The inflation tax, purchasing power, the savings rate, and the public deficit

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Since late 2021, inflation has re-emerged forcefully in France and at the global level, reshaping the orientation of economic policy. One of the most salient manifestations of this new inflationary regime has been the reappearance of positive nominal interest rates, which has entailed both an increase in nominal capital income and a rise in the nominal interest burden on public debt.

A less frequently discussed implication of inflation, however, is the so-called "inflation tax." This "inflation tax" is not accounted for within the methodology of national accounts and therefore often escapes scrutiny in public debate and, at times, even within expert analysis. Its omission has, for instance, led to a significant overestimation of the growth of households' "purchasing power" and their standard of living as reported by official statistics since 2022 (see also Geerolf (2024b)). For analogous accounting reasons, the increase in the household saving rate has also been overstated. Similarly, the rise in the cost of debt servicing, measured as "interest payments," and the scale of the public deficit have likewise been exaggerated.

The present discussion does not claim originality: the concept of the "inflation tax," also referred to as "taxation without legislation" (Friedman (1974)), has long been established in the literature (Keynes (1919)), and its omission from national accounting methodologies has already been noted (Jump (1980); Sterdyniak (1987)). The analytical foundation of the "inflation tax" lies in the proposition that the real cost of borrowing is determined by the real interest rate, rather than the nominal interest rate.

Nonetheless, it is worth restating certain points in order to properly interpret the data on purchasing power, saving rates, and public deficits published since the end of 2021. The stakes are considerable, given the magnitudes involved. In France, for example, with public debt equivalent to 100% of GDP and inflation running at 5.5%, the inflation tax corresponds to 5.5% of GDP - that is, approximately €140 billion.

The Principle of the "Inflation Tax"

Let us take a simple example. Suppose that the nominal interest rate i on a *livret A* (French regulated savings account) with an amount $A = $ €20,000 is equal to 3%, and that the inflation rate π is 6%. The interest paid by this account during the first year is given by $i \cdot A = $ €600. What is the real return on the *livret A*? According to the methodology of national accounting, real income is obtained by deflating nominal income by inflation:

$$\frac{i}{1+\pi} \cdot A$$

In this example, **€566**. From an economic point of view, this calculation overestimates real income. After one year, the value of the *livret A* is given by $(1+i) \cdot A$ and it is this whole amount that must be deflated by inflation, and compared to the initial value of the *livret A*:

$$\frac{1+i}{1+\pi} \cdot A - A = \frac{i-\pi}{1+\pi} \cdot A$$

In this example, $-$**€566, i.e. the opposite**. Intuitively, this formula involves the real interest rate $r = i - \pi$, which is negative when the inflation rate is higher than the nominal rate. The difference is the amount of the inflation tax:

$$\text{Inflation Tax} = -\frac{\pi}{1+\pi} \cdot A.$$

In this example, $-$**€1132**. In other words, national accounts record in the case of this *livret A* yielding nominal income of €600 a real income accounting-wise of €566, whereas the economic real income is $-$€566.

Why does national accounting not take into account this "inflation tax"? A principle firmly rooted in the methodology of national accounts holds that variations in asset prices are not recorded as agents' income. The "inflation tax" is considered such a variation in asset prices, since it consists of a devaluation of the stock by inflation. However, unlike changes in the price of financial assets, the increase in the Consumer Price Index is generally certain and definitive, and its measurement does not require evaluating the value of illiquid assets. It could therefore be integrated into the methodology of national accounts without particular difficulty.

The principle of the "inflation tax" is the subject of a broad consensus. (Keynes (1919); Friedman (1974)) It is also well established that the conventions of national accounting lead to an overestimation of income and of the savings rate during inflationary periods. During the inflationary episode of the 1980s, the effect of the "inflation tax" was frequently discussed. One may cite, for example, the work of Jump (1980) in the *American Economic Review* and of Sterdyniak (1987) in the *Revue de l'OFCE*. However, the existence and functioning of the inflation tax sometimes appear to have been forgotten. It is therefore relevant to study once

again its effect on the measurement of purchasing power, as defined by the French statistical institute. We will then examine its impacts on the savings rate, a straightforward corollary of the bias on purchasing power. Finally, we will analyze its effects on the cost of debt and on the public deficit.

Purchasing Power and the "Inflation Tax"

In France, Insee regularly publishes the evolution of "purchasing power" understood as that of "gross disposable income deflated by the household consumption deflator" (the problems raised by this official but overly monolithic definition of "purchasing power" go well beyond the question of the "inflation tax" – see Geerolf (2024b) for a detailed discussion). As shown by Figure 1, the evolution of net interest and dividends received has been particularly dynamic during this inflationary episode, but this evolution does not take into account the "inflation tax"[1]. As explained in the example in the previous chapter, this therefore leads to an overestimation of the increase in capital income in real terms.

Let us return to our concrete example: suppose that the outstanding balance of the *Livret A* amounts to €300 billion – its level in 2021 in France, including the "Livrets Bleus" distributed by Crédit Mutuel. If the interest rate rises from 0.5% to 3%, the interest paid to households increases from €1.5 billion to €9 billion. However, this does not offset the effects of the "inflation tax." With inflation at 6%, this tax reaches €18 billion, compared to only €6 billion when inflation was at 2%. We then observe an apparent increase in capital income of €7.5 billion, but this increase is canceled out by an additional €12 billion of "inflation tax," which ultimately results in a real decrease in capital income of €4.5 billion, instead of the nominally recorded increase of €7.5 billion. Of course, the *Livret A* is not the only savings product concerned. Other regulated savings accounts, such as the Livret de Développement Durable et Solidaire (LDDS) or the Livret d'Épargne Populaire (LEP), represent a total outstanding balance of about €200 billion. Added to this are term accounts, which have multiplied with rising rates, other fixed-income products, as well as euro-denominated life insurance contracts, whose outstanding balance amounts to €1,100 billion. If, for example, the average rate on euro-denominated life insurance rises from 1.28% to 2.6% between 2021 and 2023 (ACPR figures), property income would increase by around €15 billion. However, this increase is largely outweighed by a rise in the "inflation tax," estimated at €44 billion (4% of €1,100 billion). Thus, real capital income suffers a decrease of €29 billion, instead of an increase of €15 billion. Once again, forgetting the inflation tax leads to a strong overestimation of the increase in household purchasing power, particularly for households holding many fixed-income products.

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[1]This progression remains very dynamic even after subtracting the Financial Intermediation Services Indirectly Measured (FISIM): according to Insee, excluding FISIM, property income would increase by +9.0% in 2023, after +6.5% in 2022. The existence and magnitude of the "inflation tax" are not affected by the inclusion of these FISIM.

Figure 1: Growth of net interest and dividends received, and of gross disposable income (2021Q4–).
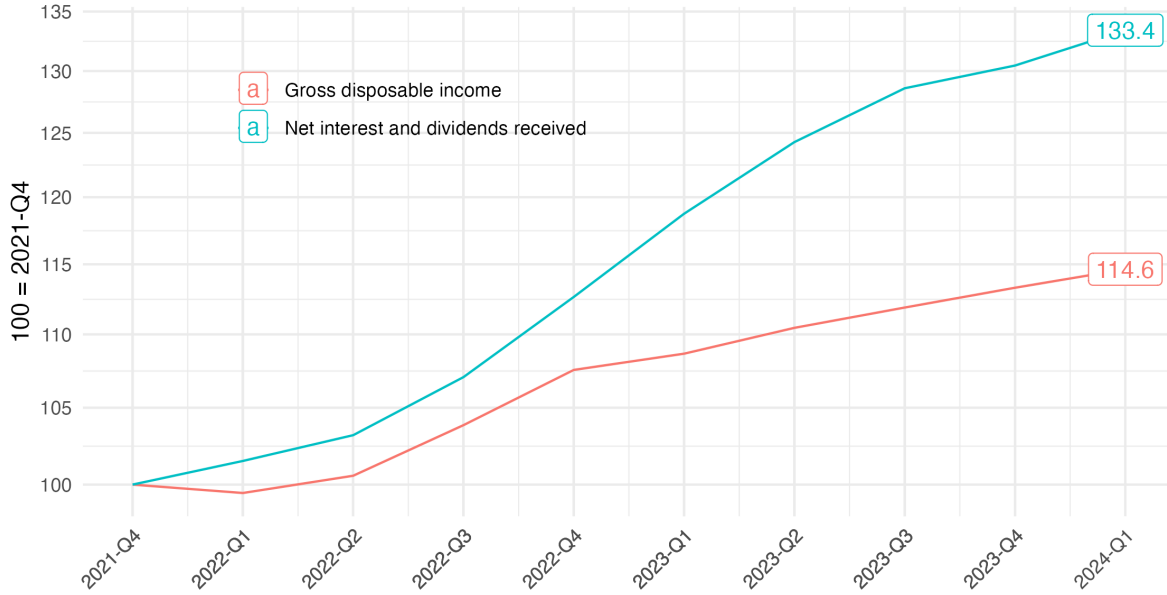
Source: Insee, author's calculations

Of course, symmetrically, on the debt side (particularly mortgages) of households, the estimated cost of credit in "household purchasing power" is also overestimated since it does not take into account a real interest rate, but rather a nominal interest rate based on interest payment flows. (Geerolf (2022)) However, as most mortgage rates are fixed, the rate increases only affect new loans. Moreover, the net financial wealth of households is positive since the outstanding balance of household loans is roughly equal to the outstanding balance of euro-denominated life insurance. Overall, therefore, the "inflation tax" weighs on households on average even if mortgage borrowers benefit from inflation.

The problem of overestimating gross disposable income would not have major consequences if gross disposable income were not used to officially define the notion of "purchasing power": in this respect, it is mainly a French-specific issue, since this monolithic definition of purchasing power as "gross disposable income deflated by the household consumption deflator" is a particularity linked to Insee (see Geerolf (2024b)). In inflationary periods, it is therefore recommended instead to track "wage purchasing power" calculated by deflating wages by a price index – ideally the Harmonised Index of Consumer Prices (HICP) rather than the CPI (Geerolf (2024a)) – which has the advantage of not showing capital income as increasing when in reality it is falling.

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The Savings Rate and the "Inflation Tax"

Just as gross disposable income is overestimated because the inflation tax is not taken into account, so too is the savings rate mechanically overestimated, indeed:

$$\text{Savings Rate} = 1 - \frac{\text{Consumption}}{\text{Gross Disposable Income}}$$

Here, however, this is a problem common to all countries, since the savings rate is defined in this way everywhere in the world, not only in France. Rudd (2024) provides an estimate of this bias on the savings rate in the U.S. national accounts. In particular, when the inflation tax is taken into account, the disinflationary period did not see a secular decline in the savings rate.

Figure 2: Official savings rate vs. inflation-adjusted savings rate. Source: Rudd (2024)
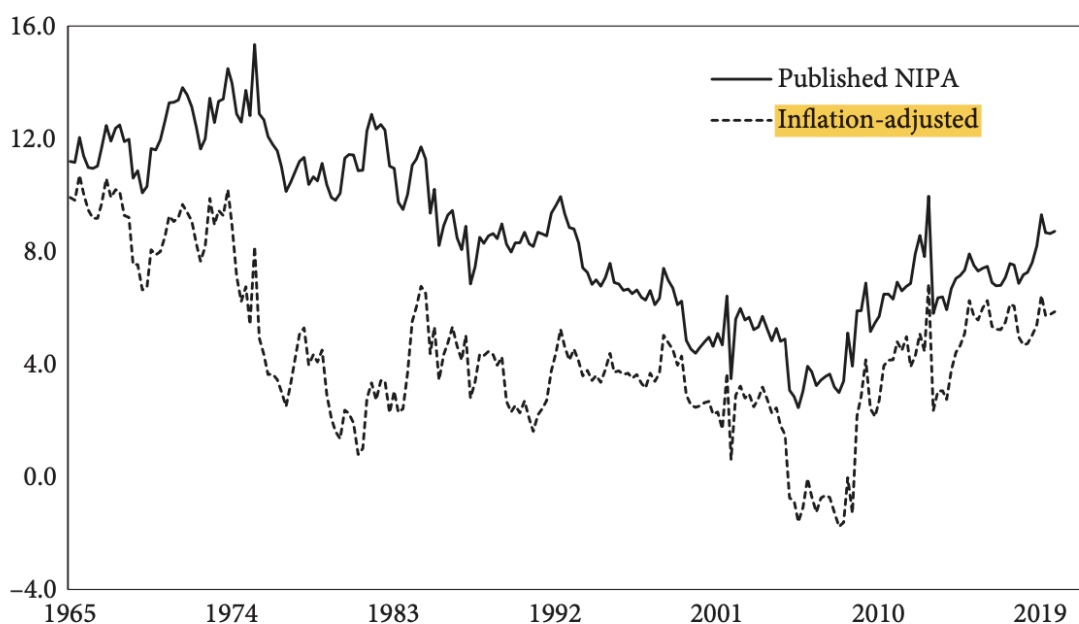

Figure 3.3 Correcting for the portion of nominal interest income that is compensation for inflation implies a very different contour for the saving rate over the past half-century.

The Public Deficit and the "Inflation Tax"

Finally, symmetrically to the overestimation of the private savings rate, the public savings rate is underestimated: the public deficit (in the case of a deficit) is much lower than what the national accounting figures indicate. The "inflation tax," which means that the State repays its debts with money devalued compared to that which was borrowed, is not recorded as income for the State, even though it contributes to reducing its debt. This led the economist Daniel Cohen to say that the statistical calculations of the public deficit are "fundamentally false"[2]. It is not difficult to correct for the inflation tax both the interest burden on the debt as well as the amount of the total deficit. Caution, however: dividing by nominal GDP is not sufficient because it is not only necessary to deflate the flow of interest, but the stock of debt. Figure 2 then shows what we obtain on the side of the real interest burden as a percentage of GDP, considerably reduced by the inflation tax compared to the nominal interest burden.

In the same way, by adding this real interest burden, which represents the "true" cost of indebtedness, to the primary deficit, we obtain a level of public deficit that is considerably reduced compared to the official figures published by national accounting.

Again, it is no doubt useful to take a concrete numerical example. According to the national accounts figures in the 2020 base recently published, in 2023, public debt as a percentage of GDP decreased despite a public deficit of 5.5% of GDP according to the standards of national accounting. In 2023, public debt amounted to 109.9% of GDP compared to 111.2% in 2022, a decrease of 1.3% of GDP. How can this decrease be explained despite a very large public deficit? The total public deficit of 5.5% of GDP actually breaks down into about 1.7% of GDP in interest charges (€48.8 billion) and 3.8% of GDP in primary deficit. The apparent rate on the debt is therefore about 1.6% (including the increase in indexation charges due to inflation-indexed borrowing). The inflation tax, for its part, represents about 5.8% of GDP (€164.5 billion), inflation measured by the GDP deflator being about 5.3%. Thus, the real cost of debt

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[2]Source: radio excerpt from the program *L'Esprit Public* on France Culture, May 15, 2022. (from 31:35 to 33:40) "Whatever diagnosis one makes, one must take into account that the statistical way in which we measure our deficits, which in itself is not a problem, becomes one because this statistical way of calculating deficits has the force of law, it is what we vote in Parliament, it is what the European Union requires of us, these ways of calculating the deficit are **false** because they take into account the interest burden we pay, without making this correction. Now, whatever the interest rate that will prevail, when we have a debt-to-GDP ratio at 100%, then an inflation of 2% if that is true inflation, means that we have unmeasured fiscal revenues. This tax falls on bondholders, of 2% times let's say 100% implies that in fact the deficit is 2% lower than what is announced. So since France is at 5%, if you remove those 2%, it is actually at 3%. If we want to go to 0 that means that in reality we want to go towards surpluses. And this is very important in Italy since the debt is at 160% in Italy, so the same calculation would go even further. Whatever the truth of the figures in the end, one must go through this work of never forgetting, in the vote in Parliament, in the calculations made in Brussels to set the trajectory of public finances, whether we agree with Brussels or not, that we have reached a point where the calculations proposed are fundamentally **false**, they do not give the truth of what is the increase in our deficits and the increase in our debt. I think that if we were to agree on one thing, and to be heard in Brussels or in Frankfurt, it would be on this very important thing. All the economists on the planet know that this correction must be made. Any one taken at random knows it. It is only Parliament and the authorities in Brussels who ignore it, it is a tragedy."

Figure 3: Interest burden and real interest burden (% of GDP)
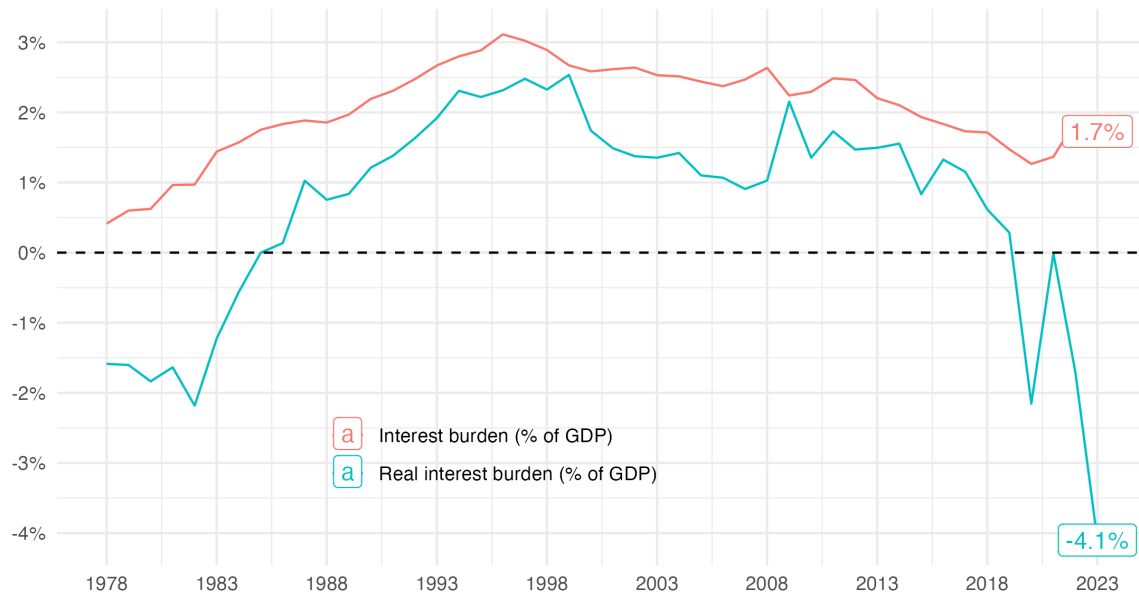
Source: Insee, author's calculations

Figure 4: Public balance and public balance corrected for the "inflation tax" (% of GDP)
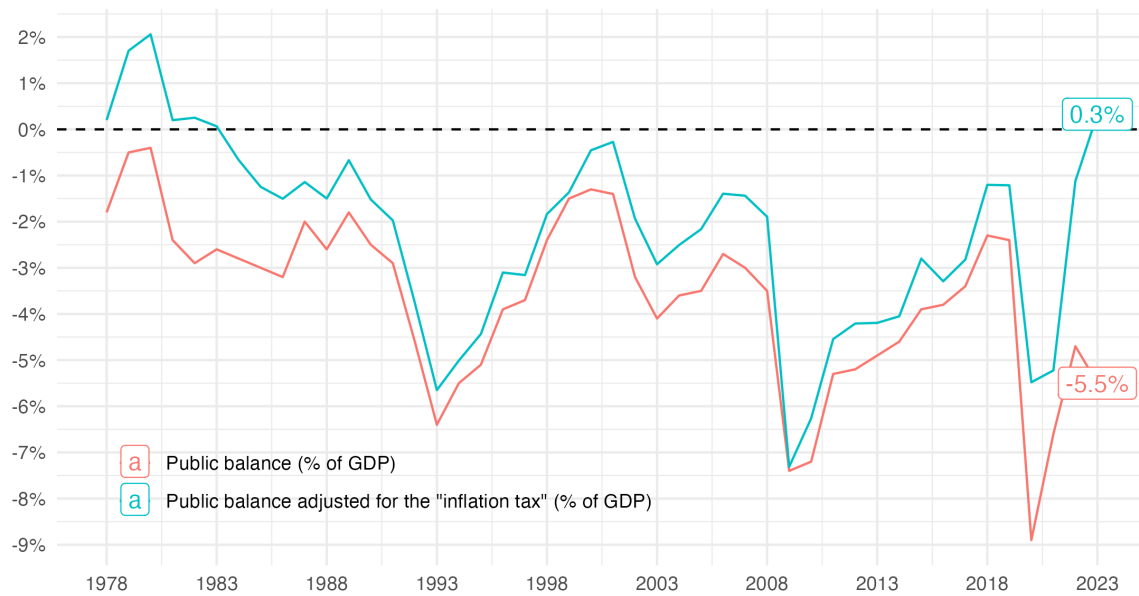
Source: Insee, author's calculations

is -4.1% of GDP. Moreover, the effect of real growth on the reduction of the debt-to-GDP ratio is about 1.0% of GDP, equal to real growth (0.9%) multiplied by the debt ratio. In total, the evolution of debt is therefore 3.8% - 4.1% - 1.0% = -1.3% of GDP.

Figure 5: In 2023, a decrease in the Debt/GDP ratio despite a deficit of 5.5% of GDP

	Debt 2022	Debt 2023	Deficit 2023	Inflation tax	Growth effect	Interest burden	Real interest burden
% of GDP	111.2%	109.9%	5.5%	−5.8%	−1.0%	1.7%	−4.1%
€bn	2,954	3,101	155	−164	−29	49	−116
Source: Insee, author's calculations							

Even in periods of moderate inflation, the amount of the inflation tax is therefore significant. Keynes was right to say: "By a continuing process of inflation, governments can confiscate, secretly and unobserved, an important part of the wealth of their citizens." (Keynes (1919)) We can also understand why the claim that "the interest burden will soon become the largest item of government expenditure" is mistaken. Indeed, this perspective is based on the nominal cost of indebtedness without taking into account its real cost, which includes the "inflation tax." One could even argue that the true cost of indebtedness is not simply measured by the real rate r, but rather by the difference $r - g$, that is, the real rate minus real GDP growth (g representing a measure of the reference real return). The criterion $r - g < 0$ is in any case crucial to assess the sustainability and desirability of public debt. (Geerolf (2013))

Conclusion

To summarize, the way in which inflation is taken into account in national accounting leads to two symmetrical biases in the accounts of agents: household income is overestimated, while that of the State is underestimated. Nominal assets, being financial assets with as many winners as losers in the aggregate, cancel out these errors at the macroeconomic level. All accounting conventions have advantages and disadvantages, but it is crucial to be aware of these conventions to avoid making the figures say what they do not. For the public debate, it is in any case important to remember that the interest burden does not represent the cost of indebtedness and cannot be compared, for example, to the national education budget, and that the public deficit is less important than what the official figures suggest. Moreover, the measurement of "purchasing power" as defined by Insee from household gross disposable income, as well as the monitoring of its evolutions, must be interpreted with greater caution: the increase in "purchasing power" is indeed overestimated when inflation is high.

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