ARI 110/2025
11 August 2025

Taxing billionaires: wealth dynamics and revenues from a global minimum tax

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Theme

For some time, the G20 has debated levying an annual minimum tax of 2% on the highest earners (billionaires). What would the effect of such a tax be? How could it be put into practice?

Summary

Wealth inequality has become one of the main problems facing modern societies due to its impact on social cohesion and economic stability. The number of people with net worth in excess of US$1 billion has grown at an annual rate of 10% in recent decades, rising from 140 people in the 1980s to 2,781 billionaires today. The increase has been accompanied by new ways of concealing wealth. Offshore tax evasion and the concealment of wealth in financial institutions headquartered in tax havens has been joined by investments in real estate, assets capable of sidestepping information exchange and maintaining secrecy, and the domiciles of major fortunes being moved to traditionally low-tax jurisdictions.

Empirical research confirms the tax deficit of people with substantial wealth. The greater part of a country's population pays 25%-50% of its income in taxes across the entire range of incomes, whereas billionaires and multimillionaires pay 20%-25%. In all cases, the effective tax rates for billionaires are much lower than those for other income groups. In the absence of policies that address the billionaires' tax deficit, this group's wealth will continue rising and in 10 years' time is on course to account for 20% of global GDP. Faced with this situation, various forums, particularly the G20, have been debating the levying of a global minimum tax on the highest income earners (multimillionaires and billionaires) as a necessary regulatory response. Such a tax would constitute a supplementary rate for billionaires equalling 2% of the value of their wealth.

In the past, attempts to levy a wealth tax in an effective manner have had limited success owing to the mobility of billionaires and the wealth itself. The coming into force of the FATCA Act in the US and the CRS in the OECD helped to establish the automatic exchange of information between tax authorities for certain financial assets. Broadening the information exchange to other asset classes could facilitate the implementation of a

global minimum tax. Hammering out a multilateral agreement on a global minimum tax on billionaires' wealth is an uncertain prospect, as negotiations between countries on common international standards tend to last for years. Even so, recent experience shows that agreements can be successfully sealed when multiple countries form a critical mass, take the first step unilaterally, sign a treaty and start to exchange information. Apart from the automatic exchange of information, the creation of a global assets register could become the governments' ultimate goal in the years ahead, once the tax has been implemented.

Analysis

1. Introduction

The taxation of billionaire wealth has emerged as a prominent topic in global economic discussions. Over the past decades, the wealthiest 1% of households have held about 40% of global wealth, a share that has remained largely unchanged. A key reason for its persistence has been the ability of billionaires to pay lower effective tax rates compared with the rest of the population. In light of recent debates at the G20 summit in 2024, the global economic community has begun considering a new approach: implementing a 2% annual minimum tax on billionaire wealth.

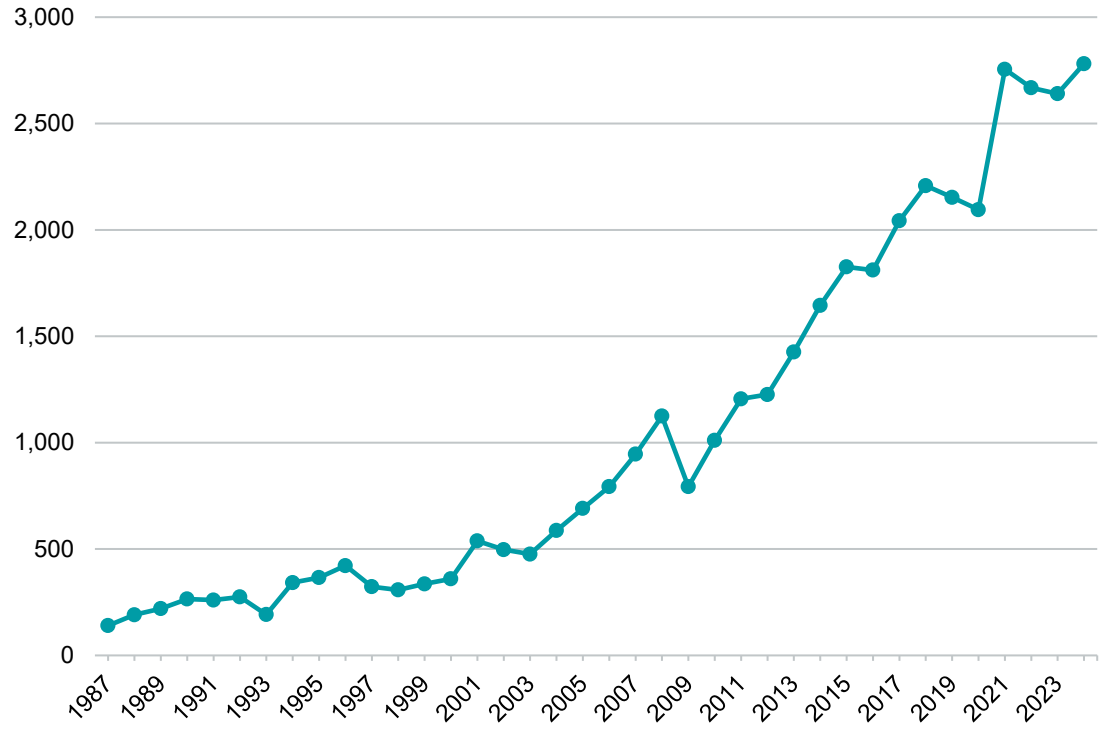
This paper examines the dynamics of billionaire wealth accumulation and quantifies the revenue that could be generated from such a tax. Using billionaire wealth growth in the past decade, we estimate that annual global revenue could reach 0.22% of global GDP in 2025 and increase to 0.27% by 2030, from 0.06% today. The total revenue over the next seven years will be around US$2.1 trillion in absolute value. This can become a substantial income source for countries that could serve as a lever to effectively address future fiscal challenges and reduce inequality. In the sections below we explore the evolution of billionaire wealth over the past four decades and the mechanisms through which tax evasion is facilitated, we present annual revenue estimates from a global minimum tax and, finally, we discuss how global cooperation could effectively enforce this.

2. Global top wealth

Wealth inequality has emerged as one of the most important issues facing our modern societies, impacting social cohesion and economic stability. Since the 1970s the disparities in wealth between rich and poor have been aggravated by globalisation, technological progress and policy decisions that favoured the wealthy and large multinationals.[1] According to Forbes, there are today 2,781 individuals with an estimated wealth above US$1 billion. Compared with the global population they form only a tiny group, yet they concentrate an aggregate amount of US$14.2 trillion in wealth. The number of billionaires has grown at an average annual rate of 10% in the past decades, from 140 billionaires in the 1980s to 2,781 today (see Figure 1).

[1] For more information see the seminal study by Thomas Piketty (2022), *Capital in the Twenty-First Century*. Recent trends in inequality are presented in the *World Inequality Report 2022*.

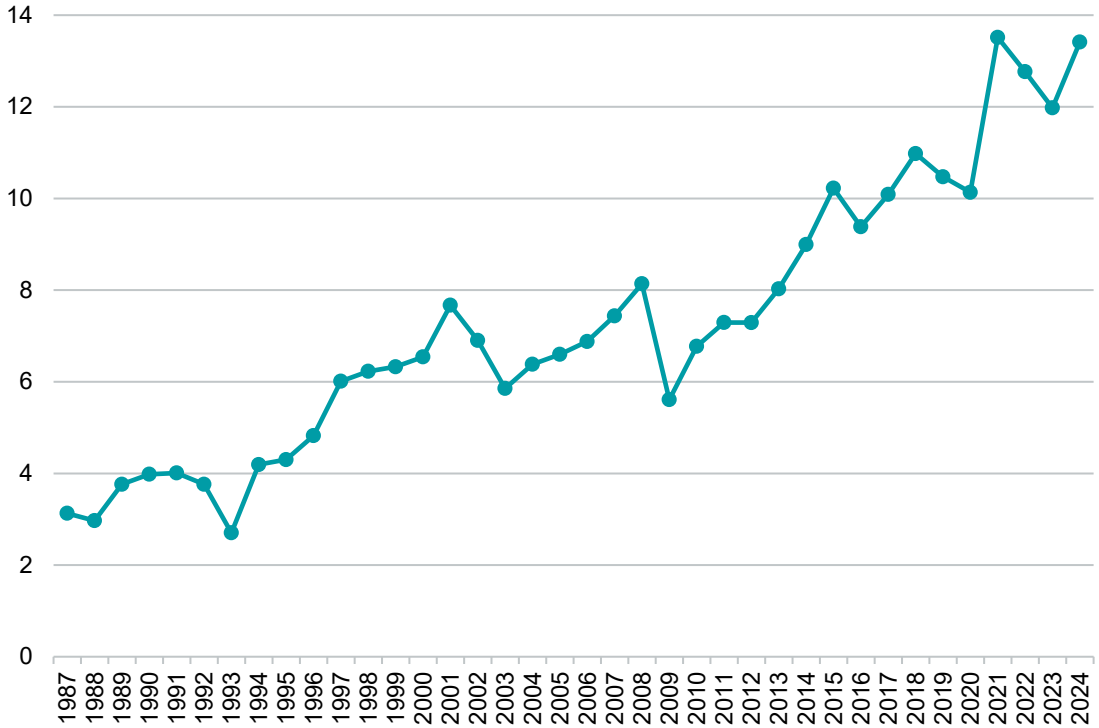
Figure 1. Number of billionaires, 1987-2024



Notes: billionaires are billionaire households. Forbes billionaire data used for the full period. See Appendix (a) for more information on the data. Source: the authors.

To enable a comparison over the years, the increase of billionaire wealth can be calculated in income shares: the amount of global wealth held by top income earners (Atkinson *et al.*, 2011). Using this method, billionaires account for the top 0.0001% of individuals globally. As shown in Figure 2, the wealth held as a percentage of global GDP has increased from 3% to 13.5%, over the past four decades. Figure 3 presents shows the extent of this increase using real compound annual growth rates of wealth (after correcting for world inflation). Every decade since the 1980s has seen the real wealth held by billionaires increase by around 7% annually, while in comparison the average wealth per adult has grown by 1.8%. Intuitively, the world's wealthiest have experienced quadruple growth rates in wealth compared with the average adult. The compound effect of this increase has enormous implications for inequality and can explain the increase of global wealth shares held by the top 0.0001%.

Figure 2. Wealth of the global top 0.0001% (as a % of world GDP), 1987-2024



Notes: this figure reports the evolution of the wealth owned by the top 0.0001% wealthiest households globally, expressed as a fraction of world GDP. In 2024 the top 0.0001% (one household out of 1 million) includes around 3,000 households, which corresponds broadly to the number of dollar billionaires according to Forbes; hence, in 2024 the wealth of the top 0.0001% was nearly equal to the wealth of global billionaires (US$14.4 trillion according to Forbes, or 13% of world GDP). In earlier years, the top 0.0001% included households with less than US$1 billion; their wealth (not reported by Forbes, which focuses on US dollar billionaires) is estimated using Pareto-interpolation techniques. See Appendix (b) for a detailed methodology. Source: the authors.

Figure 3. Real annual growth rates: wealth of top 0.0001% and average wealth per adult

Years	Wealth of top 0.00001%	Average wealth per adult
1987-1994	7,2	0,4
1994-2004	7,8	2,5
2004-2014	6,6	0,4
2014-2024	6,9	3,5
Total	7,1	1,8

Notes: the table shows the average real (ie, corrected for inflation) compound annual growth rate for the wealth of the top 0.0001% wealthiest households globally and the average wealth per adult. See Appendix (b) for a detailed methodology on calculating the wealth of the top 0.0001%. Data on global private wealth (ie, financial and non-financial assets minus debts) is from Piketty (2014) and the UBS Global Wealth Databook 2023. Source: the authors.

Geographical variation across continents is another defining characteristic of billionaires' global wealth. In 2024 the vast majority of billionaires resided in Asia, North America and Europe (2,545 out of 2,781), whilst smaller numbers resided in Oceania, the Middle East, Latin America and the Caribbean, and in Africa (see Figure 2). In terms of wealth, North America tops the list; the billionaires' total worth was US$6 trillion out of the US$14.2 world total, equivalent to a particularly large 20% of North American GDP in 2024. The last column of Figure 3 presents similar percentages for all regions, indicating a significant variation of wealth ownership across the globe, with wealth appearing to have been amassed in the Global North and to be considerably lacking from the Global South.

Overall, the past four decades of billionaires' wealth dynamics indicate that: (a) the share of wealth held by the top 0.0001%, equivalent to the global billionaires percentage, has increased considerably from 3% to 13.5% of global GDP; (b) the compound annual growth rate of wealth is four times the growth rate of the average individual, with the total effect of the difference having a profound impact on inequalities; and (c) there is a significant regional variation with more global billionaire wealth held at the Global North and less at the Global South.

Figure 4. Billionaire breakdown by region in 2024

Region	Number of Billionnaires	Wealth (US$ bn)	GDP (US$ bn)	% Wealth / GDP
North America	880	6015,5	30080	20
Europe	677	3444,7	24843,9	13.9
Oceania	52	230,4	2135,5	10.8
Asia	988	3705,3	39518,1	9.4
Latin America and the Caribbean	113	537	6126,2	8.8
Middle East	50	185,8	3492,6	5.3
Africa	21	90,9	3240,2	2.8
Total	2781	14209,6	109436,5	13

Notes: this figure shows the number of billionaire households, their wealth (in current US$), GDP (in current US$) and billionaire household wealth expressed as a % of GDP for each region for 2024. All data on billionaire households are from the Forbes data. See Appendix (a) for more information on the latter. All GDP data is from the World Bank and the External Wealth of Nations database. Source: the authors.

3. Billionaire mobility

3.1. Mobility of wealth

One of the ways of concealing wealth has been through shifting financial wealth to offshore destinations. Recent estimates show that US$12 trillion of global financial wealth is held today in tax havens, or around 12% of global GDP (Alstadsæter *et al.*, 2023). This form of offshore tax evasion has a non-trivial effect at the very top of wealth

distribution. Its practice is highly concentrated at the top 0.1% of richest households, which own around 80% of offshore wealth, while the top 0.01% own around 50% (Alstadsæter *et al*., 2018). The top 0.01% evade around 25% of their taxes by exploiting legal loopholes and exploiting tax havens (Alstadsæter *et al*. 2019).

In the past the most common form of secrecy took place through financial institutions based in tax havens. However, important policy developments in the last decade curtailed this practice significantly. In 2010 the US enacted the Foreign Account Tax Compliance Act (FATCA), requiring all banks to report account holdings of US citizens worldwide. A similar set of laws was introduced in 2014 by more than 100 countries known as the Common Reporting Standard (CRS). Financial institutions report account holdings, whilst tax administrations exchange this information automatically between them. Increased cooperation has led to a reduction of unreported financial wealth: after the introduction of the automatic exchange of information, it is estimated that around 70% of global offshore wealth is now being taxed, from an estimated 10% before the reforms (Alstadsæter *et al*., 2023).

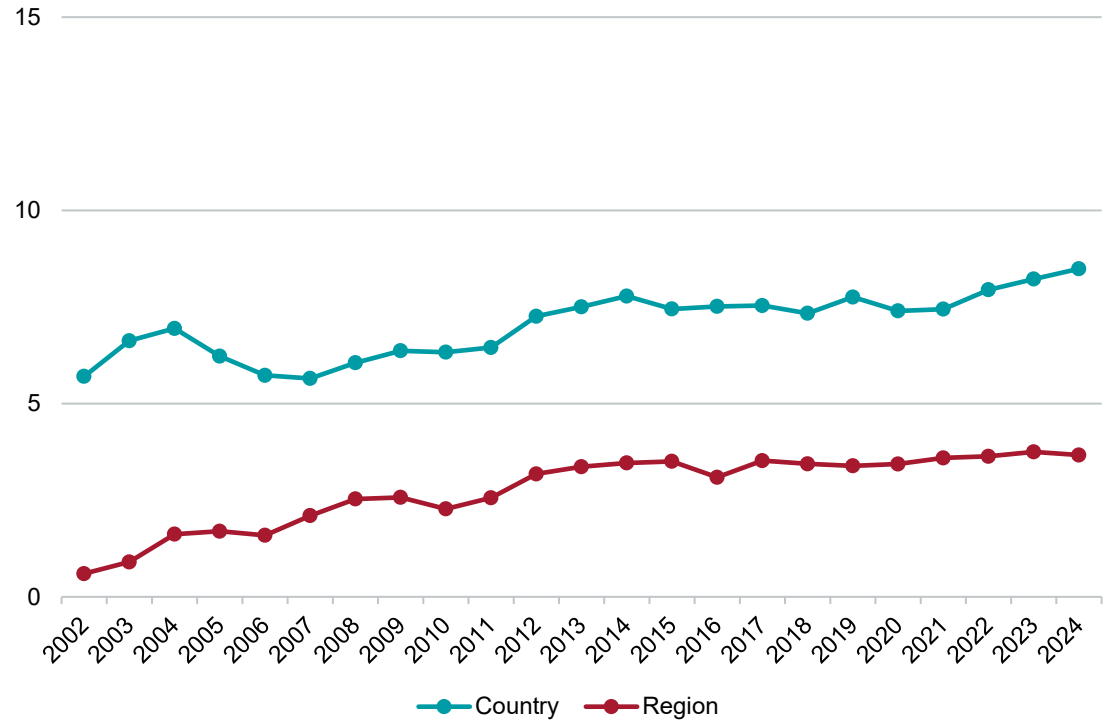
Following the introduction of the CRS, high net-worth individuals have been using other asset classes to hide wealth. Evidence emerging from recent research has noted the use of real estate as an asset class to avoid information exchange and maintain secrecy. Quasi-experimental findings document an increase in UK real estate by US$45 billion following the introduction of CRS (Bomare & Le Guern Herry, 2022). Evidence from the Dubai property market suggests that foreign nationals hold around 43% of the total value of all residential property in the city, whilst a substantial boom in Russian investments in the city is documented following the invasion of Ukraine, with both utility accounts and residential leases associated with Russian nationals increasing sharply (Alstadsæter *et al*., 2024). This serves as evidence of the mobility of wealth. The latest information on offshore real estate can be found at the EU Tax Observatory's Atlas of Offshore Wealth (Alstadsæter *et al*., 2022), which documents the global size of this harmful practice.[2]

3.2. Mobility of individuals

Hiding wealth in tax havens also takes place through the mobility of billionaires to other countries or regions. Figure 5 plots the percentage of billionaires residing outside their country (dark blue line) or region (light blue line) of nationality. This percentage has been increasing over the years. Around 9% are currently living in another country. Figure 6 shows the residency jurisdiction breakdown of billionaires living outside their country of nationality. Over the period from 2002 to 2024, out of all billionaires living outside their nationality country, 22.9% lived in Switzerland, 22.5% in the UK and 13.1% in the US. Other traditionally low-tax jurisdictions hold a particularly high percentage compared with their population: Hong Kong, Monaco, Singapore and the UAE. The list of countries is not surprising given the favourable regimes prevailing in these jurisdictions.

[2] See https://atlas-offshore-world.org/.

Figure 5. Billionaires residing in another country/region



Notes: the graph shows the percentage of billionaire households residing outside their nationality country and region. Our definition of nationality is at the country level and not the jurisdiction level (eg, a member of Hong Kong is a Chinese national). See Appendix (c) for more information. We are missing between 5% and 35% of the world's billionaire households between 2002 and 2009. The citizenship and residence country are assumed to be the same for the small amount of billionaires whose country of residence is unknown (less than 1%). Source: the authors.

Countries have been competing in attracting high net-worth individuals in a variety of ways (Agrawal *et al*., 2020; Baselgia & Martinez, 2024; Advani *et al*., 2023; Jakobsen *et al*., 2024). The introduction of preferential regimes have focused on: (a) preferential taxation of worldwide income if the tax residency is shifted; (b) tax reductions for a specific occupational activity, such as for athletes, artists and digital nomads; (c) regimes targeting retirees; and (d) citizenship or passport or preferential taxation in exchange for investment in the country. A number of such regimes in Europe and the upward trend since the 1990s have been documented in Flamant *et al*. (2021).

Figure 6. Residency jurisdiction of billionaires living outside their nationality countries, 2002-24

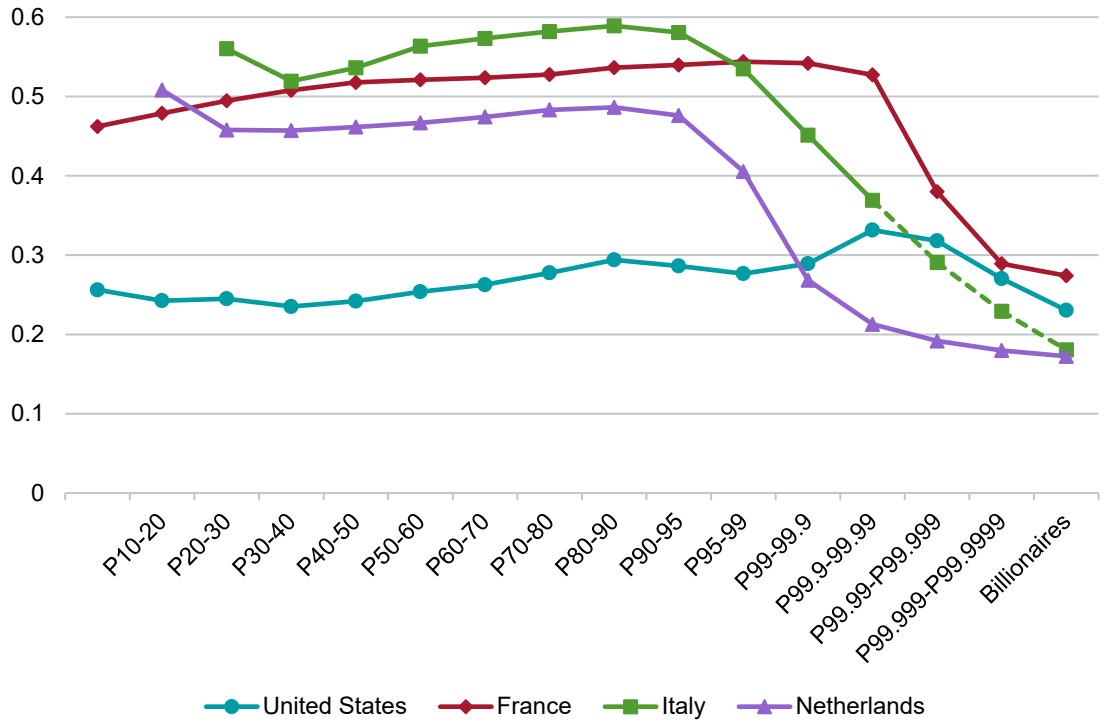
Residency jurisdiction	% Billionaires
Switzerland	22,9
United Kingdom	22,5
United States	13,1
China	7,6
Hong Kong	6,1
Monaco	5,6
Singapore	5
United Arab Emirates	5
Other	12,2

Notes: the table shows the residency jurisdiction breakdown of billionaire households living outside their nationality country. For example, 22.9% of billionaire households living outside their nationality country from 2002 to 2024 lived in Switzerland. Several jurisdictions (eg, Hong Kong, Macao and China) can have the same nationality. Therefore, a Hong Kong permanent resident living in mainland China is not living outside his nationality country. See Appendix (c) for more information. There are 39 billionaires who have lived in China without possessing Chinese nationality over this period. Eighteen have a nationality from the US, seven from Canada, seven from Taiwan and the remaining seven from other countries. Many of the US and Canadian nationals immigrated from China to North America to pursue higher studies or scientific research in the 1980s and 1990s and then returned to create companies in China (eg, Liu Xiucai, Lou Boliang and Ning Zhao). These returning Chinese-origin emigrants may have been recruited through one of the several programmes (eg, the Thousand Talents Plan) aiming to attract foreign (and particularly Chinese-origin foreign) experts in science and technology. There are publicly available Forbes billionaire data for the full period. We are missing between 5% and 35% of the world's billionaires between 2002 and 2009. The citizenship and residency country are assumed to be the same for the small amount of billionaires whose residency country is unknown (less than 1%). Source: the authors.

4. Taxing billionaires

For a long time, estimating how much billionaires evade in taxes was not possible due to the lack of data. One would need an estimate of their global income, an assessment of the fragmentation of their wealth, taking into account any avoidance practices, and a comparison against the taxes they pay. In recent years, a number of studies have begun addressing this gap in the US, in France, in Italy and in the Netherlands (Sáez & Zucman, 2019; Bach *et al*., 2023; Bruil *et al*., 2022; Guzzardi *et al*., 2023), while similar studies are ongoing in a number of countries.

Figure 7. The tax deficit of billionaires



Notes: this figure reports estimates of effective tax rates by pre-tax income groups and for billionaires in France, the Netherlands, the US and Italy. The estimates include all taxes paid at all levels of government and are expressed as a percent of pre-tax income. P0-10 denotes the 10% of adults at the bottom of the pre-tax income distribution, P10-20 the next decile, etc. Pre-tax income includes all national income (measured following standard national account definitions) before government taxes and transfers and after the operation of the pension system. National income excludes unrealised capital gains but includes the retained earnings of companies. For billionaires: EU Tax Observatory extrapolations based on the regressivity trend observed between P99 and P99.99. Source: Gabriel Zucman (2024), 'A blueprint for a coordinated minimum effective taxation standard for ultra-high-net-worth individuals', p. 11.

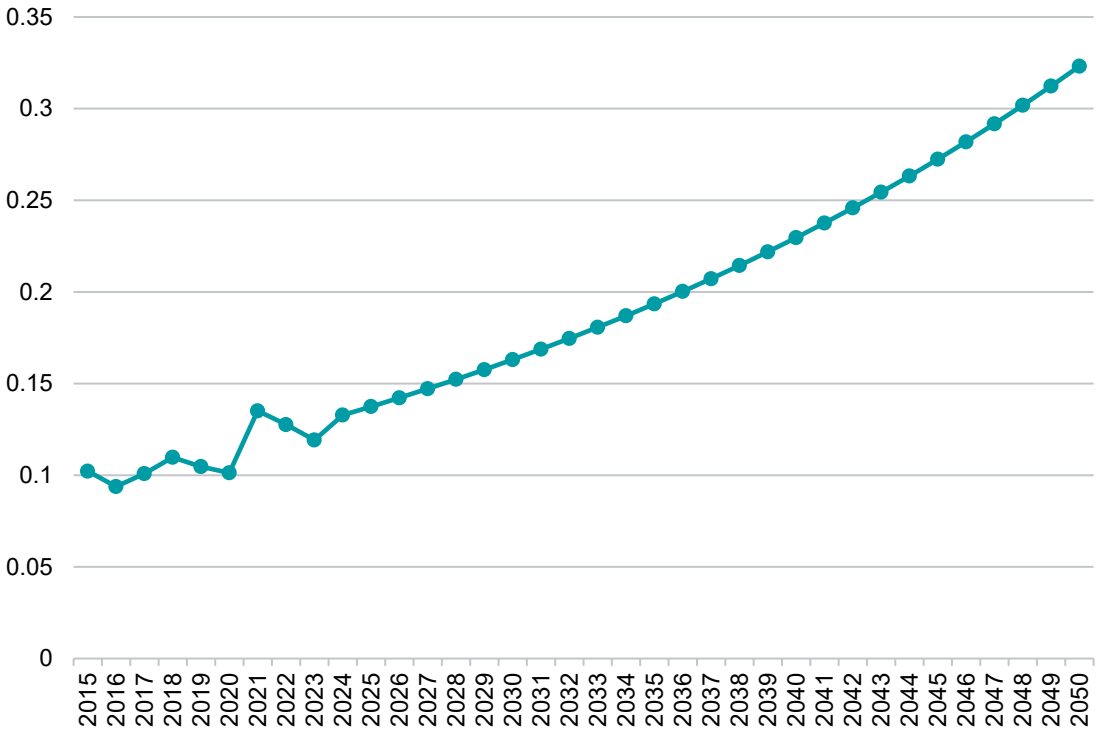
By combining evidence from the studies with previous work on the effective tax rates of individuals across the income distribution we can assess the percentage of taxes paid in each percentile. A common plot for all four countries is shown in Figure 7. Individuals are binned in deciles based on their pre-tax income with a zoom in at the top of the income distribution, specifically at 0.1%, 0.01% and for billionaires.

What emerges from all four cases is a tax deficit for high net-worth individuals: the percentage of taxes over income falls dramatically at the very top. The majority of a country's population pay 25%-50% of their income in taxes across the income distribution, while billionaires and centi-millionaires pay around 20%-25%. In all cases effective tax rates for billionaires are significantly lower than those for other income groups, and thus substantially lower than the average tax rate in the population. This indicates that the tax system is moderately progressive, except at the very top, where it becomes highly regressive.

Due to this tax deficit, the wealth of billionaires is expected to continue growing with a profound effect on inequalities. Figure 8 shows an extrapolation of their wealth as a percentage of global GDP up to 2050. Recall that this share has increased from 3% in

1987 to 14% today. In the absence of any policy to address the tax deficit of billionaires, we estimate that the wealth of billionaires will continue to increase to about 20% of global GDP in 10 years from now. A global minimum tax at the very top of the income distribution (billionaires and centi-millionaires) is emerging as a necessary policy response. Such a tax will act as a top-up tax for billionaires who pay less than the equivalent of 2% of their wealth value.

Figure 8. Projected wealth of the top 0.0001% as a percentage of global GDP



Notes: the figure shows the projected wealth of the top 0.0001% wealthiest global households as a percentage of global GDP. We assume the real compound growth rate of the wealth of the top 0.0001% wealthiest households globally for 1987-2024 (ie, 7.1%). This is a conservative estimate since the real compound growth rate of the wealth of the top 0.0001% wealthiest households globally in the last 15 years (2010-24) was 7.9%. We assume a 3.5% growth rate for GDP (ie, the compound growth rate of GDP for 2010-24). See Appendix (b) for a detailed methodology on the calculation of the wealth of the top 0.0001%. All GDP data is from the World Bank and the External Wealth of Nations database. Source: the authors.

Figure 9 shows the revenue of a 2% minimum tax on billionaires' wealth. The basis of projections is the growth of the number and wealth of billionaires in the past 10 years (5.9% and 9.9% respectively), which we can extrapolate for the years ahead.[3] The overall amount of additional revenue in 2025 amounts to 0.22% of global GDP, increasing to 0.27% in 2030, a significant increase from today's 0.06%. Under current dynamics, the wealth of billionaires will increase from US$14.2 trillion in 2024 (around 13% of 2024 GDP) to around US$25 trillion in 2030 (around 20% of estimated 2030 GDP). The absolute amount of revenue to be collected until 2030 amounts to US$2.1 trillion, which can form a significant source of revenue for countries globally. This revenue

[3] Growth over the past decade is the slowest of the last four decades and therefore represents the most conservative billionaire growth rate we could utilise.

can act as an important global lever for accelerating the green transition, enhancing investment in public services (health, education, infrastructure and entrepreneurship) and safeguarding the welfare state.

Figure 9. Projected revenues from a 2% minimum tax

Year	Number of Billionaires	Wealth (as a % of GDP)	Taxes currently paid (as a % of GDP)	Revenues from minimum tax 2% (as a % of GDP)
2025	2931	13,75	0,06	0,22
2026	3089	14,37	0,06	0,23
2027	3256	15,02	0,06	0,24
2028	3432	15,71	0,07	0,25
2029	3617	16,42	0,07	0,26
2030	3813	17,16	0,07	0,27

Notes: the compound growth rate for the number of billionaires (ie, 5.4%) and their total wealth (ie, 8.2%) from 2014-24 is assumed for 2025-30. This is a conservative estimate since it was the slowest 10-year period of growth since 1987. Taxes currently paid is an estimation of the total amount of taxes paid by billionaires in their residence country (as a % of world GDP). The 2% minimum tax is the estimated revenue of a 2% tax on total wealth minus taxes currently paid (as a % of world GDP). We assume that billionaires living in the US pay 0.7% of their wealth in taxes and 0.25% in other countries. This is based on country-level evidence from the US, France, the Netherlands and Italy. We assume the mean share of US-resident billionaire wealth from 2014-24 (around 37% of total wealth) for 2025-30. Forbes billionaire data has been used for the full period. Piketty (2013) has been used for 1987-2013. Publicly available online data has been used for 2014-24. Source: the authors.

5. Implementation

In the past, attempts to tax wealth have been less successful due to the mobility of billionaires or the mobility of wealth, as described above. However, the introduction of FACTA in the US and the OECD's CRS established automatic information exchange between tax authorities for certain financial assets. Currently financial institutions supply this information to national authorities. The latter exchange the information between them. Exchange happens for all individuals globally regardless of wealth, thus the information exists and is already being exchanged for billionaires. Extending the information exchange to other classes of assets can make a global minimum tax easier to implement.

The asset classes that must be exchanged are mainly company ownership information and real estate information. Regarding the former, the majority of countries worldwide operate a beneficial ownership register, which records the final beneficial owner of a company. This information is held by national governments, but the level of access varies from country to country. For high net-worth individuals, beneficial ownership information can be exchanged automatically, thus making it hard to structure wealth in shell companies, trusts and holding companies that conceal the ownership and income information of individuals. A second source of readily available information for automatic

exchange is real estate. Most countries globally record property ownership, which can be exchanged automatically for billionaires based on asset allocation and country of residence.

Securing a multilateral agreement on a global minimum tax on billionaire's wealth is uncertain, since negotiations between countries on common international standards take years. Yet recent experience has shown that countries can be successful in forging agreements if a critical mass of countries proceed unilaterally as a first step by exchanging information based on a newly established treaty. This approach would leverage existing national structures, with countries agreeing to enhance their data collection and sharing capabilities. Each country would retain control over its data but commit to exchanging relevant billionaire information with other treaty signatories. Such a decentralised method could be more flexible and quicker to implement, as it builds on existing frameworks and national policies. It can create a cascade effect with other countries joining to gain from the additional tax revenue.

Beyond the automatic exchange of information, establishing a global asset registry can be a final goal for governments in years to come and after the tax is established. The registry would have a centralised structure, where wealth information on billionaires would be collected and scrutinised. Billionaires would be required to supply all information through their accountants and countries would send existing data to this central entity, which would aggregate, cross-check and analyse the information. This approach ensures uniformity and consistency in data collection and management, facilitating comprehensive and accurate monitoring of billionaire wealth. By centralising the process, the global asset registry would provide a single, authoritative source of data on billionaire (or centi-millionaire) assets, enabling an efficient enforcement of the 2% global minimum tax.

Conclusions

Billionaire wealth has increased over the past four decades from 3% to 13.5% of global GDP. Novel findings from economic research have shown that billionaires benefit from considerably lower effective tax rates than the general population, with this growing wealth disparity aggravating global inequalities. The dynamics of wealth indicate that the share of wealth that billionaires have will continue to grow to around 20% of global GDP in the next decade, in the absence of any policy to address this. Introducing a 2% global minimum tax on billionaire wealth offers a viable solution to address these issues.

We estimate that such a tax can generate 0.22% of global GDP in additional revenue in 2025, while for the following years the revenue is projected to increase to 0.27% of global GDP by 2030. The overall amount generated from a tiny percentage of the world population can reach US$2.1 trillion cumulatively over the next seven years. This new source of revenue can become a catalyst for addressing future fiscal challenges and limiting the tax evasion practices that have allowed billionaires' wealth to grow in the past. Recent discussions initiated at this year's G20 summit in Brazil present a unique opportunity for countries to cooperate in order to tackle this important issue.

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Appendices

a. The Forbes billionaire data

We use the *Forbes* billionaire data to estimate the number and wealth of billionaire households in this paper. *Forbes* started publishing the data annually in 1987. It attempts to report individual billionaires and their wealth. In 2024 around 87.5% of reported billionaires are single individuals or married couples (with child dependents if any). However, in 12.5% of cases, *Forbes* is unable to identify the individual wealth of members of a family fortune and the family is reported together if they are worth a minimum of US$2 billion total or the equivalent of US$1 billion apiece. These combined family fortunes are listed with '& family' (eg, 'Bernard Arnault & family') in the data. We assign these family fortunes to the head of the family (eg, Bernard Arnault), which leads to a minor underestimation of the number of billionaire households.

There are two notable inconsistencies in the *Forbes* data. First, *Forbes* has excluded all royal families and dictators, except in 1997 and 1998 when Forbes included eight monarchs and four dictators.[4] Secondly, all individual billionaires belonging to a family fortune were aggregated at the family fortune level from 1997 to 2000 (there was no attempt to assign wealth to individual billionaires as in other years). The number of billionaires is therefore systematically lower in these years.

Forbes does significant research to compile this data. It conducts interviews with the billionaire's asset managers, financial advisors, rivals, peers and attorneys when possible. It also uses SEC documents, county filings, probate records and news articles to evaluate all asset types (eg, stakes in companies, real estate, art, yachts, planes, etc), while also considering their debts and charitable contributions. If a billionaire does not want to reveal the value of his private businesses, *Forbes* uses revenue or profit estimates combined with market ratios from similar public companies and applies a 10% liquidity discount. For venture-backed companies and businesses without recent equity sales, it adjusts valuations based on secondary market trading, input from ApeVue, Caplight and Notice.co, institutional investor holdings and sector performance since the latest funding round.

b. Estimating the real wealth of the top 0.0001% wealthiest households globally

We estimate the real wealth (corrected for inflation) of the top 0.0001% wealthiest households globally in two main steps. First, we estimate the number of households in the top 0.0001% of wealthiest households. Secondly, we estimate the share of wealth owned by billionaires within the top 0.0001% wealthiest households. We can then estimate the real wealth of the top 0.0001% wealthiest households since we observe the wealth of billionaire households in the *Forbes* data.

[4] Royalty included Sultan Hassanal Bolkiah, Brunei; King Fahd bin Abdul Aziz Al Saud, Saudi Arabia; Sheikh Zayed bin Sultan Al Nahyan and Sheikh Maktoum bin Rashid Al Maktoum, United Arab Emirates; Queen Beatrix, the Netherlands; King Bhumibol Adulyadej, Thailand; Sheikh Jaber Al-ahmed Al-jabar Al-sabah and Sheikh Hamid bin Khalifa Al Thani, Qatar. Dictators included: the Suharto family, Indonesia; Hafez Al-Assad, Syria; Sadaam Hussein, Iraq; and Fidel Castro, Cuba.

First, we estimate the number of households in the top 0.0001% of wealthiest households globally using the total global adult (ie, persons aged 25 or over) population. We use the total global adult population from the United Nations World Population Prospects 2022. The data is available for 1980 to 2021. We estimate 2022 to 2024 assuming a 1.5% growth rate of the adult population (ie, the mean growth rate of the adult population for the five years before 2022). We then assume that 80% of adults live together with one other adult (eg, are married, cohabit) to estimate the number of global households. For example, if there is a global adult population of 4 billion (about the global adult population in 2012), we assume that 80% of these adults (3.2 billion) live in the same household as one other adult (3.2/2 = 1.6 billion households) and the other 20% of adults live alone (0.8 billion adults = 0.8 billion households). Therefore, we would estimate that 4 billion adults reside in 2.4 billion households globally (1.6 + 0.8) and that the top 0.0001% households are composed of 2,400 households (2.4 billion/1 million).[5] In 2024 there were 4,883,332,860 world adults living in as estimated 2,929,999,716 households. There were therefore around 2,930 households in the top 0.0001% wealthiest households in 2024, which is close to the 2,781 billionaire households reported in the *Forbes* data.

Secondly, we estimate the share of wealth owned by billionaires (ρ) within the top 0.0001% wealthiest households using standard Pareto-interpolation techniques: $\rho = \left(\frac{b}{0.0001}\right)^{\frac{a-1}{a}}$ where a is the Pareto coefficient (equal to about 1.3 to 1.4) and b is the fraction of global households who are US dollar billionaires. b is calculated as the number of billionaire households (from the *Forbes* data) divided by the number of global households in the top 0.0001% of wealthiest households (estimated above). ρ is never greater than 1 during the full period (ie, the wealth of global billionaire households is never greater than the wealth of the top 0.0001% wealthiest households). The wealth of the top 0.0001% wealthiest households globally is then billionaire wealth divided by ρ. All wealth numbers are corrected for inflation and presented in constant 2015 US$. We calculate an implicit price deflator by dividing world GDP (from the World Bank) in constant 2015 US$ by world GDP in current US$.[6]

c. Residency and nationality

Our data on residency and nationality creates a record of the residency jurisdiction and nationality country of billionaires. We define a country as a political entity that can attribute a nationality. We use the jurisdictions in *Forbes* and in the academic tax haven literature.[7] Residency is defined as a permanent tax residency jurisdiction. A billionaire can only have one tax residency jurisdiction per year.

[5] It is important to note that the assumption that 80% of adults worldwide live with one other adult and 20% live with no other adults could be refined. The number of adults living alone and the number of adults per household is difficult to estimate and vary significantly worldwide. Changing this assumption would have negligible effects on our results.
[6] The data were downloaded when the only years available were 1980 to 2022. We estimate 2023 and 2024 assuming a 3% growth rate of GDP (ie, the approximate mean growth rate of GDP for the 10 years before 2023). The World Bank recently released 2023 data and made minor modifications to its series. These modifications are negligible and do not affect our results.
[7] Members of different jurisdictions can therefore have the same nationality. Members of the Special Administrative Regions of China (ie, Hong Kong and Macao) are Chinese nationals. Members of the five inhabited Territories of the US are US nationals (ie, Guam, Puerto Rico, Northern Mariana Islands, US Virgin (cont.)

The data is constructed by using *Forbes* and conducting additional research on the billionaires living in a residency jurisdiction that does not correspond to their country nationality for any year. There are 4,871 billionaires from 2001 to 2024 according to *Forbes*. The latter reports one residency jurisdiction and one nationality jurisdiction per year for each billionaire. *Forbes* data do not account for billionaires who have multiple nationalities. We convert the citizenship jurisdiction to nationality as explained above. We then manually verify all billionaires (489) who do not have the same residency jurisdiction and nationality for any given year using Wikipedia, LinkedIn, Companies House and publicly available press articles, reports and court documents.

Identifying multiple nationalities requires an estimation strategy. It is not always possible to determine the exact year a nationality was acquired or abandoned.[8] We proceed as follows if several sources confirm that a billionaire possesses a given nationality, but there is no additional information on the exact acquisition year. First, the billionaire is assumed to have acquired the nationality at the age of 18 if he could have received the nationality during his childhood experiences (eg, being born or living in the country, parent's nationality). Secondly, a billionaire is assumed to have received a nationality from a country with a citizenship-by-investment (CBI) programme during its first year.[9] Third, billionaires are assigned Israeli nationality at age 18.[10] Fourth, nationality is determined based on the number of years of residency if the residency year is identified and none of the above criteria apply.[11] Lastly, billionaires are considered to have abandoned their nationality if this is confirmed by several sources or if one of their nationality countries does not recognise additional nationalities.[12]

Islands and American Samoa). The same is true of the three British Crown Dependencies (ie, Guernsey, Jersey and the Isle of Man) and the members of the 11 inhabited British Overseas Territories (ie, Anguilla, Akrotiri and Dhekelia, Bermuda, British Virgin Islands, Cayman Islands, Falkland Islands, Gibraltar, Montserrat, Pitcairn Islands, St Helena, Ascension and Tristan da Cunha, and Turks and Caicos).

[8] Although there is significant public information on nationality, it is also likely that some additional nationalities are not identified. We believe that this is not a significant enough bias to have an impact on our data.

[9] Langenmayr & Zyska (2023) identify eight countries with high-risk CBI programmes. We assign the first year of the programme for St Kitts and Nevis (1984), Antigua and Barbuda (2013), Grenada (2014), Malta (2014), St Lucia (2016) and Vanuatu (2017). We assign the first year of the programme after a major reform that made the programme significantly more accessible for Cyprus (2013) and Dominica (2014).

[10] Jews, people with one or more Jewish grandparent and their spouses have the right to relocate to Israel and acquire Israeli nationality according to the 1950 Law of Return and the 1952 Citizenship Law. In practice, eligible people can apply online and pick up their passport upon arriving in Israel.

[11] We only determine the residency year nationality requirements for countries where we apply this rule. This includes the United Arab Emirates (no residency year requirement); Argentina (no requirement with family links and two otherwise); the US and the UK (three years with spouse national and five otherwise); Australia (four-five years depending on the time period); Canada (five years); Finland (four years with spouse national and five years otherwise); South Korea and Taiwan (three years with family links and five otherwise); the Seychelles and Monaco (10 years) and Switzerland (10-12 years depending on the time period). There are cases of billionaires obtaining the nationality of countries through accelerated procedures (eg, Pavel Durov and French nationality in 2021). These cases seem to be rare and covered extensively in the press, but it is possible that some of these accelerated nationality cases were not detected by our identification strategy.

[12] Examples of countries that do not recognise additional nationalities are China, Taiwan, India and Singapore.