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Rua Miguel Lupi, 20
1249-078 LISBOA
Portugal

Telephone: +351 - 213 925 912
E-mail: rem@iseg.ulisboa.pt

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PERSONAL INCOME TAX AND THE TAXATION OF BILLIONAIRES: IS THE HAIG-SIMONS MODEL FEASIBLE?

José M. Domínguez[a] Carmen Molina[b] Ana Patricia Montes[c]

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Abstract

The purpose of this paper is to analyse the tax proposal made in the United States for the taxation of billionaires, which introduces elements of the concept of income in the Schanz-Haig-Simons tradition. In particular, attention is paid to the tax treatment of unrealised capital gains, which marks an important difference between the different personal income tax models. The theoretical background is reviewed, the problems of its practical application are also addressed, and a quantitative comparison of the implications of recurrent and deferred taxation options is made.

Keywords: personal income tax, billionaires tax, Haig-Simons model.

***JEL* codes:** H24.

[a] Faculty of Economics and Business Sciences, University of Málaga, Department of Applied Economics (Public Finance, Economic Policy and Political Economy), Spain. E-mail: jmdominguez@uma.es.
[b] Faculty of Economics and Business Sciences, University of Málaga, Department of Applied Economics (Public Finance, Economic Policy and Political Economy), Spain. E-mail: cmolinag@uma.es.
[c] Faculty of Economics and Business Sciences, University of Málaga, Department of Applied Economics (Public Finance, Economic Policy and Political Economy), Spain. E-mail: anapatriciamontes@uma.es.

Introduction

Despite the age of personal income tax (PIT) and the weight it has attained within contemporary tax systems, it cannot be said that it has been managed to establish a generally accepted model in all countries[1]. Thus, although the approach proposed by Haig and Simons (H-S) is the one that has traditionally enjoyed the greatest popularity among economists, and the one taken as a reference in university textbooks on Public Sector Economics and Public Finance, the models implemented in tax reality clearly deviate from the guidelines of the model based on the concept of extensive income, opting for the criterion of realisation. Alm (2018) concluded that the H-S model was effectively "dead" in terms of its current real-world relevance for income tax design or reform.

Other more recent models have found greater receptiveness on the part of legislators, such as the linear tax, the dual tax or even the one popularly known as the negative income tax. It is also worth mentioning as an option - in this case, without transcending to actual tax systems - that of the personal expenditure tax, whose tax base focuses exclusively on the consumption component, within the definition of H-S income as the sum of this component and the change in wealth.

The current picture of tax systems in OECD countries shows a mixed picture of tax models (OECD, 2024).

As is well known, one of the drawbacks of the realisation criterion is that it excludes from taxation all unrealised capital gains, despite the fact that, according to prevailing economic doctrine, they represent an addition to the individuals' ability to pay. This does not preclude the recognition that, if taxed, there may be some practical problems related to liquidity and, in the case of assets that are not traded on open markets, to the provision of an appropriate valuation.

This being the case, the monitoring of tax practice invites one to perceive personal income taxation according to the H-S model as a utopian alternative, confined to specialised texts. However, the presentation of a concrete proposal, recently in the United States, aimed at correcting the problem of under-taxation of billionaires, offers a solution that could allow the essence of the H-S approach to be applied in a meaningful way.

The path is not an easy one, given that, in a country where the introduction of personal income tax had to overcome significant legal hurdles, the taxation of income that does not materialise in effective cash flows must also pass through certain regulatory filters. In any case, Senator Wyden's proposal is of great interest, both from the theoretical point of view and from the point of view of its implementation, and therefore deserves to be studied.

This is essentially the purpose of this paper, which is structured as follows. Initially, the model of personal income tax based on the Haig-Simons criterion is discussed, with a focus on its rationale and its practical limitations. Subsequently, the drawbacks of conventional personal income taxation with respect to the taxation of billionaires are discussed. The proposal for the taxation of billionaires in the US is discussed in the next section. In the fourth section, a number of considerations are made about the ideal model of personal income tax today, within the framework of the theory of tax reforms. The paper concludes with a number of considerations. An appendix contains some illustrative quantifications of the effects of tax deferral.

[1] This was highlighted by the OECD (2006), and the reform processes carried out since then have not altered this diagnosis.

1. The Haig-Simons model of personal income tax: rationale and practical limitations

The concept of income has been marked by controversy throughout the history of economic thought, and this polemic character not only does not disappear, but increases when it comes to expressing the concept for tax purposes. Thus, we find different interpretations of income, both from a theoretical point of view and in the practical application of the tax. The meaning of income is highly conditioned by the principle - of benefit or ability to pay - that is taken as the basis for the distribution of the tax burden (Domínguez Martínez, 2016, p. 9)[2] .

Here we will refer to the main meanings, which focus on the following three (Domínguez Martínez, 2014): a) the broad or extensive concept of income; b) the concept of income as consumption; and c) the usual meaning in real tax systems:

a) Broad concept of rent: Income according to this meaning receives different denominations: extensive income, income according to accretion, or, taking as a reference its main valuers, income according to Schanz-Haig-Simons. According to this concept, income (I) is defined as the monetary value of the net increase in a person's economic power between two points in time. This increase can take the form of two alternative uses, consumption (C) or increase in wealth (Δ W), so it can be established that I = C +Δ W. The notion of this concept of income can be intuited by asking the following question: how much can a person spend over the course of a year, maintaining the same level of wealth at the beginning and end of the year? This sum of potential consumption indicates the individual's income.

In one of the works considered seminal, Haig (2021a, p. 7) put it this way: "Under this conception , income becomes the increase or accretion in one´s power to satisfy his wants in a given period in so far as that power consists of a) money itself, or (b) anything susceptible of valuation in terms of money. More simply stated, the definition of income which the economist offers is this: income is the money value of the net accretion to one´s economic power between two points of time... It will be readly agreed that this definition, i.e., that income is the net accretion to one´s economic strength in a given period, constitutes, then, the closest practicable approximation of true income".

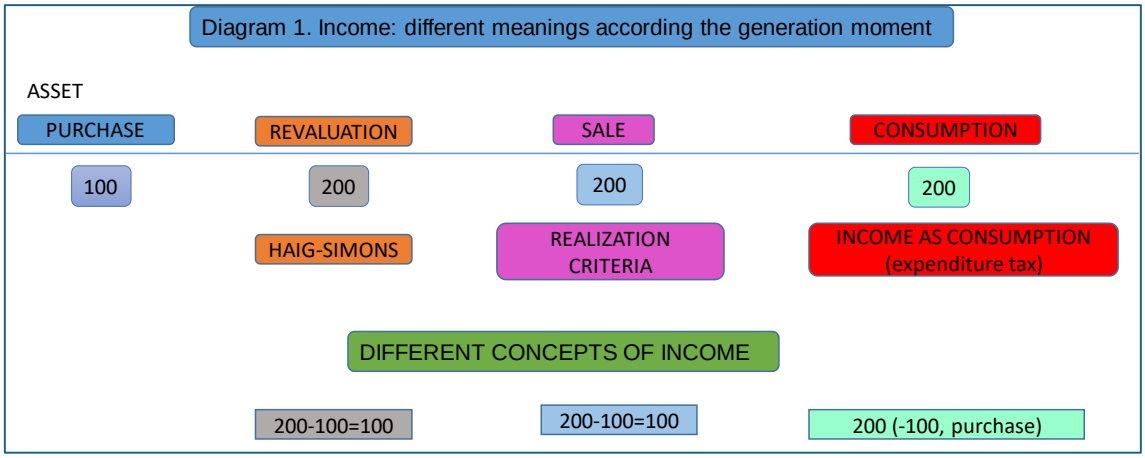
In turn, as Colm (1938, p. 494) pointed out, Simons (1938) followed Georg von Schanz and Robert M. Haig in defining income "as the sum of consumption and accumulation during a given period".

b) Concept of income as consumption: this interpretation of income is at the opposite pole to the previous approach. For income to be taxed, it is not only necessary for it to materialise in a monetary flow, but also for it to be consumed. In other words, the income is understood to be realised once it is consumed. An extreme criterion of realisation is therefore applied. This concept of income (I = C) implies the application of a tax on personal expenditure (Domínguez Martínez, 2000).

(c) Usual (traditional) acceptance of income: real tax systems have traditionally leaned towards the realisation criterion, although not as extremely as in the previous case: a simple increase in the value of an asset is not considered as income, but the asset needs to be sold and the gain realised. In short, this approach means that only realised capital gains are taxed, and not unrealised capital gains. Another difference that separates the traditional meaning from the broad concept of income is that some categories of income (essentially those corresponding to inheritances and gifts received) are not included within the concept of income, and their taxation is reserved for a tax specialised in the gratuitous transfer of wealth (inheritance and gift tax).

[2] Domínguez Martínez (2009) sets out the basic criteria for choosing the ideal personal income tax model.

The basic differentiation between the three meanings can be shown by means of a simple diagram in which four moments in the life of an asset are represented (diagram no. 1): purchase, revaluation, sale and consumption (of the funds obtained from the sale). At the moment when the asset is revalued, income is already generated according to the broad meaning (Haig-Simons); for income to be generated according to the traditional meaning, it is necessary to wait until the asset is sold; finally, this sale will not have an impact until the moment of consumption of the funds obtained, in the event that a tax on personal expenditure is applied[3] .



Source : Domínguez Martínez (2014).

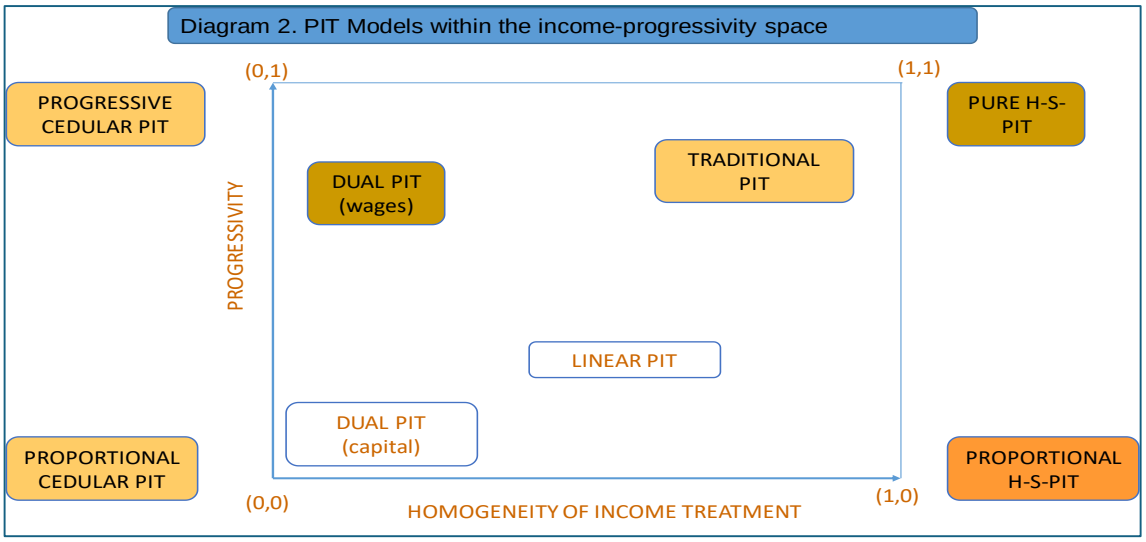
The application of the extensive income concept faces some practical limitations, which have led to no country applying this concept on a large scale. The usual explanation for this gap between theory and practice, according to Arachi and D'Antoni (2022), is that the implementation of the extensive income concept is hampered by a number of problems, among which the following stand out: (i) it may involve high compliance costs for taxpayers; (ii) "marking to market" is difficult in the case of unlisted assets or simply those assets for which there is no benchmark value; (iii) in more extreme situations, having to meet the tax liabilities arising from the revaluation of assets could lead to a forced sale of assets, if sufficient liquidity is not available[4] .

Since they are not part of taxable income, Slemrod and Chen (2023) emphasise that it is more difficult to estimate the importance of actual capital gains accrued but not realised. In their paper they note that Bailey (1969) compared the realisations of capital gains reported on income tax returns with an estimate of capital gains accruing to individuals over the period 1926-1961, concluding that more than two-thirds of all capital gains accruing to individuals on corporate shares were never taxed because the gains were not realised during the lifetime of the holder and the shares were passed on at death. Poterba and Weisbenner (2001) estimated that, in 1998, unrealised capital gains accounted for more than half of the value of the estate of individuals with an estate of at least $10,000,000.

Diagram 2 shows the different personal income tax models in the space delimited by the treatment of the different income components and progressivity.

[3] The timing of the purchase of the asset (realisation of an investment) is relevant for this tax, as the amount of the investment is deducted when calculating the tax base.

[4] However, there are authors, such as Sevilla (2005), who consider that "the difficulties of an extensive income tax at present do not derive so much from its management difficulties as from the advance of conservative positions that are in favour of very soft income taxes and of eliminating the elements of progressivity".



Source: Domínguez Martínez and López del Paso (2008).

2. The drawbacks of conventional personal income tax with respect to the taxation of billionaires

Under the traditional model, contrary to economic postulates, as indicated above, revaluations of assets that are not sold (unrealised capital gains) are not taxed. They are only taxed at the time when the assets are transferred, by one means or another. However, in the case of a wealth tax, increases in value would be taken into account within the scope of this tax. In the absence of such a tax, there may be situations where very wealthy individuals can avoid the tax burden.

More recently, Morris Pearl, president of the Patriotic Millionaires association, put it in a note (Pearl, 2021). The title alone is quite expressive of the thesis, namely that the richest Americans do not pay taxes. This shocking conclusion comes from a report published by ProPublica[5] . The report notes: "ProPublica has obtained a vast cache of IRS information showing how billionaires like Jeff Bezos, Elon Musk and Warren Buffett pay little in income tax compared to their massive wealth - sometimes even nothing".

The possible explanation for this surprising situation would not, in principle, lie in the use of tax avoidance or evasion practices. Apart from of what could be derived from these facets, the key really lies in the definition of income from a tax point of view.

Of course, if we calculate what a multi-millionaire might pay in tax on the dividends he (or she) receives in a year out of all his vast accumulated wealth, the tax rate will drop dramatically. Suppose a person receives $10 million in cash, taxed at 30%. If his accumulated wealth amounts to $10 billion, the resulting tax rate would be 0.03%. However, it should be noted that, depending on the meaning used, the tax rate can vary substantially. While the tax rate is 30% of the income received, the amount paid in tax ($3 million) could represent a very high percentage of the H-S income if, for example, a large unrealised capital loss had been recorded[6].

If a conventional income tax is levied and there is no wealth tax, the owner of revaluable assets can defer tax on the increase in value. Moreover, he can avoid the tax

[5] An entity that defines itself as "an independent, nonprofit newsroom that produces investigative journalism with moral force". Vid. Eisinger et al. (2021).

[6] So, for example, if, in addition to the $10 million in dividends, we assume consumption of $1 million and a latent capital loss of $9 million, a tax of $3 million would imply a 300% rate on H-S income.

burden if, instead of receiving capital income, he has the possibility of channelling it through the accumulation of value, and can meet his expenses by borrowing at low interest rates against the collateral of the assets. In this way, "middle-class families who earn their incomes from wages and salaries may face higher average tax rates than billionaires"[7] .

3. The proposed taxation of billionaires in the United States: scope and assessment

Not surprisingly, the issue of the contributions to be levied on the wealthiest taxpayers has attracted a great deal of attention in the United States, especially since 2019. As Slemrod and Chen (2023) point out, two leading candidates for the Democratic presidential nomination proposed strongly progressive wealth taxes, while the administration of the president-elect proposed substantial tax increases limited to those with annual incomes above $400,000, focusing on increasing the capital gains tax rather than levying a wealth tax.

Senator Ron Wyden, chairman of the Senate Finance Committee, is also one of the most active politicians in this area. In a brief note in 2021, he put forward a proposal of great interest[8]. This consists of the so-called "Billionaires Income Tax", which would apply exclusively to taxpayers with an annual income of more than $100 million or with more than $1 billion in assets for three consecutive years[9].

His proposal incorporates the Haig-Simons approach with respect to marketable assets, such as shares, which would be subject to annual valuation. Owners would be taxed on gains or generate a deduction for losses, regardless of whether or not they sold the assets. In this way, unrealised capital gains would play a central role in his proposal.

In the case of real estate assets, it would only be taxed at the time of sale, but a component called the "deferral recapture amount" would apply[10]. This would be equivalent to interest on the deferred tax for the period during which the taxpayer owned the asset in question. This amount would be calculated by spreading the total gain equally over the years of the holding period, and interest would be charged on the unpaid tax based on the length of the deferral period[11].

This treatment of non-marketable assets is justified by the approaches taken in leading public sector economics textbooks[12].

The possible implementation of the tax on billionaires will be affected by the way in which the US judiciary resolves an appeal filed by taxpayers (Moore case) who

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[7] US Senate Committee Finance (2021).

[8] US Senate Committee Finance (2021).

[9] Seven reasons have been highlighted for its implementation (Americans for Tax Fairness, 2022): 1) billionaires who do not pay taxes now will finally have to pay their fair share, or at least pay something; 2) wealth will be taxed more on par with labour; 3) hundreds of billions of dollars will be raised that can be used to reduce costs for working families and make other crucial public investments; 4) the timing is right, given the great enrichment of billionaires during the first two years of the pandemic; 5) US citizens overwhelmingly want this tax; 6) it will help restore confidence in a tax system that many Americans now see as rigged; and 7) investment capital that is now frozen to avoid taxes will be freed up for better uses.

[10] As Stiglitz and Rosengard (2015, p. 653) point out, in the case of real estate assets, "it is impossible to tell the value with any accuracy except when a deal is consummated".

[11] The question arises as to whether capital losses should, symmetrically, be subject to some compensatory adjustment for the time elapsed between their generation and the transfer of the assets.

[12] See, for example, Stiglitz and Rosengard (2015, p. 653).

claimed that the mandatory repatriation tax violated constitutional principles[13]. This tax, introduced as part of the December 2017 tax reform in the United States, was intended to encourage US companies to repatriate the profits accumulated by their international subsidiaries. Thus, profits retained abroad until the end of the 2017 tax year were subject to a single repatriation rate, applicable even if the profits had not materialised. The tax rates applied were 15.5% for liquid assets and 8% for illiquid assets, with an extended payment period of eight years. According to estimates by the Joint Committee on Taxation in 2017, this tax was expected to generate $338.8 billion in tax revenue over the next ten years.

Prior to this reform, the US tax system was global in scope, requiring US companies to pay taxes on all of their profits, including those generated abroad. However, income from international operations was not taxed until it was distributed to the US parent company or repatriated. This situation discouraged companies from repatriating their profits, opting instead to keep those profits abroad to defer their US tax burden[14].

The eventual repeal of the mandatory repatriation tax would, as Foroohar (2023) has pointed out, make it difficult for Congress to pass a wealth tax and also a tax on billionaires on the terms outlined above[15] .

Recently, however, the US President has included in his 2025 budget package a proposal for a 25% minimum tax on the unrealised capital gains of billionaires (Watson et al., 2024a)[16] . The plan is to raise $500 billion over the next ten years (The White House, 2024)[17] .

Irrespective of the court case, some analysts also question the proposal. For example, for Watson and York (2022), "overall, the proposal moves in the opposite direction of sound tax policy because it would be administratively costly, reduce US savings, and its revenue potential is uncertain".

4. The ideal model of personal income tax today: considerations in the framework of tax reform theory

Many economics students tend to be rather reluctant or sceptical of the Haig-Simons concept of income in the context outlined above. Senator Wyden's proposal, if adopted, would broaden the income tax base and demonstrate that the Haig-Simons approach can be more than just a theoretical lucubration reserved for tax textbooks.

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[13] The Moores argue that their money was still offshore, within a company that they did not fully control and therefore had not yet been realised (Cole, 2023, p. 3). The possible consequences of the ruling in that case are analysed by Bunn et al. (2023), Avi-Yonah and Rosenthal (2023), Gluckman (2023) and Tax Foundation (2023).

14 A Credit Suisse report estimated that, at the end of 2014, S&P 500 companies had $2.1 trillion of foreign earnings held offshore. Excluding financial firms, it further estimated that 37% was held in cash ($690 billion), while the remaining $1.2 trillion was reinvested in assets.

[15] As Rosenthal (2022) points out, the problem may arise that the Supreme Court may consider such revenues to be "direct" taxes, to be attributed to states on the basis of population, which in some cases, in the absence of multimillionaires, may not be feasible.

[16] The proposal had been put forward before. See York and Muresianu (2023). In any case, this line of taxation has more radical historical precedents, such as the application of a 100% tax on the annual revaluations of the assets of the richest. See Gluckman (2022b).

[17] However, it has been questioned that a number of factors (circumvention behaviour, valuation disputes...) could drastically undermine this projection. See Watson et al. (2024b).

This proposal is of great interest from the point of view of taxation theory. The approach to the taxation of unrealised capital gains (and the concomitant reduction of unrealised capital losses) is fully supported by the definition of taxable income in the economic sense.

The application of the Haig-Simons criterion would imply eradicating the possible problem of the so-called "*lock-in effect*" associated with the asymmetry in the taxation of realised and unrealised capital gains[18].

However, as York and Muresianu (2023) recall, "shifting from taxing gains upon realization goes in the opposite direction of international norms. In fact, most countries in the Organization for Economic Co-operation and Development (OCDE) tax capital gains when they are realized and at lower rates than the U.S., and tax capital income overall at lower average tax rates"[19]. They also point out that the high volatility of stock markets would make a tax on unrealised capital gains an unstable source of government revenue.

In light of the practical problems encountered with the implementation of Senator Wyden's proposal, Saez et al. (2021, p. 5) propose "capital gains withholding as a friendly amendment to existing proposals: the super wealthy should rich should have to prepay taxes on extreme unrealised capital gains over ten years... Crucially, withholding would be scored as raising revenue in the ten-year window as if the illiquid assets were sold, even though they need not be. An entrepreneur or otherwise illiquid taxpayer would be allowed to receive a government loan backed by the *startup* stock or other illiquid asset, and would be required to immediately use that loan to pay withholding taxes due to IRS".

Earlier, Auerbach (1991) had proposed an approach to capital gains taxation that eliminates the deferral advantage of realisation-based systems by charging interest on past capital gains when realisation finally takes place.

Along these lines, Griffith et al. (2010, p. 986), as a way to counteract the compound interest gain from tax deferral, advocate a systematic upward adjustment of taxable capital gains, which would increase systematically with the length of the holding period[20] . Specifically, they propose to adjust such gains by multiplying them by the following factor[21]:

$$\frac{g.(1+r)^n}{(1+g)^n-1}\left[\frac{1-\left(\frac{1+g}{1+r}\right)^{n+1}}{1-\left(\frac{1+g}{1+r}\right)}\right]$$

where *r* is the after-tax interest rate, and *g* is the average annual percentage capital gain. If the asset had been purchased at price A_b , and sold n years later at price A_s , the cumulative capital gain would be calculated from the following equation: $A_s = (1+g)\, A^n{}_b$.

[18] Vid. Saez et al. (2021). According to Griffith et al. (2010, pp. 983-984), "it is well known that capital gains taxation based on the realisation principle generates a lock-in effect which hampers the reallocation of capital towards more productive uses... Progressive taxation of realized gains exacerbates this lock-in effect because the taxpayer may be pushed into a higher tax bracket in the year of realization".

[19]See Boadway et al. (2010, p. 809).

[20]The proposal bears some resemblance to Vickrey's (1939) cumulative averaging system (Domínguez Martínez, 2014).

[21] However, the calculation of this factor may result in higher value adjustment factors for shorter holding periods compared to longer ones. In this respect, for example, with r = 5%, and g = 2%, for a term of 1 year, a coefficient of more than 2 is obtained.

Regardless of the economic rationale for the taxation of unrealised capital gains, many analysts emphasise the legal, administrative and practical problems that can arise for the valuation of assets, even in the case of those exchanged on open markets. In this respect, there has been no shortage of proposals for alternative formulas to the annual taxation of such income, including a wealth tax, the taxation of unrealised capital gains at the time of the owner's death, and the application of a surtax in personal income tax (Gluckman, 2021; 2022a).

Rosenthal (2021a; 2022b) suggests taxing unrealised capital gains at the time of the owner's death at the same rates as wage income, i.e. at higher rates than if the assets are sold or gifted during the owner's lifetime. In this way, high net worth individuals would be discouraged from postponing the payment of the tax (Zaretsky, 2022)[22].

On the other hand, in line with the issue raised by the Moore case, the possible judicial endorsement of the principle of realisation does not imply, for some analysts, a sufficient basis to justify the introduction of a consumption tax (Cole, 2023, p. 4).

5. Concluding remarks

The following considerations can be drawn from the work carried out:

i. Although there is a long tradition in economic doctrine that favours the notion of tax revenue in a broad sense, this criterion has not been transferred to actual tax systems, among others, for reasons of practical difficulty in its strict application.

ii. Such a practice implies a financial advantage, associated with tax deferral, for those income taxpayers owning assets in which significant capital gains accrue.

iii. The interest-free tax deferral becomes more valuable the longer the holding period of the asset. Such deferral reduces the effective tax rate over time, and creates an incentive for individuals to retain ownership of assets longer.

iv. This is the essential motivation behind the proposal made in the United States in relation to the taxation of persons with high levels of income or wealth. The proposed approach would allow the Haig-Simons approach to be implemented with some adaptations.

v. Despite the economic justification for the proposal, it faces certain complications in relation to assets for which no ongoing market valuation is available, as well as legal pitfalls.

vi. In this context, old proposals aimed at diminishing the benefits of tax deferral have been revived, such as the revised "constructive realisation" formula of setting relatively high tax rates at the time of transfer of assets, whether by sale, gift or inheritance.

vii. Consideration of the income tax model based on the notion of extensive income does not avoid recognising the superiority of the expenditure tax over horizontal equity from a life-cycle perspective. If such a tax were to be applied, the use of a recurrent wealth tax to compensate for the advantages associated with asset holding would be equally justified.

viii. From this point of view, if the main issue is to close the loophole of the lack of taxation of the economic capacity associated with revalued assets, whether

[22] The interaction between inheritance taxation and capital gains taxation is analysed in Boadway et al. (2010).

one opts for an income tax or an expenditure tax, a pragmatic solution capable of generating an equivalent financial effect would be the establishment of a wealth tax.

ix. Alternatively, the application of a correction factor, dependent on the interest rate, which adjusts the amount of capital gains upwards according to the term of holding the assets, may be considered.

x. In any case, the case of the proposed tax on billionaires in the US is a significant test of the applicability of the concept of extensive income, and could have a significant influence on future tax reform processes.

Appendix: **The advantages of tax deferral: some illustrative examples**

Tables 1, 2 and 3 provide a numerical comparison between the two tax options considered for an asset that is revalued annually: a) taxation on the basis of annual revaluations; b) deferred taxation until the time of sale of the asset and the subsequent realisation of the accumulated capital gain over time.

A scenario with a number of assumptions is considered (annual revaluation: 4% in table 1, 7% in table 2, and 10% in table 3; personal income tax rate: 40%; discount rate: 3%). In relation to the results obtained, the main aspects to be highlighted are the following:

- The total amount of tax paid over the whole period is the same in nominal terms for both options, irrespective of the annual revaluation rate.
- Once the amounts are expressed in present value terms, it can be seen that the tax savings resulting from applying the deferral formula increase as the term is extended. Thus, over a period of 25 years this deferral formula allows a saving of 27.2% compared to annual taxation when the annual revaluation is 4%. In the 7 and 10% annual revaluation scenarios, the savings are 24.10% and 21.2% respectively.
- If the amount of the annual tax is deducted from the successive returns for reinvestment purposes, at the end of the period considered, an asset would be generated with an amount one third lower than the value achieved if the accumulation takes place without tax loss and the annual revaluation is 4%. If the annual revaluation is 7%, the asset generated would be 48% lower, while if the annual revaluation is 10%, the decrease would be more than 60%.
- In the example under consideration, with an annual revaluation rate of 4%, the advantage of tax deferral would be completely offset by applying a recurring wealth tax with a tax rate of 0.4%. With an annual revaluation rate of 7%, and the same tax rate and discount rate assumptions, the wealth tax rate would be 0.6%. With a revaluation rate of 10%, the required rate would be close to 0.8%.

Table 1: Advantages of tax deferral: an illustrative example (Annual revaluation: 4%)

				Present value				
Year	Value	Annual personal income tax	Final personal income tax	Annual personal income tax	Final personal income tax	Value with annual personal income tax deduction	IPN	Present value IPN
0	100					100	0.40	0.40
1	104	1.60	0.00	1.55	0.00	102	0.42	0.40

2	108	1.66	0.00	1.57	0.00	105	0.43	0.41
3	112	1.73	0.00	1.58	0.00	107	0.45	0.41
4	117	1.80	0.00	1.60	0.00	110	0.47	0.42
5	122	1.87	0.00	1.61	0.00	113	0.49	0.42
6	127	1.95	0.00	1.63	0.00	115	0.51	0.42
7	132	2.02	0.00	1.65	0.00	118	0.53	0.43
8	137	2.11	0.00	1.66	0.00	121	0.55	0.43
9	142	2.19	0.00	1.68	0.00	124	0.57	0.44
10	148	2.28	0.00	1.69	0.00	127	0.59	0.44
11	154	2.37	0.00	1.71	0.00	130	0.62	0.44
12	160	2.46	0.00	1.73	0.00	133	0.64	0.45
13	167	2.56	0.00	1.74	0.00	136	0.67	0.45
14	173	2.66	0.00	1.76	0.00	139	0.69	0.46
15	180	2.77	0.00	1.78	0.00	143	0.72	0.46
16	187	2.88	0.00	1.80	0.00	146	0.75	0.47
17	195	3.00	0.00	1.81	0.00	150	0.78	0.47
18	203	3.12	0.00	1.83	0.00	153	0.81	0.48
19	211	3.24	0.00	1.85	0.00	157	0.84	0.48
20	219	3.37	0.00	1.87	0.00	161	0.88	0.49
21	228	3.51	0.00	1.88	0.00	165	0.91	0.49
22	237	3.65	0.00	1.90	0.00	168	0.95	0.49
23	246	3.79	0.00	1.92	0.00	173	0.99	0.50
24	256	3.94	0.00	1.94	0.00	177	1.03	0.50
25	267	4.10	66.63	1.96	31.82	181	1.07	0.51
Total		66.63	66.63	43.71	31.82			11.77
Difference				11.89				

Assumptions:
Figures expressed in euro.
Initial investment: €100.
Annual revaluation: 4%.
Personal income tax rate: 40%.
Discount rate: 3% p.a.

Table 2: Advantages of tax deferral: an illustrative example (Annual revaluation: 7%)

				Present value				
Year	Value	Annual personal income tax	Final personal income tax	Annual personal income tax	Final personal income tax	Value with annual personal income tax deduction	IPN	Present value IPN
0	100					100	0.60	0.60
1	107	2.80	0.00	2.72	0.00	104	0.64	0.62
2	114	3.00	0.00	2.82	0.00	109	0.69	0.65
3	123	3.21	0.00	2.93	0.00	113	0.74	0.67
4	131	3.43	0.00	3.05	0.00	118	0.79	0.70
5	140	3.67	0.00	3.17	0.00	123	0.84	0.73
6	150	3.93	0.00	3.29	0.00	128	0.90	0.75

7	161	4.20	0.00	3.42	0.00	133	0.96	0.78
8	172	4.50	0.00	3.55	0.00	139	1.03	0.81
9	184	4.81	0.00	3.69	0.00	145	1.10	0.85
10	197	5.15	0.00	3.83	0.00	151	1.18	0.88
11	210	5.51	0.00	3.98	0.00	157	1.26	0.91
12	225	5.89	0.00	4.13	0.00	164	1.35	0.95
13	241	6.31	0.00	4.29	0.00	171	1.45	0.98
14	258	6.75	0.00	4.46	0.00	178	1.55	1.02
15	276	7.22	0.00	4.63	0.00	185	1.66	1.06
16	295	7.73	0.00	4.81	0.00	193	1.77	1.10
17	316	8.27	0.00	5.00	0.00	201	1.90	1.15
18	338	8.84	0.00	5.20	0.00	210	2.03	1.19
19	362	9.46	0.00	5.40	0.00	219	2.17	1.24
20	387	10.13	0.00	5.61	0.00	228	2.32	1.29
21	414	10.84	0.00	5.82	0.00	237	2.48	1.34
22	443	11.59	0.00	6.05	0.00	247	2.66	1.39
23	474	12.41	0.00	6.29	0.00	258	2.84	1.44
24	507	13.27	0.00	6.53	0.00	268	3.04	1.50
25	543	14.20	177.10	6.78	84.58	280	3.26	1.56
Total		177.10	177.10	111.45	84.58			26.15
Difference				26.87				

Assumptions:
Figures expressed in euro.
Initial investment: €100.
Annual revaluation: 7%.
Personal income tax rate: 40%.
Discount rate: 3% p.a.

Table 3: Advantages of tax deferral: an illustrative example (Annual revaluation: 10%)

				Present value				
Year	Value	Annual personal income tax	Final personal income tax	Annual personal income tax	Final personal income tax	Value with annual personal income tax deduction	IPN	Present value IPN
0	100					100	0.08	0.08
1	110	4.00	0.00	3.88	0.00	106	0.88	0.85
2	121	4.40	0.00	4.15	0.00	112	0.97	0.91
3	133	4.84	0.00	4.43	0.00	119	1.06	0.97
4	146	5.32	0.00	4.73	0.00	126	1.17	1.04
5	161	5.86	0.00	5.05	0.00	134	1.29	1.11
6	177	6.44	0.00	5.40	0.00	142	1.42	1.19
7	195	7.09	0.00	5.76	0.00	150	1.56	1.27
8	214	7.79	0.00	6.15	0.00	159	1.71	1.35
9	236	8.57	0.00	6.57	0.00	169	1.89	1.45
10	259	9.43	0.00	7.02	0.00	179	2.07	1.54
11	285	10.37	0.00	7.50	0.00	190	2.28	1.65
12	314	11.41	0.00	8.00	0.00	201	2.51	1.76
13	345	12.55	0.00	8.55	0.00	213	2.76	1.88
14	380	13.81	0.00	9.13	0.00	226	3.04	2.01

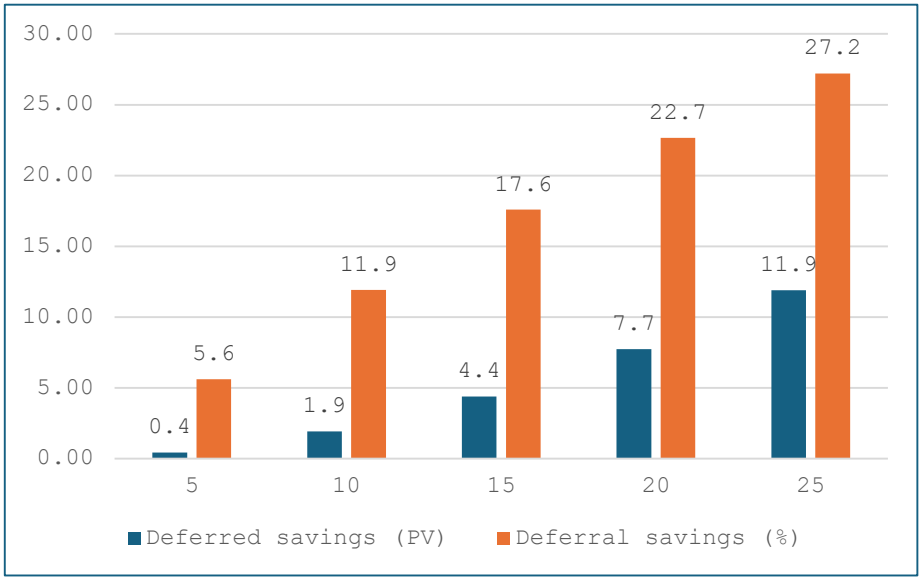
15	418	15.19	0.00	9.75	0.00	240	3.34	2.14
16	459	16.71	0.00	10.41	0.00	254	3.68	2.29
17	505	18.38	0.00	11.12	0.00	269	4.04	2.45
18	556	20.22	0.00	11.88	0.00	285	4.45	2.61
19	612	22.24	0.00	12.68	0.00	303	4.89	2.79
20	673	24.46	0.00	13.54	0.00	321	5.38	2.98
21	740	26.91	0.00	14.47	0.00	340	5.92	3.18
22	814	29.60	0.00	15.45	0.00	360	6.51	3.40
23	895	32.56	0.00	16.50	0.00	382	7.16	3.63
24	985	35.82	0.00	17.62	0.00	405	7.88	3.88
25	1083	39.40	393.39	18.82	187.88	429	8.67	4.14
Total		393.39	393.39	238.56	187.88			52.56
Difference				50.68				

Assumptions:
Figures expressed in euro.
Initial investment: €100.
Annual revaluation: 10%.
Personal income tax rate: 40%.
Discount rate: 3% p.a.

On the other hand, figures 1, 2 and 3 show how the magnitude of the tax deferral advantage varies according to the time period, both in absolute and relative terms (savings obtained as a percentage of the present value of the tax on an annual basis).

It can be seen that, as Adam et al. (2010, p. 50) point out, the interest-free tax deferral becomes more valuable the longer the holding period of the asset. Such a deferral reduces the effective tax rate over time, and creates an incentive for individuals to retain ownership of assets longer.

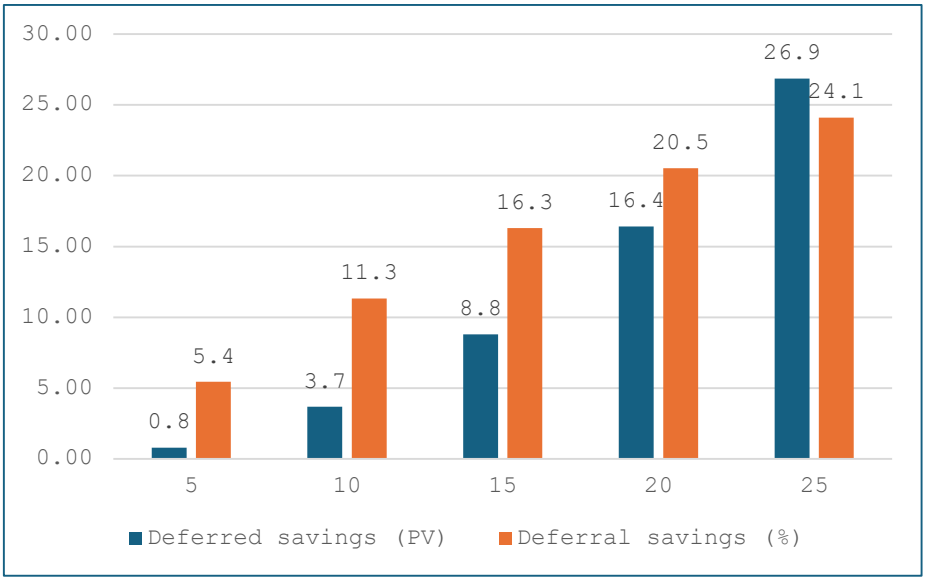
Figure 1. Advantages of tax deferral
Annual revaluation: 4%.



Assumptions:
Annual revaluation: 4%.

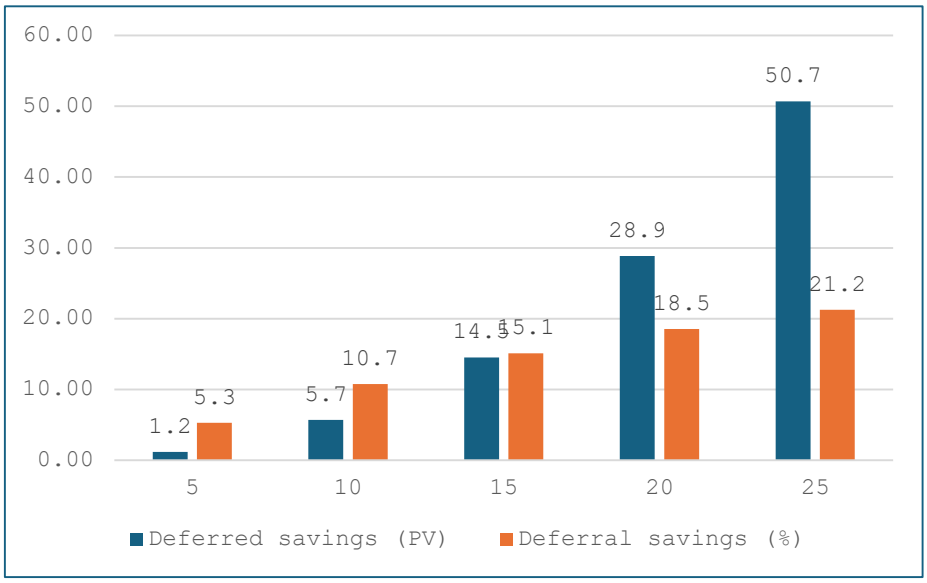
Personal income tax rate: 40%.
Discount rate: 3% p.a.

Figure 2. Advantages of tax deferral
Annual revaluation: 7%.



Assumptions:
Annual revaluation: 7%.
Personal income tax rate: 40%.
Discount rate: 3% p.a.

Figure 3. Advantages of tax deferral
Annual revaluation: 10%.



Assumptions:
Annual revaluation: 10%.
Personal income tax rate: 40%.
Discount rate: 3% p.a.

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