Capital Taxation: Principles, Properties and Optimal Taxation Issues

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ABSTRACT

This article addresses the issue of capital taxation relying on three levels of analysis. The first level deals with the multiple ways to tax capital (income or value, proportional or progressive taxation, and the temporality of the taxation) and presents some of France's particular features within a heterogeneous European context. The second area of investigation focuses on the main dynamic properties generated by capital taxation: the principle of equivalence with a tax on consumption; the issue of double taxation if it targets taxation of nominal income; neutrality of the uniform tax on the capital value; lastly, the risk of confiscatory taxation if there is a disjunction between taxation of the value and the income. The final level of analysis consists in assessing the debate on the optimal level of capital taxation drawing on the lessons in the literature. These discussions are organized into eight themes: (1) double taxation, (2) optimal growth, (3) property, (4) tax competition, (5) supervisory arguments, (6) measuring capital gains, (7) complexity and (8) fiscal stability.

KEY WORDS

Taxation, savings, accumulation of capital.

JEL

D90, E21, H20.

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1 Introduction

France, like many European countries, experienced a significant deterioration in its public finances due to the financial and economic crisis which began in 2008. Since 2011, in response, successive governments have been forced to greatly increase the rate of compulsory levies. The taxation of capital is no exception: it has risen significantly, with increased Social Security levies and a greater reliance on the progressive income tax.

The taxation of capital is a sensitive issue, as capital embodies the notion of wealth and thus of social inequality. At the same time, savings, which fund capital, also symbolizes effort, that is the willing sacrifice of present consumption in order to finance the investment needed to boost the economy's productivity.

Thanks to the taxation, governments are able to secure financing, assure the proper functioning of the State and redistribute wealth, while ensuring the maintenance of a virtuous cycle of sustainable growth. The determination of an optimal tax range is based on two considerations, specifically the nature of the economic variable to be taxed (labour income, capital income or consumption) and the status of the taxpayer (businesses or households). In a context marked by the international mobility of production factors and the great sensitivity of productive capacity (skilled labour and capital) to the level of after-tax remuneration, public trade-offs become especially acute.

Capital taxation may take place at different "moments" in the life of an investment lifecycle: upon entering it, during the holding period, or when exiting. It can apply to capital income, but also to the asset's value. Taxation can take be deduced at source, when the capital held is remunerated (such as with a flat-rate withholding tax or corporate income tax) or be applied as part of a general system of income tax.

The flow of savings is the fraction of disposable income left after consumption. Investment designates the productive counterpart of this flow. The accumulated savings is the wealth that is held for a certain period of time. Subsequently, this wealth is liquidated for the purpose of consumption or else passed on to heirs. The transmission occurs either during the investor's lifetime (donation) or upon their death (inheritance). The wealth can

be subdivided into two components: the movable asset, essentially financial (savings accounts, securities, savings plans, etc.) and real estate assets. For the wealthiest investors there is also business capital. It is also possible to include "intangible" capital resulting from a professional activity (inventions and the creation of artistic works) or productive capacity (human capital). An employee who has contributed to a pay-as-you-go (PAYG) pension system acquires "pension rights" (there are no tangible assets in consideration of the contributions paid), which are not valued from a financial perspective[1].

This article explores the issue of the taxation of capital in three dimensions. First, we examine what are the different ways used to tax capital in practice, illustrating these with the French example, after presenting the very heterogeneous European context. Next, we study various dynamics generated by this particular tax. Finally, we conduct a review of the literature in order to consider the issue of optimal taxation.

2 How capital is taxed

The taxation of capital takes different forms across countries and leads to disparate levels of taxation. In this section, we present general principles that can be used to characterise the taxation of capital before studying the diverse situations around Europe and the case of France in particular.

2.1 General principles

In order to analyse different ways to tax capital, the tax base – this is what is covered by capital and income– needs to be carefully defined. Then, the different moments when capital is taxed during the accumulation process are considered. Finally, we look at how progressive the taxation is.

2.1.1 Taxing the holding of capital or its income: what tax base?

The taxation of capital can apply to both the holding of capital and the income it provides.

[1]Some countries make a precise estimation of this "asset": Sweden, for example, has adopted notional accounts that assign a financial value to the contributions paid (Touzé, 2008); as part of the supplementary pension schemes in the private sector, French employees accumulate points, which have a conversion value as an annuity.

There are three situations in which the holding of an asset can lead to the payment of taxes:

—registration fees (recognition of property, tax on transactions in securities or real estate, transfer taxes) are paid in connection with the acquisition of a property or financial asset;

— the tax is related to ownership of a property (property tax);

— the tax is paid with respect to wealth (i. e. the French wealth tax, impôt de solidarité sur la fortune, or ISF).

The tax base directly related to the holding of wealth consists of the properties, rights and securities held by taxpayers. Thus, land assets, whose value is estimated based on the cadastral rental value, are used as the base for France's property tax ("taxe foncière") on buildings and undeveloped properties.

The taxation of capital also relies on multiple tax bases according to the type of revenue: rents, dividends, interest or capital gains on sales of securities or real estate. The income from capital is taxed:

— at source through a tax levied on capital income whenever this is allocated (payment of interest, profits made by companies);

— as part of the general tax revenues reported, without particular distinction between income from labour and income from wealth.

Capital is also taxed implicitly:

(1) by increasing taxes on consumption: an increase in Value-Added Tax (VAT) reduces the purchasing power of accumulated capital;

(2) inflation leads to the depreciation of the purchasing power of financial capital;

(3) the rate of implicit tax for payroll taxes: the link between pension benefits and the contributions paid sometimes becomes distorted. Indeed, the rules for assigning pension rights based on the contributions paid do not fully respect actuarial fairness. The difference can be compared to a subsidy or to implicit taxation (Gannon and Touzé, 2013).

Wealth may also be subject to multiple taxation. In the French case, the total wealth (property and financial) is used as the base for the ISF wealth tax.

2.1.2 When should capital be taxed?

Capital ownership may be taxed at different moments in the accumulation process (Lavigne, 2006): upon the acquisition of the savings product, during the period when it is held, or upon disposal. Johnson (1994) offers an analysis grid to classify retirement savings products (products that consist in accumulating a capital with conversion into an annuity) by criss-crossing two criteria:

1) The taxation (T) or exemption (E) of the product;

2) The date of taxation: upon the acquisition of a savings product, while it is being held, or upon disposal. The first letter indicates that the invested funds have already (T) or not (E) been subject to tax during acquisition; the second whether the products are taxed or not while being held; and the last whether the asset (capital and income) is taxed upon disposal.

By crossing these two criteria, we get eight possible tax combinations: TTT, TTE, ETT, TET, TEE, EET, ETE, EEE. Conventional savings (interest-bearing bank account) is generally TTE. In the case of life insurance or a Personal Equity Plan ("PEA"), for example, we have TEE (the income constituting the savings is not exempt from tax, then the interest is exempt during the holding period and virtually exempt upon liquidation with the only tax being social contributions), while in the case of a retirement savings converted to a lifetime annuity, we have EET (the income saved is deductible from income tax; the interest paid is not taxed; however, the annuity is taxed).

In France, the existence of the ISF wealth tax complicates this picture because, starting at a certain level of wealth, savings products that are income tax exempt are not exempt from the wealth point of view (ISF). Likewise, inheritance tax complicates the picture because life insurance investments are allowed to escape inheritance tax up to a certain threshold upon the insured's death (compulsory liquidation), which is not the case for other assets (real estate, cash, etc.).

Even if a savings product is taxed at several "moments", the idea is not to tax the same income several times. However, legal provisions do not prevent double taxation on some products, such as dividends (see 2.3.3 on tax credits).

2.1.3 Choosing the rate: progressivity, proportionality or exemption?

Taxes on income from wealth can be:

- proportional[2] : this is the case when financial income is subject to a flat-rate withholding tax as well as social contributions (here France's CSG and CRDS taxes);

- progressive when all sources of income are summed up and the income tax schedule is applied (as are also all marriage and family quotients);

- subject to rules on depreciation and deduction (rental investments), with a threshold for deductibility;

- zero in case of exemption (tax shelter): for example in France, the regulated savings passbook account (livret A). For investments in life insurance and Personal Equity Plans (PEA), the exemption is only partial as any type of gains (capital gains and interest) are subject to social contributions.

Capital tax can also be proportional (property tax), progressive (ISF wealth tax and inheritance tax) or zero up to a given threshold (exemption). When the tax is progressive, the average tax rate will depend on the number of heirs for the estate tax, while for the ISF wealth tax the marriage and family quotients (i.e the tax rebate based on family characteristics) do not apply, which means that for a given asset the amount of the wealth tax is the same for a single person or a couple.

2.2 Capital taxation in Europe – a very diverse situation

In order to compare the taxation of capital between European countries, we can break down all compulsory levies into three categories, according to the tax base: labour, capital or consumption. Europe has highly divergent levels of compulsory levies. France has the second-highest tax burden (45.2% of GDP in 2012, Table 1), and one of the highest levels of capital taxation (10.6% of GDP), after Luxembourg[3] (10.8% of GDP). Looking at the share of capital taxation out of the total taxation of factors, France is one of the countries where capital accounts for an important part of overall taxation (23%), but it is outstripped by Italy and the United Kingdom (Figure 1).

Over the period from 2000 to 2012 (Figure 2), the average for Europe (EU-27) has fluctuated (no upward or downward real long-term trend) around a reference level of

[2]Proportional taxation facilitates a withholding tax.

[3]The situation of Luxembourg is a little unusual: the high rate of capital taxation can be explained by the significant part of the financial sector in the added value.

8.4% of European GDP. Over this period, on average, the taxation of capital income accounted for 4.7% of Europe's GDP (Figure 3) versus only 2.7% for the taxation of capital ownership (Figure 4).

Table 1.Share of different levies: capital/labour/consumption (2012, % of GDP)

	Capital	Consumption	Labour	Total
DNK	8.9	14.9	24.5	48.4
BEL	10	10.8	24.5	45.2
FRA	10.6	11.1	23.5	45.2
SWE	5.7	12.6	25.9	44.2
FIN	6.3	14.3	23.5	44.1
ITA	10.6	10.9	22.5	44
AUT	6.6	11.9	24.7	43.2
LUX	10.8	11	17.4	39.3
HUN	5.3	15.7	18.2	39.2
DEU	6.2	10.8	22.1	39.1
NLD	5.6	11	22.4	39
SVN	3.7	14.2	19.7	37.6
HRV	3.7	17.5	14.5	35.7
GBR	9.7	12	13.8	35.5
CYP	9.2	13	13.1	35.3
CZE	5.2	11.7	18.1	35
GRC	7.3	12.3	14.1	33.7
MLT	8.9	13.1	11.6	33.6
ESP	7.5	8.6	17.2	33.3
POL	7.7	11.8	13.1	32.6
EST	2.3	13.6	16.6	32.5
PRT	6.8	12.1	13.4	32.4
IRL	6.5	10	12.2	28.7
SVK	6	9.5	12.8	28.3
ROU	4.2	12.8	11.3	28.3
LVA	3.5	10.7	13.7	27.9
BGR	3.9	14.9	9.2	27.9
LTU	3.8	10.8	12.6	27.2
EU-28	8.2	11.2	20.1	39.5

Source: Eurostat, Taxation trends in the European Union, 2014.

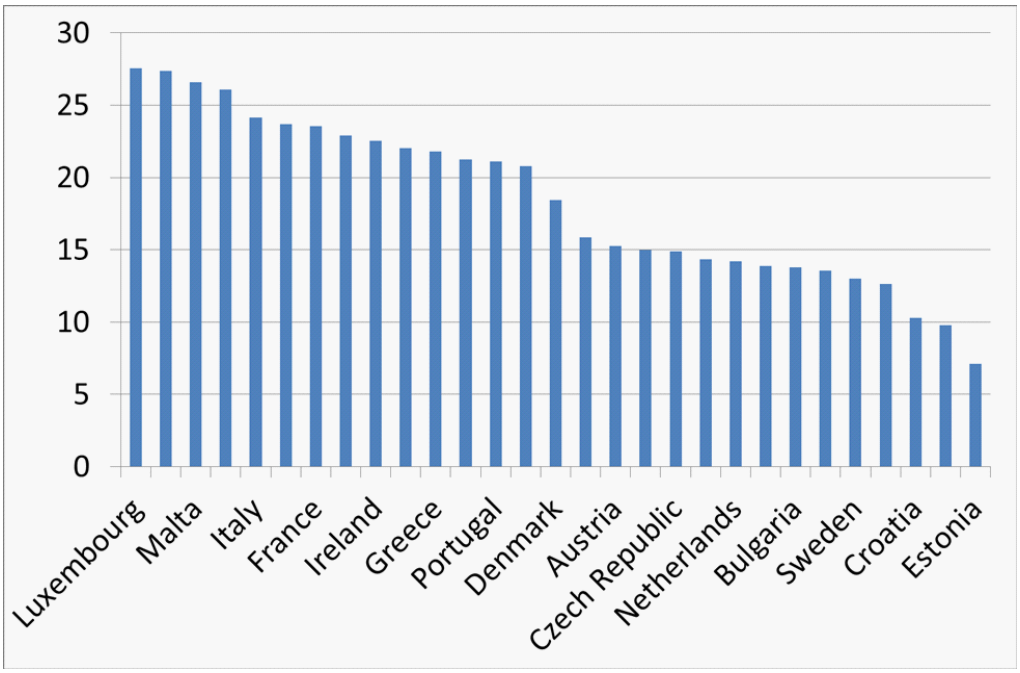

Figure 1: Compulsory levies on capital (% of total levies; source: Eurostat)

The heterogeneity characterising Europe is persistent: since 2000, no convergence was observed in the minimum and maximum rates of levies on capital, either at the overall level (12.1% versus 2.4%), on capital income (8.9% versus 1.7%) or on capital ownership (4.7% versus 0.5%). In terms of taxation of capital held, France stands out as the country with the highest level (except in 2008). Since 2000, capital taxation has been higher in France than the European average. In 2012, the French overall tax burden came very close to the Luxembourg's, the highest in Europe.

2.3 The case of France in particular

2.3.1 Capital income and capital: some data

According to French national accounts, income from real estate capital (or property income[4]) accounted for about 172 billion euros in 2013 (Table 2). This gross property income includes both rent going to landlords and rent[5] imputed to homeowners. Financial income, which includes interest, dividends (net of tax on profits) and other investment

[4]Property income is calculated from the household account in the national accounts (Antonin, 2009), and corresponds to the sum of the gross operating surplus (B2) and revenue from land and deposits (D45).

[5]Imputed rent "covers the rental service that owners of their residence provide to themselves" (INSEE).

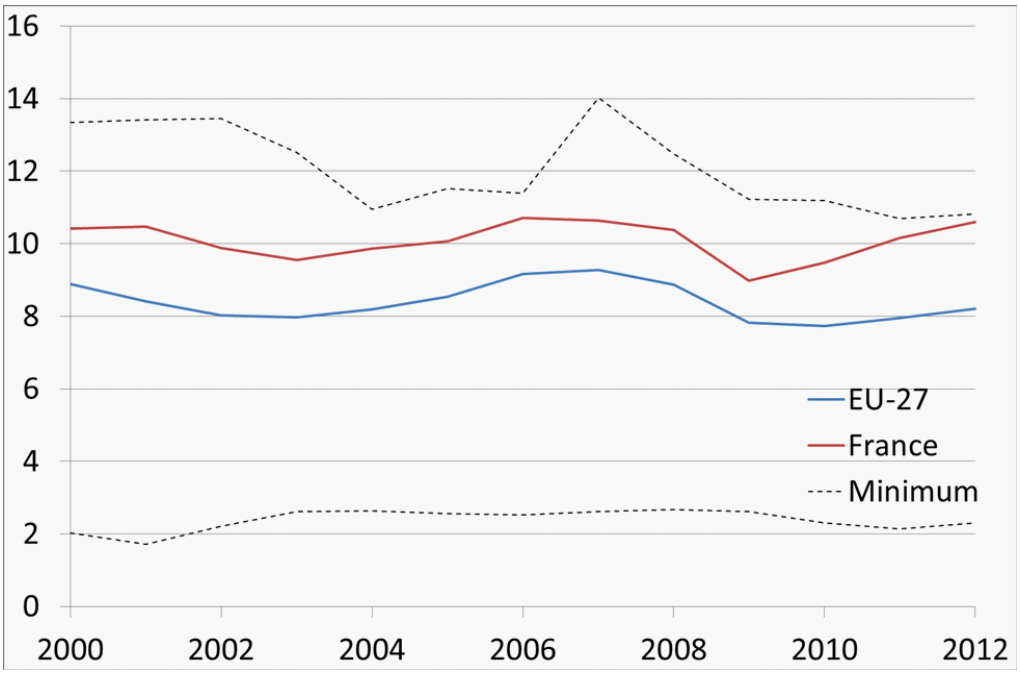

Figure 2: Taxation of capital in Europe (% of GDP): Total (income and holding)

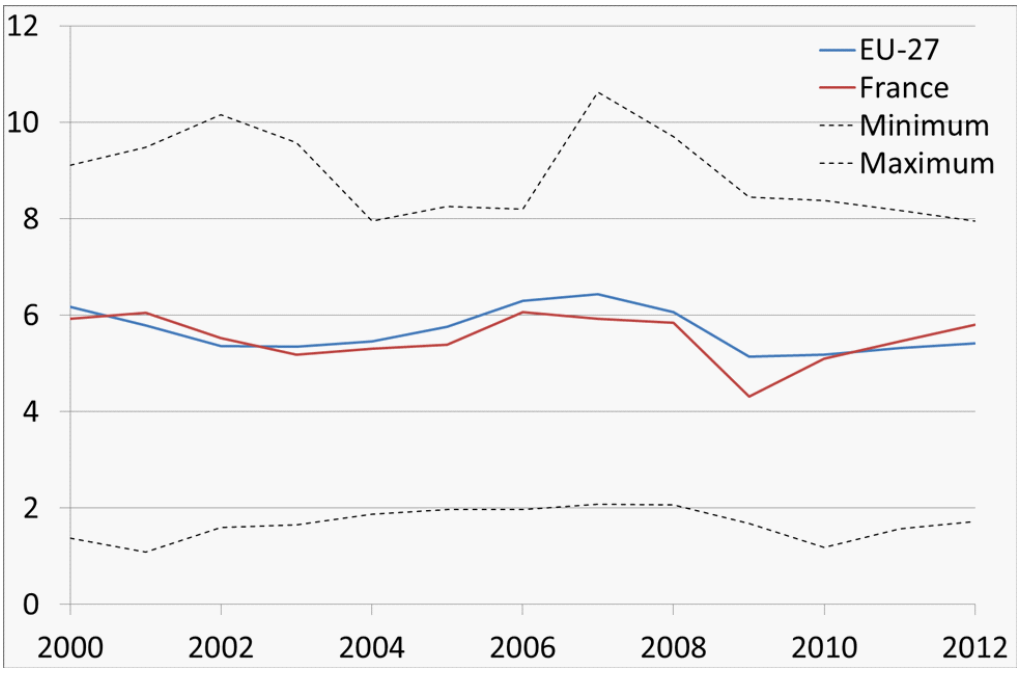

Figure 3: Taxation of capital in Europe (% of GDP): Income

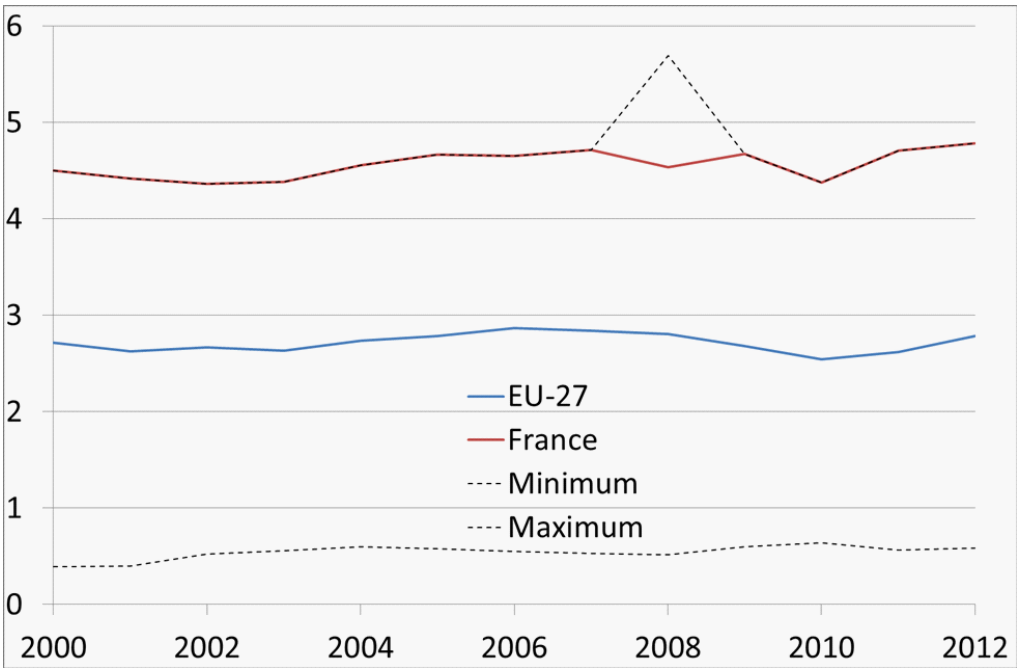

Figure 4: Taxation of capital in Europe (% of GDP): Holding

income, amounted to €109 billion. The mixed income of individual entrepreneurs, which combines returns on capital and labour, topped €122 billion.

Households paid 207.2 billion euros in taxes on income and wealth. The table published in the appendix details all the taxes levied by the State, how their payment breaks down between the productive sector and households, as well as the tax bases: capital, labour or consumption. Among the main taxes on capital, households paid €4.4 billion in ISF wealth tax, €9.5 billion in estate and transmission taxes, €11.1 billion in France's CSG-CRDS taxes and €16.5 billion in property tax (*taxe foncière*). A share of the €68.6 billion of income tax is attributable to the taxation of capital income. In addition, France's business owners also indirectly paid a tax on their capital income since they have had to pay €44.3 billion in corporate income tax.

Gross disposable household income came to €1326.3 euros, or about 62.7% of GDP. Households spent 84.9% of that income on consumption. The remaining 15.1%, i.e. gross savings, were used for the acquisition (net) of housing (8.9%, or nearly 60% of gross savings) and for financial savings (5.8%).

French households' gross savings represent about 9.5% of GDP, against 3.6% for financial savings.

Households' total net worth reached €10,298 billion euros in 2013 (Table 3), or about

5 times the GDP. This breaks down into households' non-financial assets (92% of which is real estate) worth €7,126 billion in 2013 (69.2% of net assets) and net financial assets worth €3,172 billion euros (30.8% of net assets).

		bn euros	% of GDI
Supply			
Mixed income		121,5	9,2 %
Net wages		673,3	50,8 %
	Wages	1 119,8	84,4 %
	Social contributions	446,5	33,7 %
Property income		301,2	22,7 %
	Interest	4,2	0,3 %
	Income distributed by companies	52,4	4,0 %
	Dividends	28,0	2,1 %
	Other income distributed by companies	24,5	1,8 %
	Other investment income	52,5	4,0 %
	Land rent	170,0	12,9 %
Social benefits		457,6	34,5 %
Other current transfers		0,4	0,0 %
Use			
Loan interest		18,8	1,4 %
Current taxes on income and wealth		207,2	15,6 %
	Income tax	185,0	13,9 %
	Other current taxes	22,3	1,7 %
Balance			
Gross disposable income		1 326,3	
Use of income			
Individual consumption		1 126,4	84,9 %
Savings			
Gross savings		199,9	15,1 %
	Investment in housing	118,1	8,9 %
	Other (incl. capital taxes)	5,0	0,7 %
	Financial savings	76,8	5,8 %

Table 2.Simplified breakdown of French household income, 2013

(sources: INSEE and authors' calculations)

	Current wealth	% of net assets
Non-financial assets (NFA)	**7 126,2**	69,2
Buildings and land	6 587,5	64,0
Machines and equipment	41,9	0,4
Stocks	14,7	0,1
Intellectual property rights	2,5	0,02
Other produced assets	144,3	1,4
Other non-produced assets	335,3	3,3
Financial assets (FA)	**4 500,9**	43,7
Total assets (NFA + FA)	**11 627,1**	112,9
Financial liabilities (FL)	**1 328,7**	12,9
Net financial wealth (FA – FL)	**3 172,2**	30,8
Total net wealth (NFA + FA – FL)	**10 298,4**	100

Table 3. Current wealth of French households, end 2013 (source: INSEE, household wealth accounts 2013)

2.3.2 Complex tax rules

In France, the tax on capital income has two components (see Table 4):

- Social insurance contributions (PS), whose rate is set at 15.5%[6] ;

- A general tax that is applied either through the progressive income tax ("IR", with five possible marginal rates: 0, 14, 30, 41 and 45%) or a flat-rate levy ("prélèvement libératoire forfaitaire" or "PLF", a 24% flat tax on income from bank savings, but this possibility is now restricted to households receiving less than €2000 in interest per year; a tax, ranging from 15% to 35% for life insurance held less than eight years; and a tax from 19 to 22.5% for PEA personal equity plans held less than five years).

Some investments benefit from exemptions (life insurance, retirement savings, some real estate investments, "PEP" savings accounts, regulated savings, etc.). These exemptions make it possible to avoid income tax if the holding period is long enough (life insurance, PEA personal equity plan). Others can also be used to escape social contributions (regulated savings). Still others benefit from specific tax provisions (company savings plan, retirement savings plan with conversion to a life annuity, certain real estate investments, etc.).

Taxation applies on the asset at the time when a property is purchased (conveyance taxes on a transfer with consideration), during transfer (inheritance or lifetime donations) or when considered as wealth held.

Taxes on a transfer with consideration (5.09%) are levied on the value of the sale of the real estate. They are split into several proportional fees collected by the State and the local authorities concerned (département or commune). Property ownership can also entail paying specific local taxes: property taxes.

The taxation of transfers (tax on transfers without consideration) is progressive after reaching a threshold, with marginal rates ranging from 5% for the first tax bracket up to 60% for lifetime donations or bequests between non-family members.

The wealth tax (ISF) is a progressive tax on capital. Wealth is measured on the household's net assets, excluding exempt goods (business assets, intellectual property rights, etc.). Over the period 2006-2012, a tax shield was introduced that set a de facto cap on the ISF: the direct taxes paid by a taxpayer could not exceed a given percentage of their revenue (60% before 2007, then 50% after the election of President Nicolas Sarkozy). Initially with six tax brackets going up to 1.80%, the ISF tax was reduced to just two

[6] The social contributions consist of: 8.20% for the CSG tax, 0.50% for the CRDS tax, 4.50 % for social security contributions, 2.00% for the Solidarity contribution, and 0.30% for Additional contributions.

tranches (0.25% and 0.50%) in 2012 after the planned removal of the tax shield on 1 January 2013. Following the election of François Hollande, the scale of the ISF again assumed a more progressive structure, with five tax brackets: 0.5%, 0.75%, 1.0%, 1.25% and 1.50%. As of 1 January 2015, wealth exceeding 1.3 million euros is subject to the ISF tax.

Type of income or wealth	Tax base	Tax
Taxation of income		
Real estate income	Effective rent	PS + IR or specific regime
Financial income	Interest (fixed-income investments: savings account, time-deposit accounts, corporate and Treasury bonds, etc.)*	PS + IR or PS + PLF
	Dividends (variable income investments: equities)	IS + IR + PS
	Regulated passbook savings accounts (Livret A, LDD, PEL, etc.)	Total exemption or only PS
	Life insurance income	PS + IR or PLF or exemption
	Equity savings plan (PEA)	PS + PLF or exemption
	Company savings plan (PEE)	PS + exemption of the employer contribution
	Retirement savings	PS + IR after abatement
Taxation of acquisition of wealth		
Total wealth (real estate and other assets)	Value of the donation or inheritance	Tax on transfers with no consideration
Real estate wealth	Purchase price of goods	Tax on transfers with consideration
Taxation on wealth held		
Total wealth (real estate and other assets)	Total wealth	ISF
Real estate assets	Cadastral rental value of furnished goods	*Taxe foncière* on improved and unimproved properties
Taxation on the disposal of wealth		
Real estate assets	Real estate capital gains on main residences**	Exempt
	Real estate capital gains excluding principal residence and with a short holding period**	PS + IR
Other assets	Capital gains, with abatement depending on the holding period***	PS + IR

PLF = Prélèvement Libératoire Forfaitaire (flat-rate withholding tax)
IR = Impôts sur le Revenu (incometax)
PS = Prélèvements Sociaux (social levies)
ISF = Impôt de solidarité sur la fortune (wealth tax)
**Since 2013, by aligning the taxation of capital on the taxation of labour, the government has virtually eliminated the PFL flat-tax withholding tax, which is now accessible only for households reporting savings income (interest, dividends, capital gains on securities, etc.) under 2,000 euros per year. For everyone else, financial income is subject to the progressive income tax.*
***Since 1 September 2013, exemption from income tax if the holding period exceeds 22 years, and exemption from social contributions if the holding period exceeds 30 years.*
****The gross taxable capital gain, before applying the allowances, is subject to social contributions. The gross taxable capital gain is then reduced by an allowance according to the holding period, calculated from the date the security was acquired: 50% for a holding period of between two and eight years; 65% for a period of at least eight years. Recent company shares may benefit from increased allowances. The taxable net gain, after the tax allowance, is then subject to the progressive income tax.*

Table 4.Capital taxation in France

In France, the coexistence of proportionality, progressivity and exemption principles blurs the transparency of the tax system. Thus, the marginal top tax rates are extremely disparate, ranging from 0% for capital gains on the main residence to nearly 40% for capital gains on securities, or from 10% for the taxation of imputed rents (property tax

for homeowners) to 62% for effective rents (landlords), excluding exemptions. This shows the State's willingness to channel savings towards specific investments, in particular retirement savings, property, social housing (regulated passbook savings accounts "livret A") and the financing of venture capital. The tax regime on homeowners has become even lighter as the fictitious income from home ownership has been exempt since 1965, like gains on the sale of the taxpayer's primary residence.

Moreover, savings income has been taxed more heavily over time, leading to greater equality of tax treatment between income from labour and from capital (Sterdyniak, 2012). The increase in taxation been threesold:

- a gradual increase in social contributions (15.5% today versus 0.5% in 1996);

- the abolition of the income tax credit in 2006 (see below) and a more progressive income tax schedule, with the taxation of capital gains on securities starting on the first euro of sales in 2011,

- quasi-complete elimination of the flat-rate withholding tax (PLF), and the integration of capital gains on securities in the income tax schedule in 2013.

2.3.3 The taxation of dividends after the elimination of the tax credit

Dividends have the particular feature of being taxed twice: in each company, the distribution of a dividend is a means of using the net income after payment of corporate income tax. Dividends are taxed as corporate income (IS) before distribution and as income (IR) after distribution. To eliminate this double taxation, most countries have established specific tax provisions.

Until 1 January 2005, the tax credit played this role in France, but it was replaced in 2007 by a 40% deduction on the amount of dividends included in the taxable income.

Take the example of a company making a net profit before tax of 100,000 euros in 2013, which is distributed entirely. This is hit by a 34.4% corporate tax (33.3% IS rate plus the social contribution on profits). The dividend paid (65,600 euros) is first subject to a 15.5% social contributions rate, or €10,168, before being subject to income tax (IR). Part of the CSG tax (5.1%) is deductible from the income tax base. Assume that dividend holders are subject to a marginal tax rate of 30%; in this case, they must pay income tax in the amount of:

(€65,600 x 0.6 (deduction of 40 %) – €5186 (CSG deduction)) x 0.3 = €10,252.

In total, the initial profit will be subject to contributions of €34,400 + €10,168 + €10,252 = €54,820, or an 54.8% overall tax rate, which is higher than the income tax rate (IR) plus social contributions (30% + 15.5% = 45.5%), which means that double taxation has only been partially alleviated. A similar calculation shows that if the dividend recipients are subject to a 40% marginal rate, then the overall tax rate is also higher than the income tax rate plus the social contributions (58.2% compared with 55.5%).

3 Examples of dynamic properties induced by the taxation of capital

The taxation of capital or its income has particular intertemporal implications. In this section, we examine four types of dynamic properties induced by the taxation of capital. First, the tax on capital income can be compared to a tax rate on consumption that increases over time. The tax base is in general nominal, which means that the taxation of real income (i.e. what is economically and fiscally relevant) may be biased by inflation and lead to double taxation. In addition, by reducing the income from savings, taxes should reduce the value of the asset, expressing a direct relationship between value and taxation. However, if taxation is applied equally to all assets and liabilities, a principle of neutrality is verified. Finally, the excessive taxation of wealth whose value is as dependent on the discount rate (risk-free interest rate) as on the level of future rent may lead to confiscatory taxation.

3.1 Principle of tax equivalence with a tax on consumption

If we denote the risk-free interest rate by r, the interest factor by $R = 1+r$ and the capital tax rate income by τ_r, then 1 euro saved (the marginal sacrifice of present consumption) during T periods leads to the following future gain net of tax (the marginal value of the future gain):

$$(1 + (1 - \tau_r) \cdot r)^T = R^T \cdot (1 - \tau_r \cdot \frac{r}{R})^T \tag{1}$$

The rate of deformation of the interest factor at horizon T is measured by the term $(1 + (1 - \tau_r) \cdot r)^T$. From an intertemporal consideration of consumption, the product of

the factors in the net return on savings is a coefficient that can be used to discount the price of the future good. When the capital income is taxed, this discount coefficient experiences a geometric deformation. If we denote p_T as the price of a good consumed in T periods, the present value of this good is equal to:

$$\frac{p_T}{R^T} \cdot \left(1 - \tau_r \cdot \frac{r}{R}\right)^T \tag{2}$$

From the viewpoint of the intertemporal budget constraint (discounted sum of future expenditures and revenues), a tax equivalence can be identified between taxing the savings income and taxing the consumption whenever the rate of taxation of consumption at date T, denoted $\tau_{p,T}$ changes as follows:

$$\tau_{p,T} = \frac{1}{(1 - \tau_r \cdot \frac{r}{R})^T} - 1 \tag{3}$$

Taxing the savings income can then be likened to a tax rate on consumption "that grows exponentially" (Ambler, 1999), which leads to a "rising distortion between intertemporal choices" (Piketty and Saez, 2013). Chamley (1986) and Judd (1985) see this to be a problem with a major distortion that is fully inefficient in the long term (see below).

Figure 5 shows an assessment of the implicit tax rate on consumption according to the investment horizon (horizontal axis) for values of $\tau_r = 25\%$ and $r = 3\%$. For horizons under 12 years, the implicit rate is less than 20% but it is more than 50% beyond 26 years.

3.2 Inflation and the average rate of implicit taxation of the real interest rate

The inflation rate measures the monetary erosion of an asset's purchasing power. If the rent provided by the asset is indexed to inflation, the value of the asset grows with inflation. When the rent is not indexed (as with bonds whose coupon rate is contractually fixed), inflation acts as a tax. Inflation is then feared by the asset holder, as is reflected by the notion of "inflationary tax".

Since the real interest rate is the effective gain in income obtained from savings and that taxation is applied to the nominal financial gain, fluctuations in inflation lead to

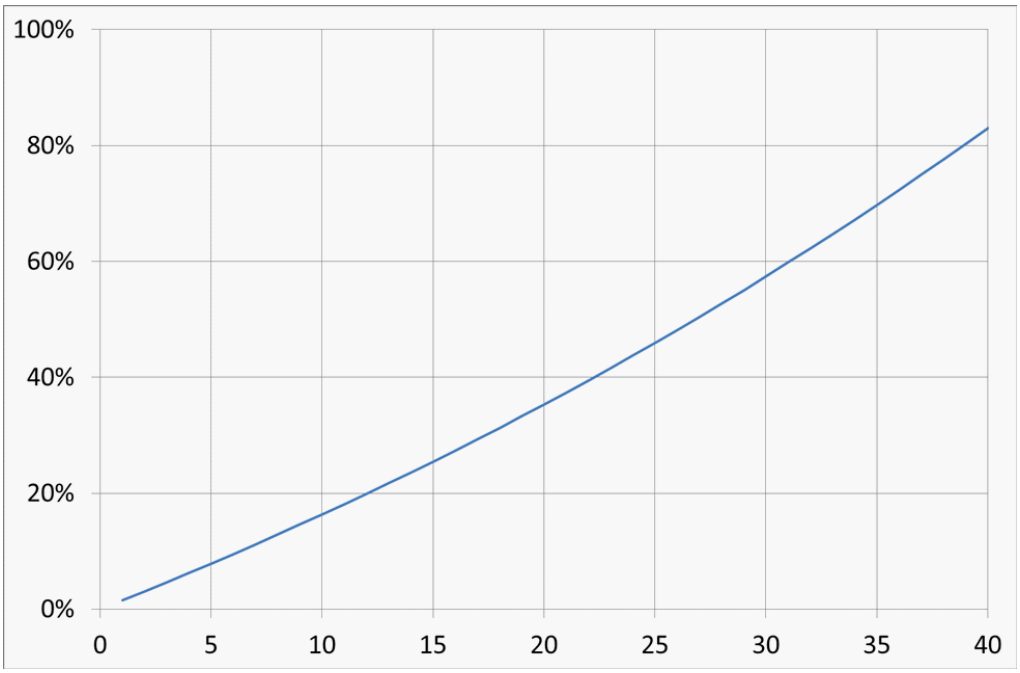

Figure 5: Implicit rate of taxation of consumption for a saver according to the investment horizon (with $\tau_r = 25\%$ and $r = 3\%$). Source: Authors' calculations.

unstable taxation. Consider an asset without nominal risk remunerated at rate r. We denote the inflation rate by $\pi \cdot (r - \pi)$ is then the real interest rate. The investor pays a tax $\tau_r \cdot r$. After tax, the real income on the wealth equals:

$$(1 - \tau_r) \cdot r - \pi \tag{4}$$

The taxation rate of the real income on the savings, denoted τ_{rm}, increases with respect to the inflation rate:

$$\tau_{rm} = \tau_r \cdot \frac{r}{r - \pi} = \frac{\tau_r}{1 - \pi/r} \tag{5}$$

Taxation bears on nominal, not real, income, so the saver also pays tax on the inflation rate, which is tantamount to double taxation. In addition to monetary erosion there is thus a supplementary tax: $\tau_r \cdot \pi$. In the configuration where $\pi/r > 1$, the saver's real income is negative and yet the amount of tax paid remains positive, as the average rate on the real income becomes negative. The tax on the capital income then becomes confiscatory. We also have $\tau_{rm} > 1$, whenever $\tau_r > (1 - \pi/r)$. On the other hand, in a deflationary period ($\pi < 0$), if the nominal interest rate is zero, the saver is exempt from tax whereas

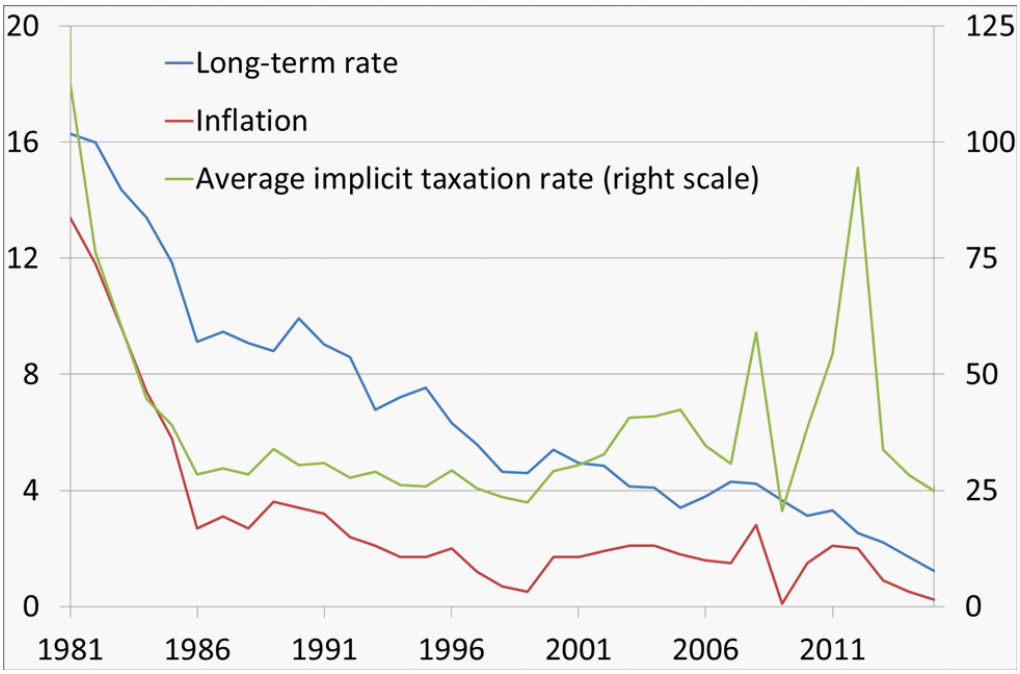

Figure 6: Implicit taxation rate of real interest rate between 1981 and 2015 (Hypothesis :$\tau_r = 20\%$). Sources: OECD, INSEE, OECD forecast for 2015, authors' calculations.

the real income of his asset is positive.

If this formula is applied to the French data, with a hypothetical constant levy rate of 20% on income from assets, the effective rate experiences strong fluctuations (Figure 6). It shows a downward trend until the late 1990s because the nominal interest rate decreased more slowly than inflation. Subsequently, from 2000 to 2012, the opposite occurs: the nominal interest rate fell rapidly. 2012's peak is due to a very low real interest rate was very low in a context of inflation close to 2%. From 2013 on, rate rate declined because inflation fell quickly and the real interest rate once again increased.

This variability in the effective rate is a direct consequence of not properly taking into account the relevant tax base. It does not obey any economic rationale. This finding justifies the deductibility of inflation from financial income even if the government has to raise the tax rate in order not to lose tax revenue.

3.3 Value of assets and neutrality of taxation

Whenever assets and liabilities are taxed identically , the marginal losses and gains resulting from financial trade-offs are affected similarly. This is the case when the value

of loans is deductible from taxable assets and when the loan interest is tax deductible. For example, one euro borrowed can be used to obtain invested capital (assets) that pays dividends (potentially taxable earnings) on the one hand and constitutes a debt to be repaid (liabilities) that leads to payable interest (potentially deductible losses), on the other hand. In a situation of uniform, proportional taxation, the marginal after-tax gains and losses arising from financial decisions are affected equally. This property therefore leads to the strong neutrality of taxation on the value of wealth.

This neutrality is total in the context of a simple computation of an asset's value. The asset price is valued as the expected discounted sum of a rent or dividend denoted D. This sum is discounted at a risk-free rate r. Without taxation, the value of the capital, for a risk-neutral individual, is equal to the present value of the future financial income. If the financial horizon is very long (infinite), the income / interest rate ratio measures the value of the asset:

$$W = \frac{D}{r} \tag{6}$$

If we introduce a capital tax (τ_W) in addition to the tax on income, the after-tax cash flow becomes: $D \cdot (1 - \tau_r) - \tau_W \cdot W'$, where W' is the value of the after-tax capital. We then obtain a new value of the capital (Bozio et al., 2005):

$$W' = \frac{D \cdot (1 - \tau_r) - \tau_W \cdot W'}{(1 - \tau_r) \cdot r - \tau_W} \tag{7}$$

Hence,

$$W' = W \tag{8}$$

On this theoretical basis, Allais (1966) deduced that the taxation of the capital and its income has a neutral effect on the value of the capital.

In contrast, the non-taxation of some capital incomes (e.g. implicit rent, that is to say, the use value of a homeowner's residence) induces a distortion once other investments are taxed. This exemption affects trade-off conditions and changes the equilibrium value of the untaxed asset. Insofar as the risk-free asset (remunerated at rate r) is taxed, we thus find:

$$\begin{aligned} W' &= \frac{D - \tau_w . W'}{(1-\tau_r)\cdot r - \tau_w} \\ &\iff \\ W' &= \frac{D}{(1-\tau_r)\cdot r} \end{aligned} \tag{9}$$

Not taxing the income D thus generates a higher valuation of the assets ($W' > W$). The taxation of capital is not neutral anymore.

3.4 Taxation of wealth and confiscatory taxation

Taxing the value of capital (the wealth) introduces a relationship between the interest rate and the average tax rate: if the interest rate (r) decreases, the income does not increase, yet the tax on the value of the asset rises. The initial value of the capital is then taxed as well as the unrealized capital gain.

Let's note T_K the total amount of the tax on the capital:

$$T_K = \tau_W \cdot W + \tau_R \cdot D = \tau_W \cdot \frac{D}{r} + \tau_R \cdot D.$$

The average amount of tax paid on the capital income D is then:

$$\frac{T_K}{D} = \tau_W \cdot \frac{W}{D} + \tau_R.$$

D/W measures the average rate of return on the capital. On the financial market, the equilibrium verifies: $W/D = r$, hence $T_K/D = \tau_W/r + \tau_R$.

When the tax rate on wealth is greater than the after-tax interest rate ($\tau_W > (1 - \tau_r)\cdot r$), the tax rate on capital income rises above 100%. The tax is then confiscatory, and over time the owner will be gradually deprived of his wealth. There is a disconnection between the amount of tax on the value of the asset and the benefit of the usufruct.

4 In search of an optimal taxation of capital

From an economic point of view, three fundamental principles can be identified for taxing the wealth produced:

1) The financing of public goods and services in the sense of Samuelson (1954), which are characterized by non-rivalry (collective consumption) and non-exclusivity (use is not

conditional on payment), making it difficult or even impossible to turn to the private market sector.

2) Social redistribution: the taxes collected become social benefits, which can be used to reduce inequality.

3) Behavioural imperfections, causing a discrepancy between market prices and the "true" social cost. These could include pollution externalities, requiring a Pigouvian tax, or the inability of agents to take optimal decisions, which could make it necessary to distort price signals either through a tax (to discourage) or a subsidy (to encourage).

Then, the tax levied must respect two principles of tax fairness:

1) Horizontal equity: this means the principle of treating "equals as equals". So two incomes deemed "objectively" identical must be taxed in the same way.

2) Vertical equity: every taxpayer should fund the functioning of the public sector based on their ability to contribute.

The concept of vertical equity stems from the two grounding principles discussed above: in general, the utility derived from the use of public goods and services depends positively on income, whereas social redistribution implies taxing the rich and helping the poor.

The literature on optimal taxation is large (Ramsey, 1927; Mirrlees, 1971; Chamley, 1986; Judd, 1985). There is an utopic first-rank theoretical optimum, the flat-rate tax. Such a tax is not levied on income but determined only from the full set of intrinsic individual characteristics. It is very efficient because it creates no distortion in the price system. But many intrinsic characteristics are in practice unobservable. Optimal taxation then involves the search for a second-best optimum that leads to a trade-off between equity (maximum social well-being) and efficiency (low distortion of the price system). The wealth observed after the allocation of an income (labour or capital) or the consumption of a good, plus the household's family situation (single or couple, number of dependent children) constitute the main frame of the objective tax base.

In this section, we discuss several arguments that may or may not justify the use of capital taxation. We explore the nature of the debate by drawing on the lessons of the literature. The debates are organized into eight themes: (1) double taxation, (2) optimal growth, (3) ownership, (4) tax competition, (5) supervisory arguments, (6) measuring capital gains, (7) complexity, and (8) fiscal stability.

4.1 The debate on double taxation

Since the 19th century (Mill, 1848), a very rich debate has taken place on the legitimacy of taxing consumption rather than income (Fossatti, 2013). The underlying idea is that it is fairer to tax the well-being arising from the use of income via consumption rather than the income earned, and thus indirectly the accumulation of savings, which in reality is simply potential consumption that has been deferred.

An overall tax on income, applied to the remuneration of labour and savings without distinction, can be considered double taxation because the income constituting the savings has already been taxed (Mill, 1848; Fisher, 1939). In 1848, Mill wrote: "Unless... savings are exempted from income-tax, the contributors are twice taxed on what they save, and only once on what they spend." However, given that savings generate a real income, it seems legitimate to consider this as new wealth and thus to tax it. To this end, Fisher (1906) recommends taxing the "realized" income, which is treated as income actually consumed (Fossatti, 2013); this is in line with Mill's vision (1848) of applying a lower tax to temporary income (weakly linked with the level of consumption) compared to permanent income (strongly linked with the level of consumption).

The argument of double taxation is also often put forward when paying inheritance tax (Arrondel and Masson, 2011), since the savings accumulated by the deceased arose out of income that was already subject to tax. However, the death of the owner of the wealth frequently allows the heirs to avoid tax on the effective capital gains unrealized during the owner's lifetime (Sterdyniak, 2015).

4.2 Optimal growth issues

From the perspective of consumer theory, taxing income from savings distorts the rate of return on capital and generates two contradictory effects:

- A substitution effect (negative on savings) such that the discounted price of future consumption rises, making current consumption more attractive;

- An income effect (positive on savings), which leads to a lower return on savings and therefore a reduction in future income, which in turn pushes up the savings needed to maintain a satisfactory level of future consumption.

From a theoretical perspective, the overall effect is thus indeterminate. However, whenever a financial investment is less taxed relative to other investments with the same

risk structure, the trade-offs lead unequivocally to favour holding this type of investment.

The optimal level of capital accumulation has been studied from a theoretical point of view in the tradition of the neoclassical growth model initiated by the work of Ramsey (1928), Cass (1965) and Koopmans (1965). This model assumes a planner with an infinite lifetime in the presence of individuals with finite lifetimes (as in Samuelson's model of overlapping generations, 1958) or infinite lifetimes (dynastic model where each parent integrates the preferences of their descendants into their own preference structure). The latter proceed to make a double trade-off: an instant trade-off between productive effort (work) and consumption as well as an intertemporal trade-off between current and future consumption. With respect to individuals with finite lifetimes, postponing consumption is considered a life cycle choice while accumulating capital to bequeath to descendants is tantamount to a dynastic choice. The intertemporal trade-off of households leads to the accumulation of savings, with the counterpart in capital used to produce wealth.

The objective of the benevolent planner is to ensure a trajectory of economic growth and capital accumulation that guarantees the highest level of intertemporal well-being while financing public spending and income redistribution. The potential effect of taxation on savings incentives raises concerns about the impact on the accumulation of wealth and consequently on the level of future growth. The intertemporal sensitivity of the tax bases (capital, labour and consumption) to the tax rate is then a key element in identifying the optimal levels of taxation.

In a model with an infinite lifetime horizon, Chamley (1986) and Judd (1985) show that taxing capital causes a distortion in behaviour that is detrimental to the long-term optimal level of production. Theoretically, the tax would lead to a level of accumulation that is not socially optimal, since there would no longer be equality between the "private cost and the social cost of investment" (Ambler, 1999). The authors' recommendation is then to have a zero tax rate on income from savings over the long term. This theoretical result advocates the exclusive use over the long term of the fiscal combination: taxing consumption and taxing labour income. Socially, dispensing with the taxation of capital income over the long term could lead the public sector to accumulate capital itself, for a transitional period, thanks to budget surpluses, and thus to tax the capital held by private agents sufficiently. The capital accumulated by the public sector then provides it with enough additional public resources for the proper functioning of the public sector

and the social redistribution of resources.

When initially implementing an optimal tax policy, the existing capital is offered inelastically and taxing capital "does not create any distortion" because the tax "in the first period acts as a flat-rate tax" (Ambler, 1999). The initial level of taxation is therefore potentially very high. Straub and Werning (2014) criticized Chamley (1985) and the literature that followed for constraining the tax rate on capital income to a level below 100%. Such an upper bound de facto prevents the government from practicing confiscatory taxation, which greatly limits the initial tax rate.

However, Straub and Werning caution that "without upper bounds on capital taxation the solution involves extraordinarily high initial capital taxation, typically complete expropriation, unless the first best is achieved first." Saez (2013) also points out this result, but stresses that Chamley's hypothesis "captures a real constraint faced by tax policy makers", and that "in practice, wealth levies happened almost never and only in very extraordinary situations such as wars, or after-war periods". Moreover, this consideration of the inelasticity of already accumulated capital cannot be repeated by surprise in each period because every rational saver will anticipate the fiscal insecurity of savings, which will undoubtedly pose a problem of time consistency (see below).

Saez (2013) extends Chamley's approach to the case of progressive taxation on capital income in the framework of heterogeneous individuals with respect to their initial wealth. Nonlinear taxation does not eliminate the result of the zero long-term taxation of capital but proves very effective for the sustainable reduction of inequalities in wealth. One possible interpretation of these results is that it is optimal to tax capital as long as there are inequalities and the public sector has not accumulated sufficient capital to finance public spending.

This analytical approach is interesting, as it raises the nature of the problem of optimal taxation in a dynamic context. However, it also has several limitations.

A first limitation is highlighted by the theoretical analysis of Erosa and Gervais (2002). These authors considered the problem of optimal taxation in a context of overlapping generations of representative agents with finite lifetimes. They found that the taxation of capital income enriches the tax range because it introduces an implicit relationship between age and income tax. Based on the fact that older workers often have a stronger preference for leisure, which indicates preference heterogeneity is based on age and accu-

mulated savings, they conclude that there can be optimal taxation of capital even in the long term.

A similar result can be obtained also by starting from the heterogeneous preferences assumption: the best-performing workers are often also the most patient (a lower rate of preference for the present). Since the level of capital accumulation reveals information about unobservable individual productivities, taxing capital contributes to tax efficiency.

Another limitation comes from the fact that the sacrifice involved in the learning effort can be important when it comes to accumulating human capital. The intuition is that it would not be optimal to tax capital and labour differently. Indeed, taxing the income from labour hits the labour effort and the accumulation of human capital without distinction. It therefore has an identical adverse long-term effect on the optimal level of accumulation. In a model of endogenous growth, Jones et al. (1993) conclude that, in the long term, neither labour nor capital should be taxed. The only tool for public resources would then be taxing consumption. Moreover, to offset the future tax losses resulting from the disappearance of taxes on labour and capital, the public sector should accumulate a sufficient productive capital upfront. Judd (1999) suggests taxing labour income and subsidizing, in return, the effort to accumulate human capital, which would make it possible to treat the two types of productive effort differently for tax purposes. However, such a tax implies taking into account all the efforts of human capital accumulation, which is certainly unrealistic (with the exception of elements such the overall time and expenses associated with education) all the more since much of human capital accumulation also depends on career experience: the "learning by doing" in endogenous growth models such as Romer's (1986).

For some workers and entrepreneurs who are also owners of their company, there is an additional limit to the Chamley-Judd result. For the tax authority, it is difficult to truly isolate in the total income the share related to the work effort from the share associated with capital return. Indeed, entrepreneurs could have an interest in lowering their wages in order to increase their potentially lesser-taxed profits . Taxing capital income at too low a rate would then amount to insufficiently taxing labour income. Furthermore, the productivity of capital can also directly depend on unobservable personal talents, which can give specific redistributive grounds for taxing capital.

Furthermore, in a context of uncertainty and imperfect financial markets (uninsurable

individual risk and credit rationing), the taxation of capital income plays an insurance role, which may be optimal even in the long term (Aiyagari, 1995; Panousi, 2010). Indeed, taxing random individual incomes makes it possible to redistribute them and therefore to mutualize them. With a general equilibrium model with overlapping generations calibrated on the US economy and with uninsurable individual shocks, Conesa et al. (2009) estimate numerically that it is optimal to tax capital more heavily than labour and conclude that "taxing capital is, after all, not a bad idea".

Beyond the neoclassical growth model that assumes balanced, efficient markets, there are other arguments for taxing capital income.

4.3 Taxing property

A strong Marxist argument, also found in Piketty's analysis (2013), tackles the unequal and dangerous nature of an excessive concentration of capital. In the Marxist analysis, this led to the dominant position of owners in the labour market. The main risk is then the alienation of the working class. This results in the exploitation and impoverishment of the workers. Piketty (2013) observes and denounces a new era of capitalism as manifested in a higher concentration of income and capital, due to the rate of return on capital being higher than economic growth.

To fight this excessive concentration, Piketty defends the idea of the progressive taxation of capital. To be relevant, such a tax would need to be adopted globally. According to him, the poor situation of the public finances in most developed countries also calls for the repayment of public debt via a one-time levy on all wealth . The IMF's October 2013 report on taxation also analyses the option of a "one-off capital levy" on net household assets. In order to reduce public debts to their pre-2007 levels, the IMF estimated that a 10% tax rate on assets would be required. By way of comparison, in France, the official public debt in 2013 (off-balance sheet items not included) accounted for about 10% of the country's net assets and 20% of households'. A general tax of 10% on households' net assets would halve the public debt. This option is also considered by the Bundesbank in its January 2014 monthly report (Bundesbank, 2014). An additional argument is that the low inflation in the euro zone (and also the prohibition of high inflation) eliminates the prospect of an erosion of nominal debt by a sharp rise in prices.

However, a distinction should be made between capital accumulated at the cost of

an effort throughout one's working life (life cycle savings) and capital that is inherited. Concern for the struggle against social inequalities is thus central to the debate on inheritance (Piketty and Saez, 2013; Masson's "taxfinh" proposal, 2015). Even the economists who are least favourable to the taxation of capital support the idea of taxing inheritances. In 1939, Fisher wrote: "the best way to avoid a hereditary undemocratic plutocracy ... would be through taxes on property and inheritance".

Inheritances are not simply financial legacies. They can also involve the transmission of human capital through an investment in education by the parents (Bourdieu's "social reproduction" mechanism) or via the transmission of innate qualities (genetic factors). It is not possible to tax human capital through an income tax. However, taxes can fund an effective education system to ensure that everyone has an equal access to quality education.

Allais (1966) also defends the idea of a tax on property but on grounds of effectiveness and "illegitimate" rent (Bozio et al., 2005; Sterdyniak, 2011; Diemer and Lallement, 2012). His idea mainly consists in taxing land holdings. The quantity of land is fixed by nature (and thus insensitive to taxation) and independent of the effort in labour or savings, which would make its ownership illegitimate. However, in order to tax property it is necessary to define a tax base. This could mean the value of the wealth but the latter depends strongly on the discount factor. For Allais, such a tax would be fair and efficient, as it would lead to freeing up the productive forces (labour, investment, business creation) by heavily taxing rentiers.

Property, including real estate, also generates a privileged use of local public goods and services. Taxing households because they are owners would thus be legitimate. Trannoy (2011) recalled Henry George's Theorem: "Local public facilities such as roads, schools, parks, pedestrian areas, cultural facilities, etc., generate additional income for the owners, who should be taxed to fund the production of public goods." When the productive use of the tax creates property value, the owner does not lose anything. Trannoy (2011) also argues that the "market value should be the base" of such a tax. Like the report of France's Council on compulsory levies (CPO, 2009), he regretted that the cadastral values used (rental values) have not been upgraded since 1970. A realistic valuation of real estate would make it possible to have better taxation, and thus more taxes. This would make it possible in return to lighten the taxation of labour and productive investment. Artus et

al. (2013) also recommend upgrading the rental values for taxing real estate more fairly.

Main residence ownership also provides a usufruct related to the fact that the owner does not have to pay a rent. In France, this implicit rent is not taxed. This is thus a tax exemption. Sterdyniak (2012) and Artus et al. (2013) recommend taxing this implicit income. To avoid distortion, such a taxation should be accompanied by the full deductibility of the interest on loans taken purchase a dwelling.

4.4 Tax competition

In a context of economic and financial globalization, the issue of tax competition should not be overlooked. Since production factors are mobile internationally, sovereign states have an interest in implementing strategies to make themselves fiscally attractive, by taxing more the least mobile factors more heavily (often labour and also property assets) than the more mobile ones (often financial savings and highly skilled work). Tax competition risks leading to a race towards the lowest compulsory levy, which is synonymous with a race towards the less protective Welfare system (Le Cacheux, 2008). Another strategy might be to tax households more and companies less in order to improve competitiveness (Antonin et al., 2014). Quoting the study by Zucman (2008), Artus et al. (2013) note that the losses due to tax exiles from the ISF wealth tax would be moderate and would represent at most 10%. In order to better assess the impact of tax exiles, they recommend publishing the entries and exits of tax residents annually. They also stress that the mobility of factors facilitates tax avoidance. Once again based on the study by Zucman, who estimated the hidden side of global wealth at 8%, they consider that the tax loss is about 10 billion euros in France corresponding to an amount of concealed assets of about 200 billion (compared with 10,000 billion in net assets).

4.5 Supervisory arguments

One supervisory argument concerns the myopia of savers about their long-term consumption needs. This myopia can be related to poor anticipation of the actual importance of investment and/or income and an "abnormal" preference for the present (poor anticipation of longer lifetimes). The public argument then is to encourage savings .

The government may rely on public pension systems financed by contributions that are made to guarantee income after the period of activity. The government can also set

up systems of tax exemptions for long-term savings. Insurers (FFSA, 2012) rely on this argument to defend the tax exemptions on their life insurance products. However, Artus et al. (2013) moderate this point, arguing that these tax advantages should be limited to retirement savings (savings converting to a life annuity) because they correspond to a real intertemporal smoothing of consumption and not to a desire to reduce taxation on the dynastic bequest, i.e. what one tries to pass on to its offspring.

A second supervisory argument concerns the differentiated taxation of savings income: legislators seek to channel savings towards specific investments, arguing that this would have a positive impact at the collective level for two reasons: first, due to shortcomings in the national productive capital stock, and second, to the need to channel savings towards long-term investment vehicles, which, though less liquid, are favourable for research and development and therefore for innovations boosting future growth. The value of promoting long-term investment is put forward by the insurance companies, who claim a key role in the allocation of savings towards non-speculative long-term investments (Garnier and Thesmar, 2009; FFSA, 2012). However, wanting to exempt long-term savings from taxation is paradoxical because these are often better remunerated and less volatile due to a mean reversion, which results in a reduction in the variance of the average yield over time (Bec and Gollier, 2007; Hamayon et al, 2013).

There may also be a two-sided approach to the public or private nature of the investment. Hence the non-taxation of some savings products (regulated savings accounts) serves to collect large and (usually) stable masses of financial resources, which are then lent to the government to make useful investments for long-term economic and social development.

However, there may be limits to the reduction of taxation on savings and investments. Overly encouraging the holding of specific investments could trigger financial bubbles when these investment products exist in a finite quantity (e.g. land reserves in major cities). Furthermore, there are also windfall effects: any tax measure benefits entirely the owners of capital goods found in scarce quantities. For example, with regard to the valuation of property prices, a highly advantageous tax may mostly benefit the owners of scarce land resources and not at all (or very little) buyers who finance their purchase with a loan.

4.6 Capital gains and the holding period

Following the sale of an asset, the saver realizes a gain or loss. From a tax perspective, a capital gain is considered as income and a capital loss may be deducted from other present or future capital gains. From an economic point of view, the relevant tax base must include two dimensions:

— inflation (see below): this is a natural rate of depreciation of the asset's purchasing power and must be deducted to measure the actual gain;

— the fair reproduction of the capital gain on a taxable annual basis must consider the total holding period in the context of progressive taxation.

Upon the death of the asset owner, the unrealized gains during his lifetime are generally not taxed as such. They are taxed only because they are an element constituting the value of the asset subject to inheritance taxes. Compared to a saver who has realized capital gains during his lifetime, there is a breakdown in the principle of tax neutrality.

4.7 Fighting complexity

Besides, the tax code has many special conditions (clauses on tax exemptions, depreciation, deductibility, etc.). These latter tend to complicate the calculation of tax and therefore its transparency (Council of compulsory levies , 2009) as well as its neutrality, which can also give rise to undue tax optimizations. The search for efficiency can lead to simplicity and motivate withholding taxes (Landais, Piketty and Saez, 2011), which can in turn lead to renouncing a genuinely progressive tax schedule. However, technical progress in the area of the automatic collection of information on earned income should on the contrary make it easier for complex taxation systems to deal with an equally complex reality.

The general recommendation by Artus et al. (2013) points in the direction of simplifying the taxation of capital in order to "reduce heterogeneity" and "limit exemptions".

4.8 Savers' confidence, tax stability and time consistency

Finally, taxes on savings suffer from a major problem of time inconsistency (Ambler, 1999). To encourage households to invest in some savings products, tax exemptions are announced. Once the investment has been made, the government has every interest in

not keeping its word and in taxing capital and investment income. Households expect this inconsistency. So the only time consistent solution is to tax capital heavily or, failing that, to adopt a strong constitutional commitment that prohibits all retroactive measures. Several studies (FFSA, 2012; Faider, 2013;Artus et al., 2013) claim that fiscal stability is a favourable factor for the confidence to invest.

5 Conclusion

Our study of capital taxation followed three levels of analysis.

We first analysed the multiple ways to tax capital: value versus income, and proportionality versus progressivity. After highlighting the very heterogeneous context in Europe regarding the taxation of capital, we show how these different taxation methods apply to France.

Next, we point out and demonstrate that taxing savings has significant dynamic effects: equivalence with a rising tax on consumption; double taxation in the case of taxation of nominal income; non-neutrality of the tax if some investments are exempt; and potentially confiscatory taxation if applied to the value of the capital.

Finally, we sum up the debate on the optimal level of capital taxation. The main argument against taxation is that it heavily and unfavourably distorts the optimal accumulation of capital in the long term. Another argument is that opening borders can lead to lowering taxes on the most mobile factors and therefore on capital. The tax exemption of some savings products to the detriment of others allows the channelling of savings towards specific types of investments, in order to satisfy growth targets or long-term savings needs. However, there are many arguments in favour of high taxation, notably based on the reduction of inequalities and the need to build up sufficient public capital and to finance local public infrastructure. Taxing capital more efficiently could consist in reducing complexity to avoid too much tax optimization, and in guaranteeing non-retroactivity to foster investor confidence.

This article does not discuss the unpopular character of the tax or its political sustainability. Any increase in taxes weakens governments politically. However, following the deterioration in public finances since the crisis, governments have had no choice but to raise taxes. Today, for reasons of political acceptability, increasing the tax burden

needs to take place mainly through the elimination of all the tax loopholes where tax exemptions have become major advantage as other capital taxes have increased.

It seems difficult to reach a clear-clut conclusion about the optimal level of taxation on capital and notably on the legitimate alignment with labour taxation (Sterdyniak, 2012).

We identify arguments in favour of high capital taxation (sharp increases in inequality and weak sustainability of public debt). Nevertheless, any such high taxation should be transitory; raising taxes does indeed have undesirable effects: the risk of the high capital mobility and the need for legal stability and low tax pressure so as to encourage investment and the accumulation of productive capital in the long run.

Assessing the real gains of capital requires the completion of a genuine balance sheet for assets. Such an assessment would accurately measure increases in household wealth and thus estimate all capital gains, including those that are unrealized or hidden. The tax base should be real income: inflation should be deductible from interest and capital gains. Given that taxation is progressive, the tax base should also be annualized: the holding period would be taken into account in the form of a relevant time correction.

Yet in France the level of taxation on capital is already high compared to other European countries. This discrepancy is disturbing, because it is harmful to attractiveness and therefore detrimental to long-term growth.

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Appendix

Main taxes by category	Tax base			Sectors		2013 (*)
	K	L	C	H	PS	
VAT type taxes			■	■		**145.1**
Tax and duty on imports			■		■	**2.6**
Tax on products			■	■		**87.1**
Tax on wages and labour		■			■	**33.7**
Various taxes on production	■			■	■	**61.8**
Business tax (TP)	■				■	0.0
Minimum business tax (TP) contribution	■				■	0.1
Contribution on business added value	■				■	12.1
Business property tax	■				■	5.9
Flat-rate tax on network companies	■				■	1.2
Tax on developed property (paid by households)	■			■		16.5
Tax on developed and undeveloped property (excl. households)	■				■	13.2
Business social solidarity contribution (C3S)	■				■	5.6
Tax for fees of Chambers of commerce and industry					■	13
Tax on retail premises					■	0.7
Income taxes	■	■		■		**232.2**
General social contribution(CSG)	■	■		■		92.5
Incl. CSG tax on capital income	■			■		10.2
CRDS tax for public debt repayment	■	■		■		6.6
Incl. CRDS tax on capital income	■			■		0.9
Other social contributions	■	■		■		7.9
Personal income tax	■	■		■		68.6
Levies on share capital (PRCM)	■	■		■		4.3
Contribution of civil servants to unemployment insurance						1.3
Corporate income tax (IS – incl. annual flat-rate tax)	■				■	44.3
10% adjustment on IS	■				■	0.4
Social contribution on corporate profits (CSB)	■				■	1.2
3% tax on dividend payments	■				■	1.9
Other current taxes						**23.2**
Housing tax	■		■	■		17.5
ISF wealth tax	■			■		4.4
Tax on undeveloped land (paid by households)	■			■		0.2
Tax on capital						**10.5**
Inheritance tax	■			■		9.5
One-off taxation of insurance capitalization reserves	■			■		0.9
Effective social contributions		■		■	■	**356.8**
Net debt recovery suspensions						-7.3
All compulsory levies						**945.6**
As % of GDP						**44.7**

Source: INSEE and authors' calculations. (*) In billion euros.

Table - Main taxes by tax base - capital (K), labour (L) or consumption (C) - and payer sector - households (H) or productive sector (PS)

Source: INSEE and authors' calculations. (*) In billion euros.

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