
220	Educational grants			
230	Marriage grants			
240	Birth grants			
250	Assistance in case of illness			
260	Assistance in case of death			
300	Other grants and benefits			
310	**Total**			

R6 Form – Tax of Wages and Salaries – 2010 Version
Website of the Ministry of Finance

Are rebated:

330 Family Rebate .....
340 Other Rebates .....

350 Net Revenues .....
360 Annual due tax .....

and salaries – 2010 Version
Website of the Ministry of Finance

* Please tick the appropriate box. ** The figure includes the spouse in case she doesn't work and dependent children.

Figure A13: Tax form for self-employed individuals, liberal and independent professions

Republic of Lebanon F3
Ministry of Finance (Individual)
Directorate General of Finance
Directorate of Revenues – Income Tax

Statement of Revenues and Expenses of the Institution/the Profession
For lump-sum profit taxpayers

Name of the Taxpayer: ……..	Institution/Profession's registration number (at the Ministry of Finance): ……..
Commercial Name: ……	Personal registration number (At the Ministry of Finance): ……..
	For the year: …….

Address of the institution/the profession:
Mohafazat …… Caza …… Region-Locality ……
District …… Street ……
Real Estate Region …….. No of Lot/Section ……
Building …….. Floor …… Phone …… Phone ……..
PO Box ……Region…… Fax
Email ……

Activity type	Revenues (*)		Profit rate		Net lump-sum profit	
1	90		95		100	
2	91		96		110	
3	92		97		120	
4	93		98		130	
Total	94		99		140	

Details of charges and expenses

Sales of merchandise and raw and consumption material	150	
Wages, salaries and other benefits	160	
Employees and wage-earners insurance	170	
Social security subscriptions	180	
Commissions paid to third parties	190	
Car and transportation expenses	200	
Banking commissions, interests and expenses	210	
Legal expenses, consultancies and similar expenses	220	
Maintenance and repair expenses	230	
Rent or investment	240	
Other office expenses	250	
Taxes, fees, and permits	260	
Accomodation	270	
Travelling expenses	280	
Promotion and advertisement	290	
Institution/Profession activity insurance expenses	300	
Amortization**	310	
Other expenses	320	
Overall charges and expenses	330	
Fixed assets buyouts	340	
Amounts paid to non-residents	350	

*** If the taxpayer practices several activities within the same institution and did not separate the revenues of each activity, the highest rate applies to the lump-sum profit among these activities and on the overall revenues.**

**** For machinery, equipment, and furniture used in the institution in the first year, plus any addition and minus any wavering, the result is multiplied by the depreciation rate of each type of them.**

Signature: ……

Figure A14: Tax form for other business incomes (1)

Republic of Lebanon
Ministry of Finance
Directorate General of Finance
Directorate of Revenues – Income Tax

	Income Statement			F16 (Individual) Page 1/2
Line Number	Account description (1)	Current Financial Cycle		Previous Financial Cycle (4)
		Details (2)	Total (3)	
200	Goods sales			
210	Production sales			
220	Works sales			
230	Services sales			
240	**Turnover**			
250	Sold merchandise cost			
260	Sold production cost			
270	Works cost			
280	Services provision cost			
290	**Overall cost**			
300	**Profit**			
310	**Consumer supplies cost**			
	External services			
320	Royalties			
330	Maintenance and repair			
340	Promotion and advertisement			
350	Transportation			
360	Rent			
370	Representation expenses			
380	Supervision expenses			
390	Travelling expenses			
400	Experts and consultants wages			
410	Insurance			
415	Paid commissions			
420	Other external services			
430	**Total external services**			
	Employees wages/charges			
440	Salaries and wages			
450	Commissions			
460	Social security			
470	Transportation			
480	Employees meals			
490	Training expenses			
500	Insurances/Guarantees to users			
510	Other expenses			
520	Total employees wages/charges			
	Corresponding taxes, fees and charges			
530	Corresponding taxes, fees and charges			
540	Fines			
550	Other administrative charges			
560	**Total corresponding taxes, fees and charges**			
	Depreciation and investment provisions allocations			
570	Depreciation allocations			
580	Provisions allocations			
590	**Total consumption and investment provisions allocations**			
600	**Total charges**			

Figure A15: Tax form for other business incomes (2)

Republic of Lebanon
Ministry of Finance
Directorate General of Finance
Directorate of Revenues – Income Tax

	Income Statement			F16 (Individual) Page 2/2
Line Number	Account description (1)	Current Financial Cycle		Previous Financial Cycle (4)
		Details (2)	Total (3)	
610	Recoveries from non-financial provisions			
620	Products with a fixed assets nature			
630	Other revenues			
640	**Overall non-financial investment revenues**			
650	**Investment profit or loss**			
660	Common operations dividends			
670	Placement and participation bonds revenues			
680	Net profit from placement bonds wavering			
690	Revenues from other movables			
700	Similar interests and revenues			
710	Positive exchange rate differences			
720	Recoveries from financial provisions			
730	Other financial revenues			
740	**Overall financial revenues**			
750	Institution's share out of the losses from joint operations			
760	Negative exchange rate differences			
770	Net charges on operation of placement bonds wavering			
780	Consumption and financial provisions allocations			
790	Financial institutions interests			
800	Financial institutions expenses			
810	Other interests			
820	**Overall financial charges**			
830	**Net financial charges and revenues**			
840	Losses resulting from wavering of fixed assets			
850	Grants and donations			
860	Other charges			
870	**Overall other charges**			
880	Profit resulting from wavering of fixed assets			
890	Other revenues			
900	Total other revenues			
910	Revenues of exceptional events			
920	Losses of exceptional events			
930	Differences due to changes in accounting policies			
940	**Income before tax on profits**			
950	**Tax on profit**			
960	**Net income after tax** (profit and loss)			

Table A1: Distribution of households according to annual income category declared by the household in thousands LBP and number of adults per household, 2004 national survey

	Annual income category declared by the household										
# Adults	Less Than 3600	3600-5999	6000-7799	7800-9599	9600-11999	12000-14399	14400-19199	19200-28799	28800 and more	No response	Total
1	32,9	12,9	6,8	6,2	4,8	3,8	2,5	2,9	4,0	13,6	8,7
2	47,0	57,2	57,6	51,8	53,4	48,6	39,5	29,3	25,0	47,4	47,7
3	13,5	16,3	16,7	17,5	18,2	20,1	21,2	19,3	29,3	19,6	18,6
4	3,0	8,8	10,3	13,8	13,3	14,5	18,0	23,3	17,7	10,1	13,0
5	2,4	3,2	5,9	7,8	6,2	7,7	11,7	14,4	12,8	5,9	7,4
6	0,8	1,2	2,0	1,9	2,1	3,9	4,7	7,1	7,6	2,4	3,1
7	0,4	0,2	0,4	0,8	1,2	1,1	1,2	2,3	1,8	0,4	0,9
8 and more		0,1	0,3	0,2	0,7	0,3	1,2	1,3	1,8	0,6	0,6
Average	2,0	2,4	2,6	2,7	2,8	2,9	3,2	3,5	3,5	2,6	2,8
Total	100	100	100	100	100	100	100	100	100	100	100

Source: 2004 survey report, Central Administration of Statistics, Lebanon . Notes: 32,9% of households with income less than 3600 thousand Lebanese Pounds had 1 adult. The average adult per household for household in this income bracket is 2.

Table A2: Average Number of Adults per household, by income bracket, Gallup World Poll 2015-2020

Income Bracket ('000s LBP)	Average # of adults	Std. Dev
Less than 3600	3.46	1.50
3600-5400	3.34	1.33
5400-7800	3.20	1.34
7800-12000	3.01	1.27
More than 12000	2.55	1.24
Total	3.13	1.38

Source: Gallup World Poll nationally representative survey of Lebanon, average of the 2015-2020 waves.

Table A3: The world's offshore wealth, 2007

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]
		Share of offshore wealth (2007)						billion of current US$ (2007)						fraction of GDP (2007)						
	2007 GDP (billion US$)	**Total offshore wealth**	Offshore wealth in Switzerland and	Offshore wealth in the havens other than Switzerland and	*Of which: Caribbean tax havens*	*Of which: Asian tax havens*	*Of which: European tax havens*	**Total offshore wealth**	Offshore wealth in Switzerland and	Offshore wealth in the havens other than Switzerland and	*Of which: Caribbean tax havens*	*Of which: Asian tax havens*	*Of which: European tax havens*	**Total offshore wealth**	Offshore wealth in Switzerland and	Offshore wealth in the havens other than Switzerland and	*Of which: Caribbean tax havens*	*Of which: Asian tax havens*	*Of which: European tax havens*	Memo: Share of HSBC wealth
Africa and Middle East (excl. Gulf countries)	**2 505**	**8,9%**	**15,4%**	**3,0%**	**0,7%**	**1,5%**	**4,7%**	**499,1**	**411,8**	**87,2**	**4,6**	**12,1**	**70,5**	**19,9%**	**16,4%**	**3,5%**	**0,2%**	**0,5%**	**2,8%**	**19,5%**
Algeria	135,0	0,1%	0,2%	0,0%	0,0%	0,0%	0,0%	5,7	5,1	0,6	0,0	0,0	0,6	4,2%	3,8%	0,5%	0,0%	0,0%	0,4%	0,4%
Angola	65,3	0,2%	0,2%	0,1%	0,0%	0,0%	0,2%	9,4	6,3	3,1	0,1	0,3	2,7	14,4%	9,7%	4,7%	0,2%	0,4%	4,1%	0,0%
Benin	8,2	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,3	0,3	0,0	0,0	0,0	0,0	3,8%	3,3%	0,5%	0,0%	0,0%	0,5%	0,0%
Botswana	10,9	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,5	0,0	0,5	0,0	0,0	0,5	5,0%	0,3%	4,6%	0,1%	0,0%	4,5%	0,0%
Burkina Faso	7,6	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,2	0,1	0,1	0,0	0,0	0,1	3,1%	1,3%	1,7%	0,0%	0,0%	1,7%	0,0%
Burundi	1,4	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,2	0,1	0,1	0,0	0,0	0,1	16,0%	7,5%	8,6%	0,0%	0,0%	8,6%	0,0%
Cameroon	23,9	0,0%	0,1%	0,0%	0,0%	0,0%	0,0%	1,9	1,7	0,2	0,0	0,0	0,2	7,9%	7,2%	0,6%	0,0%	0,0%	0,6%	0,0%
Central African Republi	1,7	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0	0,0	0,0	0,0	0,0	0,0	1,5%	1,1%	0,4%	0,0%	0,0%	0,4%	0,0%
Chad	8,7	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,1	0,0	0,1	0,0	0,0	0,1	0,9%	0,0%	0,9%	0,0%	0,0%	0,9%	0,1%
Comoros	0,8	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0	0,0	0,0	0,0	0,0	0,0	0,2%	0,0%	0,2%	0,0%	0,2%	0,1%	0,0%
Congo	8,8	0,0%	0,1%	0,0%	0,0%	0,0%	0,0%	2,0	1,8	0,2	0,0	0,0	0,2	22,6%	20,7%	2,0%	0,0%	0,0%	2,0%	0,1%
(Democratic Republic	16,7	0,1%	0,1%	0,0%	0,0%	0,0%	0,1%	3,4	2,6	0,8	0,0	0,0	0,8	20,3%	15,5%	4,8%	0,0%	0,0%	4,8%	0,1%
Côte d'Ivoire	28,8	0,1%	0,2%	0,0%	0,0%	0,0%	0,0%	5,3	5,1	0,1	0,0	0,0	0,1	18,3%	17,9%	0,4%	0,0%	0,0%	0,4%	0,1%
Egypt	130,4	0,8%	1,4%	0,2%	0,0%	0,1%	0,2%	42,4	37,6	4,7	0,1	1,1	3,6	32,5%	28,8%	3,6%	0,0%	0,8%	2,8%	2,0%
Equatorial Guinea	13,1	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0	0,0	0,0	0,0	0,0	0,0	0,3%	0,0%	0,3%	0,0%	0,0%	0,3%	0,0%
Eritrea	1,3	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,1	0,1	0,0	0,0	0,0	0,0	10,9%	10,3%	0,6%	0,0%	0,0%	0,6%	0,4%
Ethiopia	19,7	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,4	0,2	0,2	0,0	0,0	0,2	2,2%	1,2%	1,0%	0,0%	0,0%	1,0%	0,0%
Gabon	12,5	0,0%	0,1%	0,0%	0,0%	0,0%	0,0%	1,7	1,6	0,1	0,0	0,0	0,1	13,3%	12,5%	0,8%	0,0%	0,0%	0,8%	0,0%
Ghana	24,8	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,8	0,3	0,5	0,0	0,0	0,4	3,0%	1,2%	1,8%	0,0%	0,0%	1,7%	0,1%
Guinea	6,3	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,8	0,7	0,1	0,0	0,0	0,1	12,6%	11,5%	1,1%	0,0%	0,0%	1,1%	0,0%
Guinea-Bissau	0,7	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,2	0,2	0,0	0,0	0,0	0,0	33,2%	32,9%	0,3%	0,0%	0,0%	0,3%	0,0%
an (Islamic Republic o	349,9	0,3%	0,5%	0,2%	0,0%	0,4%	0,1%	18,3	12,7	5,5	0,0	3,3	2,2	5,2%	3,6%	1,6%	0,0%	0,9%	0,6%	0,8%
Iraq	88,8	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,9	0,7	0,2	0,0	0,0	0,2	1,0%	0,8%	0,2%	0,0%	0,0%	0,3%	0,3%
Israel	179,2	1,4%	2,5%	0,4%	0,5%	0,1%	0,5%	77,8	66,2	11,5	3,4	0,6	7,5	43,4%	37,0%	6,4%	1,9%	0,3%	4,2%	5,6%
Jordan	17,1	0,6%	1,2%	0,1%	0,0%	0,3%	0,1%	35,1	31,4	3,8	0,1	2,6	1,1	205,4%	183,4%	22,0%	0,3%	15,3%	6,4%	0,5%
Kenya	32,0	0,4%	0,6%	0,2%	0,0%	0,0%	0,5%	22,1	14,8	7,3	0,0	0,2	7,1	69,2%	46,3%	22,9%	0,1%	0,6%	22,2%	0,3%
Lebanon (25%)	**24,8**	**1,2%**	**2,2%**	**0,2%**	**0,0%**	**0,1%**	**0,4%**	**65,6**	**59,3**	**6,3**	**0,0**	**0,8**	**5,4**	**264,3%**	**239,0%**	**25,4%**	**0,2%**	**3,3%**	**21,9%**	**2,0%**
Lebanon (50%)	**24,8**	**0,8%**	**1,5%**	**0,1%**	**0,0%**	**0,1%**	**0,2%**	**44,1**	**39,8**	**4,2**	**0,0**	**0,6**	**3,6**	**177,4%**	**160,5%**	**16,9%**	**0,1%**	**2,2%**	**14,6%**	**1,4%**
Lebanon (75%)	**24,8**	**0,4%**	**0,8%**	**0,1%**	**0,0%**	**0,0%**	**0,1%**	**22,2**	**20,1**	**2,1**	**0,0**	**0,3**	**1,8**	**89,3%**	**80,9%**	**8,5%**	**0,1%**	**1,1%**	**7,3%**	**0,7%**
Lebanon (90%)	**24,8**	**0,2%**	**0,3%**	**0,0%**	**0,0%**	**0,0%**	**0,0%**	**8,9**	**8,1**	**0,8**	**0,0**	**0,1**	**0,7**	**35,9%**	**32,5%**	**3,4%**	**0,0%**	**0,4%**	**2,9%**	**0,3%**
Lebanon (95%)	**24,8**	**0,1%**	**0,2%**	**0,0%**	**0,0%**	**0,0%**	**0,0%**	**4,5**	**4,0**	**0,4**	**0,0**	**0,1**	**0,4**	**18,0%**	**16,3%**	**1,7%**	**0,0%**	**0,2%**	**1,5%**	**0,1%**
Lesotho	1,7	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0	0,0	0,0	0,0	0,0	0,0	1,0%	0,0%	1,0%	0,0%	0,0%	1,0%	0,0%
Libya	68,0	0,1%	0,3%	0,0%	0,0%	0,0%	0,1%	7,5	6,7	0,7	0,0	-0,1	0,8	11,0%	9,9%	1,1%	0,0%	-0,1%	1,2%	0,3%
Madagascar	8,5	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	1,2	1,0	0,2	0,0	0,0	0,1	14,1%	12,0%	2,0%	0,0%	0,5%	1,6%	0,1%
Malawi	4,4	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,3	0,0	0,3	0,0	0,0	0,2	6,6%	0,9%	5,7%	0,0%	0,1%	5,6%	0,0%
Mali	8,2	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,4	0,3	0,1	0,0	0,0	0,1	5,2%	4,2%	0,9%	0,0%	0,0%	0,9%	0,0%
Mauritania	4,3	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,1	0,0	0,1	0,0	0,0	0,1	2,1%	0,0%	2,1%	0,0%	0,1%	2,0%	0,0%
Morocco	79,0	0,3%	0,7%	0,0%	0,0%	0,0%	0,1%	19,6	18,2	1,4	0,0	0,3	1,0	24,8%	23,0%	1,8%	0,0%	0,4%	1,3%	0,9%
Mozambique	10,5	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,2	0,1	0,2	0,0	0,0	0,1	2,3%	0,5%	1,8%	0,1%	0,4%	1,3%	0,0%
Namibia	8,8	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,3	0,2	0,2	0,0	0,0	0,1	3,9%	2,2%	1,8%	0,1%	0,1%	1,7%	0,0%
Niger	5,7	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,1	0,1	0,0	0,0	0,0	0,0	2,4%	1,8%	0,6%	0,0%	0,0%	0,6%	0,0%
Nigeria	275,6	0,3%	0,5%	0,1%	0,0%	0,1%	0,2%	16,4	13,2	3,2	0,0	0,4	2,7	5,9%	4,8%	1,1%	0,0%	0,2%	1,0%	0,1%
Rwanda	4,1	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,2	0,0	0,2	0,0	0,0	0,2	4,7%	0,0%	4,7%	0,0%	0,0%	4,7%	0,0%
Senegal	14,0	0,1%	0,2%	0,0%	0,0%	0,0%	0,0%	4,4	4,2	0,2	0,0	0,0	0,2	31,2%	29,9%	1,3%	0,0%	0,0%	1,3%	0,1%
Sierra Leone	2,2	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,2	0,0	0,2	0,0	0,0	0,2	9,7%	2,0%	7,7%	0,0%	0,0%	7,7%	0,0%
South Africa	333,1	0,6%	0,5%	0,7%	0,1%	0,1%	1,3%	34,9	14,2	20,7	0,6	0,8	19,3	10,5%	4,3%	6,2%	0,2%	0,2%	5,8%	1,1%
Sudan	59,4	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	1,8	1,3	0,5	0,0	0,2	0,3	3,0%	2,1%	0,8%	0,0%	0,3%	0,5%	0,1%
Swaziland	3,5	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,4	0,2	0,2	0,0	0,0	0,1	10,2%	5,1%	5,1%	1,0%	0,2%	3,9%	0,0%
Syrian Arab Republic	180,0	0,2%	0,5%	0,0%	0,0%	0,0%	0,1%	13,6	12,5	1,1	0,0	0,0	1,0	7,5%	6,9%	0,6%	0,0%	0,0%	0,6%	0,7%
zania, United Republi	21,8	0,0%	0,1%	0,0%	0,0%	0,0%	0,0%	2,2	1,5	0,7	0,0	0,0	0,7	9,9%	6,8%	3,1%	0,0%	0,0%	3,1%	0,1%
Togo	2,7	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,7	0,5	0,1	0,0	0,0	0,1	25,1%	20,3%	4,8%	0,0%	0,0%	4,7%	0,0%
Tunisia	38,9	0,1%	0,2%	0,0%	0,0%	0,0%	0,0%	5,4	5,0	0,4	0,0	0,1	0,3	13,8%	12,8%	1,0%	0,0%	0,2%	0,8%	0,3%
Uganda	11,9	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,7	0,4	0,3	0,0	0,0	0,3	5,6%	3,2%	2,3%	0,0%	0,0%	2,3%	0,1%
Yemen	21,7	0,2%	0,3%	0,0%	0,0%	0,0%	0,0%	9,3	8,6	0,7	0,0	0,3	0,3	42,9%	39,8%	3,1%	0,0%	1,5%	1,6%	0,1%
Zambia	14,1	0,0%	0,0%	0,0%	0,0%	0,0%	0,1%	1,4	0,5	0,9	0,0	0,0	0,9	9,9%	3,5%	6,4%	0,0%	0,2%	6,2%	0,0%
Zimbabwe	5,3	0,1%	0,1%	0,0%	0,0%	0,0%	0,1%	3,1	1,9	1,2	0,0	0,0	1,2	58,8%	36,0%	22,8%	0,1%	0,0%	22,7%	0,2%
Europe	**18 397**	**40,9%**	**42,6%**	**39,4%**	**17,2%**	**17,4%**	**60,7%**	**2 302**	**1 136**	**1 166**	**109**	**143**	**914**	**12,5%**	**6,2%**	**6,3%**	**0,6%**	**0,8%**	**5,0%**	**43,2%**
Albania	10,7	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,1	0,0	0,1	0,0	0,0	0,1	0,9%	0,4%	0,5%	0,0%	0,0%	0,5%	0,0%
Austria	389,2	0,5%	0,8%	0,3%	0,0%	0,4%	0,4%	29,8	20,0	9,8	0,2	3,0	6,5	7,7%	5,1%	2,5%	0,0%	0,8%	1,7%	1,0%
Belgium	470,9	1,4%	1,8%	1,1%	0,1%	0,1%	2,1%	80,4	47,4	33,0	0,4	1,0	31,6	17,1%	10,1%	7,0%	0,1%	0,2%	6,7%	2,6%
osnia and Herzegovin	15,8	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,8	0,6	0,2	0,0	0,0	0,2	4,9%	3,7%	1,2%	0,0%	0,0%	1,2%	0,0%
Bulgaria	44,4	0,0%	0,1%	0,0%	0,0%	0,0%	0,0%	1,8	1,4	0,4	0,0	0,0	0,4	4,1%	3,2%	0,9%	0,0%	0,0%	0,9%	0,2%
Croatia	60,5	0,1%	0,1%	0,0%	0,0%	0,0%	0,1%	3,1	2,1	1,0	0,0	0,0	1,0	5,1%	3,5%	1,6%	0,0%	0,0%	1,6%	0,0%
Czech Republic	190,2	0,1%	0,2%	0,1%	0,0%	0,0%	0,1%	6,3	4,8	1,5	0,0	0,0	1,5	3,3%	2,5%	0,8%	0,0%	0,0%	0,8%	0,1%
Denmark	319,4	0,1%	0,2%	0,1%	0,0%	0,0%	0,2%	8,3	4,3	4,0	0,2	0,1	3,7	2,6%	1,4%	1,2%	0,1%	0,0%	1,1%	0,6%
Estonia	22,4	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	1,2	1,0	0,1	0,0	0,0	0,1	5,2%	4,6%	0,6%	0,0%	0,0%	0,6%	0,0%
Finland	256,4	0,1%	0,1%	0,1%	0,0%	0,0%	0,2%	6,8	2,9	3,8	0,2	0,2	3,5	2,6%	1,1%	1,5%	0,1%	0,1%	1,4%	0,0%
France	2 660,6	7,2%	7,9%	6,5%	3,4%	6,8%	7,6%	402,3	210,6	191,6	21,5	56,0	114,1	15,1%	7,9%	7,2%	0,8%	2,1%	4,3%	10,3%
Germany	3 425,6	9,7%	6,1%	12,9%	0,5%	2,2%	24,0%	545,1	162,5	382,6	3,1	17,8	361,7	15,9%	4,7%	11,2%	0,1%	0,5%	10,6%	3,6%
Greece	318,9	2,0%	3,4%	0,7%	0,0%	0,1%	1,4%	112,3	91,1	21,2	0,3	0,4	20,5	35,2%	28,6%	6,6%	0,1%	0,1%	6,4%	2,1%
Hungary	140,2	0,1%	0,1%	0,0%	0,0%	0,0%	0,1%	3,7	2,3	1,5	0,1	0,1	1,3	2,7%	1,6%	1,0%	0,1%	0,1%	0,9%	0,1%
Iceland	21,7	0,1%	0,0%	0,1%	0,0%	0,0%	0,2%	3,5	0,2	3,3	0,0	0,0	3,3	16,1%	0,7%	15,4%	0,0%	0,1%	15,2%	0,0%
Ireland	270,1	0,5%	0,1%	0,8%	0,6%	0,2%	1,3%	26,9	1,8	25,1	3,8	1,5	19,8	9,9%	0,7%	9,3%	1,4%	0,6%	7,3%	0,7%
Italy	2 213,1	4,5%	8,5%	0,9%	0,1%	0,3%	1,7%	255,1	227,1	28,0	0,5	2,2	25,4	11,5%	10,3%	1,3%	0,0%	0,1%	1,1%	6,2%
Latvia	31,1	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	1,1	0,9	0,2	0,0	0,0	0,2	3,5%	3,0%	0,6%	0,0%	0,0%	0,6%	0,1%
Lithuania	39,7	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,8	0,7	0,1	0,0	0,0	0,1	2,0%	1,7%	0,3%	0,0%	0,0%	0,3%	0,1%
Moldova (Republic of)	4,4	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,2	0,1	0,1	0,0	0,0	0,1	3,9%	2,5%	1,4%	0,0%	0,0%	1,4%	0,0%
Netherlands	848,6	0,9%	0,5%	1,3%	0,3%	0,3%	2,2%	50,1	12,9	37,2	1,6	2,4	33,1	5,9%	1,5%	4,4%	0,2%	0,3%	3,9%	0,9%
Norway	400,9	0,25%	0,15%	0,33%	0,12%	0,13%	0,53%	13,9	4,1	9,8	0,7	1,1	8,0	3,5%	1,0%	2,5%	0,2%	0,3%	2,0%	0,3%
Poland	429,0	0,1%	0,2%	0,1%	0,0%	0,0%	0,1%	6,3	4,6	1,7	0,1	0,0	1,6	1,5%	1,1%	0,4%	0,0%	0,0%	0,4%	0,7%
Portugal	240,5	0,9%	1,0%	0,8%	0,3%	1,3%	0,7%	50,1	26,9	23,2	2,0	10,6	10,6	20,8%	11,2%	9,6%	0,8%	4,4%	4,4%	0,8%
Romania	174,6	0,0%	0,1%	0,0%	0,0%	0,0%	0,0%	2,3	1,7	0,6	0,0	0,0	0,5	1,3%	1,0%	0,3%	0,0%	0,0%	0,3%	0,7%
Serbia	43,2	0,0%	0,1%	0,0%	0,0%	0,0%	0,0%	1,6	1,4	0,2	0,0	0,0	0,2	3,7%	3,2%	0,5%	0,0%	0,0%	0,5%	0,0%
Slovakia	86,6	0,0%	0,1%	0,0%	0,0%	0,0%	0,0%	2,1	1,4	0,6	0,0	0,0	0,6	2,4%	1,6%	0,7%	0,0%	0,0%	0,7%	0,0%
Slovenia	48,1	0,0%	0,0%	0,0%	0,0%	0,0%	0,1%	1,3	0,5	0,8	0,0	0,0	0,8	2,8%	1,1%	1,7%	0,0%	0,0%	1,7%	0,0%
Spain	1 474,0	2,8%	5,1%	0,8%	0,1%	0,4%	1,3%	159,6	135,7	23,9	0,9	2,9	20,1	10,8%	9,2%	1,6%	0,1%	0,2%	1,4%	1,9%
Sweden	491,3	0,5%	0,5%	0,5%	0,5%	0,1%	0,8%	28,0	12,5	15,5	2,9	0,5	12,1	5,7%	2,5%	3,2%	0,6%	0,1%	2,5%	0,8%
Ukraine	148,7	0,1%	0,1%	0,0%	0,0%	0,0%	0,1%	4,7	3,7	0,9	0,0	0,0	0,9	3,1%	2,5%	0,6%	0,0%	0,0%	0,6%	0,2%
h of Great Britain and N	3 106,2	8,8%	5,6%	11,6%	11,2%	5,2%	15,3%	492,5	148,9	343,6	70,6	42,9	230,1	15,9%	4,8%	11,1%	2,3%	1,4%	7,4%	9,0%

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]
		Share of offshore wealth (2007)						billion of current US$ (2007)						fraction of GDP (2007)						
	2007 GDP (billion US$)	**Total offshore wealth**	Offshore wealth in Switzerland	Offshore wealth in the havens other than Switzerland	*Of which: Caribbean tax havens*	*Of which: Asian tax havens*	*Of which: European tax havens*	**Total offshore wealth**	Offshore wealth in Switzerland	Offshore wealth in the havens other than Switzerland	*Of which: Caribbean tax havens*	*Of which: Asian tax havens*	*Of which: European tax havens*	**Total offshore wealth**	Offshore wealth in Switzerland	Offshore wealth in the havens other than Switzerland	*Of which: Caribbean tax havens*	*Of which: Asian tax havens*	*Of which: European tax havens*	Memo: Share of HSBC wealth
Gulf countries	**910**	**8,5%**	**13,9%**	**3,7%**	**0,2%**	**9,3%**	**2,2%**	**481**	**371**	**110**	**1**	**76**	**33**	**52,8%**	**40,7%**	**12,1%**	**0,2%**	**8,3%**	**3,6%**	**6,2%**
Kuwait	114,6	0,9%	0,8%	1,0%	0,2%	2,7%	0,4%	49,8	20,9	28,8	1,0	22,4	5,4	43,4%	18,3%	25,1%	0,9%	19,6%	4,7%	0,6%
Oman	42,1	0,2%	0,2%	0,2%	0,0%	0,4%	0,2%	11,6	5,0	6,6	0,1	3,0	3,6	27,7%	11,9%	15,7%	0,2%	7,0%	8,5%	0,2%
Qatar	79,7	0,1%	0,1%	0,1%	0,0%	0,3%	0,1%	7,4	3,1	4,3	0,0	2,2	2,1	9,3%	3,9%	5,4%	0,0%	2,8%	2,6%	0,2%
Saudi Arabia	416,0	4,1%	7,0%	1,4%	0,0%	3,7%	0,6%	228,0	187,9	40,1	0,2	30,2	9,7	54,8%	45,2%	9,6%	0,0%	7,3%	2,3%	3,3%
United Arab Emirates	257,9	3,3%	5,8%	1,0%	0,0%	2,2%	0,8%	183,9	153,7	30,3	0,2	18,0	12,0	71,3%	59,6%	11,7%	0,1%	7,0%	4,7%	2,0%
Asia	**14 019**	**11,2%**	**9,2%**	**13,0%**	**2,2%**	**35,2%**	**5,4%**	**628**	**245**	**383**	**14**	**288**	**81**	**4,5%**	**1,7%**	**2,7%**	**0,1%**	**2,1%**	**0,6%**	**6,5%**
Afghanistan	9,7	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,1	0,0	0,1	0,0	0,0	0,0	0,5%	0,0%	0,5%	0,0%	0,1%	0,5%	0,0%
Armenia	9,2	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,3	0,3	0,0	0,0	0,0	0,0	3,3%	2,9%	0,4%	0,0%	0,0%	0,4%	0,0%
Australia	854,0	1,0%	0,6%	1,4%	0,3%	2,6%	1,3%	57,0	14,9	42,1	1,9	21,0	19,2	6,7%	1,7%	4,9%	0,2%	2,5%	2,2%	0,5%
Azerbaijan	33,1	0,0%	0,1%	0,0%	0,0%	0,0%	0,0%	2,4	2,0	0,4	0,0	0,0	0,4	7,1%	5,9%	1,2%	0,0%	0,1%	1,1%	0,0%
Bangladesh	79,6	0,0%	0,0%	0,0%	0,0%	0,1%	0,0%	2,2	1,1	1,1	0,0	0,9	0,2	2,8%	1,4%	1,4%	0,0%	1,1%	0,3%	0,0%
Bhutan	1,2	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0	0,0	0,0	0,0	0,0	0,0	2,1%	0,0%	2,1%	0,0%	0,0%	2,1%	0,0%
Cambodia	8,6	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,1	0,0	0,1	0,0	0,0	0,1	1,5%	0,5%	1,0%	0,0%	0,4%	0,6%	0,0%
China	3 550,3	1,4%	0,1%	2,6%	0,2%	8,9%	0,2%	81,1	3,9	77,2	1,1	72,7	3,3	2,3%	0,1%	2,2%	0,0%	2,0%	0,1%	0,3%
Fiji	3,4	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,1	0,0	0,1	0,0	0,1	0,0	3,0%	0,0%	3,0%	0,0%	2,2%	0,7%	0,0%
Georgia	10,2	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,5	0,3	0,1	0,0	0,0	0,1	4,4%	3,2%	1,2%	0,1%	0,0%	1,0%	0,0%
India	1 216,7	0,6%	0,7%	0,5%	0,1%	1,1%	0,3%	32,7	18,6	14,1	0,6	8,9	4,6	2,7%	1,5%	1,2%	0,1%	0,7%	0,4%	2,3%
Indonesia	432,2	0,3%	0,4%	0,2%	0,1%	0,4%	0,1%	15,0	9,8	5,2	0,4	3,2	1,6	3,5%	2,3%	1,2%	0,1%	0,7%	0,4%	0,1%
Japan	4 579,8	2,2%	0,6%	3,6%	1,0%	8,3%	2,2%	123,1	16,3	106,8	6,2	68,1	32,5	2,7%	0,4%	2,3%	0,1%	1,5%	0,7%	0,2%
Kazakhstan	104,8	0,1%	0,1%	0,0%	0,0%	0,0%	0,0%	3,6	2,8	0,7	0,1	0,1	0,5	3,4%	2,7%	0,7%	0,1%	0,1%	0,5%	0,2%
Korea (Republic of)	1 172,6	0,2%	0,1%	0,4%	0,1%	1,0%	0,1%	13,0	2,5	10,5	0,8	8,5	1,1	1,1%	0,2%	0,9%	0,1%	0,7%	0,1%	0,0%
Mongolia	4,2	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,1	0,0	0,1	0,0	0,1	0,0	1,6%	0,0%	1,6%	0,0%	1,5%	0,1%	0,0%
Nepal	10,3	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,7	0,3	0,3	0,0	0,2	0,1	6,3%	3,0%	3,3%	0,0%	2,1%	1,2%	0,0%
New Zealand	137,2	0,4%	0,5%	0,3%	0,0%	0,6%	0,2%	20,2	12,2	8,0	0,1	5,1	2,7	14,7%	8,9%	5,8%	0,1%	3,7%	2,0%	0,1%
Pakistan	152,4	0,4%	0,7%	0,1%	0,0%	0,2%	0,1%	23,4	19,4	4,0	0,1	1,7	2,2	15,4%	12,7%	2,6%	0,0%	1,1%	1,5%	0,5%
Philippines	156,0	0,3%	0,3%	0,3%	0,0%	1,0%	0,0%	17,8	8,6	9,2	0,3	8,3	0,7	11,4%	5,5%	5,9%	0,2%	5,3%	0,4%	0,1%
Sri Lanka	32,4	0,0%	0,0%	0,0%	0,0%	0,1%	0,0%	1,3	0,5	0,8	0,0	0,5	0,4	4,1%	1,5%	2,6%	0,0%	1,4%	1,1%	0,0%
Taiwan, Province of China[a]	400,0	1,6%	0,8%	2,2%	0,3%	7,5%	0,1%	87,3	21,2	66,1	2,2	61,8	2,2	21,8%	5,3%	16,5%	0,5%	15,4%	0,5%	0,0%
Tajikistan	3,7	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,2	0,1	0,0	0,0	0,0	0,0	4,5%	3,5%	1,0%	0,0%	0,1%	0,9%	0,0%
Thailand	262,9	0,4%	0,5%	0,3%	0,0%	0,6%	0,2%	20,6	12,3	8,3	0,1	4,8	3,4	7,8%	4,7%	3,2%	0,1%	1,8%	1,3%	0,0%
Tonga	0,3	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0	0,0	0,0	0,0	0,0	0,0	1,5%	0,0%	1,5%	0,0%	0,0%	1,5%	0,0%
Turkey	681,3	2,2%	3,6%	0,9%	0,0%	2,6%	0,3%	123,0	96,4	26,6	0,1	21,4	5,1	18,1%	14,2%	3,9%	0,0%	3,1%	0,7%	2,0%
Turkmenistan	12,7	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,1	0,1	0,0	0,0	0,0	0,0	0,9%	0,8%	0,1%	0,0%	0,0%	0,1%	0,0%
Uzbekistan	22,3	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,9	0,8	0,1	0,0	0,0	0,1	4,2%	3,6%	0,6%	0,0%	0,1%	0,5%	0,0%
Viet Nam	77,4	0,0%	0,0%	0,0%	0,0%	0,1%	0,0%	1,1	0,2	0,9	0,0	0,6	0,2	1,4%	0,3%	1,1%	0,0%	0,8%	0,3%	0,0%
Russian Federation	**1 300**	**3,0%**	**2,2%**	**3,7%**	**0,0%**	**0,1%**	**7,3%**	**169**	**60**	**110**	**0,2**	**0,4**	**109**	**13,0%**	**4,6%**	**8,4%**	**0,0%**	**0,0%**	**8,4%**	1,0%
Latin America	**3 746**	**8,5%**	**14,1%**	**3,3%**	**9,0%**	**3,0%**	**1,1%**	**475**	**377**	**99**	**57**	**25**	**17**	**12,7%**	**10,1%**	**2,6%**	**1,5%**	**0,7%**	**0,5%**	**16,7%**
Argentina	287,5	1,8%	3,4%	0,4%	0,7%	0,2%	0,3%	102,3	91,8	10,5	4,4	1,9	4,3	35,6%	31,9%	3,7%	1,5%	0,6%	1,5%	2,0%
Bolivia (Plurinational State of)	13,1	0,1%	0,1%	0,0%	0,1%	0,0%	0,0%	3,3	2,7	0,6	0,5	0,0	0,1	25,1%	20,3%	4,8%	3,9%	0,3%	0,5%	0,1%
Brazil	1 397,1	1,5%	2,6%	0,5%	0,8%	0,6%	0,4%	84,9	68,9	16,0	5,2	4,6	6,1	6,1%	4,9%	1,1%	0,4%	0,3%	0,4%	3,9%
Chile	172,6	0,2%	0,2%	0,1%	0,5%	0,1%	0,0%	10,2	6,0	4,2	3,2	0,7	0,3	5,9%	3,5%	2,5%	1,9%	0,4%	0,2%	0,3%
Colombia	206,2	0,3%	0,3%	0,4%	1,4%	0,1%	0,1%	18,5	7,8	10,6	9,0	0,8	0,8	8,9%	3,8%	5,1%	4,3%	0,4%	0,4%	0,2%
Cuba	54,3	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,3	0,2	0,1	0,1	0,0	0,0	0,6%	0,4%	0,2%	0,1%	0,1%	0,0%	0,0%
Dominican Republic	44,0	0,1%	0,1%	0,1%	0,4%	0,2%	0,0%	5,7	1,5	4,2	2,3	1,7	0,2	13,0%	3,4%	9,6%	5,2%	3,9%	0,5%	0,0%
Ecuador	51,0	0,2%	0,2%	0,1%	0,5%	0,0%	0,0%	8,5	4,7	3,7	3,4	0,2	0,1	16,6%	9,3%	7,4%	6,7%	0,5%	0,2%	0,1%
El Salvador	17,0	0,0%	0,0%	0,0%	0,2%	0,0%	0,0%	1,6	0,5	1,2	1,1	0,0	0,0	9,7%	2,7%	6,9%	6,5%	0,2%	0,2%	0,0%
Guatemala	33,6	0,1%	0,0%	0,2%	0,5%	0,2%	0,0%	5,9	1,1	4,8	3,3	1,4	0,0	17,5%	3,2%	14,3%	10,0%	4,2%	0,1%	0,0%
Haiti	9,5	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,3	0,1	0,2	0,1	0,1	0,0	3,5%	1,3%	2,2%	0,9%	1,3%	0,1%	0,0%
Honduras	12,4	0,0%	0,0%	0,0%	0,1%	0,0%	0,0%	1,0	0,3	0,7	0,6	0,1	0,0	7,7%	2,2%	5,5%	4,9%	0,5%	0,1%	0,0%
Jamaica	12,8	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	1,6	0,7	0,9	0,3	0,3	0,3	12,5%	5,7%	6,8%	2,3%	2,3%	2,2%	0,0%
Mexico	1 052,7	1,3%	1,9%	0,7%	1,7%	0,8%	0,2%	72,1	51,6	20,4	11,1	6,9	2,4	6,8%	4,9%	1,9%	1,1%	0,7%	0,2%	1,2%
Nicaragua	7,4	0,0%	0,0%	0,0%	0,1%	0,0%	0,0%	1,3	0,3	0,9	0,9	0,0	0,0	16,9%	4,6%	12,3%	11,8%	0,2%	0,3%	0,0%
Paraguay	17,9	0,1%	0,2%	0,0%	0,0%	0,0%	0,0%	4,9	4,2	0,7	0,2	0,1	0,4	27,3%	23,6%	3,7%	1,3%	0,4%	2,1%	0,0%
Peru	102,2	0,1%	0,1%	0,1%	0,4%	0,1%	0,0%	8,0	3,8	4,1	2,8	1,0	0,4	7,8%	3,8%	4,1%	2,7%	1,0%	0,4%	0,1%
Suriname	2,9	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,3	0,1	0,2	0,0	0,1	0,1	8,7%	2,9%	5,7%	0,0%	2,5%	3,2%	0,4%
Trinidad and Tobago	21,6	0,0%	0,0%	0,0%	0,1%	0,0%	0,0%	1,2	0,2	1,0	0,4	0,0	0,5	5,5%	1,1%	4,4%	2,1%	0,2%	2,1%	0,0%
Venezuela (Bolivarian Republic of)	230,4	2,6%	4,9%	0,5%	1,2%	0,6%	0,1%	143,7	130,2	13,5	7,8	4,6	1,1	62,4%	56,5%	5,9%	3,4%	2,0%	0,5%	8,3%
United States of America	**14 474**	**18,7%**	**3,1%**	**32,9%**	**69,5%**	**32,7%**	**17,5%**	**1 054**	**83**	**971**	**440**	**268**	**263**	**7,3%**	**0,6%**	**6,7%**	**3,0%**	**1,9%**	**1,8%**	**6,0%**
Canada	**1 469**	**1,2%**	**1,2%**	**1,2%**	**1,1%**	**0,9%**	**1,3%**	**67**	**33**	**34**	**7**	**7**	**20**	**4,6%**	**2,2%**	**2,3%**	**0,5%**	**0,5%**	**1,4%**	**2,2%**
Other	565							-92	-85	-7	0	-4	-4	-16,3%						-2,2%
Total	**57 452**	**101,6%**	**103,2%**	**100,2%**	**100,0%**	**100,1%**	**100,4%**	**5 624**	**2 667**	**2 957**	**633**	**817**	**1 507**	**9,8%**	**4,6%**	**5,1%**	**1,1%**	**1,4%**	**2,6%**	100,0%

Source: Table A3 from Alstadsæter et al. (2018). Author's computations for Lebanese estimates.

Table A4: From fiscal income to national income

	Type of income	Data sources
Labor Income	Mixed income (Self-employment income by independent)	Fiscal micro-files
	Non filers (including informal sector)	N.A
	Tax evasion	N.A
	Employer fringe benefits & payroll taxes	N.A
Capital Income	Other mixed income*	Fiscal micro-files
	Corporated profits	
	incl. Undistributed profits (retained earnings)	Government tax reports
	incl. Distributed profits	Government tax reports
	Interest incomes	National accounts
	Rental Income	
	incl. built property revenues	Fiscal micro-files
	incl imputed rents and property tax	Government tax reports
	incl. royalties	N.A
	Non filers and others	N.A

Notes: Statistics on the distribution of income expressed in PPP €2016. Adult individual aged 20 and more; Equal-split assumption among adult members of a household. In 2016, 1 euro = 1641 LBP (market exchange rate) or 172.7 pound (PPP). Income corresponds to pre-tax national income. Fractiles are defined relative to the total number of adult individuals in the population. Corrected estimates (combining survey, fiscal, wealth and national accounts data), from 2014 adjusted for the price change between 2014-2016 (shares are not affected).
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