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The Analysis of Household Wealth and Associated Risks with and beyond National Accounts

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This document has been prepared by Denis Marionnet and Julia Guérin, Banque de France, and, will be presented under item 1 of the draft agenda

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The Analysis of Household Wealth and Associated Risks with and beyond National Accounts

(by Denis Marionnet and Julia Guérin, Banque de France)

The following four papers propose some ways to supplement the traditional analysis of households' financial and total wealth based on national accounts data.

“The composition of household wealth between 1997 and 2003”, P. Girardot and D. Marionnet, Quarterly Selection of Articles of the Banque de France, n°12, Summer 2008

This first paper presents a combined analysis of the results of national (financial) accounts and Households' Wealth Surveys over the period 1997-2003. The scope of the study mainly covers households' gross private wealth (financial and real-estate) and therefore does not include debt and professional wealth. Between 1997 and 2003, households' gross wealth increased much more rapidly than their gross disposable income owing to the revaluation of their real estate assets. Their savings was also increasingly channelled towards riskier investments. The study also analyses changes into wealth inequalities over the period and identifies five specific types of financial portfolios.

http://www.banque-france.fr/gb/publications/telechar/bulletin/qsq/qsq12etud_6.pdf

“La destination finale de l'épargne des ménages”, A. Rincon, Bulletin de la Banque de France, n°167, November 2007

The second paper focuses on households' financial assets at the end of 2006 with the aim to reveal their final destination in terms of financing of other non financial sectors. This approach consists in “looking through” financial institutions (FI) and re-allocating to households the “final” assets that FI hold on other sectors. Thus, after raising the veil of financial intermediation, households' financial wealth appears to be more highly invested in public debt securities and more diversified than in its initial structure.

http://www.banque-france.fr/fr/publications/telechar/bulletin/etu167_2.pdf

“The final financial investment of French households”, D. Marionnet, Irving Fisher Committee Bulletin, n°25, Bank for International Settlements, March 2007

The third paper also deals with setting financial intermediation transparent: this “look through” approach is applied to French households' savings held with non-banking financial intermediaries (mutual funds and life insurance corporations) in order to spot and analyse the “final” financial instruments in which they have been investing over the period 1994-2005. It attempts to identify where French households' savings is finally allocated (France or abroad), who bears the liquidity risk and the market risk. Doing so, the role of financial intermediaries such as insurance corporations and mutual funds may be specified more accurately.

<http://www.bis.org/ifc/publ/ifcb25o.pdf>

“Implicit social security and pension wealth in households' assets in the US and France”, D. Durant and M. Reinsdorf, paper presented at the International Association for Research in Income and Wealth, August 2008

The last paper set out a comprehensive comparison of the financial position of households in the US and in France. This position encompasses real estate, long term financial assets, including pension funds reserves, and entitlements on social security, measured with the present value of accrued rights. The pension entitlements on private pension funds have been compiled by the authors. Entitlements on social security are established on the basis of published official data extended with the authors' own estimates from the World Bank pension model (PROST).

<http://www.iariw.org/papers/2008/durant.pdf>

The composition of household wealth between 1997 and 2003

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Between 1997 and 2003, reference years for the last two wealth surveys conducted by the INSEE, gross household wealth increased, mainly as a result of a boom in real-estate prices and, to a lesser extent, a rise in financial asset prices. Real estate accounted for 58% of households' private wealth (excl. professional wealth) in 1997, compared with 66% in 2003. However, at this date, the stock market was only just picking up after three years of downturn. Owing to the subsequent rise in equity prices, financial and non-financial assets have since then posted similar developments.

Homeowners posted a very significant rise in their gross private wealth, while on average households holding only financial assets have benefited less. In this context, wealth inequalities between households increased between 1997 and 2003.

Over the period under review, the share of life insurance in household wealth rose, while that of deposits declined. The share of securities (equities, bonds, etc.) fluctuated according to market price changes.

As households get older, their wealth builds up and becomes more diversified. When they have reached a certain level of wealth, some households choose to make risky investments, notably securities investments. Households holding risky assets in 2003 have similar characteristics to those holding such assets in 1997. All other things being equal, risky assets are held predominantly by managerial staff, single persons and those whose parents had made similar investments.

Keywords: households, financial wealth, real estate wealth, housing and land, financial investments, overnight deposits, housing savings, passbook savings accounts, life insurance, securities, wealth inequalities, portfolio choices, savings, risky assets, diversification, financial accounts, wealth surveys.

JEL codes: G00, G11, D01, D14

NB: The French language version of this article was published in November 2007 in the Bulletin de la Banque de France n° 167 (available on the Banque de France website: <http://www.banque-france.fr/fr/publications/bulletin.htm>).

The macroeconomic data from national financial and non-financial accounts can be used to analyse the main developments in the wealth of households living in France by setting them back in the economic and financial context of the 1997-2003 period. The microeconomic data from the INSEE wealth surveys (see Box 1), adjusted against these macroeconomic data, shed light on the differences in asset allocation behaviour according to the characteristics of households.

In this study, we only take a look at households' gross private wealth, made up of financial assets and real estate assets, excluding professional wealth. We do not take account of debt, which may have been incurred to acquire these assets. The quantitative data relative to the amounts of the different household wealth components collected in the framework of the surveys were adjusted against national accounts data using the same method in 1997 and 2003 (see Box 2). This adjustment only concerns financial assets, for which the wealth surveys usually cover one third of the value measured by national accounts. Conversely, these surveys provide a good assessment of real estate wealth, which was therefore not adjusted.

This study first examines the main developments in households' financial and real estate wealth between 1997 and 2003. It then sets out to determine to what extent the rise in household wealth can be attributed to asset price increases on the one hand, and investment flows reflecting savings efforts on the other. Lastly, it takes a close look at developments in the financial asset portfolios of the different categories of households and their respective choices in terms of allocation and diversification.

I | Gross household wealth posted a significant increase, mainly as a result of the rise in real estate prices

At end-2003, the overall value of gross household wealth amounted to EUR 6,077 billion (see Table 1). It was up by 64% compared with end-1997, representing an average annual increase of 8.6%. This growth rate is much higher than that of their gross disposable income (4.1%) and that of the price of household consumption expenditure between 1997 and 2003 (an average annual increase of 1.1%, i.e. an overall rise of 6.6% over six years).

Between 1997 and 2003, households invested more in financial assets than in real estate assets, their financial investment flows totalling on average EUR 83 billion per year, compared with EUR 66 billion for real

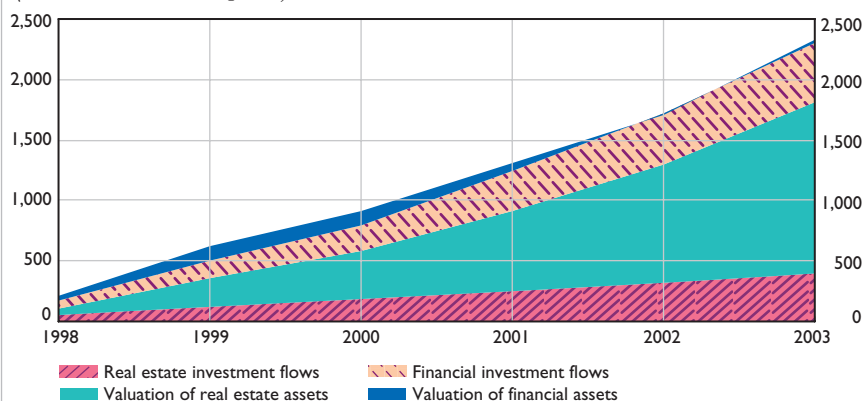
Table I Household wealth*(outstanding amounts in EUR billions – current prices, shares and rates of change in %)*

	1997		2000		2003		Rate of change 2003-1997	
	Out-standing	Share	Out-standing	Share	Out-standing	Share	Out-standing	Share
Financial wealth	1,550	42	1,909	41	2,085	34	+35	-8
Real estate wealth	2,149	58	2,723	59	3,991	66	+86	+8
Total	3,698	100	4,632	100	6,077	100	+64	-

NB: Financial assets excl. non-listed shares and other equity (see Box 1).

Sources: INSEE – wealth accounts and Banque de France – financial accounts.

estate investment flows.¹ However, during the period under review, the increase in private wealth can mainly be attributed to a strong rise in real estate assets, which surged by roughly 86% compared with 35% for financial assets. The rise in real estate assets accounts for roughly 78% of that in private wealth, of which 61% correspond to the increase in the value of housing and land and only 17% to investment flows (see Chart 1). Conversely, the increase in households' financial assets, which accounts for 22% of that in private wealth, results mainly from cumulated annual

Chart I Contributions of net flows and valuation effects to the increase in household wealth between 1997 and 2003*(EUR billions – current prices)*

NB: Excl. volume changes and excl. consumption of fixed capital for real estate assets.

Guide to chart: Households' private wealth rose by EUR 2,333 billion between end-1997 and end-2003: EUR 398 billion correspond to cumulated real estate investment flows, EUR 1,412 billion to the increase in the value of these real estate assets, EUR 497 billion to cumulated financial investment flows and EUR 26 billion to the rise in the value of financial assets.

Sources: INSEE – wealth accounts and Banque de France – financial accounts.

¹ Real estate investment flows do not cover purchases between households (mainly existing dwellings) but purchases from other sectors (mainly new dwellings) and only include buildings, because land purchases are not part of gross fixed capital formation (GFCF).

Box 1

Sources and scope of the study

The study is based at the microeconomic level on the Wealth Survey conducted by the INSEE and at the macroeconomic level on the national financial and non-financial accounts drawn up by the INSEE and the Banque de France. The Wealth Survey, which has been conducted every six years since 1986, looks at the changes in the distribution of household wealth (real-estate, financial and professional) and the holding rates of the various assets. It also includes very detailed information on the factors underlying households' investment behaviour: family and professional biographies, inheritance and donations, income and financial position, motives for holding/ not holding a certain type of asset.

The wealth accounts drawn up within the national accounts describe inter alia the non-financial assets held by the institutional sectors (households, general government, non-financial corporations, etc.). The national financial accounts drawn up by the Banque de France provide a systematic description of the claims and liabilities of all institutional sectors. They give details of each type of financial transaction in terms of outstanding amounts, flows, valuations and other volume changes.

The scope of the study mainly covers households' gross private wealth (financial and real-estate) and does therefore not include debt and professional wealth. The latter was not taken into account given its specificity and the small number of households concerned in the survey.

According to the national accounting system, valuation means the actual and potential holding gains and losses, attributable to market price variations. This valuation does therefore not include the interest received by households because these are recorded under net investment flows. The flows of interest capitalised on certain savings products such as passbook accounts or euro-denominated life insurance policies are recorded both under income and household saving flows. For example, the flows of interest received by households on their euro-denominated life insurance policies amounted to approximately EUR 28 billion in 2003.

In order to bring the scope of the financial accounts in line with that of the INSEE Wealth Survey, some assets hardly held by households were not included in the analysis: negotiable debt securities, loans granted by households to non-financial agents, prepayments of insurance premiums and reserves for outstanding claims, other accounts receivable/payable. Corporate savings were broken down into three categories of financial investments depending on the savings instruments held by households: other deposits (blocked accounts and company savings schemes), mutual fund shares (company savings plans) and other securities (company savings plans).

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In addition, for comparison purposes, financial assets were grouped together at the macroeconomic level in a different manner than in the usual presentation of financial accounts. Housing savings accounts (CEL) were thus grouped together with housing savings plans (PEL) in order to construct a “housing savings” aggregate. Furthermore, people’s savings plans (Plan d’épargne populaire – PEP) were aggregated with net equity of households in life insurance reserves given that in 1997 the INSEE Wealth Survey did not distinguish between bank-type PEPs and insurance PEPs. This aggregation was made possible by the similarities between PEPs and life insurance in terms of the holding period (a minimum of 8 years for tax purposes) and the underlying motives for holding such instruments (long-term savings, preparing retirement, etc.). Lastly, it should be noted that since 25 September 2003, it is no longer possible to open bank or insurance PEPs; it is still possible, however, to make contributions to existing ones.

Because the survey data gathered among households tend to underestimate outstanding amounts relative to national accounting data, the results presented in this article are based on the amounts adjusted against wealth outstanding amounts in the national accounts (see Box 2). Throughout the study, the household’s characteristics are by convention those of the reference person in the household declared in the wealth survey.

investment flows (21 %),² the increase in the value of financial assets having an insignificant impact (1 %). At end-1997, real estate accounted for 58 % of households’ gross private wealth, but climbed to roughly two-thirds at end-2003 as a result of the faster increase in the value of housing and land (see Table 1).

The price developments of the main assets held by households show that, on average over the period under review, real estate assets performed better than financial assets. According to the implied cumulative valuation effects derived from national accounts, homeowners experienced an average increase of 86% in the value of their property. By contrast, financial asset prices posted a much smaller rise over the period (34% for listed shares, 6.5% for general mutual funds, 2% for bonds), but were much more volatile in the short run, at least in the case of listed shares. It should however be noted that in 2003, the stock market was only just picking up following the sharp correction in equity prices underway for the past three years. If the stock price increase since 2003 were taken into account, the overall picture would probably be much more favourable to financial assets; indeed, since 2003, equity prices have risen at a similar pace to that of real estate assets (see Chart 2).

² These flows not only include households’ net payments, but also the interest capitalised on certain savings products for non-negligible amounts (see Box 1).

Box 2

**Adjustment of microeconomic data
against macroeconomic data**

The INSEE Wealth Survey gathers information on the amounts of the various household wealth components in the form of intervals (brackets or pre-defined tranches). Continuous amounts were imputed from the intervals using the stochastic regression imputation method (Gautier E. and Houdré C., 2007 or Lollivier S. and Verger D., 1988).

When the amounts of the Wealth Survey are set against the national accounts aggregates, it appears that the amounts declared in the survey are underestimated. This underestimation can first be attributed to the sampling. Because the distribution of assets is highly concentrated, it is more difficult to represent the top of the distribution, which is not captured if the large fortunes are not included in the sample. Households also have difficulties in valuing their assets. This is particularly the case of financial assets, the value of which fluctuates considerably and/or rapidly (equities, mutual fund shares, etc.) and real-estate or professional assets held at the date of the survey, when selling them has never been considered. The perception of wealth differs from one household to the next and it is not certain that households value their assets according to the definitions and recommendations given throughout the survey.

The scope of the wealth surveys differs from that of the national accounts: the former covers metropolitan France, while the latter covers the whole of France (metropolitan France and the overseas departments), from which the overseas departments cannot be distinguished. This disparity partly reinforces the apparent underestimation of the amounts presented in the survey.

Taking this reservation into account, it appears that wealth surveys tend to cover roughly one third of the financial wealth recorded in the financial accounts (including overseas departments). The 1998 Wealth Survey covered 35% of the value of financial assets and the 1992 survey 32%. The 2004 Survey posted similar results (it covered 33% of financial assets), by using the financial account outstanding amounts corresponding to the financial instruments considered in the survey. However, the scale of the adjustment differs from one financial product to the next (from 1.29 for listed shares excl. equity savings plans to 5.31 for term deposits). In order to reconcile the microeconomic approach with the macroeconomic approach, it was decided to use adjusted data (see Table below). This adjustment does not, however, enable us to correct the non-reporting of assets but only the underestimation of reported assets. A household that has failed to report an asset is considered as not holding any such asset, both before and after the adjustment. In addition, the samples of the wealth surveys do not cover the wealthiest households. The adjustment does not reconstruct the heterogeneity of the very large fortunes not included in the survey. These two restrictions probably have an impact on the cross-section of wealth inequalities.

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As regards housing, a model based on the INSEE Housing Survey, national accounts data and data from the Ministry of Agriculture was developed. Because this model yielded a higher valuation of dwellings at end-2003, it was decided to use the valuation of dwellings in the wealth survey.

An adjustment was also carried out for professional assets. Given that this study looks primarily at financial and real-estate wealth, the adjustment of professional wealth is not described in detail.

In order to assess household wealth as accurately as possible, the data from the 2004 Wealth Survey (survey conducted between October 2003 and January 2004) are compared with the wealth accounts of December 2003. Data from the 1998 Wealth Survey are also adjusted using the same method. Once this comparison has been made, amounts adjusted against national accounts are calculated. These amounts are presented in this study.

Adjustment of the data from the 2004 Wealth Survey

(EUR billions, shares as a %)

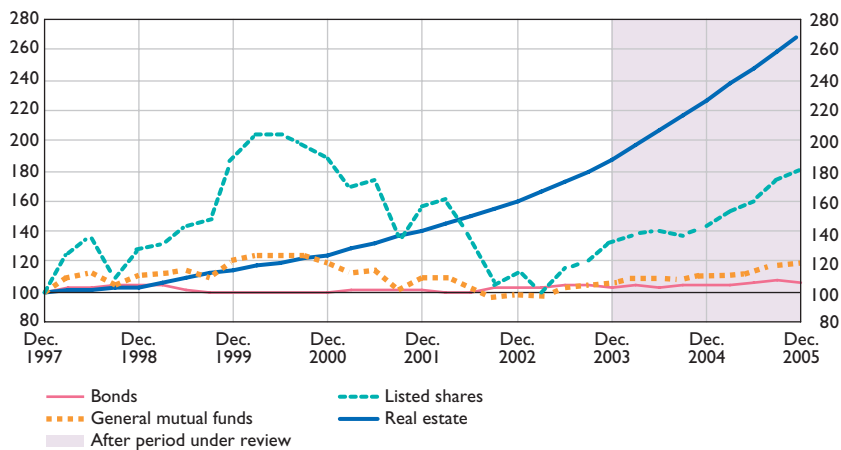
	Non-adjusted data	Adjusted data
Financial wealth	794.0	2,099.6
Passbook savings accounts	141.7	315.8
Housing savings	122.5	252.7
Securities	155.7	364.2
Life insurance	213.0	747.1
Real-estate wealth	2,722.6	2,722.6
Professional wealth	582.7	863.3
Professional goods	187.5	202.2
Professional land	96.9	197.5
Professional goods or land held by non farm sole proprietors	298.4	463.7
Total gross wealth	4,099.3	5,685.6
Share of total wealth		
Financial wealth	19.4	36.9
Real estate wealth	66.4	47.9
Professional wealth	14.2	15.2
Share of financial wealth		
Passbook savings accounts	17.8	15.0
Housing savings	15.4	12.0
Securities	19.6	17.3
Life insurance	26.8	35.6

Guide to table: before the data adjustment, financial wealth amounts to EUR 794.0 billion. After the adjustment, it stands at EUR 2,099.6 billion, i.e. 36.9% of gross household wealth. Source: INSEE – 2004 Wealth Survey.

NB: For more detailed information on the method used, see Cordier M. and Girardot P., 2007.

Chart 2 Implied valuation effects on the main assets in national accounts

(100 = December 1997)



Sources: INSEE – wealth accounts and Banque de France – financial accounts.

2| Wealth inequalities increased between 1997 and 2003

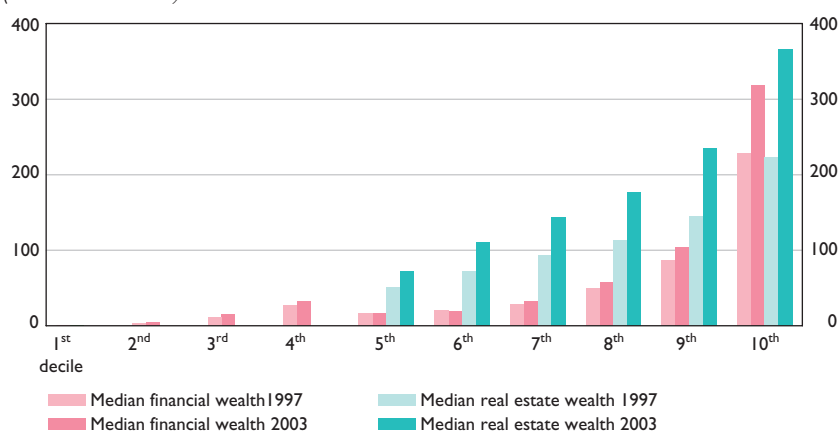
According to the INSEE wealth surveys adjusted against national accounts, households' private wealth rose from an average of EUR 135,910 to EUR 194,460, representing a 43.1% increase between 1997 and 2003 (31.5% at constant 2003 prices³).

Confirming the developments recorded in the national accounts, households' average real estate wealth posted the strongest growth rate (56%) to stand at EUR 110,060 in 2003, well above average financial assets (EUR 84,400 in 2003), which were up by only 29% over the period. However, INSEE's wealth surveys show that relative growth in real estate and financial assets varied considerably according to household categories. It is nevertheless impossible to distinguish the respective weights of investment flows and valuation effects for each category. The private assets held by the 10% least wealthy households amounted to less than EUR 2,110 in 2003, compared with EUR 1,930 in 1997 (equivalent to EUR 2,100 at 2003 prices), whereas those held by the 10% wealthiest households stood at over EUR 450,060 in 2003, as against EUR 296,400 in 1997 (equivalent to EUR 322,600 at 2003 prices).

³ The deflator used to obtain a figure at constant prices is the annual average of the consumer price index for the year under review. It represents a reference indicator, to be compared with the change in the value of private wealth (real estate assets and financial assets are not included in the consumer price index).

Chart 3 Changes in median financial and real estate wealth according to the level of private wealth between 1997 and 2003

(in EUR thousands)



Guide to chart: Among the 10% wealthiest households (10th decile), half own real estate assets worth more than EUR 222,830 in 1997 and more than EUR 366,000 in 2003.

Sources: INSEE – wealth accounts and Banque de France – financial accounts.

The Gini index (concentration indicator⁴ calculated on the basis of private wealth) can also be used to measure wealth inequalities. However, this index is more sensitive to a reliable measure of large fortunes, difficult to obtain through household surveys given their diversity and very high concentration. For example, the 2004 Wealth Survey covers 82% of households liable to wealth tax⁵ in 2003 and no private wealth exceeded EUR 15 million, although roughly 1,000 taxpayers were in the last wealth tax bracket (net private wealth above EUR 15 million) in 2002. This holds true for 1997 and 2003. Bearing in mind these reservations, the increase in wealth inequalities observed previously is nevertheless confirmed by the Gini index, which rose from 0.614 in 1997 to 0.629 in 2003.

At the same time, median wealth (i.e. the value whereby the proportion of people with more wealth is equal to that with less) increased at a slower pace than average wealth. This also points to a heightening of wealth disparities. The rise in median real estate assets of the different deciles of private wealth between 1997 and 2003 is all the more pronounced as private wealth is large. Furthermore, this increase is much more pronounced than that of financial wealth for most households, except the most well-off.

⁴ The Gini index is a measure of inequalities. A value of 1 corresponds to a situation of perfect inequality where one person holds all private assets. In contrast, a value of 0 corresponds to a situation of perfect equality where private assets are equally distributed.

⁵ Household assets liable to wealth tax are not directly comparable to those as calculated in this survey. First, household assets liable to wealth tax correspond to net wealth after deduction of debt and expenses. To simplify matters, professional wealth is excluded from the tax base. The principal residence benefits from a 20% tax deduction. Household assets liable to wealth tax are therefore a lower bound of the wealth calculated in this survey.

Indeed, in 2003, the median financial wealth held by the 10% wealthiest households was 40% higher than that calculated for the same category of households in 1997. For the other categories of households, with a smaller amount of private wealth, median financial wealth did not rise by more than 20% over the period (see Chart 3).

3| Large disparities according to the age, social category, size and place of residence of households

On average, households' private wealth has grown in line with their real estate assets. However, the successive INSEE wealth surveys bring to light disparities in the developments of the respective shares of real estate and financial wealth according to age, size of wealth and place of residence (see Table 2).

Although it is difficult to identify to what extent these developments can be attributed to the structure of the population or generation effects on the one hand and deliberate portfolio allocation choices on the other, it clearly appears that the generation born between 1945 and 1955 has more gross private wealth than the generations before and after (see Cordier M., Houdré C. and Rougerie C., 2006). Furthermore, in 2003, the median real estate wealth of households above the age of 70 is lower than that of the French population as a whole. There are slightly fewer homeowners in this age bracket than in the 50-60 and 60-70 age brackets. This smaller proportion of homeowners in the upper age bracket can partly be attributed to a generation effect and to early wealth transmissions, such as donations or sales of assets during retirement.⁶ Indeed, the oldest generations, for example those born at the start of the 20th century, did not often own their house. Furthermore, 22% of households over the age of 70 in 2003, i.e. three times more than the national average, had made (real estate or financial) donations to relatives.

Single persons, with or without children, account for roughly 40% of the French population. Less than half of them are homeowners, the proportion being slightly higher for single persons (43.6%) than for single-parent families (41.2%). Consequently, their median real estate wealth is zero and, more generally, their median private wealth is not very high: EUR 41,060 for single persons and EUR 34,900 for single-parent families, compared with EUR 112,180 for the French population as a whole.

⁶ For an in-depth analysis of wealth held by households by age bracket, see Boissinot J., Friez A., 2006.

Table 2 Changes in real estate and financial wealth between 1997 and 2003 according to household characteristics

(current EUR prices)

	Share of real estate wealth in private wealth		Share of homeowners		Median financial wealth		Median real estate wealth		Median private wealth	
	2003	1997-2003 Change	2003	1997-2003 Change	2003	1997-2003 Change	2003	1997-2003 Change	2003	1997-2003 Change
	(%)	(points)	(%)	(points)	(euro)	(%)	(euro)	(%)	(euro)	(%)
TOTAL	56.6	4.7	60.5	2.0	20,790	4.0	74,650	61.1	112,180	39.0
Age (a)										
Less than 30	50.8	10.6	17.3	2.1	8,350	9.3	0	–	11,090	14.1
30-40	65.3	6.6	51.2	3.6	16,610	10.4	30,490	ns	82,050	37.6
40-50	63.4	2.1	65.4	-1.7	19,550	8.8	94,870	31.9	133,400	34.9
50-60	60.4	6.8	74.2	-2.5	33,890	19.7	121,550	51.8	174,680	41.6
60-70	50.3	-1.1	74.2	1.2	29,360	-4.1	107,900	59.6	162,400	47.0
Over 70	48.1	8.4	65.4	2.5	29,460	1.1	64,430	57.6	110,320	28.3
Socio-occupational category (a)										
Farmers	47.5	4.8	76.6	4.3	43,670	12.4	87,560	90.4	159,740	58.7
Artisans, shopkeepers, entrepreneurs	50.2	0.9	73.6	-2.9	39,990	13.8	116,180	35.1	186,520	38.8
Self-employed professionals	47.7	4.5	81.5	5.4	110,930	6.2	221,000	24.4	443,030	48.2
Managers and higher-grade occupations	54.2	3.9	77.3	3.9	69,070	33.6	167,610	51.2	261,940	44.6
Intermediate-grade occupations	60.6	7.8	67.8	1.0	28,490	3.4	102,560	47.7	143,600	26.4
Clerical workers	58.0	7.4	47.6	1.8	12,900	-8.3	0	–	51,950	18.0
Manual workers	66.6	6.4	53.4	-0.3	11,500	-2.9	37,660	40.0	68,540	23.3
Non-participants in the labour force	53.8	-17.8	6.8	-0.2	3,270	-25.5	0	–	3,400	-26.3
Type of household										
Single person	48.2	5.1	43.6	1.6	13,200	-12.6	0	–	41,060	16.0
Couple without children	52.4	4.1	72.8	2.2	35,950	11.0	111,210	57.8	166,640	44.7
Couple with one child	61.6	3.2	69.5	1.8	29,110	34.7	108,570	43.5	145,460	40.3
Couple with 2 children	68.4	6.0	73.3	2.1	23,770	6.3	125,310	54.7	164,850	47.5
Couple with 3 children or more	66.9	2.1	68.4	5.5	16,360	4.2	114,900	80.9	143,430	66.0
Single-parent family	57.7	2.5	41.2	2.0	10,520	43.6	0	–	34,900	58.3
Other	57.4	14.3	60.3	0.2	17,380	-20.7	61,240	42.4	88,880	16.7
Level of education (a)										
No qualification or CEP	56.4	3.8	58.0	0.4	15,350	-5.2	50,920	43.7	80,360	20.2
BEPC	59.5	8.0	60.6	1.2	22,420	18.2	78,890	45.0	120,800	44.8
CAP, BEP	64.1	5.5	63.0	-0.1	18,080	-6.7	88,530	53.4	121,050	38.8
Baccalaureate or equivalent	54.0	7.8	58.1	-0.7	26,600	7.4	75,790	30.4	120,850	16.0
Baccalaureate + 2 years	56.3	3.3	60.4	9.9	31,100	37.7	97,360	ns	148,720	78.2
Baccalaureate + 3 years and over	50.7	1.2	66.3	0.0	57,120	24.1	140,340	37.7	222,430	29.5
Disposable income bracket (2003 prices)										
Below the 1 st decile (EUR 7,060)	51.8	-5.0	29.6	-3.3	4,280	ns	0	–	9,780	ns
4 th – 5 th decile (EUR 14,900–EUR 17,940)	57.3	2.3	63.4	5.4	21,130	6.7	69,030	62.4	104,770	38.5
Above the 9 th decile (EUR 40,070)	52.3	5.6	90.1	0.9	110,020	23.5	156,310	56.0	261,890	58.0

Table 2 (cont'd)

(current EUR prices)

	Share of real estate wealth in private wealth		Share of homeowners		Median financial wealth		Median real estate wealth		Median private wealth	
	2003 (%)	1997-2003 Change (points)	2003 (%)	1997-2003 Change (points)	2003 (euro)	1997-2003 Change (%)	2003 (euro)	1997-2003 Change (%)	2003 (euro)	1997-2003 Change (%)
Private wealth bracket (2003 prices)										
Below the 1 st decile (EUR 2,110)	0.0	0.0	0.0	0.0	810	8.0	0	–	810	6.6
4 th -5 th decile (EUR 71,160–EUR 112,180)	65.4	2.4	79.0	0.1	17,350	7.5	72,230	42.7	91,920	34.3
Above the 9 th decile (EUR 450,060)	45.2	3.8	95.5	-0.4	318,410	39.7	366,000	64.3	656,380	52.2
Place of residence										
Rural area	61.2	7.2	77.9	4.1	24,960	2.9	99,090	58.0	135,980	36.6
Urban area of less than 20,000 inhabitants	59.4	0.8	53.0	-0.1	22,500	18.7	97,420	78.8	136,750	61.6
Urban area of 20,000-100,000 inhabitants	52.7	0.3	68.4	4.5	16,870	-14.0	41,800	62.3	89,190	29.8
Urban area of over 100,000 inhabitants	55.8	5.6	51.6	1.4	18,180	4.8	30,920	ns	81,900	30.0
Paris region excl. Paris	56.1	3.5	51.9	-2.4	19,400	4.9	30,240	-29.2	94,500	6.7
City of Paris	43.2	3.9	44.5	0.8	35,040	64.6	0	–	87,540	70.1

(a) Age, socio-occupational category and level of education of the reference person in the household.
ns: not significant.

Source: INSEE – 1998 and 2004 Wealth Surveys.

Households in which the reference person is a self-employed professional post the highest median private wealth (EUR 443,030 in 2003). This category includes the highest proportion of homeowners (81.5% in 2003). Although it is within this category that the proportion of homeowners recorded the highest rise between 1997 and 2003 (+5.4 points), the share of real estate in their wealth increased at a slower pace than in intermediate professions or among employees.

In addition, the level of education, as well as the level of income with which it is strongly correlated, plays a major role in the accumulation of wealth: the higher the reference person's level of education, the larger his/her private wealth. The amounts of financial and real estate assets rise in proportion to the income decile. Compared with 1997, the rate of increase in the levels of wealth was all the more significant as the income was high. However, because the elasticity⁷ of wealth relative to income is the same in 1997 and 2003, this only means that wealth and income followed a parallel path.

⁷ The elasticity of wealth relative to income measures the effect of a change in income on the total amount of wealth. An elasticity of 1.13 means that a 1% change in income results in a 1.13% same direction change in wealth.

The composition of household wealth varies significantly according to the place of residence. On average, the share of real estate wealth held by Parisian households is lower (43.2%) than that of their financial wealth, contrary to households outside Paris. This can partly be explained by the small proportion of homeowners in the capital (44.5% as against 60.5% in the rest of France) and, to a lesser extent, by the relative size of their financial wealth: the median financial wealth of Parisians who are not homeowners is greater than that of non-homeowners outside Paris (EUR 13,000 compared with EUR 8,240).

4| Reallocation of households' financial assets: increase in the share of life insurance to the detriment of other savings products

Households' financial wealth, as presented in the national financial accounts in the same manner as in the 1998 and 2004 surveys, is broken down into various types of deposits (overnight deposits, housing savings, passbook savings accounts, other deposits), people's savings plans, life insurance and securities (see Box 2).

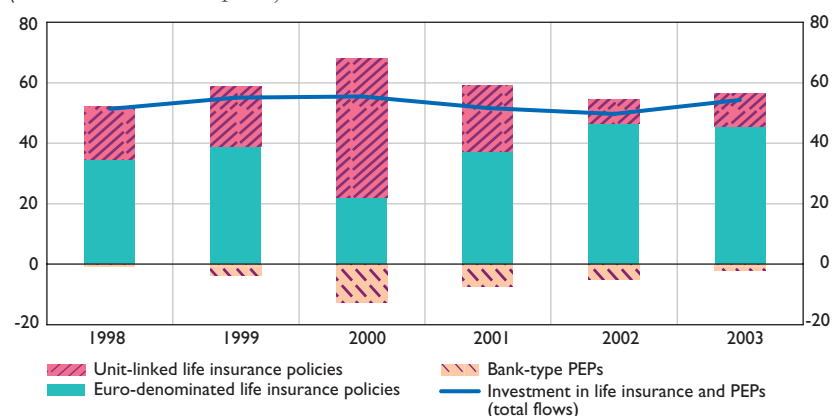
During the period under review, life insurance is the only asset whose share in financial wealth increased significantly (39.8% in 2003 compared with 31.6% in 1997, see Chart 3). Because it offers specific tax breaks⁸ and relatively stable returns on euro-denominated funds, life insurance attracted large and steady investment flows between 1998 and 2003: over EUR 50 billion each year (see Chart 4). Households also perceive life insurance as a long-term savings product in a context of continued uncertainty about the future level of pensions. Given the decline in interest rates on franc-denominated then euro-denominated policies and the good performance of stock markets, the share of unit-linked policies,⁹ the value of which largely depends on equity prices, increased significantly until 2000 to reach about 22% of the reserves of insurance companies, compared with 10% at the start of the period. This share then dropped in 2001 and especially in 2002 (17.4%) due to the fall in equity prices and the lesser appeal of unit-linked policies, before picking up slightly in 2003 (18.4%). Life insurance accounted for 40% of households' financial wealth (39.8% in 2003), but the holding rate of this type of investment was still relatively low in 2003 (28%), which suggests that subscribers are strongly concentrated among certain categories of households.

⁸ In particular, life insurance premium payments made before the age of 70 are exempt from inheritance tax unless the amount received by the beneficiary exceeds EUR 152,500.

⁹ A unit-linked policy is a policy backed by one or several classes of underlying assets (securities or real-estate assets); they fluctuate in line with their underlying assets.

Chart 4 Investment flows in life insurance and bank-type PEPs

(EUR billions – current prices)



NB: Insurance PEPs are classified under life insurance.

Source: Banque de France – financial accounts.

As regards deposit investments, flows into overnight deposits were positive every year between 1998 and 2003, as households had sought to hold a relatively stable share of their assets in liquid form, while flows into other categories of deposits, in particular term deposits, were negative at the end of the period under review. Flows into passbook savings accounts and housing savings were also significant, except in 1999 and 2000, which

Table 3 Households' financial wealth

(outstanding amounts, flows and valuations at constant EUR prices; shares in %)

	1997		2003		Cumulated flows 1998-2003	Valuation 1998-2003
	Out-standing	Share	Out-standing	Share		
Overnight deposits	172	11.1	218	10.5	58	ns
Housing savings	187	12.0	253	12.1	66	ns
Passbook savings accounts	229	14.8	308	14.7	79	ns
Other deposits	52	3.3	35	1.7	-17	ns
People's savings plans	78	5.0	46	2.2	-32	ns
Life insurance	490	31.6	830	39.8	349	-9
Securities	343	22.1	396	19.0	-8	44
Financial wealth	1,550	100.0	2,085	100.0	497	34

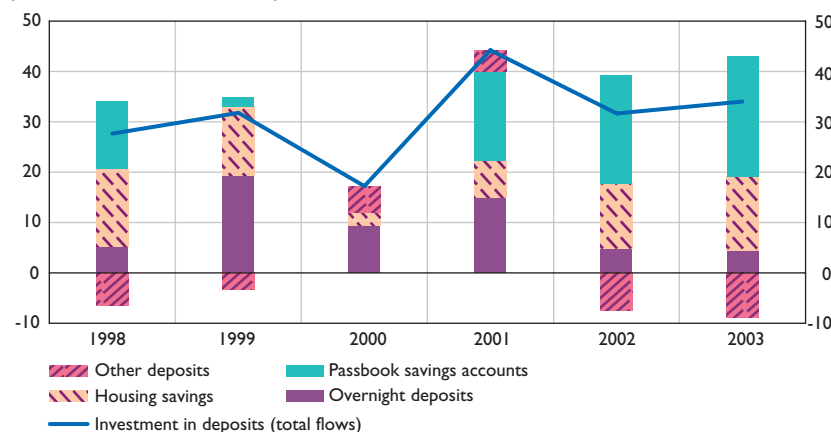
Guide to table: The share of securities in households' financial wealth slid from 22.1% at end-1997 to 19.0% at end-2003. The fact that the cumulated flow of securities investments was negative over the period 1998-2003 (-EUR 8 billion) means that households were net sellers, while the positive aggregate valuation (EUR 44 billion) shows that the value of their corresponding assets appreciated.

ns: not significant.

Source: Banque de France – financial accounts and monetary statistics.

Chart 5 Investment flows in deposits

(EUR billions – current prices)



Source: Banque de France – financial accounts.

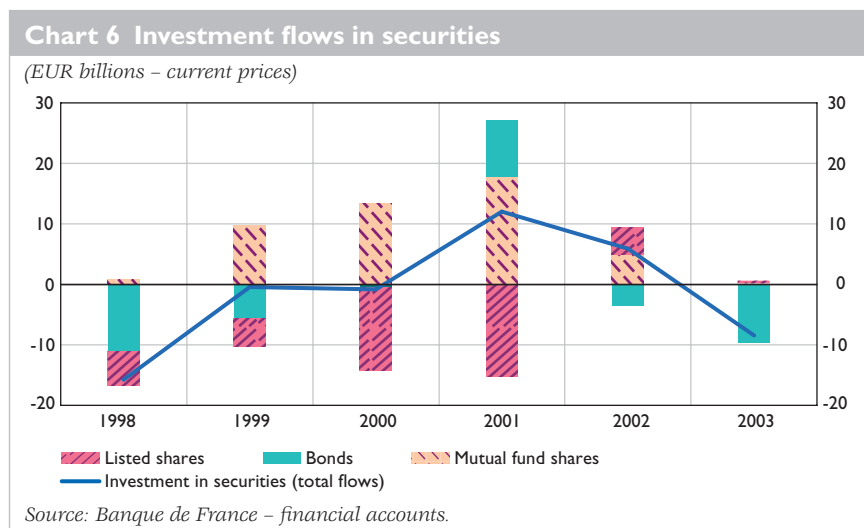
suggests that a share of the flows that are usually channelled into these deposits were redirected to other products, such as unit-linked life insurance policies or mutual funds.

5| Changes in securities portfolios are more in line with those in equity prices than investment flows

If investment flows are cumulated over the period, it appears that households were overall net sellers of bonds (to the tune of EUR 21.2 billion) and listed shares (EUR 33.3 billion), but were net buyers of mutual fund shares/units (EUR 47 billion, see Chart 6).

In view of this increase in collective securities holdings, the share of securities in households' financial wealth dipped only slightly.

Although it was already low at the start of the period, the amount of bonds held directly by households dropped by almost 50%. The proportion of listed shares also declined overall (from 4.9% in 1997 to 4.2% in 2003), while fluctuating in line with stock price variations with a peak in 1999-2000 (6.5%) prior to the bursting of the Internet bubble and a low in 2002 (3.7%). The proportion of mutual fund share/units hardly varied: it only fell by 0.5 point relative to 1997 to stand at roughly 12.7% in 2003. It fluctuated in line with stock price variations over the period, but less markedly than listed shares, due to the greater range of assets in the portfolio of mutual funds.



A large number of factors influence the decisions that households take concerning their savings and the composition of their wealth, in particular their decision to invest in more or less risky assets. Households' propensity to take risks and their attitude towards time, the characteristics of the assets that they may invest in, their complementarity or substitutability and the associated transaction costs (INSEE, 2004) play an important role. To shed light on households' investment behaviour, we should also look at their exposure to risk in various fields (family, work, health, life expectancy). The typology of financial portfolios described in section 6 is based on a number of factors for assessing the uncertainty which households may face.

6| Five types of more or less diversified financial portfolios

Using statistical analysis methods (in this case, a hierarchical ascending classification) and data from the 2004 Wealth Survey, we were able to draw up a typology of households' financial portfolios according to the holders' characteristics. Households' portfolios may be composed of passbook savings accounts (excl. cheque accounts), housing savings, life insurance and securities. The analysis stresses the importance of three factors in the composition of households' financial portfolios: age, income and the level of wealth. Indeed, households' needs at the start of their working life are clearly different to those during retirement and their saving capacity varies depending on whether they have a low or high income. On this basis, it was possible to draw up five types of

financial portfolios according to households' needs and saving capacity (see Tables 1 and 2 in the Appendix).

32% of households have a financial portfolio made up exclusively of passbook savings accounts

The most popular type of portfolio among French households (32%) is exclusively made up of passbook savings accounts, which is a safe and liquid product. The holders of this type of portfolio have a low income and few assets. They are mainly workers or employees (62%) and are either at the beginning of their working life (i.e. less than 30 years old) or retired (i.e. 70 years old and over). In view of their low saving capacity, they tend to favour liquid investments in order to meet their needs for cash but also for precautionary purposes. When their saving capacity increases, they first adopt longer term saving strategies, but continue to favour risk-free products such as housing savings and life insurance.

11% of households have a portfolio made up of passbook savings accounts and life insurance

In 2003, 10.8% of households invest most of their savings in life insurance policies and passbook savings accounts, with a view to preparing their retirement and protecting their relatives. These are mainly middle-income, elderly households but also single-parent families and households who have experienced long periods of unemployment. Their main motives in saving are probably the following: precaution, preparation of retirement and protection against unexpected events.

17% of households favour housing savings

Younger households (i.e. less than 40 years old), who are non-homeowners with one child and an income below the median level tend to favour housing savings (both a long-term and risk-free investment). In 2003, 17.2% of households have a portfolio made up of housing savings and passbook savings accounts with a view to purchasing property. Some of these households have experienced short periods of unemployment. Their motive in saving is mainly life-cycle related and is to be able to make a down payment on a property insofar as they probably have increasing needs in terms of housing but are restricted by their low saving capacity.

24% of households have a diversified portfolio

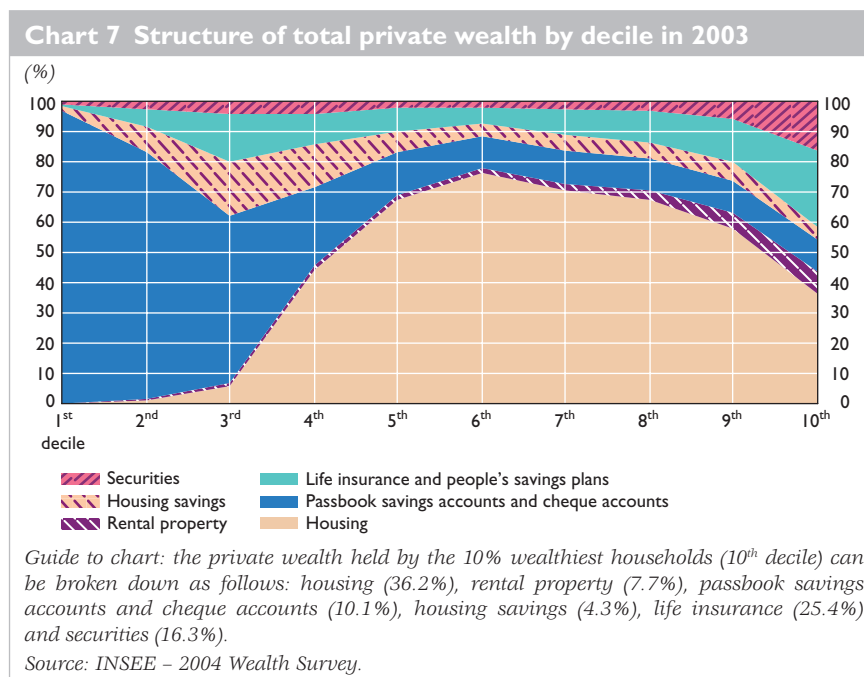
Households who own their principal residence and have a larger saving capacity tend to diversify their portfolio. Thus, roughly 24% of households have a portfolio made up of the four major asset classes: passbook savings accounts, housing savings, life insurance and securities. Most households in this category are well-off. One third of households in this category have considerable wealth and a very high disposable income (above the

9th decile); they have a managerial position, and have graduated from a *grande école* or have an undergraduate or postgraduate degree. This category also comprises households in intermediate-grade occupations (25,3 %), who have accomplished two years of higher education and whose wealth is between the 6th and 7th decile (11.5%).

16% of households favour securities and life insurance

High-income households do not all decide to diversify their financial investments. Roughly 15.5% of French households have a portfolio composed mainly of risky assets such as securities and unit-linked life insurance policies. They have a high income and considerable wealth (last decile); their parents also hold (or have held) securities. Most of these households are in the 50-60 age bracket, own their principal residence and often a second residence, and have never been unemployed.

This typology can be linked to the structure of private wealth by decile (see Chart 7), as households are more likely to diversify their portfolio when their personal environment is favourable: stable family situation, high income, no risk of unemployment. The 10% wealthiest households have a portfolio made up of housing (36.2%), rental property (7.7%), passbook savings accounts and cheque accounts (10.1%), housing savings (4.3%), life insurance (25.4%) and securities (16.3%), while the 10% least wealthy households hold 96.9% of their wealth in the form of passbook savings accounts and cheque accounts.



7| Risky financial assets: higher holding rates in 2003 than in 1997

Households' financial wealth can also be described by the holding rate and weight of risky assets. An asset is said to be risky if its price is likely to post large variations; such is the case of listed shares, non-money market fund shares and unit-linked life insurance policies.

Over the period under review and according to this definition, households' financial savings were increasingly channelled into risky investments: the share of risky assets in households' financial wealth rose from 14.0% in 1997 to 19.2% in 2003, after having peaked at 23.8% in 2000. This rise can largely be attributed to unit-linked life insurance policies: if they are not considered as risky assets, this ratio increased from 10.8% in 1997 to 11.8% in 2003 (and 16.0% in 2000). Given that the 1998 Wealth Survey does not distinguish unit-linked policies, these are considered as risk-free assets in the "all other things being equal" analyses conducted in 1997 and 2003. This implies that the risky assets held by households are somewhat underestimated. In a context characterised by large fluctuations in financial market prices, it is useful to define the characteristics of holders of risky financial assets and to attempt to explain their behaviour using an "all other things being equal" analysis in 1997 and 2003. The qualitative model presented in the next paragraph (see Table 4) measures the impact of each household characteristic (age, socio-occupational category, type of household, whether the parents were holders of risky assets, income, etc.) on the probability of holding a risky financial asset. More precisely, what is measured is the gap between the probability of holding a risky financial asset in the reference situation and in the situation under review. The reference situation is that of households between 40 and 49, in an intermediate-grade occupation in the public sector, with two children and in the 5th decile of private wealth and disposable income. According to the economic theory, the degree of risk-aversion, caution, temperance and time preference for the present play an important role in shaping households' saving behaviour and portfolio choices. Given the nature of the data obtained from the 1998 and 2004 Wealth Surveys, these variables cannot be directly introduced into the model (see Box 3). However, because the model includes age and sex, to which risk-aversion and caution are linked, these variables are taken into account in an indirect and partial manner. In addition, variables that describe households' exposure to risk (job stability, financial difficulties) were introduced in an initial model. In the end, they were not used as they turned out to be non-significant.

Between 1997 and 2003, the share of households holding a risky asset increased; in particular, the probability of a household in the reference

Box 3

Risk aversion/exposure and portfolio choices

The standard life cycle theory (see Brumberg R. and Modigliani F., 1954) describes a world with no uncertainty in which individuals are supposed to be patient and rational and financial markets are perfect. The subsequent studies on this theory dropped these simplistic assumptions and stressed the importance, in individuals' saving decisions and portfolio choices, of individual preferences such as the degree of risk aversion, caution, temperance, time preference for the present and altruism.

Since 1998, the INSEE wealth surveys have included an additional section (two-sided questionnaire) with the purpose of assessing individuals' degree of risk aversion/exposure. In 1997, 2,950 households provided exploitable data in this particular section, i.e. 28.9% of the 10,200 households surveyed. The 1998 framework (but not that of 2004) was supplemented with a specific survey on households' attitude to risk and the future, which resulted in the construction of scores for measuring these preference parameters. 1,135 completed questionnaires were collected. Risk aversion and time preference for the present are measured by means of three types of questions: lottery choice, opinions or intentions, reactions to fictive scenarios. Each question relates to at least one of the characteristics to be measured and each possible answer is supposed to correspond to a degree of its expression for the individual surveyed. It is then possible to construct for each individual surveyed an individual "score" which captures his attitude to risk and time, and his level of altruism. To complete this score, each individual surveyed is asked to position himself on a scale which measures his own perception of his profile with regard to the characteristics considered. As usual, given that these are qualitative and subjective variables, the regressions performed on these variables have a low explanatory power. However, age and sex appear to have a significant impact on each of them. The methodology and results of the 1998 Survey were published in the special issue No. 374-375 of *Économie et Statistique* (INSEE, 2004).

Given the differences in the protocol for collecting information on risk aversion between 1997 and 2003 and the small size of the samples of respondents, the asset holding models presented in this article do not include any direct indicators of risk aversion among the explanatory variables. The approach adopted in this article to model the holding of risky assets is based on the study "Gestion du risque et comportements patrimoniaux" (see Arrondel L. and Masson A., 1996). This study, based on the 1992 Financial Asset Survey, takes into consideration individuals' environment and exposure to risk through the use of variables such as the sector of professional activity, the socio-occupational category, the age and the level of wealth and income. The level of education and the presence of risky assets in the parents' portfolio are an indication of the important role played by information as regards the holding of risky assets. In addition, the fact that portfolio transaction, holding and management costs are often graduated may also bring about different types of financial behaviour depending on households' level of income and wealth. Lastly, risk aversion/exposure are partly taken into account by age and wealth differences, but may also be reflected in the household's professional situation (choice of sector of activity, social category, etc.).

situation holding risky assets rose from 7.0% in 1997 to 9.4% in 2003¹⁰ (see Table 4). In 1997, the head of the typical household holding risky assets has a high income and considerable wealth. His parents also held

Table 4 Probability of holding a risky financial asset in 1997 and 2003 (qualitative model – logit)

(probability as a %)

	1997		2003	
Probability of the reference situation (as a %)	7.0		9.4	
	Coefficient (a)	Marginal effect	Coefficient (a)	Marginal effect
CONSTANT	-2,59		-2,27	
Age (b)				
Less than 30	ns		ns	
30-39	ns		0.29 **	2.8
40-49	ref		ref	
50-59	ns		ns	
60-70	ns		ns	
Over 70	ns		-0.31 *	-2.3
Socio-occupational category (b)				
Self-employed	ns		ns	ns
Salaried employees				
Managers	ns		0.25 **	2.4
Intermediate-grade occupations	ref		ref	
Clerical workers	ns	ns	ns	n.s.
Manual workers	-0.59 ***	-3.0	-0.36 ***	-2.7
Other salaried employees	ns		ns	
Non-participants in the labour force	-0.62 **	-3.1	-0.76 *	-4.8
Works in the private sector (b)				
Yes	0.29 ***	2.1	0.14 *	1.3
No	ref		ref	
Type of household				
Single person	0.74 ***	6.6	0.92 ***	11.2
Couple without children	0.35 **	2.7	0.40 ***	4
Couple with one child	ns		0.30 **	2.9
Couple with 2 children	ref		ref	
Couple with 3 children or more	0.27 *	-1.6	ns	
Single-parent family	0.34 *	2.6	ns	
Other cases	ns		ns	
Parents hold (held) risky assets				
Yes	0.80 ***	7.2	0.60 ***	6.8
No	ref		ref	
Decile of disposable income				
1 st decile	ns		ns	
2 nd decile	-0.37 *	-2.1	-0.24 *	-1.9
3 rd decile	-0.45 **	-2.4	-0.22 *	-1.7
4 th decile	ns		ns	
5 th decile	ref		ref	
6 th decile	ns		ns	
7 th decile	ns		ns	
8 th decile	0.41 **	3.1	0.41 **	4.1
9 th decile	0.44 **	3.5	0.45 **	4.5
10 th decile	0.62 ***	5.2	0.61 ***	6.6

.../...

¹⁰ The probability is 10.1% if unit-linked life insurance policies are considered as risky assets in 2003.

Table 4 (cont'd)

(probability as a %)

	1997		2003	
	Coefficient (a)	Marginal effect	Coefficient (a)	Marginal effect
Decile of private wealth				
1 st decile	-2.54 ***	-6.4	-2.72 ***	-8.7
2 nd decile	-1.36 ***	-5.1	-1.16 ***	-6.2
3 rd decile	-0.78 ***	-3.6	-0.55 ***	-3.8
4 th decile	ns		ns	
5 th decile	ref		ref	
6 th decile	ns		ns	
7 th decile	0.67 ***	5.8	0.41 ***	4.1
8 th decile	0.88 ***	8.3	0.67 ***	7.5
9 th decile	1.20 ***	12.9	1.11 ***	14.5
10 th decile	2.34 ***	36.7	1.94 ***	32.4

(a) Ref: reference situation, *** coefficient significant at the 1% threshold, ** coefficient significant at the 5% threshold, * coefficient significant at the 10% threshold, ns: not significant.

(b) Age, socio-occupational category and employment status of the reference person in the household.

NB: In this analysis, unit-linked life insurance policies are not considered as risky financial assets. In addition, in order to integrate risk aversion into the model, the variables "risk of unemployment" and "financial difficulties" have been introduced but are not significant.

Guide to table: In 2003, the probability of households whose reference person is aged between 30 and 39 holding a risky asset is 2.8 points higher than that of households aged between 40 to 49 (reference situation), i.e. 12.2%; all of the other characteristics taken into account in the model are identical and equal to the reference situation.

Scope: Households with financial wealth.

Source: INSEE – 1998 and 2004 Wealth Surveys.

risky assets; he has no children. In 2003, the head of the typical household holding risky assets has the same characteristics as in 1997, but the gap with the reference household has widened. In addition, some age and socio-occupational category characteristics become significant: managers and households between 30 and 39 are more liable to hold risky assets. Lastly, salaried employees in the private sector tend to hold more risky assets than those in the public sector, but the gap is narrower.

Indeed, high-wealth households are better able to diversify their portfolio: having satisfied their housing, precautionary and transaction balance needs, they are more likely to invest part of their wealth in risky assets, from which they expect to get higher returns. Thanks to their high saving capacity, high-income households are in a better position to structure their portfolio, in particular towards risky assets. However, the gap in terms of risky asset holdings between low- and high-wealth households remained stable between 1997 and 2003. Hence, the stock market correction that took place in the early 2000s did not deter high-wealth households from holding risky assets.

Similar considerations seem to prevail among managers: in 2003, they hold risky assets slightly more often than the other social categories. In 2003, the probability of managers holding risky assets is 2.4 points higher than that of households in an intermediate-grade occupation. One possible interpretation is that the socio-professional environment of managers facilitates their access to information on different financial assets.

In general, households' investment behaviour is carried over from one generation to the next. This also holds true for risky asset holdings: households whose parents held risky assets are more likely – all other things being equal – to hold this type of assets, either through inheritance or because they have become more familiar with this type of assets.

Overall, households' wealth, level of income and degree of information on financial investments are key determinants of their propensity to hold risky assets.

Appendix

Table I Changes in the average amount of each class of financial assets between 1997 and 2003

(in current euros)

	Deposits		Life insurance and people's savings plans		Securities	
	1997	2003	1997	2003	1997	2003
Age						
Less than 30	3,930	3,630	11,840	12,270	5,570	8,570
30-40	5,230	4,820	21,880	25,560	9,360	11,430
40-50	5,740	6,340	34,090	49,030	20,140	22,180
50-60	9,240	8,840	44,870	59,610	36,370	26,600
60-70	9,450	9,330	38,770	104,690	36,180	65,190
Over 70	10,770	10,760	47,830	81,280	72,040	55,250
Socio-occupational category						
Farmers	9,140	8,990	37,220	80,740	35,070	28,720
Artisans, shopkeepers, entrepreneurs	12,020	10,300	68,120	108,000	63,080	70,210
Self-employed professionals	12,920	17,450	82,850	87,290	121,030	73,180
Managers and higher-grade occupations	9,770	10,880	45,080	80,640	44,940	37,890
Intermediate-grade occupations	7,570	7,020	33,090	51,930	21,240	20,530
Clerical workers	5,960	5,370	33,890	48,810	24,300	18,690
Manual workers	4,980	4,660	21,150	31,390	7,380	12,370
Non-participants in the labour force	2,970	2,620	20,620	22,720	3,380	6,450
Type of household						
Single person	8,350	8,410	37,960	74,610	35,110	39,380
Couple without children	9,580	9,650	42,780	79,360	41,040	43,850
Couple with one child	6,360	6,640	34,660	44,420	19,980	21,700
Couple with 2 children	5,440	5,080	26,300	38,170	20,080	18,430
Couple with 3 children or more	3,950	5,670	30,550	44,750	27,280	17,550
Single-parent family	5,070	4,800	29,090	44,870	12,380	22,550
Other	10,310	7,080	42,990	50,250	72,610	21,580
Level of education						
Postgraduate degree, <i>grandes écoles</i>	9,910	12,000	50,400	83,190	53,300	50,840
Undergraduate degree, DUT, BTS	7,550	7,580	31,360	60,250	24,360	20,580
General baccalaureate	9,740	8,060	59,830	96,260	63,660	39,310
Technical baccalaureate	6,330	7,460	31,120	49,980	23,940	13,060
BEPC	7,180	6,770	42,660	71,390	27,020	26,450
CAP, BEP	5,880	5,370	27,220	45,190	10,920	18,710
CEP, DFEO	8,040	7,850	38,470	65,130	32,790	23,180
No qualification	6,200	5,830	27,110	50,270	19,600	53,990

Source: INSEE – 1998 and 2004 wealth surveys.

Table 2 Typology of financial portfolios held by French households in 2003
 Characteristics of the predominant type of household for each portfolio,
 in diminishing order of predominance

<p>Portfolio 1: 32.0% of households Passbook savings accounts exclusively</p> <p>1st and 2nd deciles of total wealth 1st decile of disposable income Non-homeowners No qualification Manual workers Clerical workers Over 70 Less than 30</p>	<p>Portfolio 4: 24.5% of households Diversified portfolios: passbook savings accounts, life insurance, housing savings and securities</p> <p>9th and 8th deciles of total wealth 9th decile of disposable income Managers Undergraduate or postgraduate degree, <i>grandes écoles</i> Homeowners (principal residence and second residence) Intermediate-grade occupations 7th decile of total wealth Undergraduate degree</p>
<p>Portfolio 2: 10.8% of households Passbook savings accounts and life insurance</p> <p>60-70, over 70 CEP, no qualification 3rd and 5th deciles of total wealth 4th and 5th deciles of disposable income Single-parent family Long-term unemployment</p>	<p>Portfolio 5: 15.5% of households Life insurance, people's savings plan and securities</p> <p>Homeowners (principal residence and second residence) Managers 9th decile of total wealth 9th decile of disposable income Undergraduate or postgraduate degree, <i>grandes écoles</i> Self-employed Married 50-60 Liberal profession Paris</p>
<p>Portfolio 3: 17.2% of households Passbook savings accounts and housing savings</p> <p>Less than 40 3rd and 4th deciles of total wealth Short period of unemployment 1 child Non-homeowners Public sector clerical workers Municipality of less than 20,000 inhabitants</p>	

NB: These different portfolios are taken from a hierarchical ascending classification carried out on households with financial wealth.

Source: INSEE 2004 Wealth Survey.

Bibliography

Arrondel (L.) (1996)

"Patrimoine des ménages : toujours le logement, mais aussi les actifs de précaution", *Économie et Statistique*, No. 296-297, INSEE.

Arrondel (L.) and Masson (A.) (1996)

"Gestion du risque et comportements patrimoniaux", *Économie et Statistique*, No. 296-297, INSEE.

Boissinot (J.) and Friez (A.) (2006)

"Épargne et patrimoine des ménages : données macroéconomiques et données d'enquête", *L'économie française*, 2006 edition, INSEE Références.

Brumberg (R.) and Modigliani (F.) (1954)

"Utility analysis and the consumption function: an interpretation of cross-section data", Kurihara Ed., *Postkeynesian Economics*, Rutgers University Press.

Cordier (M.) and Girardot (P.) (2007)

"Comparaison et recalage des montants de l'enquête Patrimoine sur la comptabilité nationale", *Working paper*, No. F0702, INSEE.

Cordier (M.), Houdré (C.) and Rougerie C. (2006)

"L'évolution des inégalités de patrimoine entre 1992 et 2004", *Les revenus et le patrimoine des ménages*, 2006 edition, INSEE Références, October.

Cordier (M.) and Rougerie (C.) (2004)

"Patrimoine des ménages début 2004 : le déploiement de l'épargne salariale", *INSEE Première*, No. 985.

Gautier (E.) and Houdré (C.) (2008)

"Approche multivariée de l'estimation des inégalités dans l'enquête Patrimoine 2004", *Working paper*, No. F0801.

INSEE (1999)

"Revenus et patrimoine des ménages", *Synthèses*, No. 28, INSEE.

INSEE (2004)

"Préférences de l'épargnant et accumulation patrimoniale", *Économie et Statistique*, No. 374-375.

Kessler (D.) and Masson (A.) (1988)

"Qui possède quoi, et pourquoi ?", *Revue financière*, No. 10.

Lollivier (S.) and Verger (D.) (1988)

"D'une variable discrète à une variable continue, une application de la méthode des résidus simulés", Mélanges économiques : essais en l'honneur d'Edmond Malinvaud, Economica.

Marionnet (D.) (2005)

"Placements financiers des ménages français : comparaisons européennes (1995-2004)", Bulletin de la Banque de France, No. 143, November.

Marionnet (D.) (2007)

"The final financial investment of French households", Irving Fisher Committee Bulletin, No. 25, Bank for International Settlements, March.

La destination finale de l'épargne des ménages

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Cet article vise à décrire l'allocation finale du patrimoine financier des ménages français, à savoir sa contribution aux différents types de financement des activités économiques non financières. En effet, si la composition initiale des portefeuilles des ménages renseigne sur leurs choix globaux en matière de gestion d'actifs et de risques, elle éclaire peu sur leur contribution aux différents circuits de financement. Pour mesurer celle-ci, il convient d'identifier les emplois auxquels les institutions financières consacrent in fine les placements qu'elles collectent auprès des ménages.

À la différence des actifs directement investis auprès des agents non financiers (actifs dits « finaux »), les actifs placés auprès des institutions financières (établissements de crédit, OPCVM, sociétés d'assurance,...) sont donc retraités afin de mettre en transparence ces intermédiaires. En partant de l'hypothèse qu'il n'y a pas d'affectation des ressources aux emplois, cette mise en transparence s'obtient en appliquant aux opérations internes au secteur financier la structure de leurs emplois finaux : la répétition de ce calcul permet ainsi de converger vers une estimation de la destination finale des placements des ménages.

Cette démarche fait apparaître que les emplois auxquels les institutions financières destinent ces placements sont assez diversifiés au plan géographique, une bonne part étant investie hors de France, en actifs d'autres pays de la zone euro ainsi que du reste du monde. Elle montre également qu'ils sont principalement consacrés à des investissements en titres de dette publique : alors que les titres émis par les administrations publiques, françaises et de la zone euro, représentent une part marginale dans les placements directs des ménages, le processus d'intermédiation de l'épargne aboutit ainsi à leur donner une place prépondérante dans les emplois finaux de leur patrimoine financier.

Mots-clés : Ménages, patrimoine financier, enquête patrimoine, épargne, intermédiation, diversification, dépôts, crédits, titres de créance, valeurs mobilières, actions, OPCVM, sociétés d'assurance

Codes JEL : G00, G11, G2, D01, D14

I | La composition initiale des placements des ménages

I | I Les placements intermédiés représentent une part prépondérante de l'épargne des ménages

À fin 2006, les placements des ménages français intermédiés par les institutions financières représentent 2 853 milliards d'euros, soit 87 % des 3 286 milliards d'euros de leur patrimoine financier. Le rôle de l'intermédiation est donc prépondérant dans la gestion de l'épargne des ménages en France, ces derniers ne consacrant qu'une part modeste de leurs placements aux actifs « finaux » finançant directement les agents non financiers (13 %, soit 433 milliards d'euros).

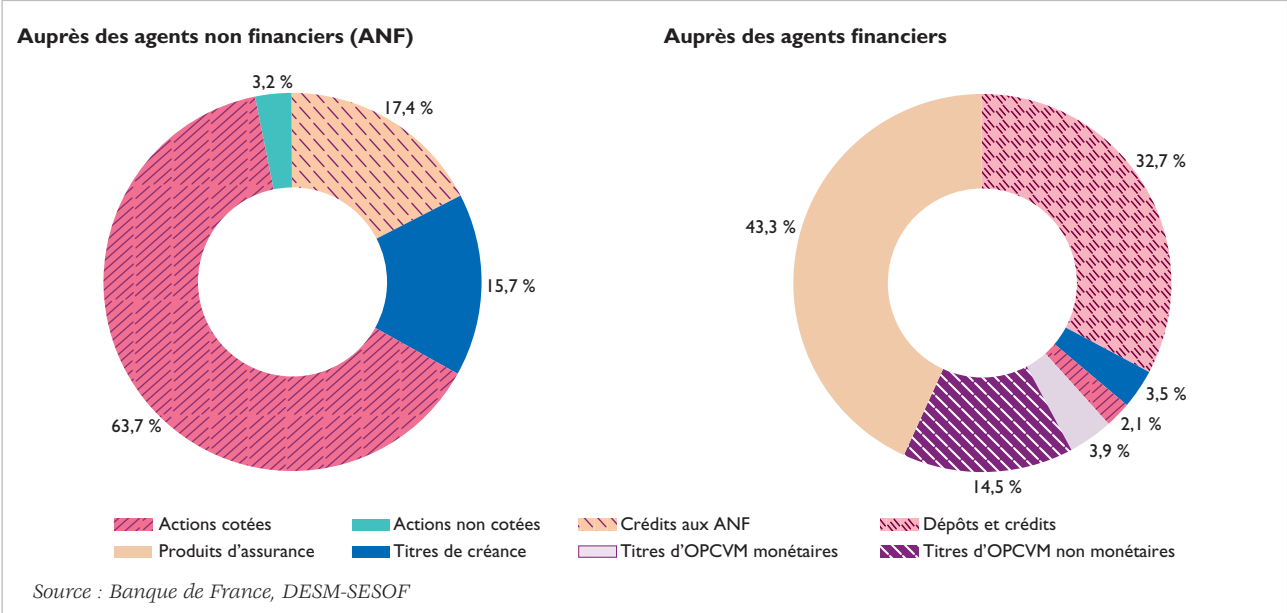
Les placements directs des ménages en actifs « finaux » sont constitués, pour l'essentiel, de valeurs mobilières (63,7 % en actions cotées et 15,7 % en titres de créance) et, dans une moindre mesure, de crédits aux agents non financiers (17,4 %).

Structure des placements des ménages À fin 2006		
(montant en milliards d'euros et part en %)		
	Montant	Part
Dépôts et crédits	1 007,4	30,7
Titres de créance	168,8	5,1
Actions cotées	336,4	10,2
Actions non cotées	13,8	0,4
Titres d'OPCVM monétaires	110,6	3,4
Titres d'OPCVM non monétaires	414,3	12,6
Produits d'assurance	1 234,8	37,6
Total	3 286	100

Note : Dans un souci de simplification, la nomenclature utilisée dans cette étude regroupe les opérations de dépôt et de crédit. La prise en compte de la catégorie à laquelle appartient le créancier et le débiteur permet néanmoins de distinguer clairement la nature de ces opérations : les dépôts figurent essentiellement au passif des institutions financières, mais peuvent être détenus par tous les types d'agents, alors que les crédits sont un instrument de financement des agents non financiers.

L'épargne des ménages confiée à des institutions financières est placée, pour l'essentiel, en produits d'assurance (43,3 %), en dépôts (32,7 %) et en titres d'OPCVM généraux et monétaires (respectivement 14,5 % et 3,9 %).

Graphiques 1 et 2 Structure des placements directs et intermédiés des ménages



1 | 2 La structure des placements des institutions financières diffère selon les catégories d'intervenants

Chaque catégorie d'intermédiaire financier se caractérise par une structure spécifique de ses placements :

- Le secteur des *établissements de crédit et entreprises d'investissement* consacre environ 73 % de ses placements financiers à l'acquisition de créances sur les agents non financiers, le reste étant constitué essentiellement d'opérations internes à ce secteur. S'agissant des actifs « finaux », la part des opérations de crédit et de dépôt s'élève à 52 % et celle des titres de créance à 15 %.

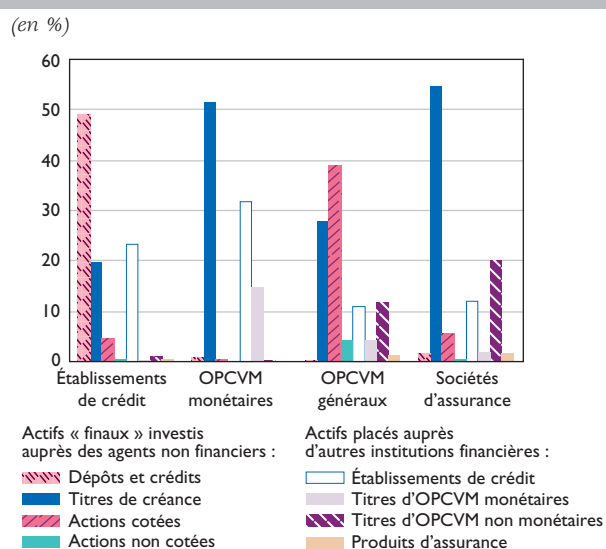
- Les *OPCVM monétaires* placent 53 % de leurs actifs directement auprès des agents non financiers, principalement sous forme de titres de créance. Près d'un tiers (32 %) de leurs placements sont effectués auprès des établissements de crédit et près d'un sixième (15 %) sont internes au secteur (détention de titres d'OPCVM monétaires par des OPCVM monétaires).

- Les *OPCVM généraux* investissent directement en titres émis par des agents non financiers près de 71 % de leurs actifs, notamment en actions cotées (39 % des actifs). Les 29 % restants sont constitués de placements auprès des intermédiaires financiers, dont 12 % en titres d'OPCVM généraux et 11 % auprès des établissements de crédit.

- Les *sociétés d'assurance* investissent très majoritairement leurs ressources en actifs « finaux » émis par des agents non financiers (63 %) et placent le solde auprès d'autres intermédiaires financiers, surtout auprès des OPCVM généraux (20 %) et des établissements de crédit (12 %). Les titres de créance prédominent au sein de leur portefeuille d'actifs, puisqu'ils en représentent près de 55 %.

Le graphique ci-après présente la structure des placements des différentes catégories d'institutions financières.

Graphique 3 Structure des placements des institutions financières



Source : Banque de France, DESM-SESOF

2 | La destination finale des placements des ménages

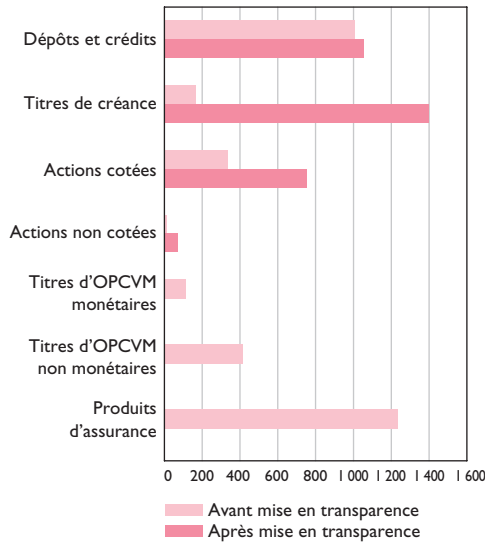
2 | 1 Une vision différente de l'allocation des placements

La mise en transparence des placements intermédiés modifie bien évidemment de manière très sensible la structure par instrument du patrimoine financier des ménages. Tout d'abord, par construction, les placements en titres d'OPCVM et en produits d'assurance disparaissent. Ensuite, les titres de créance, très peu détenus de manière directe par les ménages, voient leur part augmenter pour atteindre près de la moitié des emplois finaux des patrimoines financiers. Enfin, la part des actions est aussi fortement accrue, tandis que celle des dépôts-crédits est inchangée¹. Ainsi, la part des emplois finaux de l'épargne des ménages exposés aux fluctuations des marchés financiers se révèle sensiblement plus importante que dans les portefeuilles primaires des ménages.

¹ Étant entendu que la mise en transparence des établissements de crédit conduit, pour une bonne part, à substituer aux dépôts bancaires détenus par les ménages des crédits aux agents non financiers.

Graphique 4 Montant des actifs investis par les ménages

(en milliards d'euros)



Source : Banque de France, DESM-SESOF

emplois en actifs finaux). L'intermédiation des établissements de crédit y contribue également de manière significative (224 milliards d'euros) bien que les titres de créance représentent une proportion moins importante de leurs investissements.

Les placements des ménages en actions, cotées et non cotées, sont également fortement accrus. Les OPCVM généraux allouent notamment plus de la moitié des fonds collectés auprès des ménages aux actions cotées (54 %, soit environ 580 milliards d'euros). De même, ces organismes portent la plus grande partie des actions non cotées attribuées aux ménages (63 milliards d'euros), n'y affectant toutefois pas plus de 6 % des fonds collectés auprès de ces derniers.

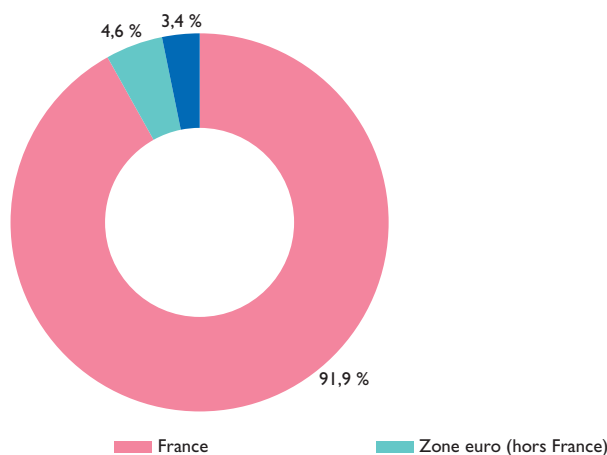
2 | 2 L'intermédiation financière contribue à la diversification internationale des placements des ménages...

La très forte proportion des titres de créance détenus indirectement par les ménages témoigne des effets de l'intermédiation des sociétés d'assurance et également des OPCVM monétaires qui investissent massivement dans ces actifs (respectivement 1 087 milliards d'euros et 107 milliards d'euros, soit 86 % et 97 % de leurs

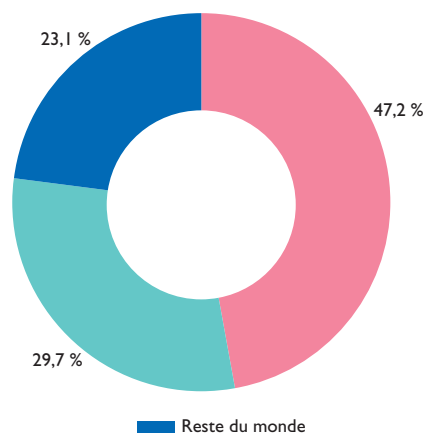
Les ménages investissent assez peu en actifs « finaux » finançant des non-résidents². Avant mise en transparence, ceux-ci représentent seulement 8,1 % de leurs placements, dont 4,6 % dans la zone euro et 3,5 % auprès du reste du monde (cf. graphiques ci-dessous).

Graphiques 5 et 6 Structure d'affectation par zone géographique des actifs finaux des ménages

Avant mise en transparence



Après mise en transparence



Source : Banque de France, DESM-SESOF

² À défaut de pouvoir mettre en transparence les institutions financières non résidentes, on considère ici comme des actifs finaux l'ensemble des avoirs des ménages sur les non-résidents, qu'il s'agisse d'agents non financiers ou financiers (cf. Annexe n° 1 « Concepts, données et sources »).

Après mise en transparence, la part des actifs « finaux » des ménages français finançant les non-résidents passe à plus de la moitié (dont près de 30 % vers la zone euro et 23 % vers le reste du monde) et celle de leurs avoirs sur des agents non financiers résidents tombe à 47 %. Les institutions financières jouent donc un rôle-clé dans la diversification géographique des emplois de l'épargne des ménages.

En effet, sur 1 euro placé auprès de celles-ci, en moyenne 57 centimes sont finalement réinvestis en actifs sur des non-résidents. Cette proportion est encore plus élevée s'agissant des OPCVM monétaires, puisque pour 1 euro placé auprès d'eux, 83 centimes sont réinvestis en actifs sur des non-résidents, dont 47 centimes sur des signatures de la zone euro hors France.

S'agissant des titres de créance, les OPCVM monétaires et les sociétés d'assurance canalisent respectivement 64 % et 70 % de leurs placements vers la zone euro dans son ensemble – France comprise. La zone euro offre, en effet, aux investisseurs institutionnels l'accès à un éventail d'émetteurs et de lignes de titres beaucoup plus large que le marché national et exempt de toute exposition au risque de change.

Globalement, les titres de créance indirectement affectés au patrimoine financier des ménages français sont majoritairement émis par des résidents de la zone euro hors France (53 % des montants après réaffectation, soit 650 milliards d'euros) ou des signatures du reste du monde (25 %), la part des émetteurs français étant un peu moins élevée (22 %).

En revanche, les réaffectations d'actions cotées concernent d'abord des titres français (40 % des montants réaffectés, soit 166 milliards d'euros), puis de la zone euro hors France (30 %) et du reste du monde (30 %). C'est principalement la mise en transparence des OPCVM généraux qui fait croître le montant des actifs finaux détenus par les ménages sous la forme d'actions cotées.

Enfin, concernant les actions non cotées, les réallocations les plus substantielles portent sur les titres d'émetteurs implantés hors de la zone euro (29 milliards d'euros), puis sur ceux émis par les résidents de la zone euro hors France (19 milliards d'euros) et ceux des émetteurs français (11 milliards d'euros).

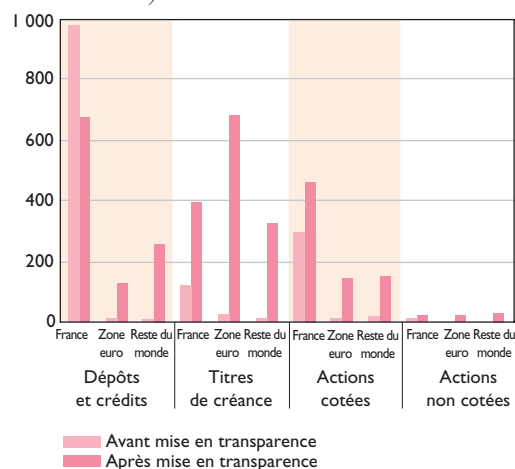
2|3 ... mais ne fait que légèrement baisser leur part investie en euros

Avant mise en transparence de leurs placements intermédiés, les ménages n'investissent que 5 % de leur patrimoine financier en devises. Environ 16 % des actifs « finaux » qu'ils détiennent directement sont placés en devises (soit 70 milliards d'euros) mais cette proportion tombe à moins de 1 % s'agissant de leurs actifs « intermédiés ».

Après mise en transparence des institutions financières, la proportion d'actifs finaux des ménages libellés en devises passe de 5 % à 16 % du total de leurs avoirs financiers. Ce renforcement de la part des actifs en devises est essentiellement dû aux allocations d'actifs des établissements de crédit et des compagnies d'assurance. Les actifs finaux libellés en devises sont principalement des titres de créance et, dans une moindre mesure, des actions cotées, voire des opérations de dépôt ou de crédit.

Graphique 7 Répartition des emplois par zone géographique (France, zone euro hors France et reste du monde)

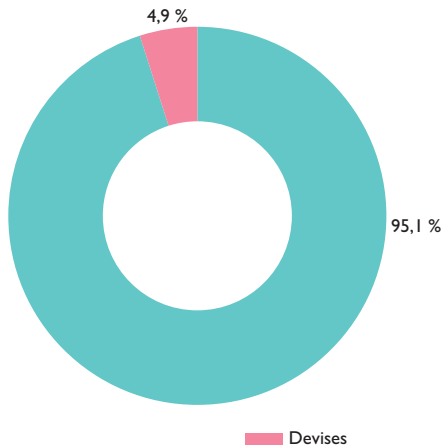
(en milliards d'euros)



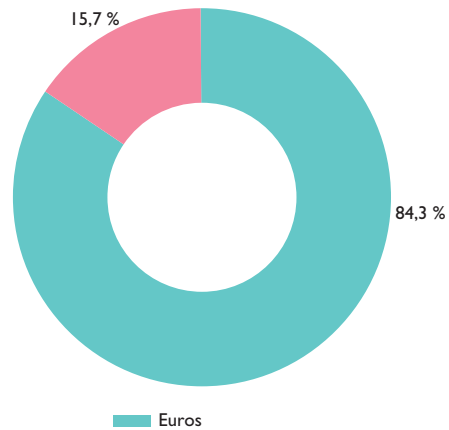
Source : Banque de France, DESM-SESOF

Graphiques 8 et 9 Proportion des actifs finaux libellés en euros et devises

Avant mise en transparence



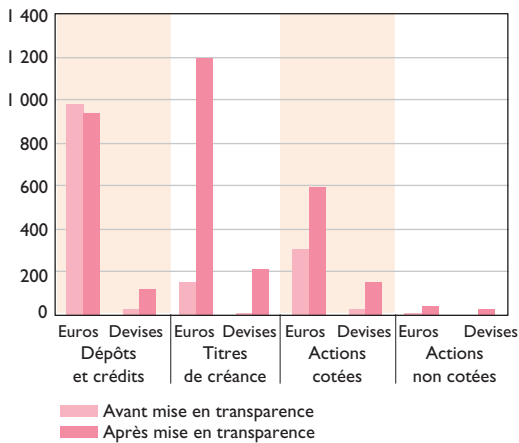
Après mise en transparence



Source : Banque de France, DESM-SESOF

Graphique 10 Comparaison de la détention d'actifs avant et après mise en transparence

(en milliards d'euros)

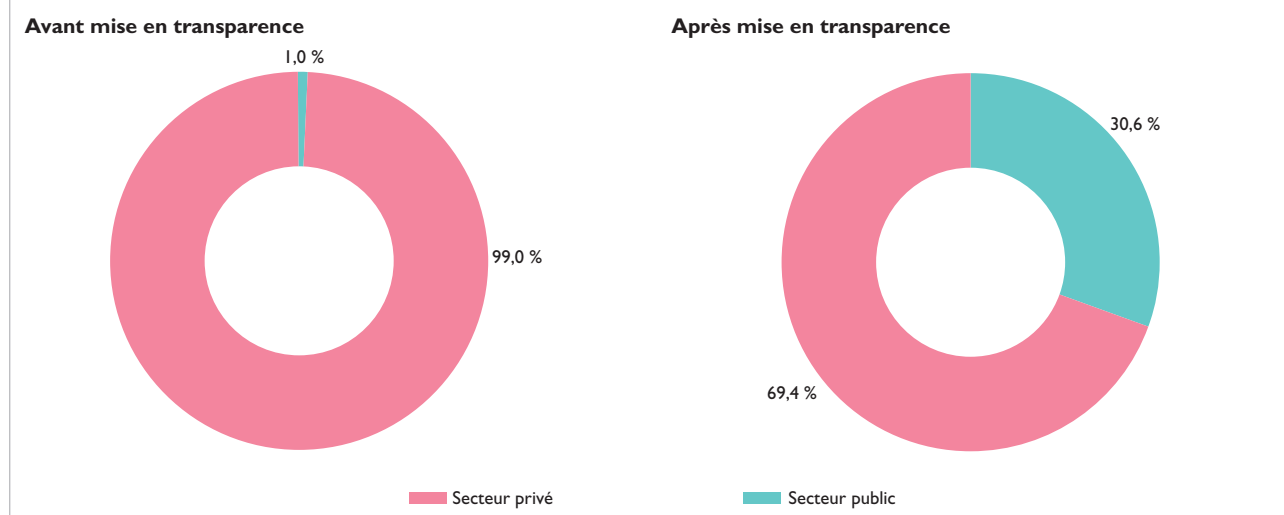


Source : Banque de France, DESM-SESOF

2 | 4 Les placements des ménages s'orientent largement vers les titres des administrations publiques françaises et de la zone euro

Après mise en transparence des institutions financières, la part des placements des ménages allouée au financement des administrations publiques françaises et des autres pays de la zone euro s'accroît de manière très significative, passant d'un niveau négligeable (14 milliards d'euros, soit 1 %), à près d'un tiers (1 093 milliards d'euros, soit 31 %).

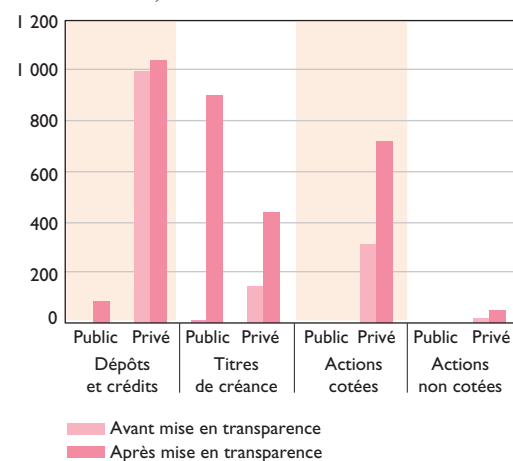
Ainsi, les institutions financières réinvestissent une bonne part des fonds qu'elles collectent auprès des ménages en titres de dette publique. L'intensité de ce réinvestissement est toutefois variable selon les catégories d'intermédiaires financiers.

Graphiques 11 et 12 Partage des actifs finaux des ménages entre financement des administrations publiques et du secteur privé


En effet, pour 1 euro placé auprès des sociétés d'assurance et des OPCVM monétaires, respectivement 54 et 51 centimes sont réinvestis en titres publics. En revanche, les établissements de crédit canalisent davantage l'épargne des ménages vers le financement du secteur privé (c'est-à-dire essentiellement les entreprises non financières et les ménages) auquel sont alloués 79 % des fonds collectés auprès de ces derniers.

Graphique 13 Répartition de l'actif des ménages entre les secteurs public et privé

(en milliards d'euros)



Source : Banque de France, DESM-SESOF

Au total, la mise en transparence des intermédiaires financiers révèle que ceux-ci emploient principalement les flux d'épargne collectés auprès des ménages à l'acquisition de titres de dette publique. Ces emplois finaux apparaissent dans le même temps assez diversifiés au plan géographique, une bonne part étant investie hors de France, en actifs des autres pays de la zone euro ainsi que du reste du monde.

Annexe I

Concepts, données et sources

L'étude porte sur les actifs financiers détenus à fin 2006 par les ménages français, y compris les entrepreneurs individuels, mais hors les institutions sans but lucratif au service des ménages (ISBLSM). Elle prend en compte l'ensemble des actifs financiers recensés par la comptabilité nationale, à l'exception des « autres comptes à recevoir ou à payer » et des « produits dérivés ». Ces actifs sont répartis entre actifs « finaux » et actifs « intermédiés ».

Les ménages détiennent :

- des actifs « intermédiés », constitués de ressources mises à la disposition des agents financiers (établissements de crédit, entreprises d'investissement, OPCVM, sociétés d'assurance) ;
- des actifs « finaux » détenus en direct et constitués d'avoirs sur les agents non financiers. Les agents non financiers sont les ménages eux-mêmes, les sociétés non financières, les administrations publiques, les ISBLSM et les non-résidents.

Les actifs finaux sur les secteurs non financiers ont pour support les instruments suivants :

- les dépôts et crédits, regroupés en une seule catégorie ;
- les titres de créance ;
- les actions cotées ;
- les actions non cotées.

Les actifs intermédiés sont constitués de placements auprès des agents financiers réalisés sur les supports suivants :

- tous les instruments évoqués précédemment comme supports des actifs finaux ;
- les titres d'OPCVM monétaires ;
- les titres d'OPCVM généraux et titres de fonds d'investissement divers ;
- les provisions techniques d'assurance.

Les actifs sont répartis selon trois critères :

- l'appartenance au secteur des administrations publiques ou au secteur privé des agents financés (créances sur le secteur privé ou sur les administrations publiques de la zone euro)¹ ;
- leur monnaie de libellé (euro ou devises) ;
- la zone de résidence des bénéficiaires finaux des financements : France/zone euro/reste du monde.

1 Les données disponibles permettent difficilement d'identifier de manière systématique les opérations réalisées avec des administrations publiques autres que celles de la zone euro.

Différentes sources d'informations ont été utilisées afin de constituer les séries de données auxquelles sont appliqués les calculs. Les principales sont les suivantes :

Les comptes financiers trimestriels (CFT)

Les CFT fournissent des informations en « qui-à-qui »² pour les opérations de dépôt et de crédit ainsi que pour la détention des ménages en OPCVM et en produits d'assurance.

Cependant, ces informations ne permettent pas toujours de faire la distinction entre les contreparties publiques et privées, notamment pour des opérations réalisées avec les non-résidents. Aussi, les dépôts et les crédits des ménages et des sociétés d'assurance vis-à-vis des non-résidents de la zone euro ont été considérés comme effectués avec des contreparties du secteur privé.

Le portefeuille-titres des sociétés d'assurance

Les portefeuilles-titres d'un échantillon de compagnies d'assurance permettent d'estimer la structure en « qui-à-qui » des actifs financiers détenus par ce secteur : à partir du code de chaque titre, on identifie le code SIREN de son émetteur puis son secteur institutionnel de rattachement en comptabilité nationale.

Ce traitement permet, après calage sur les encours des CFT, d'obtenir la détention de titres de créance et d'actions cotées des compagnies d'assurance en « qui-à-qui ». Les données de la nouvelle enquête « Protide » (cf. *infra*) permettent également de compléter certaines décompositions.

Les données sur les OPCVM

La base de données sur les OPCVM gérée par la Banque de France permet d'établir le portefeuille en « qui-à-qui » des OPCVM monétaires et généraux en titres de créance et en actions et également de ventiler sur leurs opérations de refinancement.

L'enquête auprès des conservateurs sur la détention de titres (collecte « Protide »)

La collecte « Protide », mise en place récemment par la Banque de France, vise à mesurer la détention par les agents économiques de titres inscrits en compte chez les établissements déclarants, que ces titres soient émis par des résidents ou par des non-résidents.

Les données collectées auprès d'un échantillon de déclarants ont permis d'obtenir les montants de titres de créance et d'actions détenus par les ménages et par le secteur des institutions financières monétaires.

² Les données des statistiques financières sont dites établies en « qui-à-qui » lorsque, pour une opération donnée, elles permettent d'identifier à la fois le secteur créancier et le secteur débiteur. Aisées à obtenir pour les opérations de dépôts et de crédits avec les IF, les données de « qui-à-qui » sont plus délicates à établir pour les opérations sur titres, notamment parce que l'émetteur n'a pas toujours une connaissance précise de la répartition par secteur détenteur.

Annexe 2

La mise en transparence des institutions financières

La ventilation des placements des ménages en fonction de leur destination finale est obtenue en appliquant une méthode de calcul matriciel initialement développée par M. Boutillier¹. Dans le prolongement de travaux récemment menés à la Banque de France², la mise en transparence a été étendue à l'ensemble des intermédiaires financiers (IF).

On considère comme actifs finaux l'ensemble des financements dont bénéficient directement les agents non financiers (ANF) : ménages, sociétés non financières résidentes, administrations publiques, institutions sans but lucratif au service des ménages et non-résidents. Les institutions financières sont les établissements de crédit et les entreprises d'investissement (EC), les OPCVM monétaires (OM), les OPCVM généraux (OG) et les sociétés d'assurance (SA).

Soit le vecteur f des montants d'actifs finaux détenus directement par les ménages sur des ANF :

$$f = \begin{pmatrix} dc \\ tc \\ ac \\ an \end{pmatrix} = \begin{pmatrix} \text{Dépôts et crédits} \\ \text{Titres de créance} \\ \text{Actions cotées} \\ \text{Actions non cotées} \end{pmatrix}$$

Soit le vecteur b correspondant aux montants investis par les ménages auprès des différentes catégories d'IF, tous actifs confondus :

$$b = \begin{pmatrix} EC \\ OM \\ OG \\ SA \end{pmatrix}$$

Soit enfin le vecteur e correspondant au portefeuille total des ménages et donc à la juxtaposition des vecteurs f et b :

$$e = \begin{pmatrix} f \\ b \end{pmatrix}$$

On définit ensuite la matrice A des parts des différents types d'actifs finaux dans le bilan des différentes catégories d'IF.

$$A = \begin{pmatrix} a_{dc}^{EC} & a_{dc}^{OM} & a_{dc}^{OG} & a_{dc}^{SA} \\ a_{tc}^{EC} & a_{tc}^{OM} & a_{tc}^{OG} & a_{tc}^{SA} \\ a_{ac}^{EC} & a_{ac}^{OM} & a_{ac}^{OG} & a_{ac}^{SA} \\ a_{an}^{EC} & a_{an}^{OM} & a_{an}^{OG} & a_{an}^{SA} \end{pmatrix}$$

1 Cf. M. Boutillier, A. Labye, C. Lagoutte, N. Lévy, A. Mapacko Priso, V. Oheix, S. Justeau et B. Séjourné (2002) : « Placements des ménages en Europe : le rôle des intermédiaires financiers se transforme en profondeur », *Économie et Statistiques*, n° 354. Une version plus récente et plus exhaustive (États-Unis et Japon) a été rédigée par Boutillier, Lévy et Oheix (2007) : « Financial intermediation in developed countries: heterogeneity, lengthening and risk transfer », *document de travail, Économie* n° 2007-22, Université Paris X.

2 Cf. D. Marionnet (2006) : « The final financial investment of French households », présenté à la conférence de l'Irving Fisher Committee, Bâle, août.

La matrice B est constituée des parts dans le bilan de chacune des catégories d'IF de leurs actifs sur des IF. Sur la diagonale figure donc la part d'actif que chaque famille d'IF détient sur elle-même.

$$B = \begin{pmatrix} b_{EC}^{EC} & b_{EC}^{OM} & b_{EC}^{OG} & b_{EC}^{SA} \\ b_{OM}^{EC} & b_{OM}^{OM} & b_{OM}^{OG} & b_{OM}^{SA} \\ b_{OG}^{EC} & b_{OG}^{OM} & b_{OG}^{OG} & b_{OG}^{SA} \\ b_{SA}^{EC} & b_{SA}^{OM} & b_{SA}^{OG} & b_{SA}^{SA} \end{pmatrix}$$

Les catégories d'IF créancières sont représentées en colonne et les catégories débitrices en ligne. Les coefficients de cette matrice sont également des pourcentages du total de l'actif des catégories d'IF créancières.

On construit ensuite la matrice P à partir des matrices A et B définies ci-dessus.

$$P = \begin{pmatrix} I_4 & A \\ 0 & B \end{pmatrix}$$

En multipliant le vecteur e par la matrice P , on obtient le vecteur $e_1 = (Pe)$ qui enregistre une première réaffectation de l'épargne des ménages placée auprès des IF.

$$e_1 = P.e = \begin{pmatrix} f + Ab \\ Bb \end{pmatrix}$$

Le terme Ab enregistre la répartition entre les différentes classes d'actifs finaux des avoirs b détenus par les ménages auprès des différentes catégories d'IF, proportionnellement à leur part dans le bilan de chacune de ces catégories. Le terme Bb représente la répartition des avoirs des ménages b entre les actifs sur les différentes catégories d'IF, proportionnellement à leur part dans le bilan de chacune de ces catégories.

En répétant l'opération de multiplication du vecteur e_1 par la matrice P , on réaffecte en actifs finaux des ménages une nouvelle part du vecteur Bb des actifs intermédiaires :

$$e_2 = P.e_1 = \begin{pmatrix} f + Ab + ABb \\ B.Bb \end{pmatrix}$$

Au terme de n itérations de ce processus, on obtient le résultat suivant :

$$e_n = \begin{pmatrix} f + (A + AB + \dots + AB^{n-1}) b \\ B^n b \end{pmatrix}$$

Comme tous les éléments de A et de B appartiennent à l'intervalle $[0,1]$ (car A et B sont des matrices de proportions), B^n tend vers 0 quand n tend vers l'infini.

Par ailleurs, la série $A + AB + AB^2 + \dots + AB^{n-1}$ converge vers $A(I_4 - B)^{-1}$ quand n tend vers l'infini.

en tend donc vers :

$$e_n = \begin{cases} f + A(I - B)^{-1} \cdot b \\ 0 \end{cases}$$

Et en définitive, le vecteur f^* des montants investis dans chacun des actifs finaux est donné par :

$$f^* = f + A(I_4 - B)^{-1} \cdot b$$

The final financial investment of French households

Denis Marionnet¹

1. Introduction

This study wants to spot and analyse the “final financial instruments” in which French households’ financial savings are invested by making transparent their intermediated investments with mutual funds and life insurance corporations. It attempts to identify where French households’ savings is finally allocated (France or abroad), who bears the liquidity risk and the market risk. Doing so, the role of financial intermediaries such as insurance corporations and mutual funds may be specified more accurately.

Households’ allocation of savings is first determined by their choice between financial and non-financial investment. Non-financial investment is mainly devoted to housing and it presently takes the lion’s share in the wealth structure of households in France due to the rise in real estate prices over the last years. Indeed, the share of housing in total households’ wealth has risen from 53% in 1994 to 61.6% in 2005 and has always exceeded the share of their financial assets (see annex 3). Nevertheless, the reason for holding a house/flat is usually primarily influenced by socio-demographic motivations (demography, social behaviour, labour market...). We will thus focus on financial investment hereafter.

As regards the share they allocate to their financial investment, households have to choose whether to invest directly on financial markets or to use the services of financial intermediaries such as banks for deposits or non-bank institutions for mutual fund shares or life insurance contracts.

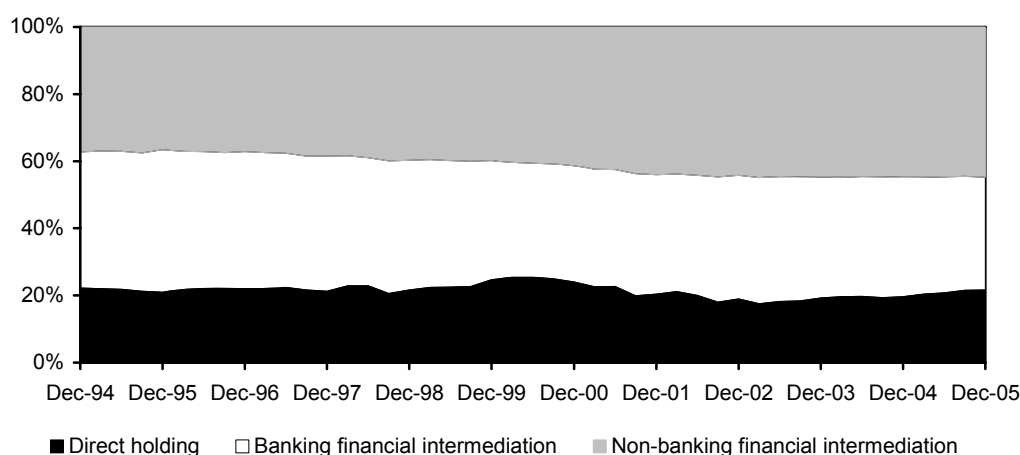
Among financial intermediaries, the weight of non-bank financial intermediaries, namely investment funds and insurance corporations, has increased at the expense of traditional banking intermediation. Indeed, although the share of intermediated households’ investments is stable around 79% over the period 1994-2005 the proportion invested in deposits with monetary financial institutions has decreased from about 41% in the mid nineties to 34% in 2005, while the share of non-bank financial intermediation has increased symmetrically.²

¹ Banque de France, Financial Accounts Division. For further information on this paper, please contact: Denis Marionnet: denis.marionnet@banque-france.fr. The author would like to thank Dominique Durant, Olivier Cousseran and Michel Boutillier for their many helpful comments on this work. The views expressed in this paper are those of the author and do not necessarily reflect those of the Banque de France.

² It must be noted that, in France, banks have significantly contributed to this development by creating investment fund subsidiaries and insurance corporation subsidiaries, respectively registered in national financial accounts under the sectors Other financial intermediaries (S.123) and Insurance corporations and pension funds (S.125).

Chart 1

Intermediated and non-intermediated financial investment of households¹



¹ In this chart and all the following ones the total financial assets of households include all the instruments reported in financial accounts except prepayments of insurance premiums and reserves for outstanding claims (AF62) and other accounts receivable/payable (AF7) which hold a specific role.

Source: Banque de France (Financial Accounts).

In fact, through these intermediated instruments, households finally hold bonds, shares and deposits, invested nationally or in other economies, in euros or in foreign currencies. Sometimes, two intermediaries are involved in the intermediation process as is the case when insurance corporations invest in mutual fund shares for example.

Households' financial investment, as described in financial accounts, is first analysed in section 2. The results of the transparency making process are presented in section 3. In section 4, the results are pushed a step forward identify the main risks borne by households. The methodology used to make non-bank intermediaries transparent is presented in annex 1. The detailed breakdowns used for the construction of the key indicators analysed before and after transparency are listed in annex 2.

The term "before transparency" hereafter refers to the analysis of households' financial assets based on the use of financial accounts, whereas the term "after transparency" refers to the analysis of households' financial investment in terms of "final" instruments.

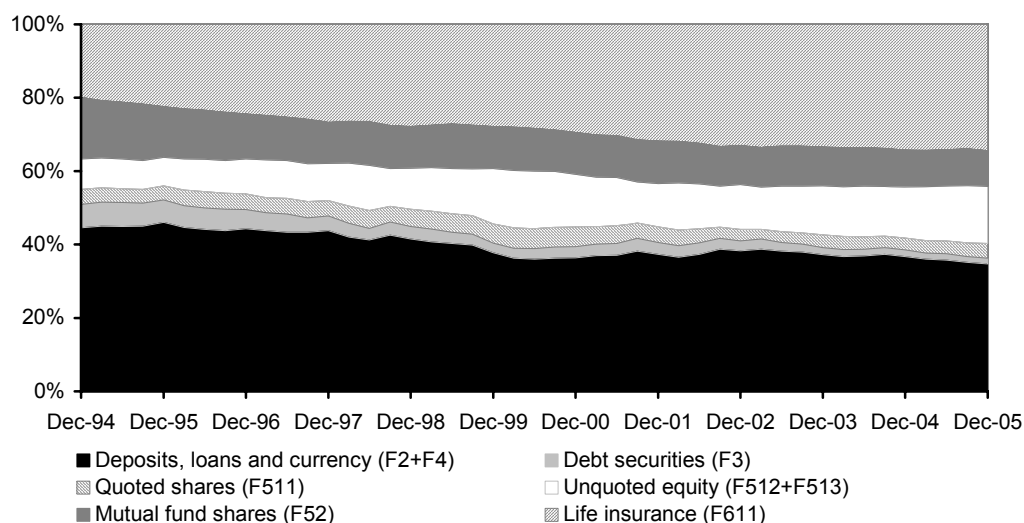
2. Households' financial wealth before transparency

While remaining predominant, the proportion of households' financial wealth held in the form of deposits, loans and currency declined almost continuously between December 1994 and December 2005, shrinking from 45% to 35%.³ This fall is due to the attractiveness of competing instruments, particularly life insurance products.

³ Loans in households financial assets are mainly shareholders loans and they represent a very small part of households' assets (1.1% in December 2005). Similarly, the share of currency held by households is only 1.3% in December 2005.

Chart 2

Initial structure of households' financial investments



Source: Banque de France (Financial Accounts).

As regards households' direct investment on capital markets, two opposite developments can be observed. Whereas the share of debt securities has sharply fallen from 6.4% to 1.5%, the proportion of shares and other equity in households' financial wealth has risen from 12,3% to 19.6% between 1994 and 2005. This rise is mainly due to the increase in the value of unquoted equity (*unquoted shares and other participation*) as, in spite of some fluctuations, quoted shares remained around a proportion of 4% of households' financial wealth.

The proportion of money market fund shares in households' financial wealth has declined from 5.7% in the fourth quarter of 1994 down to 1.0% in the fourth quarter of 2005. The share of other investment funds has also decreased but to a lesser extent (from 11.1% down to 8.7% over the same period).

Finally, as in many other European countries, life insurance experienced the most rapid and constant growth since the mid-90's in France. Indeed, the share of life insurance in households' wealth has risen from 19.9% in December 1994 up to 34.4% in December 2005.

3. Households' financial wealth after transparency

After transparency, households' financial wealth is shared out among the following "final" instruments:

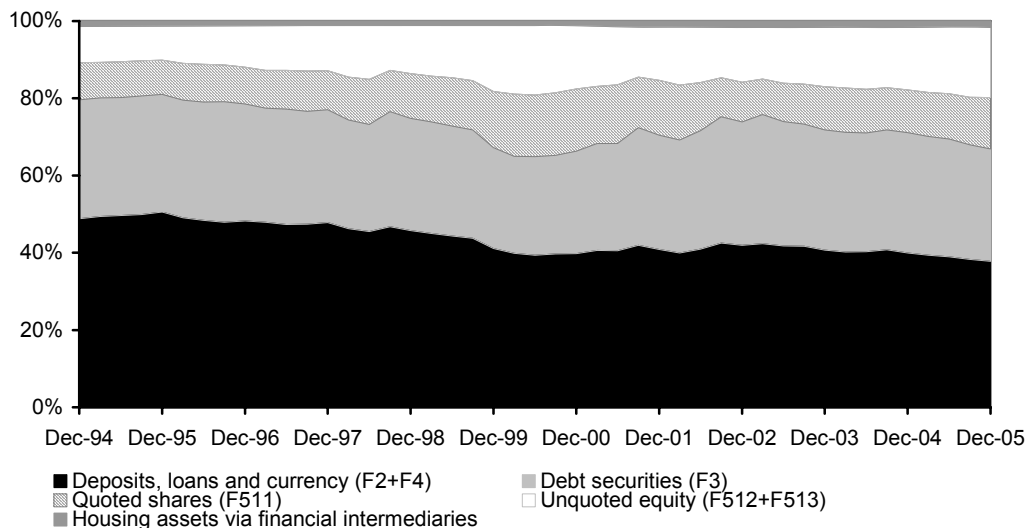
- deposits, loans and currency (AF2+AF4),
- debt securities (AF3),
- quoted shares (AF511),
- unquoted equity (AF512+AF513),
- "additional real-estate assets" held *via* financial intermediaries (life insurance corporations and real-estate investment funds).

Thanks to the data sources used for the transparency process,⁴ all these final instruments are available with the following breakdowns:

- less or equal 1 year / over 1 year maturity,
- national currency / foreign currencies,
- resident counterpart / non-resident counterpart.

Chart 3

Households' financial investments in final instruments



Source: Banque de France (Financial Accounts and Investment Funds Database).

Deposits, loans and currency are still predominant in households' final financial wealth although their share is also declining over the period (*from 49% down to 38%*). This share is not significantly changed by the transparency making process as non-bank financial intermediaries do not significantly re-invest the funds they raise from households in deposits.

Debt securities are competing with shares and other equity for the second place, their ranking depending on the fluctuations in equity valuations.

Compared to direct holding, the final instrument debt securities is the one which increases the most, as it hovers around 30% over the period against a maximum proportion of direct holding of 6.4% before transparency. Insurance companies are mainly responsible for this (see chart 4) as, at December 2005, 78% of households' final investment in debt securities are made via life insurance, 17% via mutual fund shares while the remaining 5% are held directly.

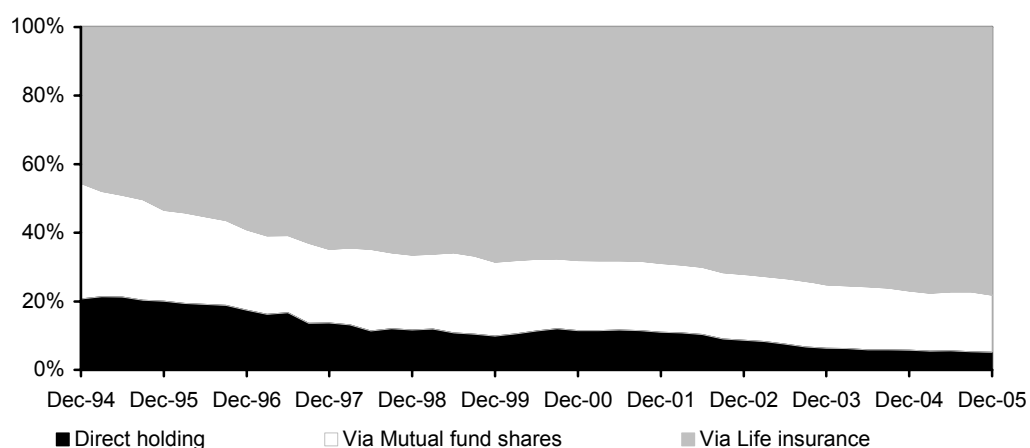
Shares and other equity are also increasing their weight in households' financial wealth after transparency, albeit in a lesser extent for unquoted equity than for quoted shares. As a matter of fact, unquoted equities are in average held directly at more than 85%, a smaller proportion (20%) being held via insurance corporations (see chart 6). Quoted shares are held in a fairly even manner: 42% *via* life insurance, 30% directly and 28% *via* mutual funds.

Over the period, shares and other equity present an upward trend, rising from an average 18% in 1994-1995 up to an average 30% in 2005.

⁴ Cf. methodology presentation in annex 1.

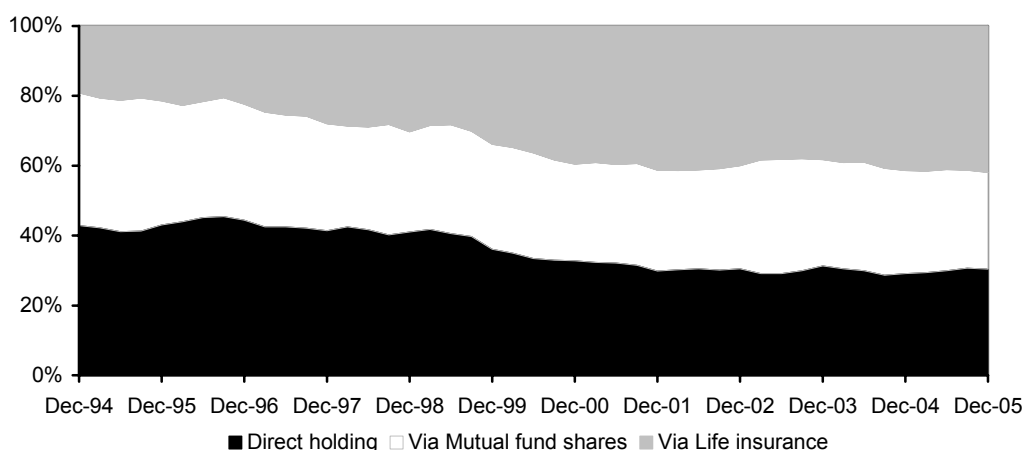
Finally, the additional real-estate related assets held by households via financial intermediaries are very low compared to both the other final instruments and the housing assets held directly (EUR 5,547 billions at December 2005),⁵ as they only represent between 1.1% and 1.6% of households' final investment.

Chart 4
Direct and intermediated households' holdings of debt securities
 In % of all final holdings of the instrument



Source: Banque de France (Financial Accounts and Investment Funds Database).

Chart 5
Direct and intermediated households' holdings of quoted shares
 In % of all final holdings of the instrument



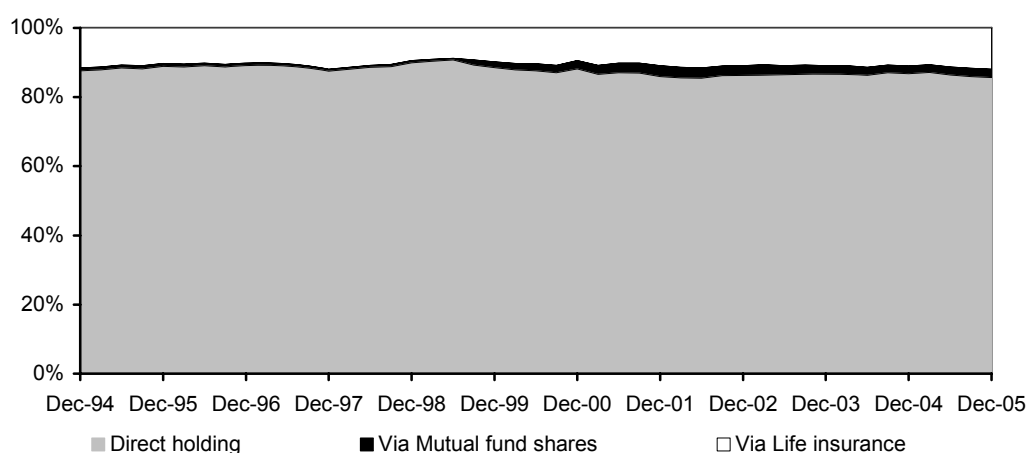
Source: Banque de France (Financial Accounts and Investment Funds Database).

⁵ See annex 3.

Chart 6

Direct and intermediated households' holdings of unquoted equity

In % of all final holdings of the instrument



Source: Banque de France (Financial Accounts and Investment Funds Database).

4. Other analyses derived from the transparency making-of results

The existing nomenclature for the description of households' financial wealth does not always provide sufficient details for a complete analysis of the risks borne by households (see O'Hagan, 2004).

The transparency making-of process helps to build a set of key indicators related to risks borne by households such as the weight of assets bearing a risk of loss of capital, the share of long-term instruments and of liquid assets.

Transparency helps also to assess currency risk and geographical diversification. This allows a more thorough analysis of households' financial assets.

4.1 Share of risky assets in households' wealth

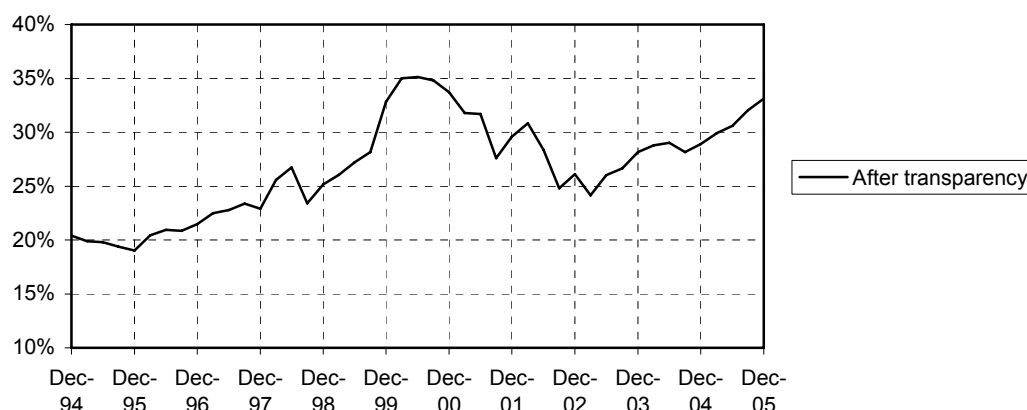
We define risky assets as assets highly sensitive to price fluctuations, and thus bearing a risk of capital loss. They include shares and other equity as regards financial assets and housing assets as regards non-financial assets.

ESA95 nomenclature for financial accounts does not allow a complete analysis of households' risky assets as instruments such as mutual fund shares and life insurance contracts conceal different kinds of risk (non unit-linked and unit-linked contracts themselves referring to different types of securities, bond funds as well as equity and mixed funds). The transparency making method provides the necessary breakdowns.

The proportion of risky assets in households' financial wealth illustrates and confirms the fact that, in France, households tend to hold more and more risky assets over time: the trend is clearly upward in spite of a decrease since the high of mid-2000 corresponding to the highs of the stock markets and the "Internet bubble" (see chart 7). At December 2005, 33% of households' financial wealth is invested, directly or via non-banking financial intermediaries, in risky assets.

Chart 7

Share of risky assets in households' financial wealth

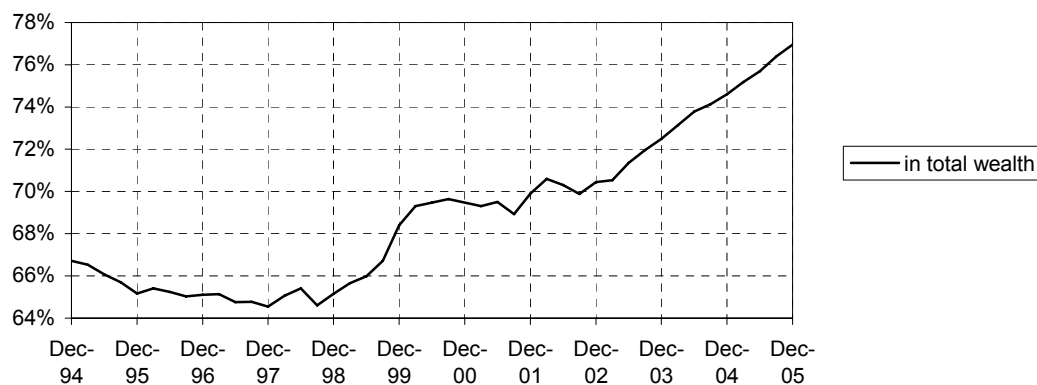


Source: Banque de France (Financial Accounts and Investment Funds Database).

Risky assets are of course predominant (77%) when housing assets are included and the trend towards more risk exposure is then clearer owing to the rapid rise in housing prices since 2000 (see chart 8).

Chart 8

Share of risky assets in households' financial and non-financial wealth



Source: Banque de France (Financial Accounts and Investment Funds Database).

4.2 Share of long-term assets

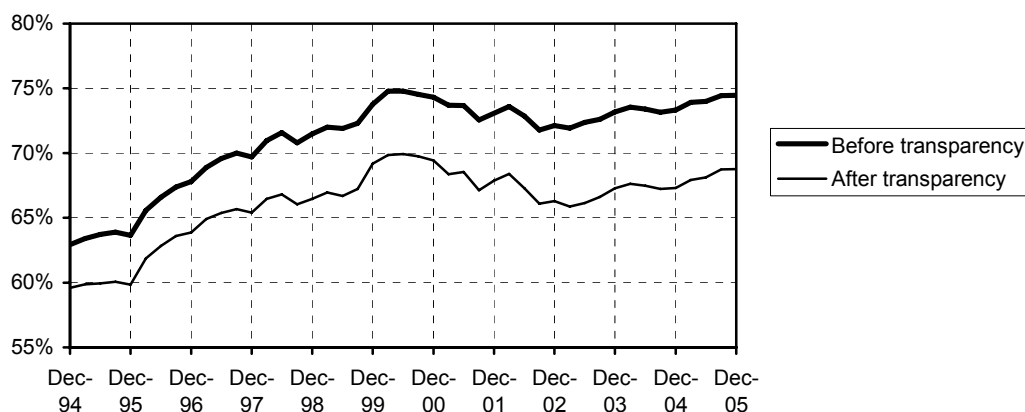
The maturity exposure of households financial investments provides insights into the evolution of the horizon of investment of households over time. The retained borderline is the one of the financial accounts: less or equal to one year and over one year, ie short term versus medium and long term.

The share of long-term assets is higher before than after transparency because households' assets in other mutual fund shares and life insurance corporations are all considered as long-

term assets - indeed they are, from the households point of view - whereas these intermediaries hold a significant proportion of assets with a maturity of less than 1 year.

Both calculations confirm that households increasingly hold long-term assets (see chart 9). Their investment horizon gets longer over time, putting aside the consequences of the rise and fall of stocks prices. This upward trend can be related to the growing concerns of French households about their future pensions and their financing, probably with the objective to complement pay-as-you-go pension rights.

Chart 9
Share of long-term assets in households' financial wealth



Source: Banque de France (Financial Accounts and Investment Funds Database).

4.3 Share of liquid assets

Liquidity is considered as the ability to sell relatively rapidly the underlying instruments in order to convert it into cash.

The share of liquid assets in households' financial wealth after transparency is above the proportion before transparency and strikingly high. The difference is increasing from +25% in 1994 up to +35% in 2005. The main reason for this difference lies in the fact that, due to their high holding of quoted securities, life insurance corporations are liquid on their asset side whereas households' assets in life insurance may not be considered as liquid products insofar as tax-exemption⁶ on realised capital-gains occurs after 8 years.

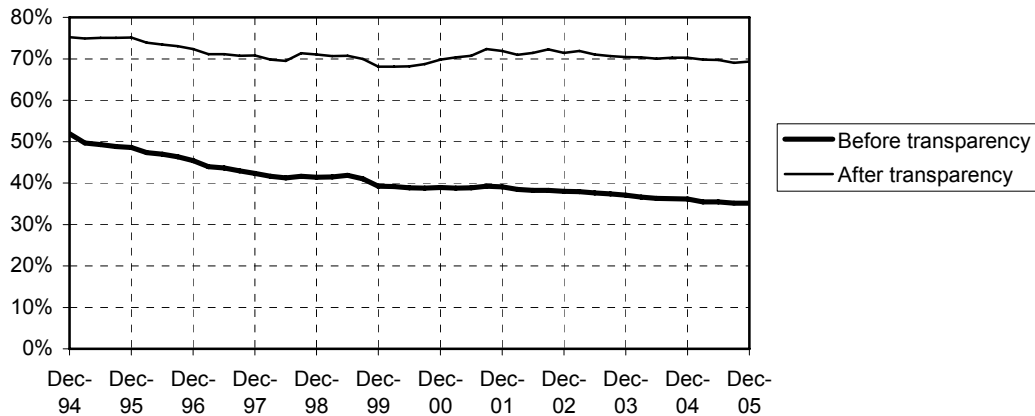
Besides, the decrease in the proportion of liquid assets before transparency (from 50% down to 35%) is due to the rise in life insurance contracts in households assets.

Nevertheless, a different picture would appear if banking intermediaries were made transparent. as banks hold an important share of non-liquid assets (loans mainly) on their asset side.

⁶ Up to a maximum amount of annual withdrawal.

Chart 10

Share of liquid assets in households' financial wealth



Source: Banque de France (Financial Accounts and Investment Funds Database).

4.4. Foreign currency risk exposure and proportion of assets implying non-residents

In this sub-section, we analyse both the currency risk exposure of households to by distinguishing assets denominated in national currency versus assets denominated in other currencies and the exposure of households' investment vis-à-vis non-resident counterparts.

Currency risk exposure

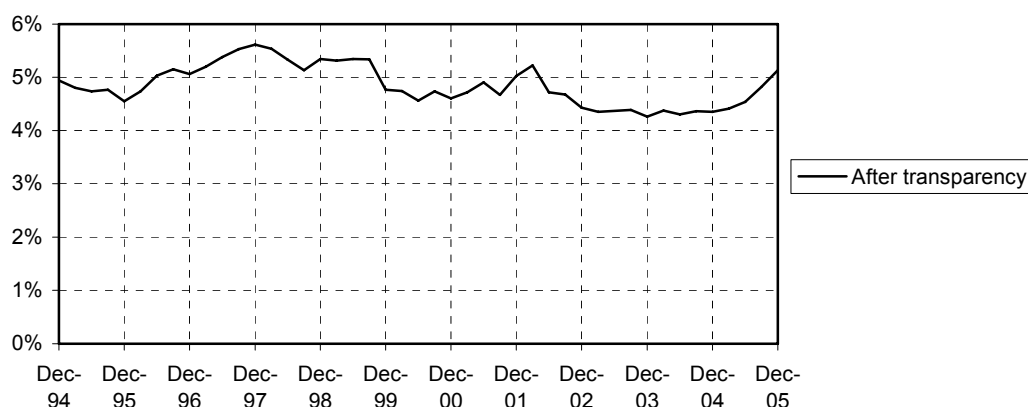
As it is not possible with French financial accounts to distinguish euro-denominated assets from foreign currency denominated assets for the instruments "other mutual fund shares" and "life insurance contracts", households' currency risk exposure can only be calculated after transparency.

The proportion of assets denominated in foreign currencies after transparency lies a little bit above 5% before the euro changeover and around 4.5% after. The euro changeover permitted geographical diversification and lowered the need for bearing currency risk for that purpose.

In any case, French households bear a low and relatively stable foreign currency risk.

Chart 11

Share of households' financial assets invested in foreign currencies



Source: Banque de France (Financial Accounts and Investment Funds Database).

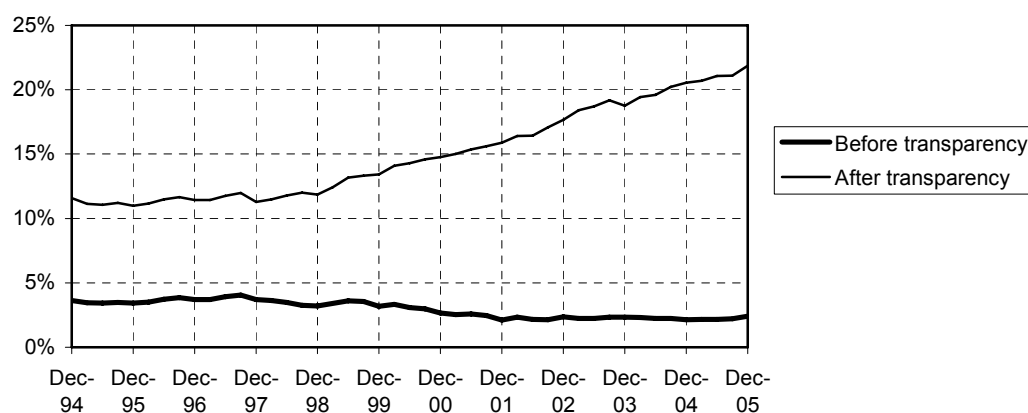
Exposure vis-à-vis non-resident counterparts

Before transparency, the proportion of households' assets invested in assets concerning non-resident counterparts is quite low, decreasing from 4% to 2% over the period, reflecting the fact that households primarily transact with resident intermediaries and do not easily invest directly with rest of the world counterparts.

However, geographical diversification also comes from financial intermediaries and is increasing. After transparency, the proportion of assets concerning non-resident issuers or counterparts begin to rise in 1998, from 11.5% up to 21.9% in December 2005. This increase has been made possible by the euro, which permits geographical diversification without currency risk. As a matter of fact, insurance corporations are prudentially limited in their capacity to incur such a risk.

Chart 12

Share of households' financial assets invested with non-resident counterparts



Source: Banque de France (Financial Accounts and Investment Funds Database).

5. Conclusion

As the weight of intermediated instruments in households' financial wealth increases in many countries, the interest for a thorough analysis of these diversified and complex financial operations gets more and more relevant. The use of a transparency making-of method is one way of doing so, allowing to complement the use of financial accounts for the analysis of households' financial wealth.

Thus, as regards French households' financial investment, the transparency making process confirms the predominance of deposits but also their relative decline. It also illustrates the fact that households' holding of debt securities heavily increases through insurance corporations and competes for the second rank with shares and other equities. Among the latter, quoted shares benefit from indirect holding via financial intermediaries, while unquoted shares are mainly held directly.

Even more interesting is the light shed on the different types of risk borne by households:

- assets with market risk increase, and represent a fairly high proportion when housing assets are also considered,
- the maturity of the households' financial assets is longer than that of the assets of insurance corporations and mutual funds to which they entrust their savings. Besides, due to the importance of life insurance investments, it is also less liquid,
- households' financial investment is increasingly geographically diversified owing to the rise in their life insurance investments. However, thanks to the euro, this diversification has not induced an increase in their foreign risk exposure.

Households' investment with monetary financial institutions (*deposits*) have not been made transparent. This is no doubt one way for further investigations although extending the transparency making method to this part of the households' financial wealth doesn't seem straightforward and would deserve further in-depth deliberations.

Annex 1: Presentation of the transparency-making method retained

We present here the method retained for making transparent households' investments with non-bank financial intermediaries.

As mentioned in Introduction, the analysis of household financial wealth does not precisely reveal the instruments on which households really invest their money, especially for life insurance and mutual fund shares. Nevertheless, it is possible to make this intermediation process transparent by using the asset structure of these financial intermediaries and apply it to households' investment in mutual fund shares and life insurance.

Thus, the final investment of households can be described with the following "final" instruments:

- deposits, loans and currency (AF2+AF4),
- debt securities (AF3),
- shares and other equity (AF51), with the distinction quoted / unquoted,
- and "additional housing assets" held via financial intermediaries (as life insurance corporations and mutual fund shares invest in housing).

Yet, as financial intermediaries also invest part of their assets with other financial intermediaries, this transparency-making method has to be applied several times so as to completely eliminate intermediated investments from the structure applied to households intermediated assets.

Indeed, life insurance corporations invest in mutual fund shares and mutual funds are allowed to invest into other mutual fund shares. Therefore, after one round of "re-allocation", mutual fund shares remain in households' assets. Thus, the remaining amount of investment in mutual fund shares should be replaced by the structure of their investment, giving again a residual amount invested in mutual fund shares,... This process corresponds to an arithmetic sum that can be mathematically solved with the corresponding formula :

Presentation of the arithmetic formula to calculate the sum of the amounts made transparent when re-invested in the same intermediated instrument

The example is presented with money market fund shares but applies similarly for other mutual fund shares.

If M represents the amount invested in money market fund shares by households, p the proportion that money market funds re-invest in money market fund shares and a the proportion that money market fund shares invest in a “final” asset, then the assets re-invested after the first application of the asset structure is given by T_1 , etc...:

$$T_1 = aM$$

$$T_2 = apM$$

$$T_3 = ap^2M$$

...

$$T_n = ap^{n-1}M$$

Therefore, the total amount invested in a final asset through money market fund shares is given by S :

$$S = T_1 + T_2 + T_3 + \dots + T_n = aM + apM + ap^2M + \dots + ap^{n-1}M$$

$$S = a \frac{1 - p^n}{1 - p} M$$

$$S \xrightarrow{n \rightarrow \infty} a \frac{1}{1 - p} M$$

The data sources used are described in the table below :

Code	Instrument	Data source used for the asset structure
F521	Money market fund shares	The asset structure of money market investment funds has been calculated from the quarterly Investment funds database of the Banque de France and applied to households' assets in money market fund shares. For securities, the structure has been derived from the quarterly security-by-security portfolio of money market funds available since March 1999. Some assumptions have been made by the author for certain breakdowns not always available since the beginning of the period.
F522 + F523	Other mutual fund shares	The asset structure of other investment funds has been calculated from the quarterly Investment funds database of the Banque de France and applied to households' assets in other mutual fund shares, except those invested in foreign funds (see below) and those invested in housing funds which are invested in real estate. For securities, the structure has been derived from the quarterly security-by-security portfolio of investment funds available since March 1999. March 1999 structure is used from December 1994 to December 1998 in the absence of any other information. Assets directly invested by households in foreign mutual fund shares have not been made transparent as it is not possible to elaborate an asset structure for them.

Code	Instrument	Data source used for the asset structure (cont)
F611	Life insurance contracts	The asset structure of insurance corporations has been calculated from quarterly financial accounts. Then, quarterly reports from the Insurance Corporations Supervisory Commission have been used in order to elaborate a structure for life insurance corporations only. ¹ This structure has been applied to households' assets in life insurance reserves. Besides, although not available in financial accounts, the assets invested in housing assets by life insurance corporations in representation of insurance technical reserves have been re-introduced in order to obtain the proportion of assets invested in real estate by life insurance corporations.

¹ Insurance corporations are divided into three broad categories by the Insurance Corporations Supervisory Commission: life insurance corporations, non-life insurance corporations (damage) and re-insurance corporations.

The asset structures of mutual fund shares and life insurance corporations provide the following breakdowns:

- assets with an initial maturity of less or equal 1 year / over 1 year,
- assets invested in euros / foreign currencies,
- assets invested with residents / non residents.

Annex 2: Detailed groupings used for risk analyses

Risky and non-risky assets after transparency	
Non-risky assets	
AF2+AF4	Deposits, currency and loans
AF3	Debt securities
Risky assets	
AF51	Shares and other equity
AN_transp	Other housing assets via non-bank financial intermediaries

Analysis in terms of maturity before transparency	
Short-term assets (\leq 1 year)	
AF2+AF4	Deposits, currency and loans with a maturity under 1 year
AF331	Short-term debt securities
AF52_part	Money market fund shares
Long-term assets ($>$ 1 year)	
AF2+AF4	Deposits, currency and loans with a maturity over 1 year
AF332	Long-term debt securities
AF51	Shares and other equity
AF52_part	Other mutual fund shares
AF611	Life insurance

Analysis in terms of maturity after transparency	
Short-term assets (\leq 1 year)	
AF2+AF4_short	Deposits, currency and loans less or equal 1 year
AF331	Short-term debt securities
Long-term assets ($>$ 1 year)	
AF2+AF4_long	Deposits, currency and loans over than 1 year
AF332	Long-term debt securities
AF51	Shares and other equity
AN_transp	Other housing assets via non-bank financial intermediaries

Analysis in terms of liquidity before transparency

Liquid Assets

AF2+AF4	Deposits, currency and loans with a maturity under 1 year
AF3	Debt securities
AF511	Quoted shares
AF521	Money market fund shares
AF52_part	Mutual fund shares (general public funds + foreign funds)

Non-liquid assets

AF2+AF4	Deposits, currency and loans with a maturity over 1 year
AF512+AF513	Unquoted equity
AF52_part	Real estate fund shares and other non-liquid mutual fund shares
AF611	Life insurance

Analysis in terms of liquidity after transparency

Liquid assets

AF2+AF4_short	Deposits, currency and loans less or equal 1 year
AF33	Debt securities
AF511	Quoted shares

Non-liquid assets

AF2+AF4_long	Deposits, currency and loans over than 1 year
AF512+AF513	Unquoted equity
AN_transp	Other housing assets via non-bank financial intermediaries

Analysis in terms of currency risk after transparency

Liquid assets

AF2+AF4_short	Deposits, currency and loans in euros
AF33	Debt securities in euros
AF51	Shares and other equity in euros
AN_transp	Other housing assets via non-bank financial intermediaries

Non-liquid assets

AF2+AF4_short	Deposits, currency and loans in foreign currencies
AF33	Debt securities in foreign currencies
AF51	Shares and other equity in foreign currencies

**Proportion of assets invested with
non-resident counterparts before transparency**

Financial investments with resident counterparts

AF2+AF4_res	Deposits, currency and loans with residents
AF33_res	Debt securities issued by resident companies
AF51_res	Shares and other equity issued by French companies
AF521	MMFS issued by resident MFI
AF52_res	Other mutual fund shares invested with resident investment funds
AF611	Life insurance contracts

Financial investments with non-resident counterparts

AF2+AF4_non-res	Deposits, currency and loans with non-residents
AF33_non-res	Debt securities issued by non-resident companies
AF51_res	Shares and other equity issued by non-resident companies
AF52_non-res	Mutual fund shares directly invested by households with foreign investment funds

**Proportion of assets invested with
non-resident counterparts after transparency**

Financial investments with resident counterparts

AF2+AF4_res	Deposits, currency and loans held with residents
AF33_res	Debt securities issued by residents
AF51_res	Shares and other equity issued by residents
AN_transp	Other housing assets via non-bank financial intermediaries

Financial investments with non-resident counterparts

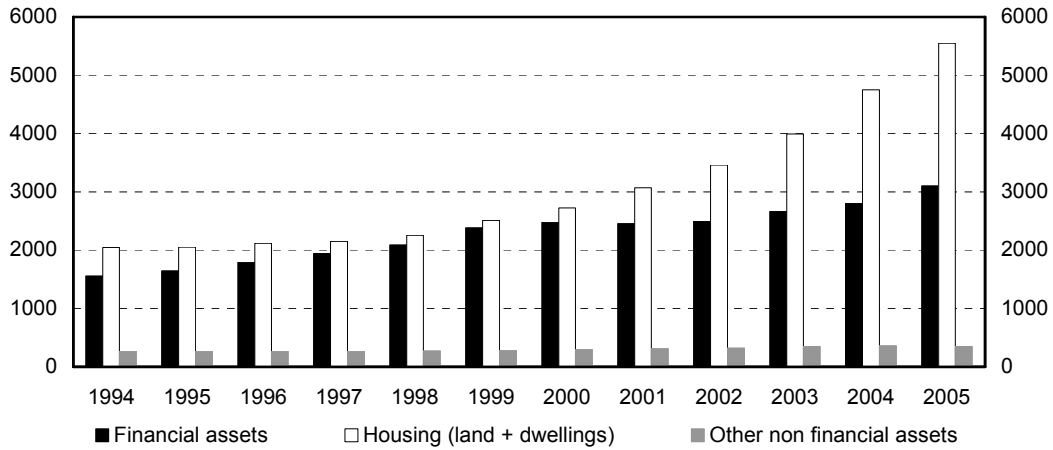
AF2+AF4_res	Deposits, currency and loans invested with non-residents
AF33_res	Debt securities issued by non-residents
AF51_res	Shares and other equity issued by non-residents

Annex 3: French households' total wealth

Chart 13

French households' total wealth

In EUR billions



Sources: Banque de France (Financial Accounts) and INSEE.

References

Boutillier M et al.: "Placements des ménages en Europe : le rôle des intermédiaires financiers se transforme en profondeur", *Economie et Statistiques*, n°354, pp. 85-102, 2002.

Durant D: "Proposals for a more precise nomenclature of household assets: comments", Working Party on Financial Statistics, OECD, 2004.

O'Hagan P: "Canadian System of National Accounts: supplementary asset detail in the personal sector", Working Party on Financial Statistics, OECD, 2004.

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**Implicit social security and pension wealth in households' assets in
the US and France¹**

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¹ The opinions expressed in this article are those of the authors and do not necessarily express the views of the Banque de France or the Bureau of Economic Analysis.

The main purpose of this paper is to compare the present financial situation of current and future retirees in the US and France. The two countries have a very different retirement income systems, the first relying more on funded pension schemes sponsored by employers and on private asset accumulation, and the latter relying more on social security and pay-as-you go financing.

The situation of future retirees is gauged by the total wealth of households, including real estate, long term financial assets and entitlements on social security, measured with the present value of accrued rights. The estimate of pension entitlements is made on the basis of published official data extended with the authors' own estimates from analysis of microdata and from the World Bank pension model (PROST) of social security liabilities. It also tries to account for the risk borne by households on such assets.

This paper is organised as follows: section 1 briefly describes the French and American retirement systems; section 2 compares French and American households' balance sheets in the light of their assets holdings for retirement purposes; section 3 deals with pension entitlements in Social Security in France and in the United States; section 4 focuses on asset structures and wealth effects. Section 5 concludes.

I. Sources of Retirement Income in France

In France, retirement benefits come primarily from a pay-as-you-go (PAYG) social security scheme, and from a government employee pension scheme that is tightly integrated with the social security scheme. According to the Fiscal income survey for 2006, 67 percent of income of households with a reference person between 65 and 74 (74 percent when he/she is older than 75) come from social security benefits, while 19 percent (21 percent) comes from direct holding of financial assets². By comparison, American retirees earn much less from social security (40 percent of cash income of households with reference person older than 65, see IV-A). Moreover, they add to direct property income (15 percent of income) some revenues from pension and annuities (18 percent of income), that is negligible in France.

This comparison puts forward the near-absence of funded pension and personal retirement plans together with the major role of social security in the provision of retirement benefits, both for the basic pension (no more than 50 percent of the reference salary) and the supplementary pension (up to 84 percent of the reference salary).

Social security in France comprises several mandatory pay-as-you-go multi-employer schemes: in 2005 80.4 percent of benefits (and 86.3 percent of pension entitlements) went to employees of the private sector and local governments; 17.1 percent of benefits (12.3 percent of pension entitlements) went to State (national government) civil servants³. The State civil servant pension scheme is run on the same pay-as-you-go basis as social security, with slight differences in contribution rates and reference salaries. Financial transfers between the different schemes are needed to compensate for imbalances between contributions and benefits in some of them. For example, the State pays significant amounts to the "general regime" every year.

Two pension reforms were implemented in 1993 and 2003 with a view to closing an anticipated financing gap of the social security and civil servant schemes and to harmonizing the two systems. First, the required number of years of work for full benefits increased from 37.5 years to 40 years. Conditioned on the evolution of life expectancy, it is expected to reach 41.75 years in 2020. Second, work after the normal retirement age of 60 was allowed and even encouraged. Those retiring with fewer years of work

² These data have been substantially revised in 2008 in order to better account for revenue from financial assets.. See Goutard, Pujol [2008]

³ See technical annex B for a more complete description of French social security and how we measure it. See also Durant, Frey [2008]

history than the number required for full benefits suffer a further reduction in benefits for retiring early if they have not reached age 65; conversely, any year worked between 60 and 65 in surplus of the required number of year gives rise to a bonus. Just one major difference between the social security and civil service schemes remains: the reference salary for State civil servants remains the last years' salary because of the larger role of bonuses in their income. For the private sector the reference salary is now calculated on the best 25 years instead of the best 10 years used before the reforms. Finally, the pension and reference salary are now indexed for inflation as measured by the CPI rather than by a faster-growing wage index.

For an employee in the private sector retiring in 2003 and having worked the required number of years, the replacement rate on after-tax income lies after the reforms between 64 percent for an executive and 84 percent for a non-executive. The corresponding rates will be 53 percent and 73 percent for people who retire in 2050. The replacement rate for civil servants will remain around 69 percent throughout the same period.⁴

Voluntary supplementary retirement schemes, either autonomous or recorded as book reserves of employers, are still poorly developed in France, accounting for just 2 percent of pension entitlements in 2005 (table 1.) They are growing rapidly, however, so their share of pension contributions, at 4 percent, is much higher than their share of pension entitlements. These schemes include defined benefit plans, either recorded as uncovered book reserves in employers' accounts or managed by insurance companies. Insurance companies also run some defined contribution plans. In addition, a new type of collective pension scheme was created in 2003 (so-called PERCO, comparable to 401(k) defined contribution plans in the US), which appears as a component of mutual investment funds in French financial accounts.

Table 1: Pension Entitlements and Flows in France, 2005

(Persons in thousands, balances and flows in billions of euros; accrued to date pensions)

	DC Plans and Life Insurance	DB Plans and Book Reserves	Civil Servants Plan	Social Security	Total (1)	Social Security from PROST
1 Contributors	2635	1586	2459	16638	19097	22058
2 Beneficiaries	NA	NA	1961	11939	13900	11994
3 Pension entitlement, opening balance	70	87	950	6565	7672	5980
4 Actual contributions	4	4	24	136	167	139
5 Transfers	0	0	0	11	11	13
6 Imputed contributions	1	6	34	319	360	281
7 Benefits paid	2	2	33	160	197	153
8 Pension entitlement, closing balance	74	94	975	6872	8015	6260

Italics denote authors' estimates using discount rate of 2%. Line 8 = 3 + 4 + 5 + 6 - 7.

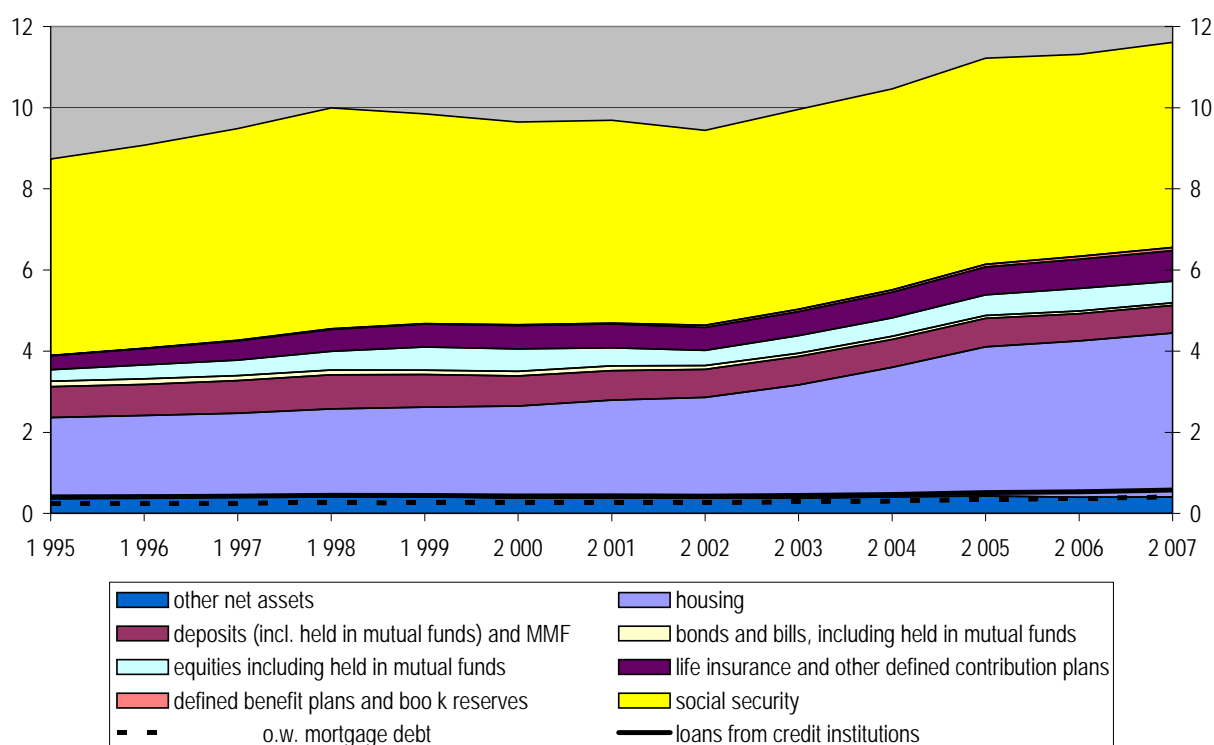
(1) Contributors and beneficiaries may participate in several schemes, though the numbers don't add up.

⁴ See Conseil d'orientation des retraites [2006] p.142

II. Explicit and Implicit Assets of French Households

To see how households in France may navigate the demographic transition to a more aged society, we must look at the structure of the household sector's wealth, including the actuarial value of pension entitlements. Actuarial estimates are subject to a considerable uncertainty because they are sensitive to assumptions about interest rates, future longevity, future retirement timing and other factors, so they should be viewed as indicative of the location of a plausible range of values, not as precise measures. (For information about our assumptions and methods, see technical annex B.) Nevertheless, it is clear that taking the actuarial value of expected benefit entitlements from PAYG schemes into account changes the picture of French households' wealth, the riskiness of their portfolio, and their saving behaviour from the one that considers only funded pension plans, financial assets and real estate.

Chart 1: French households' assets and liabilities including those held in unincorporated businesses (ratios to household disposable income, corrected for actuarial accounting of social security)



In the years from 1995 to 2006, households' implicit social security wealth, calculated as the actuarial value of future benefits less future taxes over a 50 year window, increased from 6.1 years of disposable income to 6.5 years (table 2a.) The increase reflects the ageing of the population. Yet at the same time, households' implicit social security wealth fell from 54 percent of households' total assets to 43 percent. One possible explanation for this restructuring of the balance sheet is that concerns about the solvency of the social security scheme have prompted French households to invest more in long term financial assets. In years of disposable income, households' holdings of corporate equity shares (including in mutual funds) and life insurance reserves have more than doubled (from 0.4 to 0.7 years in the former case and from 0.4 to 0.9 years in the latter) and DB pension assets have grown rapidly from a base of effectively 0.

To be consistent with a treatment of social security entitlements as an asset, the growth of these entitlements as income can included in income. Doing so implies a ratio of social security wealth to

corrected gross disposable income of 5.1 in 2007 (Chart 1). An estimate using comparable methods for the United States is much less, at 1.9 years of disposable income (Chart 3).

The voluntary (in an accounting sense) component of the portfolio shifts that have occurred since the late 1990s can be measured by investment flows, which by definition exclude holding gains and losses.⁵ Investment in long term financial assets was an important contributor to their growth, especially in the case of life insurance. Life insurance is a very popular vehicle for saving for retirement, with net investment inflows in the range of 5.3 to 8.5 percent of household disposable income (table 3.) Although life insurance no longer enjoys all the income tax advantages that it once had in France, it remains the only financial asset that can be transmitted to heirs without taxation. Moreover, the implementation of directive EC2003 on pension funds entitled French life insurance companies to act as pension funds and to provide retirement benefits. Investment in shares combined with other securities assets was under 2 percent of gross income in most years (table 3.). Holding gains added on average 1 more percent each year, with strong variation due to the ups and downs of the stock exchange.

French households have traditionally built wealth by investing in real estate. In the past decade, however, gross residential investment has accelerated, rising from 6.8 percent of gross disposable income in 1996 to 8.9 percent in 2007. This extra investment in real estate was not funded by households from their own saving, however: deducting net increases in mortgage debt from investment in residential real estate reveals that the investment of households' own funds was in the range of 2.5 to 3.3 percent of their gross disposable income in 2004-2007, down from 5.8 to 7.0 percent in 1995-1998.⁶ Nevertheless, the value of real estate equity grew rapidly, as holding gains on real estate far exceeded even gross investment in real estate: cumulated holding gains from 1995 are 3.7 times higher than the cumulated investments. Mostly because of these revaluations, households' residential real estate assets rose from 2.5 times gross household income in the late 1990s to 5 times income in 2006-2007.

These gains have made homeownership a major source of wealth for elderly households in France. According to a 2002 housing survey, 73.4 percent of households whose reference person is retired own their residence (80 percent for those between 65 and 69), compared with a homeownership rate of 56 percent for population as a whole. Moreover, few older homeowners have mortgage debt. A wealth survey in 2004 found that 72 percent of households whose reference person is over 55 own their residence with no mortgage, while just 6 percent of households over 55 are homeowners with a mortgage⁷. In effect, implicit rental income of homeowners is a major resource supporting the standard of living of retirees in France. (Implicit rental income is the hypothetical income that homeowner receives by renting to himself after payment of mortgage interest and other expenses borne by a landlord.)

The actuarial value of social security entitlements in France is even larger than the value of residential real estate owned by households. Current contributions by employers and employees to social security net of benefits paid to retirees are negligible. (Indeed, in a pure pay-as-you-go system, by design each year's benefits are funded by that year's contributions.) Yet, the actuarial investment flows to social security needed to provide promised future pensions amount to 26.4 percent net of benefits in 2007.⁸ This

⁵ In an economic sense most portfolio restructuring may be voluntary, because, at least for financial assets, households have the option of making investment flows that rebalance their portfolio following holding gains or losses.

⁶ Indeed, deducting consumption of fixed capital (CFC) in addition to net mortgage borrowing implies that the net amount of saving used to build up equity in residential real estate was barely positive in 2007.

⁷ Baclet [2006]

⁸ We calculated the actuarially required investment net of benefits as the change in required year-end pension reserves estimated by PROST with a 2 percent real interest rate.

Table 2a: Balance sheet for the Household Sector in France, including sole proprietorships
ratio to gross disposable income

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Residential real estate	2.4	2.5	2.5	2.5	2.7	2.8	3	3.2	3.6	4.1	4.7	5.0	5.1
Deposits (incl. held in mutual funds) and MMF	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Bonds and bills, including held in mutual funds	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Equities including held in mutual funds	0.4	0.4	0.5	0.5	0.7	0.7	0.6	0.5	0.6	0.6	0.7	0.7	0.7
Life insurance and other defined contribution plans	0.4	0.5	0.6	0.6	0.7	0.7	0.7	0.7	0.8	0.8	0.9	0.9	0.9
Defined benefit plans and book reserves	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Other assets less other liabilities	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Loans from credit institutions	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.7
o.w. mortgage debt	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5
total assets	5.1	5.2	5.3	5.4	5.9	6.0	6.0	6.2	6.7	7.3	8.0	8.4	8.5
Explicit net worth	4.4	4.6	4.7	4.7	5.2	5.3	5.3	5.5	5.9	6.5	7.1	7.5	7.5
Social security entitlement	6.1	6.3	6.3	6.3	6.4	6.3	6.2	6.2	6.4	6.4	6.5	6.5	6.4
Memo items:													
Gross disposable income (billions of euros)	787	803	822	851	873	923	970	1015	1043	1089	1126	1181	1244
Net worth as % of assets (gross)	87.6	87.9	87.9	87.3	87.9	87.9	87.7	88.4	88.7	89.2	89.2	89.1	89.0
Housing equity as % of housing asset	87.6	87.6	87.5	87.8	88.2	88.5	89	89.4	89.8	90.4	90.6	90.4	89.9
Value at risk													
real estate	0.08	0.08	0.08	0.08	0.08	0.08	0.09	0.10	0.11	0.12	0.14	0.15	0.15
interest bearing assets	0.04	0.04	0.04	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
equity	0.10	0.10	0.11	0.12	0.15	0.17	0.15	0.13	0.13	0.13	0.14	0.16	0.16
life insurance	0.02	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.05
social security	1.27	1.29	1.31	1.32	1.34	1.32	1.32	1.31	1.33	1.33	1.34	1.33	1.32

Table 2b: Balance sheet for the Household Sector in France, including sole proprietorships
ratio to gross disposable income corrected for actuarial accounting of social security

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Residential real estate	1.9	2.0	2.0	2.2	2.2	2.3	2.4	2.5	2.8	3.2	3.7	3.9	4.0
Deposits (incl. held in mutual funds) and MMF	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Bonds and bills, including held in mutual funds	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Equities including held in mutual funds	0.3	0.3	0.4	0.5	0.6	0.6	0.4	0.4	0.4	0.5	0.5	0.6	0.5
Life insurance and other defined contribution plans	0.3	0.4	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.8
Defined benefit plans and book reserves	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Other assets less other liabilities	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Loans from credit institutions	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.6
o.w. mortgage debt	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4
total assets	4.0	4.2	4.4	4.7	4.8	4.8	4.8	4.8	5.2	5.7	6.3	6.5	6.7
Explicit net worth	3.5	3.7	3.8	4.1	4.2	4.2	4.3	4.2	4.6	5.0	5.6	5.8	6.0
Social security entitlement	4.8	5.0	5.2	5.4	5.2	5.0	5.0	4.8	4.9	5.0	5.1	5.0	5.1
Memo items:													
Gross disposable income	996	1005	997	981	1074	1157	1206	1319	1349	1407	1431	1530	1571
Value at risk:													
real estate	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.07	0.08	0.09	0.11	0.11	0.12
interest bearing assets	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01
equity	0.08	0.08	0.09	0.11	0.12	0.13	0.12	0.10	0.10	0.10	0.11	0.12	0.12
life insurance	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04
social security	1.00	1.03	1.08	1.14	1.09	1.06	1.06	1.01	1.03	1.03	1.06	1.03	1.04

Table 3: Net investment transaction flows of the Household Sector in France, including sole proprietorships

percentage of gross disposable income

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
gross investment in real estate	6,9	6,8	6,9	7,0	7,3	7,2	7,1	7,1	7,3	7,6	8,1	8,8	8,9
deposits and MMF	5,1	1,3	3,9	2,5	3,7	0,1	2,8	3,1	3,2	3,6	2,9	2,0	3,8
bonds and bills	-0,4	-0,7	-3,0	-1,7	-0,2	0,4	1,2	-0,3	-1,8	-0,1	0,2	0,5	-0,1
shares like securities	-0,9	0,9	0,2	0,4	0,7	0,3	0,5	2,3	2,7	0,4	2,3	1,3	0,9
life insurance and other defined contribution plans	6,9	7,8	8,5	6,0	6,5	7,1	5,9	5,3	5,2	6,6	7,2	8,3	7,2
defined benefit plans and book reserves	0,0	0,1	0,5	0,2	0,4	0,5	0,4	0,3	0,5	0,4	0,4	0,0	0,3
other net assets	1,3	1,2	2,6	1,2	1,2	-1,5	-0,6	6,7	-0,4	1,0	0,2	0,6	1,8
Liabilities	0,9	2,1	2,2	2,1	3,9	3,3	3,0	3,5	3,5	4,7	6,7	7,2	7,1
<i>o.w real estate loans</i>	<i>-0,1</i>	<i>1,0</i>	<i>0,8</i>	<i>0,8</i>	<i>2,4</i>	<i>2,3</i>	<i>1,9</i>	<i>2,7</i>	<i>3,6</i>	<i>4,3</i>	<i>5,5</i>	<i>6,3</i>	<i>5,8</i>
social security actual net investment	-0,6	-0,3	0,2	0,6	0,7	0,6	0,4	0,3	0,4	0,2	-0,1	-0,2	-0,4
social security actuarial net investment	27,2	25,3	21,3	15,4	23,0	25,5	24,3	30,0	29,5	29,3	27,2	29,7	26,4
<i>o.w property income due to contributors</i>	<i>24,0</i>	<i>23,0</i>	<i>19,4</i>	<i>13,7</i>	<i>20,6</i>	<i>21,9</i>	<i>20,5</i>	<i>26,2</i>	<i>25,9</i>	<i>25,7</i>	<i>25,2</i>	<i>25,2</i>	<i>24,7</i>
Memo item:													
Gross disposable income	787	803	822	851	873	923	970	1 015	1 043	1 089	1 126	1 181	1 244
saving rate	15,9	15,0	15,9	15,5	15,2	15,1	15,8	16,9	15,8	15,8	14,9	15,1	15,8
saving rate + actuarial contribution - pension	33,6	32,0	30,7	26,7	31,1	32,3	32,2	36,0	34,9	34,8	33,0	34,5	33,3

Data sources for tables 2a, 2b, and 3: national accounts. Estimates for pension detailed in annex 2. Split of general purpose mutual fund shares according to their investment with a combination of holding by type of mutual funds (table on investment and financing of non financial sectors and insurance corporation) and net asset by type of mutual funds (quarterly monetary statistics)

Table 4: Composition of US Household Income with Defined Benefit Pension Plans in Sector of the Employer*

(percentages of total)

	1998	1999	2000	2001	2002	2003	2004	2005	2006
Compensation excluding employer contributions to DB pension plans	68.8	69.9	69.8	69.1	69.1	69.7	69.3	68.2	67.7
Mixed income	8.8	9.1	9.0	9.2	9.0	9.3	9.8	9.8	9.5
Property income excluding imputed income and DB pension plans ^a	13.3	12.0	12.5	12.1	11.3	10.1	10.2	11.3	12.2
Social security and railroad retirement benefits ^b	5.2	5.1	5.0	5.1	5.2	5.3	5.2	5.2	5.1
Other government social benefits (excluding PBGC)	8.1	8.0	7.8	8.4	9.2	9.5	9.6	9.5	9.6
Transfers from business and nonprofit institutions	0.8	0.9	0.9	1.1	0.9	0.9	0.8	0.9	0.8
Benefits from DB retirement plans or the PBGC	3.8	3.9	3.8	3.9	4.0	4.1	4.0	3.9	3.9
DEDUCT: Contributions for social insurance	-8.8	-8.9	-8.7	-8.7	-8.8	-8.9	-8.9	-8.8	-8.7
MEMO ITEMS:									
Contributions for social security and railroad retirement ^{b,c}	7.0	7.1	7.0	7.0	6.8	6.7	6.6	6.6	6.6
Contributions to DB and DC pension plans ^c	5.4	5.4	5.3	5.4	5.9	6.3	6.0	6.1	NA
Benefits from DB and DC pension plans and the PBGC	5.6	5.7	5.6	5.8	6.1	6.3	6.2	5.8	5.8
Property income excluding all pension plans and life insurers	9.9	8.8	8.8	9.0	8.4	8.4	8.6	9.2	NA
Property income including pension plans but not imputed income	16.1	14.8	15.0	14.3	13.5	13.3	13.2	14.2	NA
Property income including pension plans and FISIM	18.6	17.6	17.7	17.3	16.3	15.7	15.5	15.7	16.5
Net household saving as a percent of net household income	3.8	1.7	1.6	1.4	2.2	2.0	1.8	0.1	0.1
Gross household saving as a percent of gross household income	7.1	5.2	5.1	5.0	5.6	5.5	5.6	4.7	3.9

a. Excludes imputed income from implicit rental income of homeowners and implicit depositor services.

b. Includes disability and survivors insurance components.

c. Includes employer and employee contributions.

Source: Authors' calculations from US National Income and Product Accounts and Employee Benefits Security Administration Bulletins.

Table 5: Balance Sheet for US Households with Actuarial Measures of Pension and Social Security Wealth^a**(Ratios to Gross Disposable Household Income; Unincorporated Businesses Consolidated)^b**

	2000	2001	2002	2003	2004	2005	2006	2007
Real estate and tangible assets of unincorporated businesses	2.3	2.4	2.5	2.6	2.7	2.8	2.9	2.8
Deposits and money market shares	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.8
Bonds and mortgages, including held in mutual funds, plus miscellaneous	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.8
Corporate equities (directly held or held in mutual funds)	1.3	1.0	0.7	0.8	0.9	0.8	0.9	0.8
Life insurance, annuities and defined contribution pension and retirement plans	0.7	0.6	0.6	0.6	0.7	0.7	0.7	0.7
Actuarial value of defined benefit pension plans	0.8	0.8	0.8	0.8	0.8	0.8	0.8	NA
Actuarial value of future social security benefits net of future taxes	1.4	1.5	1.5	1.5	1.5	1.6	1.6	1.6
Home mortgage debt	0.7	0.7	0.8	0.9	0.9	1.0	1.0	1.0
Other liabilities	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7
Net worth with actuarial values of pension and social security wealth	6.4	6.2	5.9	6.2	6.3	6.5	6.7	NA
MEMO ITEMS:								
Assets of defined benefit pension plans	0.6	0.7	0.7	0.7	0.8	0.7	0.7	0.6
Assets of social security trust fund	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Social security trust fund+taxes less benefits for future participants if positive	0.1	0.2	0.2	0.2	0.3	0.3	0.2	0.3

a. Note that actuarial estimates are subject to a considerable range of uncertainty because they depend on assumptions.

b. Gross disposable household income is about 1.04 times net disposable income in most years.

Sources: For private DB plans, authors' estimates based on Form 5500 data and Employee Benefits Security Administration Bulletins; for state and local DB pension plans, Lenze (2008); for Federal pensions, US. Treasury Department reports, for social security actuarial estimates, Social Security Trustee's Reports; and for all other items the Federal Reserve Board's Flow of Funds Accounts.

Table 6: Balance Sheet for US Households with Actuarial Measures of Pension and Social Security Wealth ^a**(Ratios to Gross Disposable Household Income corrected for actuarial accounting in social security ; Unincorporated Businesses Consolidated)^b**

	2000	2001	2002	2003	2004	2005	2006	2007
Real estate and tangible assets of unincorporated businesses	2.1	2.2	2.3	2.4	2.5	2.5	2.6	2.5
Deposits and money market shares	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.7
Bonds and mortgages, including held in mutual funds, plus miscellaneous	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.7
Corporate equities (directly held or held in mutual funds)	1.2	0.9	0.6	0.7	0.8	0.7	0.8	0.7
Life insurance, annuities and defined contribution pension and retirement plans	0.6	0.5	0.5	0.5	0.6	0.6	0.6	0.6
Actuarial value of defined benefit pension plans	0.7	0.7	0.7	0.7	0.7	0.7	0.7	N.A.!
Actuarial value of future social security benefits net of future taxes	1.3	1.4	1.4	1.4	1.4	1.5	1.4	1.4
Home mortgage debt	0.6	0.6	0.7	0.8	0.8	0.9	0.9	0.9
Other liabilities	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6
Net worth with actuarial values of pension and social security wealth	5.8	5.7	5.4	5.7	5.7	5.9	6.0	N.A.
MEMO ITEMS:								
Assets of defined benefit pension plans	0.5	0.6	0.6	0.6	0.7	0.6	0.6	0.5
Assets of social security trust fund	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Social security trust fund+taxes less benefits for future participants if positive	0.1	0.2	0.2	0.2	0.3	0.3	0.2	0.3

a. Note that actuarial estimates are subject to a considerable range of uncertainty because they depend on assumptions.

b. Gross disposable household income is about 1.04 times net disposable income in most years.

Sources: For private DB plans, authors' estimates based on Form 5500 data and Employee Benefits Security Administration Bulletins; for state and local DB pension plans, Lenze (2008); for Federal pensions, US. Treasury Department reports, for social security actuarial estimates, Social Security Trustee's Reports; and for all other items the Federal Reserve Board's Flow of Funds Accounts.

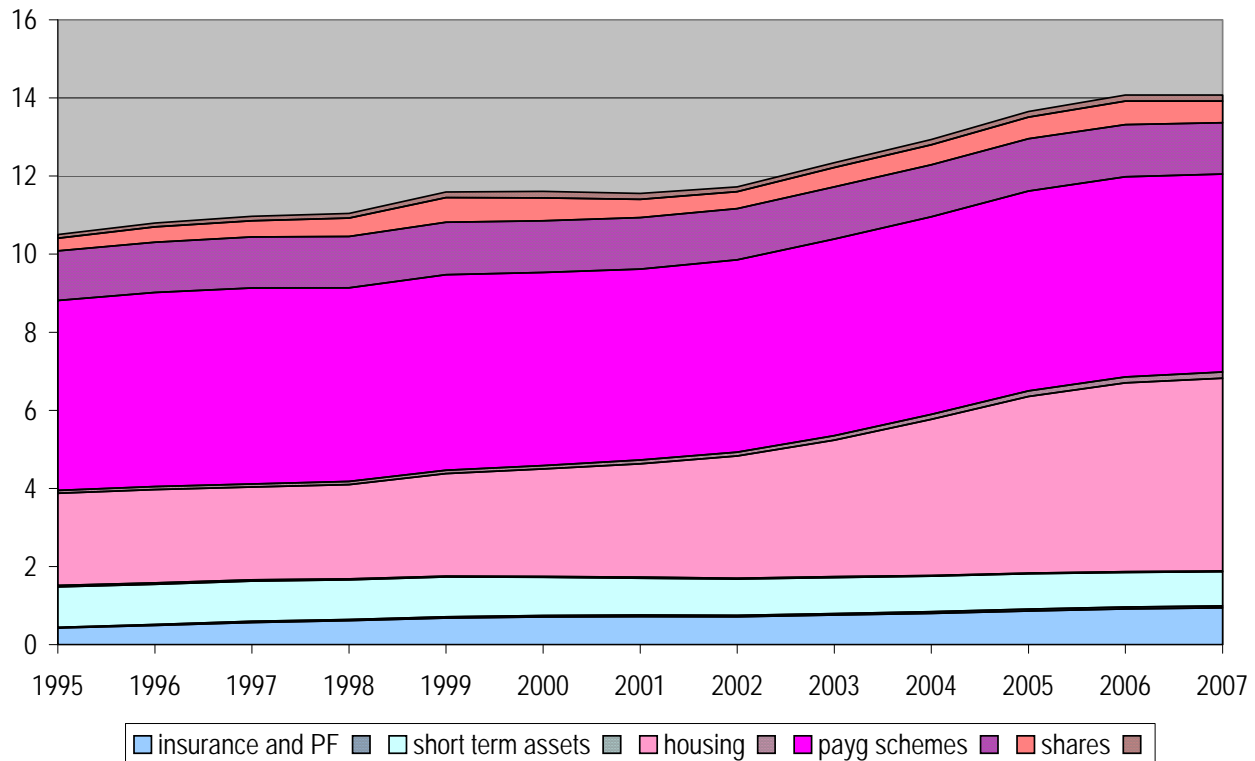
investment includes property income amounting to 24.7 percent of disposable income, which is implicitly received and reinvested by households in their huge notional social security assets. Adding this actuarial element to gross disposable income and to gross savings would dramatically increase the gross saving rate of French households, from 15.8 percent in 2007 to 33.3 percent. Of course, an equivalent adjustment would need to be subtracted from saving by government, implying that the taxes of today's households or future generations will have to be increased by this amount if all the promised benefits are paid.

III. Riskiness of Explicit and Implicit Wealth of French Households

Whether the assets are reliable is of utmost importance for secure financing of retirement, especially for those who are soon to retire or already retired. To gauge the riskiness of real estate and each type of financial asset, we calculated the largest cumulated percentage holding loss observed from 1978 to 2006 on each detailed type of asset. We also estimated the riskiness of social security wealth by the proportional reduction in benefits that will be necessary to restore fiscal balance if contributions grow as currently projected. Note that benefits of diversification make the riskiness of the entire portfolio less than the sum of the risks to each detailed class of asset, as changes in price for different types of assets tend to offset one another. We did not calculate a measure of risk for the combined portfolio.

The largest source of risk for households in France comes from the social security entitlement. The 21 percent of the implicit social security wealth at risk based on the present value of the expected future deficit that we calculate using PROST amounts to almost 9 percent of total explicit and implicit wealth in 2007. As noted above, the high risk of social security entitlements may have motivated French households to diversify their portfolio. Note that our estimate of risk is a residual, as we discount the accrued right of present contributors and beneficiaries by the deficit that future participants will create. On a relative basis, the value at risk in equity shares is also high, representing 24 percent of the outstanding amount in 2007. Over the last ten years the value at risk in real estate has increased to 3 percent of its value, which is very low. Furthermore, the total value at risk of all assets other than social security is far smaller than the cumulated holding gains from 1978. These gains amount to 47 percent of the assets, with 40 percent due solely to gains in housing prices. Indeed, revaluation of real estate on that period is double from the cumulated flows while it is almost double (1.7) for shares and non monetary mutual fund shares.

Chart 2: Assets and “value at risk” (in grey) for Households in France^a
(as a percentage of gross disposable income)



a. This chart includes neither “other net assets” nor book reserves.

IV. Comparisons to American Households

A. Sources of Retirement Income

Except near the bottom of the earnings distribution, earnings replacement rates are much lower in the American social security system than in the French one. For American claimants who attained the full retirement age of 65 and 10 months in 2007, the replacement rate ranged from 90 percent of average indexed monthly earnings for the lowest earners, to just over 30 percent for claimants with an average annual income of \$80,000. (The marginal replacement rate was zero for earnings in excess of approximately \$82,000.) For a claimant at the minimum age for filing of 62, these benefits were reduced by 24.2 percent in 2007. In contrast, in France, the social security replacement rate was 75 percent at the normal retirement age of 62 in 2007.

Despite the relatively low earnings replacement rates of social security in the US, the mean cash income per household member in households with a reference person 65 or older was 92.5 percent of the mean for all households according to the March supplement to the 2006 Current Population Survey (CPS).⁹ These households had much higher income than social security alone would have provided because they received substantial amounts of income from employment or self-employment (22 percent of total cash income), pensions and annuities (18 percent of income), and direct property income (15 percent of income.) Social security provided, on average, just 40 percent of the cash income of these households.

⁹ Omitting the correction for household size, the mean income of households over 65 was 63 percent of the mean income of all households.

Pension plans have a strong institutional role in providing retirement income in the US, and benefits from these plans are undoubtedly even higher than reported on the CPS. A plausible correction for under-reporting of pension benefits in the CPS would raise their estimated amount to about three-quarters as large as social security benefits for those 65 or over. The need for such a correction is evident from a comparison of the CPS with the national accounts for the US. The national accounts show that benefits from DB and DC pension plans substantially exceed benefits from social security (table 4.) Some of the difference between the national accounts estimates for all households and the CPS estimates for households 65 and over is caused by the greater relative importance of pension benefits for those under 65, but more of the difference appears to be caused by under-reporting on the CPS. In 2006, for example, CPS pension benefits for all households are about 35 percent below social security benefits, compared with pension benefits that are 13 percent higher than social security benefits in the national accounts. Also, property income excluding imputations, pension plans and life insurance reserves has a much larger ratio to wage and salary income in the national accounts than does property income in the CPS. Direct property income undoubtedly provides substantially more than the reported 15 percent of total cash income for households 65 or over.

B. Assets and Liabilities

American households hold significantly more financial assets than French households. In 2006, their financial assets amounted to about 3.8 years of gross disposable income, compared with 2.5 for households in France. (The calculations of the US balance sheet are discussed in annex A, and the results are shown in table 4) The gap becomes even larger if we include in income the imputed property income from implicit social security actuarial assets and exclude the cash benefits, as if the scheme were run by an insurance company. This correction is appropriate when comparing French and American data, because in the United States a large share of retirement income comes from pension plans whose property income is already included in the disposable income of households. Financial assets of French households represent only 2.1 years of the corrected disposable income (chart 1), compared to a ratio to corrected gross income of 3.3 for the US (chart 3).

The relatively large value of financial assets on the balance sheet of US households is consistent with the finding that these households receive substantial pension and property income, but neither of these patterns seems consistent with the very low saving rate of American households. In recent years, the US gross saving rate has fallen to below 5 percent, less than a third of the French saving rate of 15 percent (table 4.)¹⁰

Part of the answer to this paradox lies in the relatively large borrowing by American households: in part, Americans have more financial assets because they are willing and able to have a more leveraged balance sheet. In particular, households in the US have mortgage debt about equal to one year's gross disposable income, double the ratio for French households, and their nonmortgage debt is about triple the debt of French households (table 5 and chart 3.) Indeed, 32 percent of American households 65-75 still have mortgage debt, and total mortgage and non-mortgage debt for this age group amounts to half a year's income according to the 2004 Federal Reserve Board Survey of Consumer Finances (SCF.) Whereas French households over 65 have almost no debt servicing obligations, total debt service payments of 65-75 year old American households (which include required amortization of principle) have averaged almost 9 percent of their income in the 1998, 2001, and 2004 waves of the SCF.

By borrowing, households in the US are able to invest almost as high a proportion of their gross disposable income in acquisitions of residential real estate as French households despite their meagre saving and high investment in financial assets. Their gross investment in real estate is in the range of 5 to 8 percent of income, compared with almost 7 to 9 percent in France. Growth in the value of real estate assets is a different story, however, because it has been much higher in France. Residential real estate assets of American households increased in value by about 30 percent between 1998 and 2006, compared to a gain of

¹⁰ A detailed comparison of French and American saving rates is beyond the scope of this paper, but a discussion of problems involved in this sort of comparison may be found in Audenis, Grégoir, Louvot (2002.)

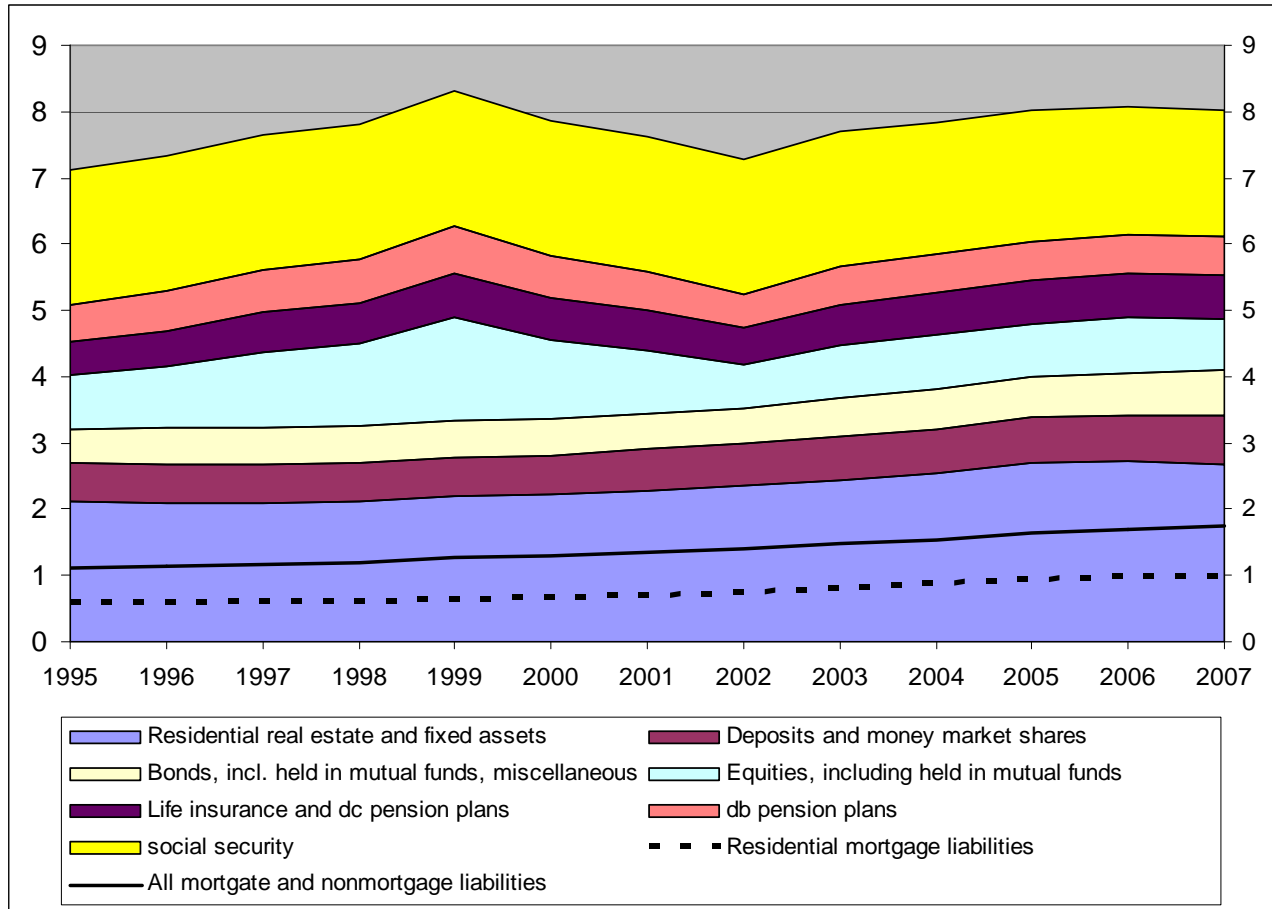
100 percent for France. Revaluations of real estate in the US, though substantial, was not as large as in France, where they propelled the value of residential real estate to 5 times their gross annual income, compared to a ratio of 2 for US households (or 2.7 if non-residential real assets are added.) The difference remains substantial with comparable corrected income: 4 years of income in France and 1.8 years in the US.

Further widening the gap between France and the US in household net worth relative to income is the difference in their social security wealth. For US households, social security wealth is less than 2 times their corrected disposable income according to our calculations using PROST (chart 3), compared to more than 5 times corrected disposable income for French households.¹¹ The lower value of social security wealth of US households partly reflects reforms enacted in 1983, which raised the full retirement age and social security contributions by amounts thought—at the time—to be sufficient to ensure the long term solvency of the scheme. As a result of these reforms, younger cohorts now alive had, or will have, negative social security wealth when they first enter the labour force, and contributions to social security are currently greater than benefits to retirees. Including actuarial wealth in social security and pension plans along with explicit financial assets and liabilities implies a financial net worth for US households of 3.4 times corrected gross disposable income in 2006, compared with a ratio of 7 for French households. Furthermore, with real estate included, the net worth of the household sector in France stood at over 11 times corrected gross disposable income, compared with 6 times corrected gross disposable income in the US (table 6.)

The greater wealth relative to income of French households would seem to suggest that they have better prospects of being able to maintain their standard of living in retirement than American ones. However, this is not necessarily the case, for three reasons. First, Americans need less wealth to finance their retirement because they retire later, and about 20 percent of the cash income of 65 to 74 year old households in the US comes from employment or self-employment. Second, housing wealth, which is comparatively high in France, may be subject to larger risks of holding losses after the fast increases in prices registered in the recent years, and significant transactions costs are incurred when housing wealth is converted to cash to pay general living expenses. Third, the value of the social security wealth of French households alive today is subject to significant risk of reforms, due to the remaining financing gap. The risk arises because the size of the actuarial deficit of French social security given current schedules of contribution rates and benefits is so large that a complete transfer of the cost of covering this deficit to future generations seems unlikely. The 21 percent of French social security wealth that is at risk according to our simulations using PROST would amount to over 1.3 times annual disposable household income. To be sure, social security wealth in the US also at risk: present projections are that if no increases in contributions are enacted, funds will be available to pay only 78 percent of scheduled old age benefits starting in 2042 (Board of Trustees, 2008. pp. 8-10.) Nevertheless, the risk is smaller for American households than for French ones. According to actuarial projections in the 2008 report of the trustees of US social security system, an immediate, permanent increase in the contribution rate equal to 1.7 percent of covered payroll would be sufficient to remedy its fiscal imbalance. The present value of the decline in wealth of today's households from capitalizing the resulting increase in their contributions to social security amounts to around a quarter of a year's disposable household income under reasonable assumptions about the real rate of interest and the rate at which today's contributors exit the work force. Thus, the risk-adjusted gap between France and US in social security wealth, though still substantial, is significantly smaller than the unadjusted gap. Note, however, that the balance sheet of American households is riskier than that of French households in other ways., including more use of leverage and more ownership of corporate equities.

¹¹The Social Security Trustee's Report estimates the actuarial value of future benefits less future contributions for persons over 15 years old (the closed group liability) at 1.6 times gross household income. The accrued-to-date estimate from PROST for the US is calculated using methods comparable to those that we used for France, so we use it for comparison purposes even though we regard the Trustee's Report estimates as more appropriate for general purposes.

Chart 3: American households' assets and liabilities, including those held in unincorporated businesses (ratios to household disposable income, corrected for actuarial accounting of social security)



Source: Authors' calculations based on the Federal Reserve Board's Flow of Funds Accounts, authors' tabulations of private DB plan tax returns, US Treasury Department financial reports and PROST, and Lenze (2008.)

C. Differences in Saving partly reflect Differences in Balance Sheet Structure

A comparison of the household sector balance sheets in France and the US sheds some light on the large gap between French and American saving rates. On the liability side of the household sector balance sheet, the much larger amount of debt relative to income on the balance sheets for the US implies that differences in borrowing by households have a direct role in explaining differences in the two countries' saving rates. The greater borrowing by US households may partly reflect the greater or cheaper availability of credit resulting from institutions that provide credit assurance and securitization services for mortgages, from a legal system that allows lenders to foreclose on pledged collateral without excessive delays and expenses, and from innovations like securitization of many kinds of debt and software-based credit scoring models. In addition, the deductibility of mortgage interest is an important tax incentive for borrowing by American households to borrow.

Differences on the asset side of the balance sheet also suggest some reasons for the much lower saving of Americans as measured in national accounts. One way that Americans can accumulate wealth in financial assets without much saving being recorded in the national accounts is by holding financial assets that experience positive revaluations (chart 3.) These assets include corporate equities either held directly or in mutual funds, pension plans and variable life insurance. Over short horizons prices of corporate equities are highly volatile, but over longer intervals holding gains tend to be the most important source of the growth in

the value of households' financial assets in the US. Over the 13 years from 1995 to 2007, for example, US households and nonprofit institutions serving households acquired \$6.8 trillion in financial assets by net investment, but revaluations added \$18.8 trillion to the value of their financial assets (Flow of Funds Accounts, table R.100.)

Nevertheless, holding gains actually reduce the national accounts measure of disposable income. This occurs because realized holding gains result in income taxes that are subtracted in the calculation of disposable income, but all holding gains, whether realized or not, are excluded from the national accounts definition of income.¹² Taxes on realized holding gains depress the national accounts measure of personal saving in the US by an average of about 1 percentage point, because saving is measured as the residual that remains after consumption is subtracted from disposable income. Adding to the negative effect of holding gains on measured saving, these gains tend to increase consumption expenditures. Households have been estimated to consume a modest 2 to 3 percent of the holding gains on financial assets that they hold directly, but defined benefit pension plans rely heavily on holding gains to pay promised benefits, and contributions from sponsors of these plans are quite sensitive to holding gains and losses.

Differences in the role of pension plans in providing retirement income also contribute to differences in saving rates between France and the US in two ways. First, pensions in France are still in their infancy, but defined benefit plans in the US have mostly matured. Pension plans have high rates of saving in their early years, but once they mature most or all of their receipts from contributions and property income are disbursed as benefits. This is particularly so for defined benefit plans, as only defined contribution plans have assets that can be left to heirs.

Second, financial assets built up in defined contribution pension plans or in other retirement plans enable American households to borrow more than they could with a retirement system in which they accumulated only actuarial social security wealth. Assets in pension and retirement plans can furnish explicit collateral for borrowing: in the 1998 *Survey of Consumer Finances*, 5.3 percent of households had loans collateralized by assets in a defined contribution plan (Sundén and Surette, 2000), and Weller and Wenger, (2008), estimate that the outstanding balance of such loans was \$30.8 billion in 2004.¹³ These assets can also enhance access to credit by serving as a source of balance sheet strength that improves creditworthiness.

The access to credit made possible by the presence of explicit pension plan assets probably increases total borrowing, but it might not reduce overall saving if the extra borrowing is used to acquire assets such as housing or to avoid liquidating financial assets. At the aggregate level, the effect on saving of substituting explicit financial assets for social security wealth depends on whether or not most households are life-cycle savers who plan for retirement. If households engage in long term financial planning and perceive social security wealth as neither risky nor as a reason to increase bequests to offset the liability that will be inherited by future generations, their saving rate should be nearly insensitive to whether retirement wealth takes the form of explicit financial assets or the present value of expected net benefits from social security. Even for planners, saving would not be completely insensitive, however, because social security wealth does not lessen the precautionary motive to hold financial assets that provide liquidity for smoothing consumption as income fluctuates and for lumpy or unexpected expenses. On the other hand, the access to credit resulting from the presence of explicit financial assets *would* significantly reduce saving by households who are myopic or liquidity constrained (that is, unable to consume as much as they would like when their income fluctuates because of a lack of financial assets or access to credit.) Indeed, myopic households might even feel wealthier—and therefore want to consume more—if they have explicit pension plan assets than they would if they had an equivalent amount of less transparent, actuarial wealth. Lusardi and Mitchell (2007a, 2007b) find that a great many households have devoted little thought to financial planning for retirement and lack the financial literacy to do so effectively, which suggests that myopic behaviour is not uncommon.

¹² See Reinsdorf (2004 and 2005).

¹³ Indeed, there are even debit cards that allow US households to borrow against pension plan assets. Legislation to prohibit such cards was recently proposed by Senators Schumer and Kohl.

V. Conclusion

Differences between the household sector balance sheets of France and the US reflect their very different approaches to providing retirement income. In France, about 80 percent of cash income of households 65 or older comes from social security benefits. Also, about 80 percent of these households own their home without a mortgage, making implicit rental income of homeowners the other mainstay of the standard of living of older households in France. In contrast, in the US, households 65 and over on average receive less than half their cash income from social security, and for the household sector as a whole pension benefits are a more important source of cash income than social security. Furthermore, the balance sheet of the US household sector has higher values relative to income for many categories of financial assets, including actuarial wealth in defined benefit pension plans, securities such as bonds and corporate equities held directly or in mutual funds and defined contribution pension plans.¹⁴

Nevertheless, the pension and directly held financial assets of American households are not sufficient to bring their net worth to income ratios near those of French households once social security wealth is considered. Households in the US only partially offset their lower social security wealth by having higher pension wealth and higher levels of directly held financial assets. Furthermore, their housing assets have not grown as rapidly in value relative to their income as have those of French households. Taking into account actuarial values of social security and residential real estate, the ratio of net worth to income is about twice as high for households in France, leaving French households much better positioned to afford retirement.

Part of the explanation for the difference in retirement wealth is that American households do not need to accumulate as much wealth to have a comfortable retirement, as they retire later than their French counterparts. The full retirement age for American social security is presently almost 66, compared to a range between 60 and 65 depending on the length of career in France, and over 20 percent of 65 to 74 year old men in the US still work. Despite their lower retirement wealth, on average the income of the aged in the US is not markedly different from that of non-aged. The fact that US households have sufficient income to largely maintain their pre-retirement consumption level into old age suggests that its lower level of retirement wealth are mostly a result of later planned retirement ages, though some work at older ages is undoubtedly an unplanned response to a lack of resources that was not foreseen.¹⁵

Despite the adequacy of the resources that are available to today's retirees in France and the US, future retirees in both countries face some significant risks. Falling ratios of workers to retirees will strain social security's finances in both countries, making social security wealth risky for younger and future generations. The financial retirement wealth of households in France is not diversified, as it is heavily concentrated in social security. In the case of US households, the risk from projected shortfalls in social security financing is smaller, but that is partly because after-tax benefits are already scheduled to decline as part of the reforms of 1983. In addition, in the US private businesses, and to lesser extent state governments, have replaced defined benefit pension plans with defined contribution plans, which has had the effect of shifting risks from employers to households. In principle, employees have the opportunity to accumulate enough wealth in defined contribution plans to offset this change by contributing more of their own pay and by managing their investments wisely. Yet, according to Munnell and Sass (2008), the growth in defined contribution plan pension wealth is not turning out to be sufficient to replace the lost defined benefit plan wealth, so that the average retirement age of US households will have to rise from 63 to 66 if future retirees are to avoid a sharp decline in their standard of living.

¹⁴ Estimates of actuarial values of expected pension and social security benefits should be interpreted with caution because they depend on many assumptions.

¹⁵ To obtain evidence on how often poor planning by US households results in inadequate resources for retirement, the aggregate data and sample means that we have investigated in this paper must be supplemented with micro data on distributions. Lusardi and Mitchell (2007a) and Lusardi and Beeler (forthcoming) find that a sizeable minority of households over 50 are unprepared for retirement because of a lack of financial planning, even though mean and even median net worth for households on the eve of retirement is substantial according to data from the 2004 US Health and Retirement Survey.

References

- Audenis, Cédric, Stéphane Grégoir and Claudie Louvot. 2002. “The Various Measures of the Saving Rate and their Interpretation. Presented at OECD Meeting of National Accounts Experts, Paris, 8 October 2002.
- Baclet, Alexandre 2004, « Les seniors: des revenus plus faibles pour les plus âgés compensés par un patrimoine plus élevé », in Les revenus et le patrimoine des ménages - Edition 2006, Insee, Collection référence.
- Board of Trustees of the Federal Old-Age and Survivors Insurance Trust Fund and the Federal Disability Insurance Trust Fund. 2008 Annual Report. Washigton: US Government Printing Office.
- Blanchet Didier, Ouvrard Jean-François, July 2006, “Les engagements implicites des systèmes de retraite”, in L'économie française – comptes et dossiers – Edition 2006-2007, Insee, collection référence
- Conseil d'orientation des retraites, March 2006, « Retraites, perspectives 2020 et 2050 » Third report
- Direction générale de la comptabilité publique, 2003, 2004, 2005, 2006, 2007 « Les comptes de l'Etat, rapport financier »
- Durant Dominique, Frey Laure 2008 “An initial estimate of pension entitlements of French households” ISI Bulletin n°28, 2008
- European Commission, 2005, « The 2005 projections of the age-related expenditure (2004-50) for the EU-25 Member states: underlying assumptions and projection methodologies », European economy n°4/2005
- European Commission, 2006, « Long-term sustainability of public finances in the European union », to be published in European economy n°4/2006.
- Goutard Luc, Pujol Jérôme “Les niveaux de vie en 2006”, Insee Première n°1203 – Juillet 2008
- Munnell, Alicia H. and Steven A. Sass. 2008. *Working Longer: The Solution to the Retirement Income Challenge*. Brookings Institute Press: Washington.
- Reinsdorf, Marshall B. 2004. Alternative Measures of Personal Saving,” *Survey of Current Business* 84 (September): 17–27.
- Reinsdorf, Marshall B. 2005. “Saving, Wealth, Investment, and the Current-Account Deficit,” *Survey of Current Business* 85 (April): 3.
- Reinsdorf, Marshall B. 2007. “Alternative Measures of Personal Saving,” *Survey of Current Business* 87 (February): 7-13.
- Robert Holzmann, Robert Palacios et Asta Zviniene, August 2001, “Implicit pension debt: Issues, measurement and scope in international perspective”, World Bank, Pension Reform Primer collection
- Sundén, Anika and Brian Surette. 2000. “Household Borrowing from 401(k) Plans.” In *Just the Facts on Retirement Issues*, Center for Retirement Research at Boston College.
- Pellé Thierry, January 2006, « Evaluation des engagements de retraite des fonctionnaires de l'Etat en France », 11^{ème} colloque de l'Association de comptabilité nationale

Technical Annex A: Consolidated Balance Sheet for the Household Sector from the Federal Reserve Board's (FRB's) Flow of Funds Accounts

We made four types of adjustments to the balance sheet data published in the Flow of Funds Accounts (June 2008 release) to arrive at the balance sheet shown for the US in table 5 in the main text. The first was to remove assets and liabilities of nonprofit institutions serving households from the published balance sheet of the personal sector to obtain assets and liabilities of a pure household sector. Second, in France the assets and liabilities of unincorporated businesses and farms are consolidated with those of the household sector, whereas in the main version of the personal sector balance sheet for the US, the net worth of unincorporated businesses and farms is shown as an asset representing households' equity in these businesses. (See the first table below.) To make the balance sheet for US households comparable with the one for French households we therefore consolidated households and unincorporated businesses and farms.

Third, we combined directly held equity in incorporated businesses (stock) with equity held in mutual funds, and we split equity in pension funds into defined benefit (DB) and defined contribution (DC) plans so that we could show the DB plans separately.

Fourth, participants in DB plans receive retirement benefits based on a formula that considers their pay and years of services, so their asset is really the actuarial value of the promised benefits, not the amount that is currently in their pension plan's trust fund. In contrast, participants in DC plans own the balances accumulated in their accounts and have no claims to additional retirement benefits from employer.

The balance sheet without the adjustments for unincorporated businesses and for the actuarial value of DB pension entitlements is shown in the table A.1 below, the balance sheet after the adjustment for unincorporated businesses is shown in table A.2, and the balance sheet after all adjustments is shown in table A.3. Table 1C differs from table 5 in the main text because table 5 shows ratios to gross disposable household income, which is about 3.5 to 4 percent higher than the net income used in the ratios in table A.3.

Table A.1: Balance Sheet for the Household Sector in the US (Ratios to Net Disposable Household Income)													
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Housing	1.48	1.48	1.47	1.50	1.56	1.59	1.66	1.74	1.83	1.92	2.05	2.06	1.97
Deposits and money market shares	0.60	0.60	0.59	0.59	0.59	0.59	0.63	0.64	0.64	0.64	0.66	0.68	0.71
Bonds and mortgages, including held in mutual funds, plus miscellaneous assets	0.55	0.56	0.54	0.53	0.54	0.49	0.49	0.49	0.52	0.54	0.55	0.57	0.62
Corporate equities (directly held+in mutual funds)	0.88	1.01	1.26	1.35	1.69	1.32	1.03	0.71	0.88	0.89	0.88	0.92	0.84
Equity in noncorporate businesses and farms	0.64	0.64	0.64	0.63	0.63	0.64	0.63	0.62	0.65	0.67	0.71	0.74	0.76
Life insurance, annuities and defined contribution pension and retirement plans	0.55	0.58	0.64	0.69	0.74	0.70	0.65	0.61	0.68	0.70	0.72	0.74	0.74
Defined benefit pension plans	0.62	0.66	0.71	0.73	0.78	0.71	0.65	0.57	0.64	0.65	0.66	0.67	0.64
Home mortgage debt	0.62	0.63	0.63	0.64	0.67	0.67	0.71	0.77	0.84	0.90	0.98	1.02	1.03
Other liabilities	0.26	0.27	0.28	0.28	0.29	0.30	0.30	0.29	0.30	0.30	0.30	0.30	0.30
Net Worth	4.43	4.62	4.95	5.10	5.55	5.04	4.71	4.29	4.69	4.81	4.95	5.04	4.92
ADDENDUM:													
Disposable household income (billions of dollars)	5378	5659	5957	6372	6669	7167	7471	7822	8157	8674	9084	9623	10175
Net worth as percentage of assets	83.4	83.7	84.5	84.8	85.3	83.8	82.3	80.1	80.4	79.9	79.5	79.2	78.6
Housing equity as percentage of housing assets	58.2	57.6	57.1	57.5	57.5	57.6	57.0	55.5	53.9	53.0	52.4	50.2	47.5
Value at Risk assuming 45 percent drop in equity prices													
Equities (directly held+held in mutual funds)	0.39	0.45	0.57	0.61	0.76	0.59	0.47	0.32	0.39	0.40	0.40	0.41	0.38
Life insurance, annuities and defined contribution pension and retirement plans	0.09	0.10	0.13	0.15	0.18	0.16	0.14	0.11	0.14	0.15	0.16	0.17	0.18
Defined benefit pension plans	0.06	0.07	0.07	0.07	0.08	0.08	0.07	0.06	0.07	0.08	0.08	0.08	0.07
Value at risk assuming 20 percent drop in Real estate	0.30	0.30	0.29	0.30	0.31	0.32	0.33	0.35	0.37	0.38	0.41	0.41	0.39

Table A.2: Balance Sheet for US Households with Unincorporated Businesses Consolidated (Ratios to Net Disposable Household Income)													
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007

Real estate and tangible assets of uninc. business	2.29	2.29	2.28	2.30	2.38	2.41	2.47	2.55	2.66	2.77	2.95	2.99	2.92
Deposits and money market shares	0.64	0.64	0.64	0.64	0.64	0.65	0.69	0.70	0.71	0.72	0.74	0.77	0.80
Bonds and mortgages, including held in mutual funds, plus miscellaneous assets	0.62	0.64	0.63	0.65	0.66	0.63	0.63	0.64	0.67	0.71	0.74	0.77	0.83
Equities (directly held+held in mutual funds)	0.88	1.01	1.26	1.35	1.69	1.32	1.03	0.71	0.88	0.89	0.88	0.92	0.84
Life insurance, annuities and defined contribution pension and retirement plans	0.55	0.58	0.64	0.69	0.74	0.70	0.65	0.61	0.68	0.70	0.72	0.74	0.74
Defined benefit pension plans	0.62	0.66	0.71	0.73	0.78	0.71	0.65	0.57	0.64	0.65	0.66	0.67	0.64
Home mortgage debt	0.64	0.65	0.66	0.67	0.70	0.71	0.76	0.82	0.88	0.95	1.03	1.08	1.09
Other liabilities	0.52	0.54	0.56	0.58	0.62	0.65	0.66	0.65	0.66	0.68	0.70	0.72	0.75
Net Worth	4.43	4.62	4.95	5.10	5.55	5.04	4.71	4.29	4.69	4.81	4.95	5.04	4.92
Effect of 45 percent drop in equity prices on net worth	3.95	4.06	4.25	4.34	4.62	4.29	4.10	3.86	4.15	4.26	4.40	4.45	4.37
Effect of 20 percent drop in real estate prices on net worth	4.14	4.32	4.65	4.80	5.24	4.72	4.38	3.94	4.32	4.43	4.54	4.63	4.53
Leverage indicators:													
Financial net worth	2.14	2.33	2.66	2.79	3.17	2.63	2.24	1.74	2.03	2.04	2.00	2.05	2.00
Net worth as percentage of assets:													
Baseline	79.2	79.5	80.3	80.3	80.8	78.8	76.9	74.4	75.2	74.8	74.1	73.7	72.8
Assuming 45 percent drop in price of corporate equities	77.3	77.4	77.8	77.6	77.7	75.9	74.4	72.4	72.9	72.4	71.7	71.2	70.4
Assuming 20 percent drop in price of household real estate	78.1	78.5	79.3	79.3	79.8	77.7	75.6	72.8	73.6	73.2	72.4	72.0	71.1

**Table A.3: Balance Sheet for US Households with Actuarial Measures of Pension and Social Security Wealth
(Ratios to Net Disposable Household Income; Unincorporated Businesses Consolidated)**

	2000	2001	2002	2003	2004	2005	2006	2007
Real estate and tangible assets of unincorporated businesses	2.41	2.47	2.55	2.66	2.77	2.95	2.99	2.92
Deposits and money market shares	0.65	0.69	0.70	0.71	0.72	0.74	0.77	0.80
Bonds and mortgages, including held in mutual funds, plus miscellaneous	0.63	0.63	0.64	0.67	0.71	0.74	0.77	0.83
Equities (directly held+held in mutual funds)	1.32	1.03	0.71	0.88	0.89	0.88	0.92	0.84
Life insurance, annuities and defined contribution pension and retirement plans	0.70	0.65	0.61	0.68	0.70	0.72	0.74	0.74
Actuarial value of defined benefit pension plans	0.85	0.87	0.85	0.85	0.85	0.86	0.85	NA
Actuarial value of benefits payable by the Pension Benefit Guarantee Corp	0.002	0.002	0.004	0.006	0.007	0.008	0.007	0.007
Actuarial value of future social security benefits net of future taxes	1.49	1.52	1.52	1.56	1.58	1.66	1.71	1.71
Home mortgage debt	0.71	0.76	0.82	0.88	0.95	1.03	1.08	1.09
Other liabilities	0.65	0.66	0.65	0.66	0.68	0.70	0.72	0.75
Assets of social security trust fund	0.13	0.16	0.18	0.17	0.17	0.19	0.20	0.20
Social security trust fund+taxes less benefits for future participants if positive	0.13	0.16	0.18	0.17	0.27	0.29	0.20	0.28
Financial net worth with actuarial values of pension wealth	2.78	2.46	2.03	2.24	2.25	2.21	2.24	NA

DC + DB plans + claims on the pension insurance for terminated DB plans equal 1.6 times DHI in 2006, compared with the net claim of current participants on social security of 1.7 times DHI. However the sum of the trust fund and the excess of taxes over benefits for future participants is only 0.2 to 0.3 times DHI. This implies that the balance in the trust fund will be exhausted during the lifetime of current participants. When that happens the full payment of promised benefits will be impossible because the present law does not give the system the authority to borrow. The likely solution will involve both benefit cuts and increases in taxes on future participants; it will not be possible to increase the unfairness to future participants by enough to close the funding gap without benefit cuts. If half the cost of closing the funding gap is borne by current participants, their actuarial social security wealth would be reduced to about 1 times DHI.

Technical annex B: Social security and pensions in France: building the data set

1. Social security

Social security in France includes several mandatory pay-as-you-go multi-employer schemes.

The bulk of the population is covered by 3 schemes. All these schemes are mandatory and run on a pay-as-you-go basis. They represent 83 percent of contributors and 79 percent of the pension paid in 2005.

1rst July 2005	contributors	in%	beneficiaries	in%
wage earners				
general regime (CNAVTS)	16 637 978	68	10 757 714	51
civil servant	2 459 134	10	1 960 765	9
farm wage earners (MSA)	666 998	3	2 353 373	11
Mines (CANSSM)	13 147	0	371 111	2
state workers (FSPOEIE)	55 260	0	108 472	1
local government and hospitals (CRNAEL)	1 807 475	7	757 821	4
gaz and electricity (EDF-GDF)	141 662	1	185 023	1
Railways (SNCF)	168 132	1	306 768	1
Subway (RATP)	43 750	0	43 356	0
Sailors (ENIM)	31 036	0	114 842	1
notary clerks (CRPCEN)	44 545	0	52 221	0
Banque de France	15 015	0	14 781	0
other wage earners (SEITA, CAMR)	1 759	0	23 258	0
Own account workers				
farmers (MSA)	606 458	2	1 879 644	9
salespersons (ORGANIC)	693 403	3	974 991	5
craftspersons (CANCAVA)	552 795	2	776 462	4
independants (CNAVPL)	532 322	2	193 325	1
Clergymen (CAVIMAC)	15 311	0	63 622	0
Total social security	24 486 180	100	20 937 549	100
non management staff (ARRCO)	14 326 340	59	8 775 851	42
management staff (AGIRC)	3 590 660	15	2 106 363	10
government staff (IRCANTEC)	2 400 000	10	1 600 000	8
complementary scheme	20 317 000	83	12 482 214	60

2005	pensions	survivors	total
complementary scheme	44 297	8 813	53 110
general regime	65 634	8 662	74 296
civil servants	31 827	4 193	36 020
local government and hospital	9 977		9 977
others	43 615		43 615
Total social security	177 380	29 661	207 041

Financial transfers occurs between the different schemes in order to compensate for imbalances between contributions and benefits in some of them. For example, the State contributed 1,7 euro billion to the “general regime” in 2007. Moreover, unbalanced regimes were financed by the State (SNCF, RATP, ENIM, CANSSM for a total amount of 3,8 euro billion in 2007, and FSOEIE).

1.1 The state civil servant social security

State civil servants (10 percent of the contributors and 17 percent of the pension paid in 2005) are covered by a unique scheme directly paid on the State budget. It is included in the central government sector.

The civil servant regime were reformed in 2003 (law of the 21 August 2003).

The **maximum** retirement age was 60 before reform. It will progressively raises to 65 in 2020. No pension entitlement are earned under 15 years of service. The required number of years for a full pension is 38^{1/2} years in 2005, 40 years in 2008, and potentially 41 years in 2012, 41^{3/4} in 2020. The reference wage is the average 6 last months wage. The replacement rate is 75 percent for people having worked the total required time or leaving at the limit pension age (from 61 in 2006 up to 65 in 2020). Any missing quarter reduces the replacement rate by 1.25, progressively raised to 5 percent.

Employee contributions amount to 7.85 percent of the basic salary without bonuses +5 percent under ceiling of 20 percent of basic salary. Employer contribution is complemented in order to attain the amount of pensions paid during the year. It amounts to 49.9 percent for civil servants and 100 percent for military servants. Survivors receive 50 percent of the retiree pension. The regime also covers disabled workers.

Accrued to date pension liabilities of the State civil servants' scheme are calculated by the Ministry of Finance from 2003, with a generational model (Ariane) taking into account the specific feature of civil servants (career, gender structure, life expectancy...). It is based on the PBO method. These data are now published¹⁶ in the State accounts and checked by the Commission of Audit of public sector (Cour des comptes).

Civil and military State servant social security

data published by the Ministry of Finance for a 2% discount rate

	2005	2006	2007	2008
Pension entitlement (opening BS)	950	975	1033	1056
actual contribution	24	20	22	25
imputed contributions	37	40	38	38
pension paid	33	35	37	38
revaluation				
<i>other change in volume (1)</i>	-3	33		
Pension entitlement (closing BS)	975	1033	1056	1081
Other schemes financed by the State			270	

(1) calculation of the author in order to reconcile pension entitlement discounted at 2%

1.2 The other social security schemes

The bulk of the wage earners of the private sector are covered by two defined benefit schemes, included in the social security sub-sector, which benefits add-up:

- the basic general regime (CNAVTS – Caisse nationale d'assurance vieillesse des travailleurs salariés) represent 68 percent of contributors and 36 percent of the pension paid in 2005.
- mandatory complementary schemes federated in two institutions: AGIRC (Association générale des Institutions de retraite des cadres) for executives, and ARCCO (association des régimes de retraite complémentaires) for both executive and non executives. This scheme complement the general regime as well as the minors scheme (since 1967) and the farm wage earners scheme

¹⁶ See Direction générale de la comptabilité publique [2005], Pellé [2006]

(since 1991), the later adding 5 percent of contributors to the general regime. It pays 26 percent of the pensions in 2005.

This regimes were reformed in 1993 and further in 2003. In addition to the increase of the required working time, the 1993 reform indexed the pension and the reference salaries on inflation.

The benefit formula is different for each of these 3 regimes.

For the **general regime** pension is calculated as:

$$\frac{\text{Average annual salary (1)} \times \text{replacement rate (2)} \times \text{time in regime limited to the total required time (3)}}{\text{total time required (4)}}$$

- (1) the average is calculated on 22 best years for people born in 45 up to 25 best years for people born in 1948, under the social security ceiling. This ceiling is proportional to the average earning income of the private sector.
- (2) the replacement rate is 50 percent for people having worked the total required time or leaving at 65. Any missing quarter reduces the replacement rate by 1.25 percent. The maximum rate is 50 percent of the social security ceiling.
- (3) By derogation, people having worked the required time at 60 can go on working. Each supplementary quarter give them a surplus of 0.375 percent
- (4) the required number of years for a full pension was 37 ^{1/2} years in 1993 and raises after reform from 40 years in 2003 to 41 years in 2012.

The contribution rates are the following:

2005	under ceiling	whole salary
employee	6,7	0,1
employer	8,3	1,6

Survivors receive 54 percent of the benefit. Disabled enter the regime after the age of 60. Beforehand, they are compensated by the health regime.

The benefits of the **AGIRC and ARRCO** for year N are calculated as:

$$\text{Ratio (1)} * \text{value of the point in year N (2)} * [\sum \text{contribution of year T} / \text{reference salary of year T}] (3)$$

With year N: any year after retirement year T: any year as contributor

- (1) the ratio lies between 43 percent if retirement occurs at 55 to 100 percent if retirement occurs at 65.
- (2) value of the point and the reference salary are fixed by the social partners and their relation does not necessary reflect a discount rate. Usually, the reference salary is indexed on the average salary of the private sector. The value of the point is indexed on inflation.

1rst April 2006	ARCCO	AGIRC
reference salary	13,0271	4,5444
value of the point	1,1287	0,4005

- (3) The number on brackets is usually called the “number of points earned”

Pension can be obtained from 55. If it is demanded before 65, the points are reduced by a coefficient which raises from 0.43 at 55 to 1 at 65. Survivors obtain 60 percent of the initial pension. The contribution rates are the following:

	non executives	executives		
under 1 SSC*	7,50%	7,50%	0,39%	under 1 SSC*
1-3 SSC*	20%	20,71%		1-4 SSC*
		20,65%		4-8 SSC*

*SSC = social security ceiling = 30 192 euros in 2005

paid to ARCCO: 60% employer 40% employee

paid to AGIRC: 62,07% employer 37,93% employee

1.3 Running PROST for the private sector social security.

Data used to run PROST refer to the general regime AGIRC and ARCCO rules. The amounts are thus extended to include specific schemes such as local government and hospital civil servants schemes (CNRACL), own account workers (CNAVPL, CANCAVA, ORGANIC), and some special schemes financed by the state by the mean of subventions (state owned companies schemes¹⁷ -SNCF, RATP,...- or declining profession schemes -minors, sailors, farmers, State workers...).

** not to be added*

complementary scheme		AGIRC-ARCCO 73,2% contributors* 52,0% beneficiaries* 25,6% pensions paid	
basic scheme	civil servants 10,0% contributors 9,4% beneficiaries 17,4% pensions paid	general regime 67,9% contributors 51,4% beneficiaries 35,9% pensions paid	other schemes 22,0% contributors 39,3% beneficiaries 21,1% pensions paid
			minors and farm wage
Ministry of Finance estimation 10% of the beneficiaries and contributors		prost using general regime-agirc-arcco rules 90% of the beneficiaries and contributors	

The benefit formula of the main regime was used and simply extended to the whole population covered by the social security schemes (thus excluding the State civil servants). Macro economic assumptions and projections from 2005 to 2050 are the one provided to the Aging working group (AWG) of the European Commission¹⁸. Mortality tables are the one published by the INSEE and used by the COR. Data on labour are available from the INSEE. Data on social security are available from the social security regimes (CANVTS, AGIRC, ARCCO).

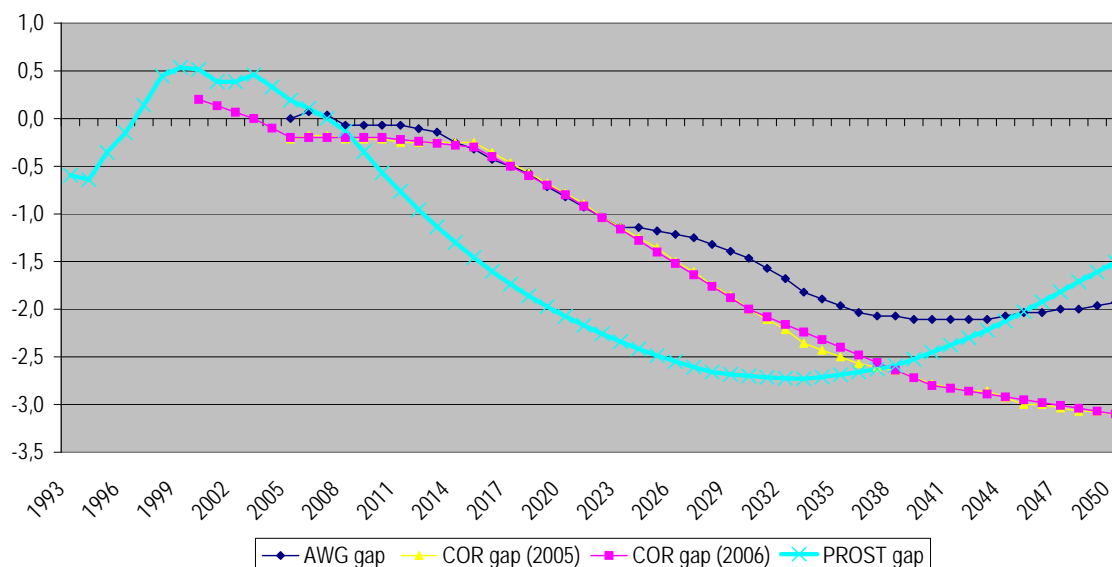
¹⁷ From 2005, the EDF and GDF schemes are now included in the general regime and the complementary scheme i.e. social security for the bulk of it. The small part in excess is maintained as an employer scheme.

¹⁸ See European Commission [2005]

PROST provides the accrued to date pension liabilities using the PBO method. In order to gauge the quality of the PROST estimates, the results have been compared to official data. For the social security, the national statistical institute (Insee) runs a micro-simulation model (Destinie). Accrued to date pension liabilities using the PBO method were published for 2005 with 2050 as time horizon¹⁹. The calculation was based on the benefit formula of the main schemes, which covers about 70 percent of the population. The results were extended to the whole population thanks to data collected from the social security offices by the “Conseil d’Orientation des retraites” (COR), a public body devoted to the pension reforms follow-up. Destinie provides several *scenarios*, using in particular several discount rates. The result of the comparison is reported in table 1.

The financing gap calculated by PROST fits roughly with both the estimates of the AWG and the COR. The reasons for differences are mainly in the use of a simplified benefit formula (for example, it was not possible to take into account the benefits caused by children) and the use of a unique formula to describe the diverse situation of the different social security schemes.

Four estimates of the financing gap



For data in annex 4, PROST was run with a 2 percent discount rate and 2085 as time horizon.

2. Private pensions

Private pension are still poorly developed in France. Apart from book reserves, on which statistical data are scarce, they were located exclusively in insurance corporation. In 2003, the PERCO a new type of employer pension funds based on investment funds is created. The French transposition in 2006 of the European directive on pension funds provided some tools for further development. Insurance companies are entrusted with employer pension funds. The PERP is a personal retirement scheme run by insurance corporation. Data for outstanding amounts, contribution and pension in insurance contracts are publish by the professionnall association of insurance companies, the Fédération française des sociétés d’assurances (FFSA). The professionnall association of investment funds (AFG) publishes similar dat on PERCO.

DB schemes and book reserves include:

¹⁹ See Blanchet, Ouvrard [2006], Conseil d’orientation des retraites [2006]

- DB plans in insurance companies, where the risk is born by the employer (art. 39 CGI, “indemnités de fin de carrière”)
- Book reserves have been estimated from a Mercer study on pension liabilities of CAC40 groups in 2005 and 2006. The amounts not covered by financial assets have been kept and further reduced for the share of non resident employees of the group. To estimate the amount from 1995 to 2004, the increase in DB insurance companies has been used. The information being very scarce, transaction flows have been set as a difference between outstanding amounts.

Private pensions, data sources, estimation methods and classification

outstanding amounts as at en 2006, in euro million

nature	classification in the present study	sources	type	status in fin. accounts	reserves	contributions	pensions
	life insurance and other DC plans						
	<i>insurance contracts with fiscal provisions</i>						
pension in life insurance	defined contribution (art 82 CGI)	FFSA	dc	life insurance reserves	2 734	190	160
	defined contribution (art 83 CGI)	FFSA	dc		20 933	1 899	1 224
	individual workers (Madelin)	FFSA	dc		11 154	1 705	188
	farm worker	FFSA	dc		2 214	205	37
	<i>specialised insurance corporations</i>						
	Institution de prévoyance	estimates		life insurance reserves	4 000	?	17
	Institutions de retraite supplémentaire	estimates			19 600	?	83
	Mutual insurance	estimates			15 000	?	63
	individual pension plans						
life insurance	PERP	FFSA	dc	life insurance reserves	2 350	852	0
	other individual plans	FFSA	dc		29 041	3 520	893
	<i>specialised financial corporation</i>						
pension in pension funds	PERCO	AFG	dc	mutual funds shares	761	432	0
	DB plans and book reserves						
pension in employer sector (risk born by the employer)	defined benefit (art 39 CGI)	FFSA	db	life insurance reserves	30 993	2 797	1 812
	retirement benefit	FFSA	db		11 901	1 275	696
	companies net liabilities	Mercer	?	not yet recorded	25 674	?	?

Technical Annex C : Modeling the US social security with PROST

The benefit formula in 2007 is described as:

90 percent of the first 711 monthly indexed dollars earned in one of the best 35 years,
+ 32 percent of the next monthly indexed dollars earned in one of the best 35 years up to 4288 dollars
+15 percent of the monthly indexed dollars above 4288 and under the indexed ceiling.

This is the monthly benefit at 66 years old. It is reduced from 25 percent if the person retire at 62.

Due to this formula, the maximum but unattainable replacement rate is 90 percent. The Social security administration describes a 40 percent replacement rate as usual. The “maximum” replacement rate of our formula is the average. The incremental replacement rate is the result of the division of 64 percent by 45 years.

Benefit Formula Parameters for old age	
Required Years of Service for Basic Replacement Rate	10
Basic Replacement Rate	14,3%
Incremental Replacement Rate	1,43%
Maximum Replacement Rate	64%
Years in Final Average Wage	35
Wages are Valorized to Nominal Wage Growth	100,0%
Pension Indexation To Inflation	100,0%
Actuarial Reduction for Early Retirement	
% Reduction for Each Year Before Normal Retirement Age	6,0%
Maximum Number of Years of Reduction	4
Revenue Sources	
Contribution from Employees	6,2%
Contribution from Employers	6,2%
Contribution Ceiling Applies for Employers	Yes
Contribution Ceiling Indexation To Nominal Wage Growth	100,0%

	2002	2009	2020	2027
Retirement Age	65	66	66	67
replacement rate for survivors as a % of old age pension	38%	35%	35%	33%

<i>Length of Service at Retirement</i>			
<i>Male</i>		<i>Female</i>	
<i>2002</i>	<i>2050</i>	<i>2002</i>	<i>2050</i>
41,0	42,0	37,0	38,0

In order to gauge the quality of the estimates, the results of PROST have been compared to the long term estimates of the OASDI actuaries report for 2007. The results are shown in the tables and graphs below.

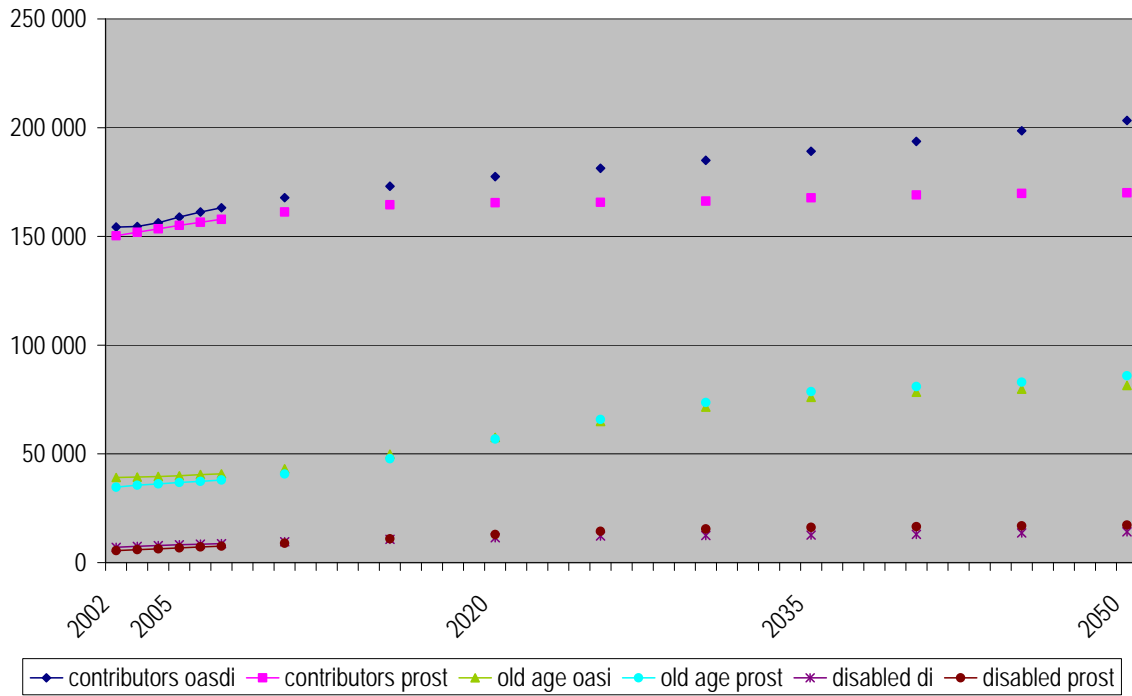
Pension obligations according to the OASDI report and to PROST,

In years of disposable income

	2002	2003	2004	2005	2006	2007
OASDI closed group unfunds obligation (1)	1,3	1,4	1,4	1,5	1,5	1,5
PROST accrued to date liabilities	2,2	2,2	2,2	2,2	2,1	2,1

(1) equals Present value of future cost less future taxes for current participants less current trust fund

Number of contributors and beneficiaries of the social security (in thousand).



Balance (contribution and taxation less benefit payments) of the social security (in \$ billion)

