

How has the fall in interest rates affected the income of economic agents in France?

Having been in decline for at least twenty years, interest rates have now hit extremely low levels, with some even straying below zero. This decline can be attributed both to structural factors – a slowdown in productivity and a surplus of savings – and to the expansionist monetary policies which have been introduced to bolster economic activity since the crisis of 2008-2009. Identifying the winners and losers of this phenomenon is no easy task, since it requires to imagine how overall activity levels and the circumstances for different categories of economic agents would have evolved in the absence of the prevailing structural factors and monetary stimulus measures. In this case our focus is a simple question of accounting: who are the apparent winners and losers of the decline in interest rates, adopting a static approach which does not take the behaviour of economic agents into consideration?

The decline in interest rates has primarily benefited general government and non-financial corporations, netting them average savings of 2 billion and 1 billion euros respectively every year between 1998 and 2018. The opposite is true of households who, as a whole, have lost approximately 2.5 billion euros each year. This mean estimate is calculated by comparing actual income measurements with the projections for a fictional scenario in which, every year between 1998 and 2018, interest rates remained unchanged from year to year.

For households, this loss comes primarily in the form of lost revenue from life insurance schemes: it will thus affect individual households differently, depending on the composition of their assets. Such sources account for a more significant proportion of the income of wealthier households, and the effects of falling interest rates may therefore be felt primarily by these households.

Interest rates have been falling gradually for over twenty years

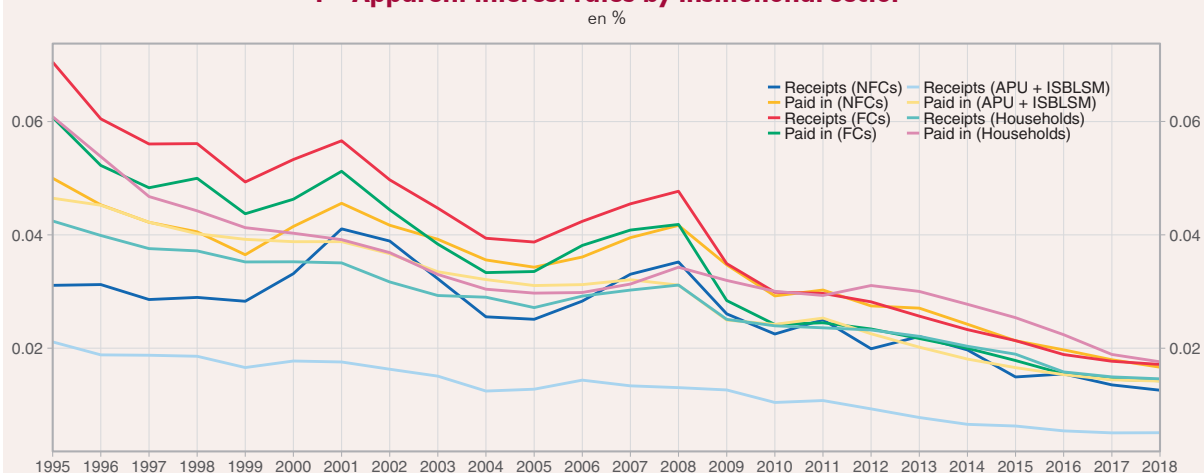
Various different interest rates determine the flows of cash received and paid out by economic agents. For example, households pay out interest on their loans (mortgages and consumer lending), while receiving

interest on their savings (savings accounts, home savings plans etc.). Using the data for all interest sums paid and received by all institutional sectors, we can estimate apparent interest rates¹ which incorporate banking margins (financial intermediation services indirectly measured; FISIM²). The rates paid and received have both undergone a progressive decline

1. For each institutional sector, the apparent interest rate is estimated at an aggregate level, taking into account all forms of income potentially affected by variations in interest rates and derived from assets within this sector (for interest received) or liabilities paid (for interest paid out, with reference to the stock of corresponding assets and liabilities). The forms of income included here are interest received and paid (D41; on assets and liabilities in the categories: deposits F2, securities F3, loans F4, other accounts receivable F8) or other forms of investment income received or paid out (D44; on assets and liabilities in the categories: technical insurance provisions, pension funds and standard loan guarantee reserves F6).

2. Apparent interest rates paid to all sectors excluding financial corporations, and received by financial corporations, include financial intermediation services indirectly measured (FISIM). FISIM represent that portion of the services provided by financial intermediaries for which clients are not invoiced. For these services, financial intermediaries remunerate themselves by taking a slice of the interest accrued by their clients' deposits and applied to the loans which they provide.

1 - Apparent interest rates by institutional sector



Note: the sectors represented here are non-financial corporations (NFCs), financial corporations (FCs), general government (APU) non-profit institutions serving households (ISBLSM) and households

Source : Insee, comptes financiers et non financiers annuels

over the past two decades or so (Figure 1), across all institutional sectors. For example, apparent interest rates on the income flows received and paid out by households fell by 2 and 4 points respectively between 1995 and 2018. This phenomenon could be attributed, in the long term, to the slowdown in productivity and a surge in demand for “safe” assets (Conseil d’analyse économique, 2016), and more recently to accommodating monetary policies (Héam et al., 2015). What consequences has this decrease had on the income of French economic agents?

General government and non-financial corporations pay out more interest than they receive, while the opposite is true for households

While the decline in interest rates has applied to all institutional sectors, net income from interest (the difference between incoming and outgoing flows) including FISIM is not evenly distributed across the sectors (Table 1). In 2018, for example, taking into account their investment income and interest received, non-financial corporations (NFCs) paid out a total of 27 billion euros to other agents, of which 18 billion euros went to banking margins. By the same token, general government paid 40 billion euros to other agents, of which 5 billion euros in the form of FISIM. Meanwhile, while household income from interest on savings made up for the interest they paid on loans (meaning that net received interest was nil), households also received 44 billion euros in the form of income from investments (primarily

from life insurance contracts). They nevertheless paid 16 billion euros in banking margins.

These income streams will have been affected by the decline in interest rates. If the net outstanding balance were to remain constant (i.e. with no increase in either assets or liabilities), a fall in apparent rates would reduce the flow of interest paid out by agents but also the flow of interest they receive (the “pure rate effect” would be the combined effect of both variations). For example, a decrease in mortgage rates increases household income but, at the same time, the decline in the interest rates applied to savings accounts has a negative impact on their income. If the former effect is more significant than the latter, the overall effect will be positive, if not it will be negative. To this we must also add the positive or negative effect induced by variations in the banking margins applied by financial corporations (known as the FISIM effect). Finally, the overall effect of the decrease for all agents, resident or not within the economy, must be nil: the income received by one agent has been paid by another, and vice versa.

In 2018, non-financial corporations, general government and households generally increased their debt

The flow of interest paid and received depends on interest rates, but also on the respective variations in the outstanding balance of assets (hereafter referred to as deposits) and liabilities (hereafter referred to

Table 1 - Flow of income from assets subject to variations in interest rates in 2018, by institutional sector

<i>In billions of euros</i>	Non-financial corporations	Financial corporations	General government and non-profit institutions	Households	Rest of the world
Net interest received	-11	42	-38	0	7
Other net income from investments (including from life insurance contracts)	2	-48	2	44	0
Total excluding FISIM	-9	-6	-36	44	7
<i>FISIM (banking margins)</i>	-18	43	-5	-16	-4
Total including FISIM	-27	37	-40	27	3

Key: in 2018, households received 44 billion euros in “other investment income” (primarily from life insurance contracts) and the flow of interests received from their savings deposits compensated for the flow of interest paid on their loans. They also paid 16 billion euros in FISIM.

Source : Insee, *comptes financiers et non financiers annuels*.

Table 2 - Growth in the stock of financial assets and liabilities subject to variations in interest rates in 2018, by institutional sector

<i>Increase, in billions of euros</i>	Non-financial corporations	Financial corporations	General government and non-profit institutions	Households	Rest of the world
<i>Financial assets*</i>	201	567	5	26	323
<i>Financial liabilities*</i>	230	493	60	48	292
Net financial wealth*	-29	74	-54	-22	31

N.B.: * this only includes those assets and liabilities which generate cash flows dependent on interest rates (i.e. deposits, securities, loans).

Key: in 2018, the stock of assets subject to interest rate variations held by households grew by 26 billion euros (property), whereas the stock of financial liabilities subject to rate variations grew by 48 billion euros. Households thus increased their debt more than they increased their assets. Their net financial wealth therefore shrank by 22 billion euros

Source : Insee, *comptes financiers annuels*.

as debt) held by the institutional sectors. To put it differently, if rates remain constant then an increase in deposits increases the flow of income received by an agent³, while an increase in debt has the opposite effect of increasing the flow of interest paid out (the 'outstanding balance effect' is the balance of these two effects). For example, if the rates remain constant then the outstanding balance effect will be positive if a household pays down its debt, or if its savings grow more rapidly than its debt.

In 2018 it appears that, on the whole, non-financial resident agents increased their debt (Table 2), which may have negatively affected their income. For example, the rise in household debt levels (+48 billion euros) outstripped the increase in household savings (+26 billion euros), meaning that their net financial wealth (assets minus liabilities) subject to variations in interest rates decreased by 22 billion euros. This surfeit of debt may be due to low interest rates providing an incentive for people to take out loans, or may simply be a result of rising property prices or consumer prices. The phenomenon can also be observed for NFCs and general government. Mirroring this development, financial corporations and the rest of the world have been the counterparts to the rising debt levels of resident agents. Measuring the effect of declining interest rates on the income of these agents thus requires us to analyse the profile of variations in debt and savings levels.

Overall, and ex post, it is possible to break down the changes in flows received (and paid) by economic agents. These changes come from variations in interest rates and the margins demanded by the banks, but also from variations in levels of deposits and debts. Applying accounting methods allows us to measure the contribution of each of these three terms (Annex). On the other hand, the observed variations

in interest rates may be caused, among other factors, by variations in the wealth of agents. Similarly, the variations observed in deposit and debt levels may also be attributed to rate increases and decreases. The method used here does not allow us to measure the impact of such endogenous and behavioural effects. Simply put, with the accounting method we use it is not possible to determine how household deposits and debt would have developed if interest rates had remained stable. Furthermore, it is not possible to estimate how general economic activity would have developed in the absence of monetary stimulus measures.

Over the past twenty years, general government and non-financial corporations have, on average, benefited from the decline in interest rates. Households, on the other hand, have suffered.

As an average over the past twenty years, the flows of income received and paid out have generally balanced one another out within each institutional sector (Figure 2). Nevertheless, this phenomenon has not affected all economic agents in the same manner.

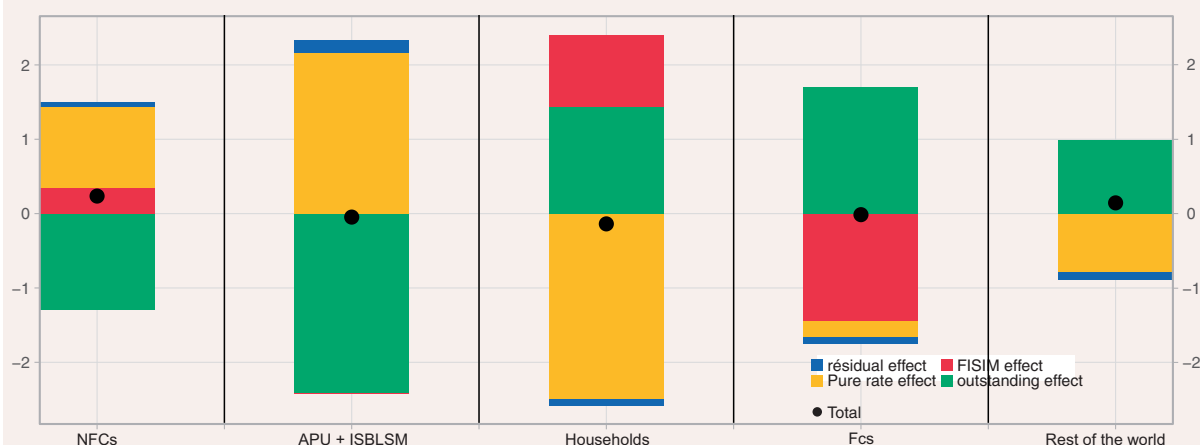
On average, NFCs and general government have benefited from the fall in apparent interest rates (the "pure rate" effect) to the tune of around 1 billion euros per annum for NFCs and 2 billion euros for general government. This dynamic has helped to compensate for the increase in the net debt of these two sectors over the period in question. These increases have come largely in the form of long-term securities for general government and outstanding loan balances for NFCs.

Meanwhile, households have increased their deposits more than their debts over this period, with a substantial increase in life insurance contracts

3. Except if apparent interest rates are negative, in which case an increase in net outstanding balance will reduce the flow of income received by agents.

2 - Average increase of income subject to variations in interest rates over the past twenty years, by institutional sector

in billions of euros



Key: between 1999 and 2018, on average, net household income subject to variations in interest rates remained broadly stable (black line). The decline in interest rates caused this income to fall by 2.5 billion euros per annum (blue), while the increase in net outstanding balance and the reduction of banking margins boosted income by 1.5 billion euros (red) and 1 billion euros (yellow) respectively.

Source : Insee, *comptes financiers et non financiers annuels*.

and the like. This has helped to increase household income by 1.5 billion euros. They have also benefited from the reduction in banking margins. All in all, the combination of the outstanding balance effect and the FISIM effect has boosted income by an average of around 2.5 billion euros per annum. But this income boost has been counterbalanced by a more substantial decrease in the interest rates corresponding to incoming flows than in those corresponding to outgoing flows. There are two reasons for this. On the one hand, the flow of income received from deposits and other securities was similar in scale to the flow of repayment on loans, to the extent that they largely cancelled each other out. On the other hand, income from life insurance contracts – which represents, on average, 77% of income received from assets subject to interest rate variations – was severely affected by the fall in interest rates.

The flow of income and outstanding balance figures of financial societies are diametrically opposed to those of the non-financial sectors. As such the decline in margins has reduced their income (by an average of around 1.5 billion euros per annum), but this has been offset by a more substantial increase in deposits than in debt. However, the pure effect of the fall in interest rates on their income has been largely neutral.

Finally, the resident sectors increased debt to the rest of the world more than the debt owed to them by the rest of the world over this period on average. Nevertheless, the rise which this implies in the flow of payments from resident sectors (households, companies, general government etc.) to the rest of the world has been offset by the fall in interest rates.

Over the past five years, the effects of falling interest rates have gradually faded

While the long-term analysis indicates that the income flows subject to variations in interest rates have remained stable on average, the same cannot be said of the more recent period, for example the past five years (Figure 3). Since 2014, general government has, on average, received more than it

has paid out (an average of 1 billion euros more per annum), primarily as a result of the continuing decline in interest rates and despite the gradual increase in the sector's debt levels. Nevertheless, this effect has gradually faded, to the extent that in 2018 the net change in their income subject to variations in interest rates was nil.

The household income subject to these variations, meanwhile, fell slightly before bouncing back in 2017 and 2018 (to the tune of 1 billion euros extra per annum on average). While households continue to suffer from the fall in rates, at least in accounting terms, the impact of this decrease has gradually faded while the decline in FISIM payments has boosted their income by, on average, around 2 billion euros per year over the past five years.

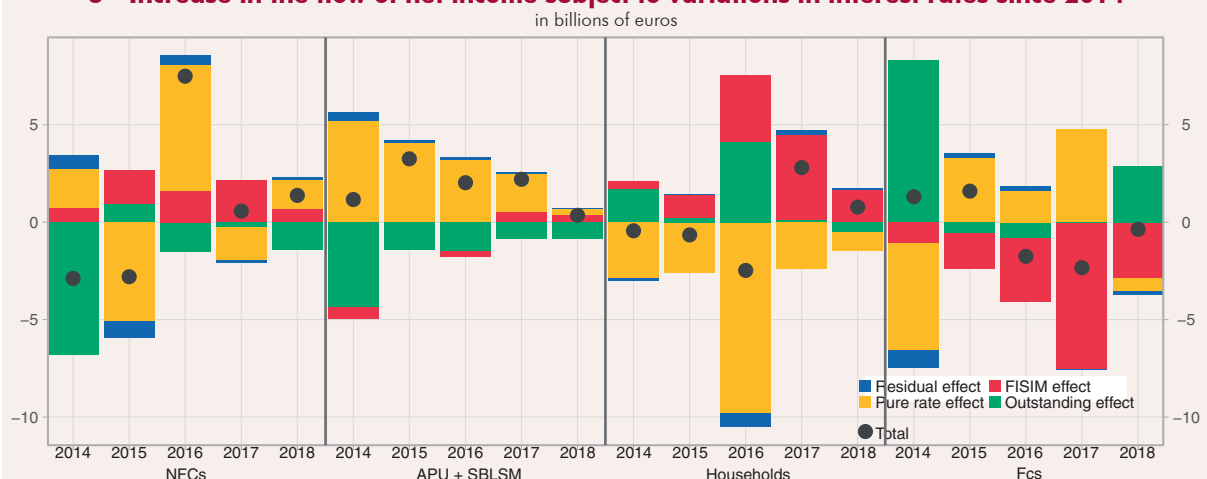
At the same time, the income of financial corporations has broadly fallen. The beneficial effects of falling interest rates have not been sufficient to compensate for the reduction in their margins. Finally, the income of NFCs subject to variations in interest rates fluctuates more substantially, but on average the effect has been nil over this period. In 2018, the fall in interest rates and reduction of banking margins nevertheless helped to boost their income by around 2 billion euros.

In total, the contribution of falling interest rates to the increase in income in the institutional and non-financial sectors has, on average, been nil since 2014, after contributing +2 billion euros per annum and per sector in the preceding five-year period.

The negative accounting effect of the reduction in interest rates on household income appears to have been felt most acutely by the wealthiest households

The negative effect of the fall in interest rates on the income received by households, in the long term and more recently, is a mean effect calculated for all resident households. But the structure of their financial assets and liabilities, as well as the sums

3 - Increase in the flow of net income subject to variations in interest rates since 2014



Source : Insee, comptes financiers et non financiers annuels

International developments

received and paid out in connection with them, differs considerably from one category of household to the next, depending in particular on their standard of living⁴. (Table 3)

Firstly, the proportion of net income from assets subject to variations in interest rates varies considerably from one household to the next (see Accardo et al. 2017 for the methodology). For the most modest households (who fall into the first quintile in terms of standard of living⁵), the share of gross disposable income (GDI) which comes from such sources (interest on deposits and income from life insurance contracts) is comparable to the proportion of income paid out to cover the interest on mortgages and consumer loans. But the wealthier the household, the more significant their other investment income (primarily from life insurance contracts) is as a share of GDI, and thus the greater the proportion of their income which is subject to variations in interest rates (up to 6% of GDI for the wealthiest households, belonging to the top quintile in terms of standards of living).

The negative accounting effect for households of the fall in interest rates therefore depends on their standard of living. The decline in income from life insurance contracts has probably had a far more pronounced impact on the wealthiest households than it has on the most modest. Furthermore, the

reduction in terms of net interest rates (thus excluding income from life insurance contracts) may have been relatively neutral for wealthier households (since the interest they receive is broadly similar to the interest they pay out), but the effect has been positive for lower-income households who pay out more interest than they receive.

Finally, the accounting effects examined here are likely to have only a limited effect on household consumption: the negative effect of reduced income from life insurance policies applies primarily to the wealthiest households, whose marginal propensity to consume is lower. Furthermore, and moving beyond this accounting approach, it is difficult to accurately imagine a counterfactual scenario for households in which interest rates remain constant. For one thing, the decline in interest rates is largely the result of disequilibrium on the market for risk-free assets, and it seems likely that economic activity (and thus household income) would have been weaker if monetary policies had been more restrictive over recent years. On the other hand, the decline in interest rates may also have had the effect of driving up the prices of financial and non-financial assets, and in doing so generating wealth effects which have benefited the wealthiest households. ■

4. The standard of living of households is defined as their gross disposable income per consumption unit.

5. In the income breakdown used here, households are split into five quintiles based on their standard of living.

Table 3 : Income from assets subject to variations in interest rates as a proportion of the gross disposable income of households, by category of standard of living in 2011

As a % of gross disposable income	Q1 (bottom 20% in terms of income)	Q2	Q3	Q4	Q5 (wealthiest 20%)	All ordinary households
Net interest	-2 %	-1 %	-2 %	-1 %	-1 %	-1 %
Of which interest received	1 %	1 %	2 %	2 %	2 %	2 %
Of which interest paid out	-3 %	-3 %	-3 %	-3 %	-2 %	-3 %
Other income from investments	1 %	2 %	3 %	4 %	6 %	4 %
Total	0 %	1 %	1 %	2 %	6 %	3 %

Key: for those households in the bottom 20% in terms of standard of living, received interest accounted for 1% of gross disposable income in 2011

Source : Insee, comptes nationaux.

Bibliography

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Methodological appendix

Breaking down the increases in interest flows into increases of outstanding balance and interest rates.

General scope: income received and sums paid, excluding FISIM

Let i_t^r (inversely. i_t^v) represent the flow of income received (inversely paid out) in the year t by the holder of a financial asset (inversely a liability), for which the outstanding balance is equal to a_t (inv.pt). The apparent rate of this income is defined as the ratio between these two quantities, i.e:

$$\text{year } \tau_t^r = \frac{i_t^r}{a_t} \text{ (resp. } \tau_t^v = \frac{i_t^v}{p_t} \text{)}$$

It is possible to break down the increase in the flow of income $\Delta i_t^r = i_t^r - i_{t-1}^r$ between two years by measuring the respective contributions of the growth in the corresponding outstanding balance and its apparent rate:

$$\Delta i_t^r = a_{t-1} \Delta \tau_t^r + \tau_{t-1}^r \Delta a_t + \Delta a_t \Delta \tau_t^r$$

The first term on the right-hand side can be read as the effect of an increase in the apparent rate, with the outstanding balance remaining unchanged from the preceding period, hereafter referred to as the "rate effect." Symmetrically, the second term can be interpreted as the effect of an increase in the outstanding balance, with the apparent rate remaining unchanged from the preceding period, hereafter referred to as the "outstanding balance effect." The final term corresponds to the contribution of combined increases in both quantities, hereafter referred to as the "residual effect." The same reasoning can be applied to outgoing flows.

As such, the breakdown of the increase in net income received, i.e. the increase of $i_t^n = i_t^r - i_t^v$

Can be expressed thus:

$$\Delta i_t^n = \Delta i_t^r - \Delta i_t^v = (a_{t-1} \Delta \tau_t^r - p_{t-1} \Delta \tau_t^v) + (\tau_{t-1}^r \Delta a_t - \tau_{t-1}^v \Delta p_t) + (\Delta a_t \Delta \tau_t^r - \Delta p_t \Delta \tau_t^v)$$

Where the first term in brackets corresponds to the net rate effect on the increase of net income, the second term is the net effect of outstanding balance and the third term is the net residual effect.

Scope covered here: income received and sums paid out, including FISIM

Introducing financial intermediation services indirectly measured (FISIM) makes this breakdown slightly more complex. For a non-financial institutional sector, the flow of income received is reduced by commission paid to banks for services rendered, written as S_t^r , giving the $I_t^r = i_t^r - s_t^r$:

Meanwhile, the flow of sums paid out is increased by FISIM: $I_t^v = i_t^v + s_t^v$.

For financial corporations, on the other hand, the flow of income is increased by commission charged for services rendered, while the flow of sums paid out is reduced by FISIM. The income plus FISIM allows us to determine an apparent rate which incorporates FISIM: $T_t^r = \frac{I_t^r}{a_t}$ or $T_t^v = \frac{I_t^v}{p_t}$. It is thus possible to break down the net increase in revenue flows including FISIM in the same manner used above:

$$\Delta i_t^n = \Delta I_t^r - \Delta I_t^v = (a_{t-1} \Delta T_t^r - p_{t-1} \Delta T_t^v) + (T_{t-1}^r \Delta a_t - T_{t-1}^v \Delta p_t) + (\Delta a_t \Delta T_t^r - \Delta p_t \Delta T_t^v)$$

Or:

$$a_{t-1} \Delta T_t^r - p_{t-1} \Delta T_t^v = (a_{t-1} \Delta i_t^r - p_{t-1} \Delta i_t^v) + (a_{t-1} \Delta s_t^r - p_{t-1} \Delta s_t^v)$$

The rate effect can be broken down into a "pure rate effect" (first term on the right-hand side) and a "FISIM effect" (second term). ■