



BANCA D'ITALIA  
EUROSISTEMA

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(Occasional Papers)

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by Riccardo De Bonis, Daniele Fano and Teresa Sbano

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# HOUSEHOLD AGGREGATE WEALTH IN THE MAIN OECD COUNTRIES FROM 1980 TO 2011: WHAT DO THE DATA TELL US?

by R. De Bonis\*, D. Fano\*\* and T. Sbano\*\*\*

## Abstract

This paper analyses aggregate household wealth in Canada, France, Germany, Italy, Japan, Spain, the UK and the US. Building on a new data set for the time span 1980-2011, we discuss the trends in household financial assets in the last thirty years, the reasons for differences across countries, the tendency towards convergence, the economic interpretation of breaks in time series and the effects of the recent financial crisis. We also comment on the evolution of household debt and real assets. In discussing the empirical evidence, the paper summarises some of the recent literature on household wealth.

**JEL Classification:** E01; E21; G20.

**Keywords:** household wealth and debt; financial systems.

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\*\*\* Pioneer Investments.



## 1. Introduction <sup>1</sup>

Household wealth is a traditional subject of economic analysis, as testified, *inter alia*, by the large literature on wealth effects, individual risk aversion, the characteristics and evolution of financial systems, and on the links between portfolio choices, population ageing and retirement saving.<sup>2</sup> A broader area of interest relates to the evaluation of the well-being of societies.<sup>3</sup>

Lately, the debate on the causes and consequences of the financial crisis that began in 2007 and exploded in 2008 has spurred further interest in household wealth.<sup>4</sup> The crisis occurred after a period of rising household indebtedness and heightened volatility on financial markets. Most importantly, the crisis determined a destruction of household wealth. Hence the interest in longer series in financial accounts, which are the privileged macro source on household assets and liabilities.

Relying on a new data set for Canada, France, Germany, Italy, Japan, Spain, the UK and the US, this paper studies the level and composition of aggregate financial wealth and discusses why financial asset sizes differ across countries. We analyse the main instruments in which individuals invest: deposits, securities other than shares, shares and other equity, and insurance technical reserves. We also look at convergence issues and at the role of institutional investors. Finally, we discuss the evidence on household debt and real assets.

The paper is based on a realignment of series on household financial assets and liabilities following the introduction of the System of National Accounts in 1993 (SNA93)<sup>5</sup> for the time span 1980-2011. Based on the SNA93 and on the 1995 European System of Accounts (ESA95) classification, we have engaged in a statistical reconstruction reconciling the series preceding

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<sup>1</sup> This paper was prepared for the Working Party on Financial Statistics held at the OECD on 1-2 October 2012. The authors wish to thank the participants at seminars held at the OECD, the Bank of Japan, and the Bank of Korea for useful comments. Massimo Coletta provided excellent research assistance. Many thanks to Roberto Marano for his invaluable editorial help. The views expressed in this paper do not necessarily represent those of the Bank of Italy or Pioneer Investments.

<sup>2</sup> See, for instance, Poterba (2000); Guiso, Paiella and Visco (2005); De Bonis and Silvestrini (2012); Guiso et al (2002); Goldsmith (1969); Babeau and Sbrana (2002); and the Group of Ten (2005).

<sup>3</sup> In this respect the Stiglitz-Sen-Fitoussi Report of 2009 underlined that wealth should be considered jointly with income and consumption (Fitoussi, Sen, Stiglitz 2009).

<sup>4</sup> According to Chen, Milesi-Ferretti and Tresselt (2012), “*Indeed, between 2000 and 2008 the entire deterioration in the net financial position of deficit countries vis-à-vis non residents reflects a worsening of private sector financial balance sheets, with the effect on household balance sheets masked by asset price booms*”.

<sup>5</sup> An initial contribution was presented for the Luxembourg Wealth Study. See De Bonis, Fano and Sbrana (2007). An impulse for more systematic availability of regularly updated macro figures on household assets and liabilities came from the Financial Stability Board and the IMF (Financial Stability Board and IMF 2009). Subsequent initiatives followed (Financial Stability Board and IMF 2011; Shrestha 2012).

SNA93 with the series that have followed since 1995. The process is illustrated in detail in the Appendix.<sup>6</sup> We do not study household-level data on wealth (on this topic see ECB 2013).

The paper is organized as follows. Section 2 analyses the evolution of aggregate household financial assets. Section 3 discusses the main factors explaining the differences across countries. Section 4 looks at the national composition of financial wealth. Section 5 studies the issue of convergence. Section 6 examines household debt and net financial wealth. Section 7 compares household real assets. Paragraph 8 contains the main conclusions. The Appendix focuses on the methodology used.

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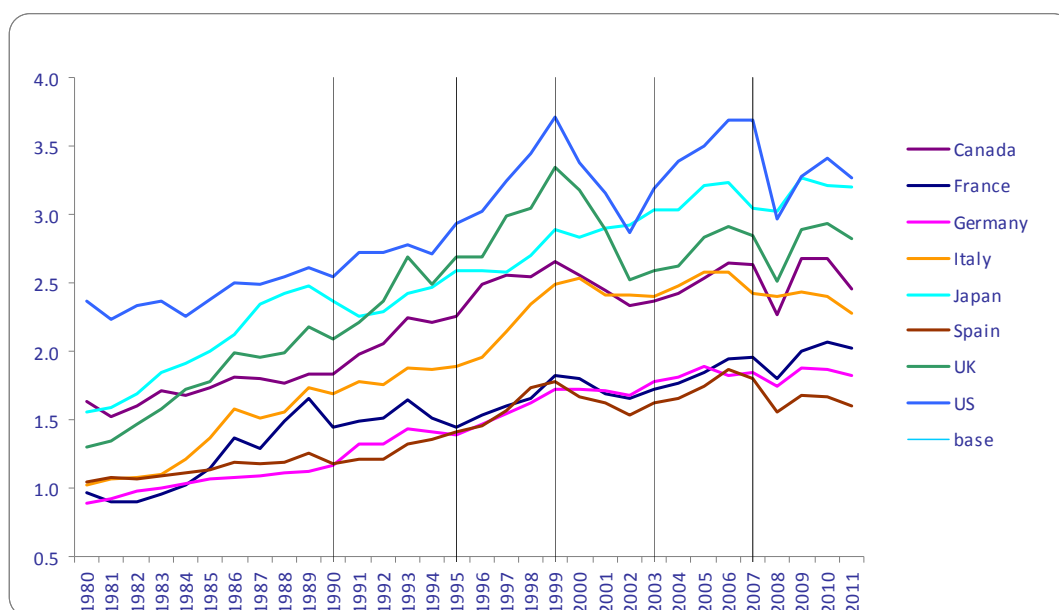
<sup>6</sup> This greater detail is expected to be officially available from 2014 onward, while, for the sake of continuity, correspondence tables will be needed in order to re-group the new items in the previous SNA93 aggregates. For more on the issues involved, the interested reader may want to refer to the other papers presented at the Working Party on Financial Statistics, OECD, Paris, 1 and 2 October, 2012. We recommend that, once the SNA08 implementation is operational, the reconciliation tables between the old and new series be published.



## 2. The evolution of household financial assets

Figure 1 shows the evolution of the stock of household financial assets relative to GDP from 1980 to 2011. The US, UK, Canada and Japan stand out as having, throughout the period, the highest ratios, while Spain, Germany and France have the lowest, with Italy positioned somewhat in the middle.

**Figure 1. Household total financial assets (ratio to GDP, 1980-2011)**



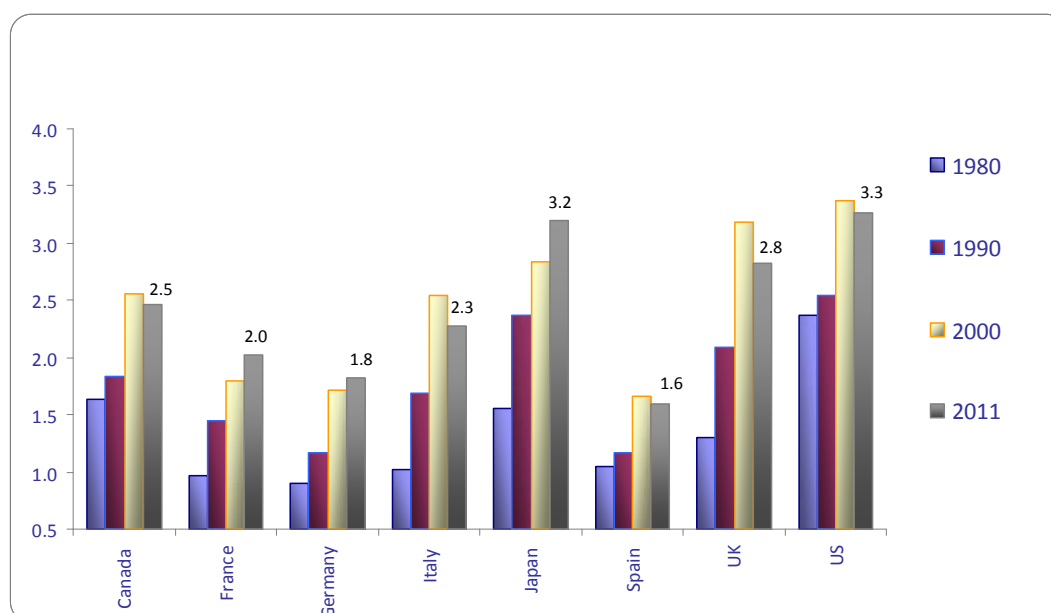
We have distinguished six periods, with a special focus on the most recent years.

- *The quiet eighties.* From 1980 to 1990, there was smooth growth of financial assets in most of the countries considered. In that decade financial repression measures – such as credit ceilings, high bank reserve requirements, limits on capital movements – were common and curbed the increase of financial assets. On the contrary the growth of household wealth was stronger in Japan until the end of the 1980s, as a result of high savings, the boom in asset prices and the good performance of the economy. Then, around the beginning of the 1990s, the economic crisis struck – resulting in the lost decade of 1991-2001 (Hayashi and Prescott 2002) – and financial assets were negatively affected. Since then in Japan the growth of financial assets has been much smoother than in other countries, due to the general deflationary context.
- *The “new economy” and the bubble of 1995-2000.* Overall, the growth in financial assets appears to have continued in the early 1990s and accelerated from 1995 to 2000, especially in the US, the UK, Canada and Italy. The acceleration was associated with the performance of the stock market during the years of the Internet bubble. The growth of financial assets was weaker in Germany and Spain, where historically banks have a strong role.

- *The burst of the bubble.* From 2000 to 2003 the slump in stock prices and economic stagnation caused a reduction in the ratio of household financial assets to GDP in all the countries. The decrease was sharper in the US and the UK because of the greater importance of the Stock Exchange in the two countries.
- *The temporary recovery.* From 2003 to 2007 financial assets rebounded. However, there were strong differentiations across countries. In the US in 2007, financial assets regained the previous peak levels observed in 2000, while the recovery was weaker in the UK. Italy, Spain and Canada were less volatile than the US and the UK. France, Germany and Japan were on a continuing growth path and only slightly affected by volatility.
- *The eruption of the financial crisis.* The crisis determined a drop in the stock of financial assets in all the countries with the exception of Japan. In 2008 the reduction of the value of financial assets was particularly accentuated in the UK, but also in Canada and the US. Only minor volatility was observed in the other countries, because of the greater importance of bank deposits.
- *The years after 2009.* From the first half of 2009 onwards, household financial assets recovered. In 2011 in Germany, France, and Japan, financial wealth had reached the pre-crisis level of 2006; the US was still suffering from the shock of 2007-2008, while Spain and Italy were negatively affected by the sovereign debt crisis that erupted in 2011.

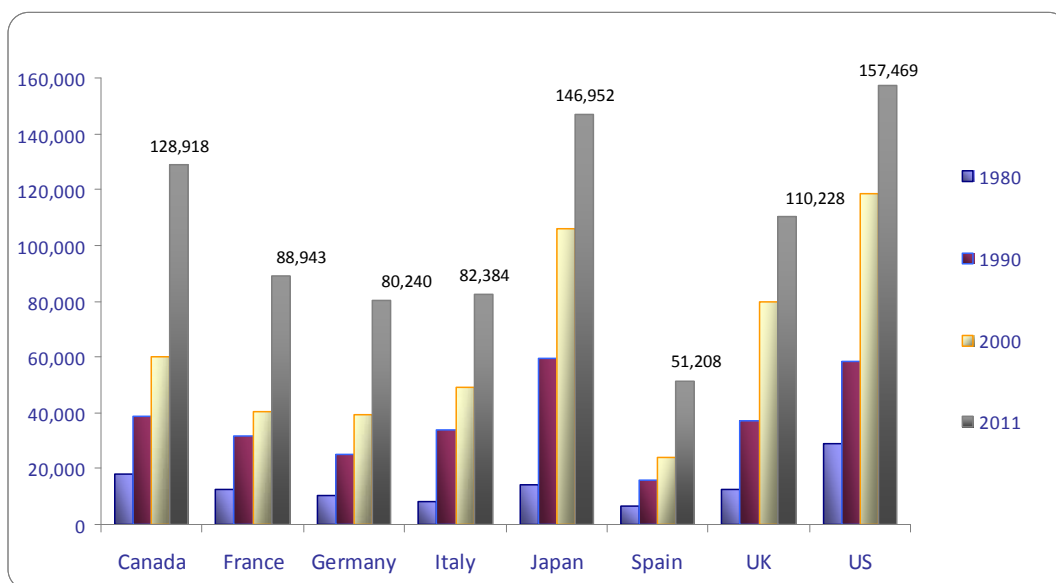
Figure 2 helps highlight the evolution of financial wealth with reference to specific points in time. The figure confirms that the growth of financial assets was, overall, very strong in the 1990s, following a positive period in the 1980s. Household financial wealth reached its peak in 1999 in most of the countries. Only in France, Germany and Japan were financial assets greater in 2011 than in 1999.

**Figure 2. Household total financial assets (ratio to GDP in selected years)**



Per capita financial assets put the disparities across countries in a somewhat different perspective (Figure 3). As in the case of the ratio of financial assets to GDP, the US and Japan show the highest levels, followed by Canada and the UK. By contrast, while Italian households traditionally have a ratio of financial assets to GDP greater than the levels of Germany and France, per capita figures show that France and Germany were in line with Italy in 2011. The performance of the Italian economy has been disappointing in recent years and this result has influenced the ratio of financial wealth to GDP (or to disposable income).

**Figure 3. Household total financial assets per capita in nominal US dollars (selected years)**



### 3. Why does financial wealth differ across countries?

While a vast literature exists on the determinants of per capita GDP or GDP growth, the same is not true of the determinants of household wealth (notable exceptions are Davies, Sandstrom, Shorrocks and Wolff, 2011; Zinni 2012). Taking into account the absence of a comprehensive theoretical framework and the existence of endogeneity issues between wealth and other variables, the differences in household financial assets across countries can be linked to four main, interrelated factors:<sup>7</sup>

- *participation in financial markets;*
- *social security systems;*
- *substitution effects between real and financial wealth;*
- *saving and price effects.*

#### 3.1. Participation

A first explanation lies in households' participation in financial markets. The percentage of individuals who invest directly in shares is higher in the US, the UK, and Japan than in France, Germany, Italy and Spain (Guiso, Haliassos and Jappelli 2003). Also, indirect participation in financial markets through mutual funds, pension funds and insurance corporations is higher in the US and the UK.

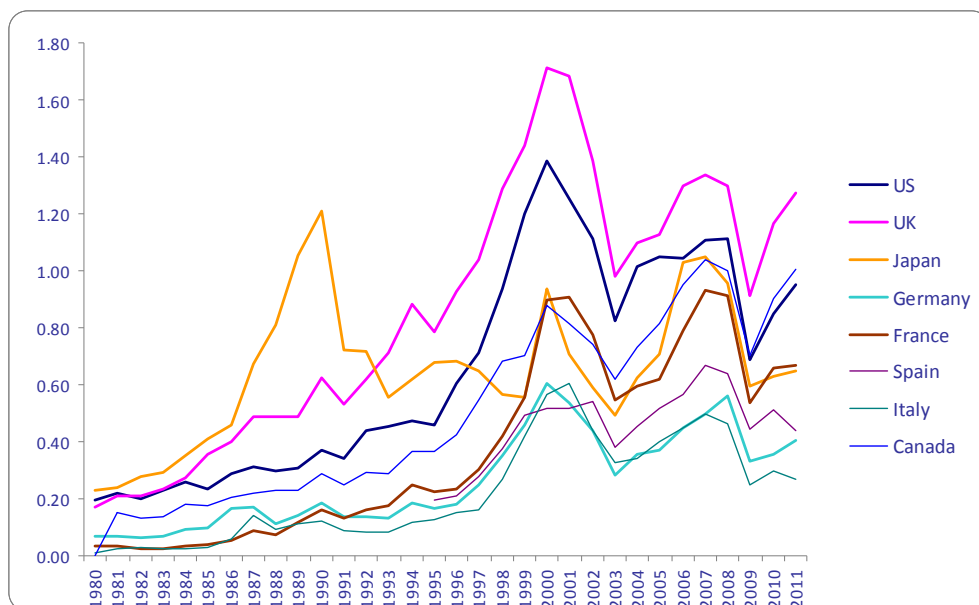
Given that households are the major owners of shares, at the macro level stock market capitalization may be used as a rough proxy of participation in financial markets. Figure 4 shows the evolution of stock market capitalization in relation to GDP. Trends are quite similar to those presented in Figure 1. Japan experienced an acceleration of stock market capitalization in the second half of the 1980s and was subsequently affected by the financial crisis and the prolonged stagnation. In the other countries, the increase in stock market capitalization was concentrated in the time span 1995-2000. The subsequent years were dominated by the two crises of 2000-2003 and 2007-2009 and the diversified recoveries: as in the case of financial assets, today's stock market capitalization levels are also far off the peaks of 1999-2000. With the exception of Japan, the figure also shows a clear pattern of hysteresis; the relative rankings of countries by stock market capitalization are today quite similar to thirty years ago. This is partly disappointing for those countries, like Italy, which introduced reforms to improve the corporate governance of quoted firms and to foster the development of the Stock Exchange (see Bianchi and Bianco 2006; Enriques 2009).

Households' exposure to equities differs in our countries (Fano 2005). Correlation coefficients, across time, between household wealth and stock market indices (Table 1) are very high in the UK, the US and Canada, and lower in Japan and Spain, where deposits are crucial in household portfolios. Clearly other factors, including stock market performance, affect total household wealth.

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<sup>7</sup> Here we draw on Bartiloro, Coletta, De Bonis and Mercatanti (2012).

**Figure 4. Stock Market Capitalization \***  
(ratio to GDP)



\* Data for Spain are available since 1995.

**Table 1. Correlation of household aggregate financial wealth and stock market indices: 1980-2011**

Italy	0.879125	Canada	0.869536
Spain	0.599832	Japan	0.569908
Germany	0.850728	UK	0.895904
France	0.797349	US	0.870062

### 3.2. Social security systems

A second reason for country differences in household financial wealth is that public pension schemes – not registered in the current financial accounts – are less generous in the UK and the US than in the euro area countries. Consequently, household financial assets are greater in the UK, the US, Canada and Japan because of the popularity of private pension schemes (see Whitehouse and Queisser 2012 for a survey). This second factor is interrelated with the first, given that private pension and insurance vehicles are powerful engines of greater individual participation in financial markets (see Banks and Wakefield 2003 on the UK).

### 3.3 Substitution vs complementary effects with real assets

A third cause of country differences in financial wealth is households' preference for investing in real assets. For instance household real assets are large in Spain, where financial assets are very low, while they are modest in the US, where financial wealth is highest. This is

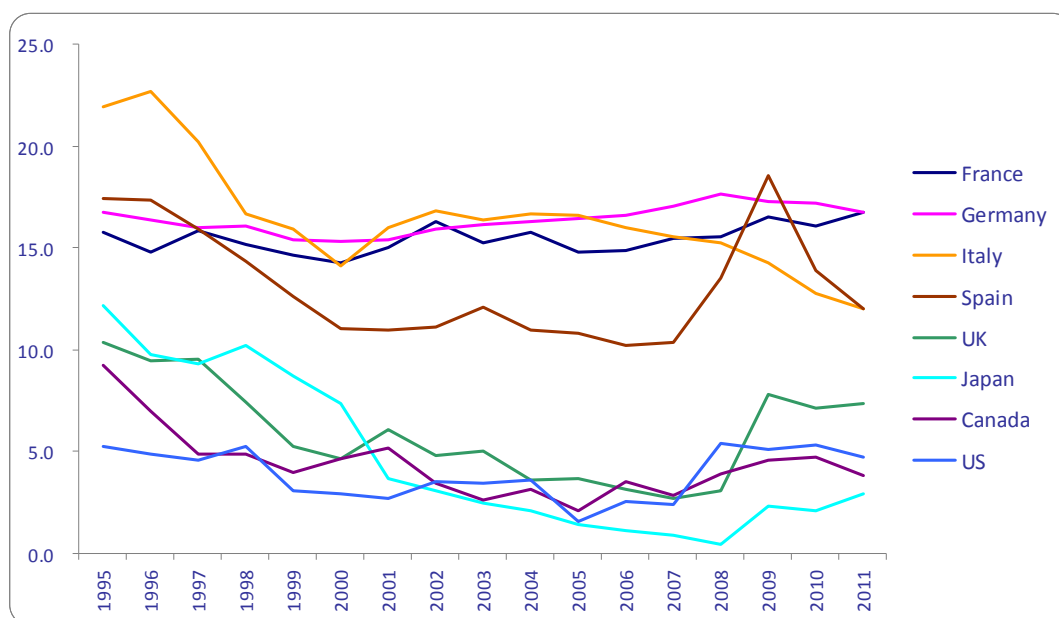
puzzling because real and financial assets seem complementary in the UK, Italy and France. We will analyze household real wealth in detail in Section 7.

### 3.4. Saving and price effects

In the long run, wealth is linked to the accumulation of savings but in the short run this connection is often difficult to detect. Figures 5a and 5b show that since the 1990s saving dynamics have differed strongly across countries.<sup>8</sup> Savings alone can hardly explain variations in wealth. The propensity to save declined in most cases, and particularly in Italy and Japan, which both started with high levels in the 1990s. Lower interest rates, unrealized capital gains (price effects), increased availability of credit, population ageing and slower growth of disposable income are among the explanations (see de Serres and Pelgrin 2003 on the determinants of saving in OECD countries; see Lusardi, Skinner and Venti 2001 on the US; see Bassanetti, Rondinelli and Scoccianti 2012 on Italy).

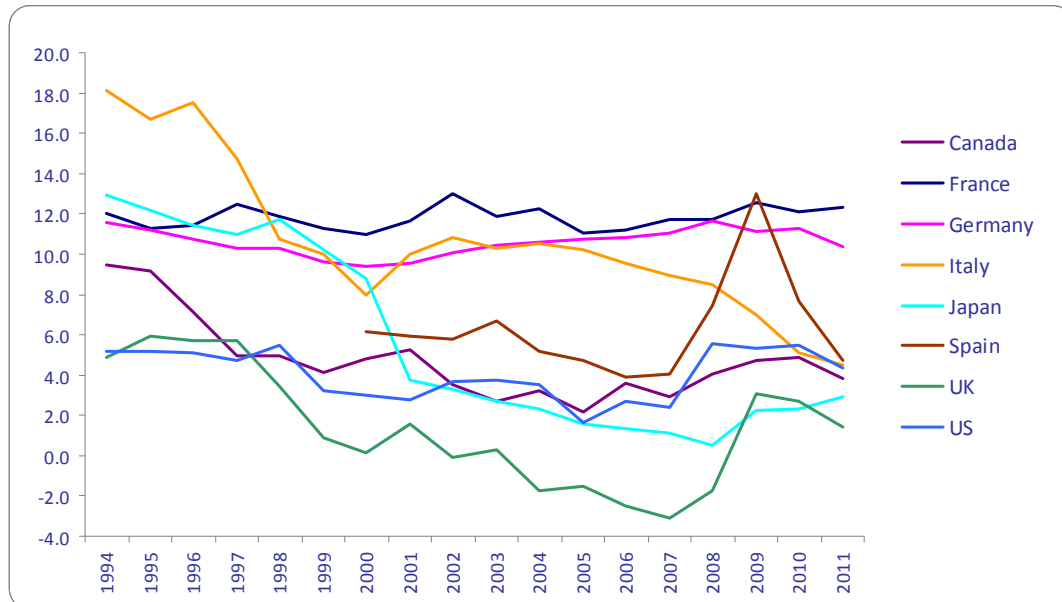
Following the onset of the financial crisis in 2007, saving rates recovered in those countries where households were most affected by high levels of debt: this was the case of the UK and the US (on household indebtedness see Section 6). According to the most recent figures, savings remain higher in the euro area than in the UK, the US, Canada and Japan. It is noteworthy that Germany and France are the only countries where household savings remained fairly stable in the last 15 years.

**Figure 5a. Saving rates: 1995–2011**  
(percentages)



<sup>8</sup> Figure 5a reports gross savings for five countries; Canada, Japan and the US have information on net savings only. Therefore Figure 5b shows net savings for all the countries (see OECD 2004 on statistical issues in the measurement of savings).

**Figure 5b. Household net savings rates: 1994-2011**  
(percentages) \*



\* Data for Spain are available since 2000.

Correlations between the saving rate and wealth were negative in many countries in the 1990s and the 2000s. This is consistent with the idea that in the years of rising share and house prices, i.e. in most of the period from 1995-2007 individuals saved less because their perceived wealth increased: this interpretation applies in particular to the US, the UK and Canada.<sup>9</sup>

Table 2 tries to disentangle the two main components of the overall change in the stock of financial wealth. Section A of the table shows the rates of change of financial wealth as a ratio to GDP, as derived from the statistics shown in Figure 1 above. Section B presents net lending and net borrowing by households as a percentage of GDP, i.e. the financial component of savings, as derived from national accounts. Section C highlights the residual component, i.e. the changes in aggregate financial wealth that are not explained by new financial savings. This residual is a mix of components, but price effects play a key role as shown by the high correlation with stock indices.

As underlined above, only a portion of savings is directed towards financial uses, the rest being directed towards non-financial investments and real estate essentially. Net lending by households highlights this financial component of savings.

<sup>9</sup> See Greenspan (2005), Palumbo and Parker (2009), and Kennickell (2012) on the US; Barwell and Burrows (2011) on the UK; O’ Hagan (2012a) on Canada.

**Table 2. Disentangling the main components in the rates of change of household financial wealth**

<b>A. % Change in household financial wealth/GDP</b>																
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Canada	2.2	10.5	2.6	-0.5	4.5	-4.1	-4.4	-4.3	1.6	2.1	4.7	4.1	-0.4	-13.6	17.8	0.2
France	-2.5	3.9	3.8	4.5	9.8	-1.6	-6.1	-1.8	4.1	2.6	4.5	5.2	0.7	-7.8	11.3	2.7
Germany	2.4	2.2	4.2	5.5	6.5	-0.3	-0.1	-2.3	5.7	2.0	4.4	-3.3	0.7	-5.4	8.1	0.6
Italy	-7.9	13.0	8.4	10.0	6.1	2.2	-5.2	0.0	-0.2	3.2	4.1	0.0	-5.1	1.7	-3.7	-1.0
Japan	4.9	0.1	-0.5	4.8	7.0	-1.7	-0.4	0.0	4.7	-0.6	5.4	0.4	-6.7	-1.2	9.7	-3.4
Spain	9.1	0.2	5.6	10.8	2.5	-6.3	-2.4	-5.6	6.2	0.5	7.9	7.1	-3.7	-13.7	7.5	0.2
UK	8.4	3.0	7.2	6.3	7.9	-9.1	-6.6	-9.3	11.6	4.0	3.1	7.5	-1.1	-19.9	10.0	4.2
US	7.8	-0.1	12.3	1.6	9.8	-5.0	-9.0	-13.7	3.1	1.4	8.8	1.9	-2.0	-11.9	15.3	1.5

<b>B. Household net lending/net borrowing as a % of GDP</b>																
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Canada	3.9	2.5	0.2	0.2	-0.5	-0.1	0.0	-1.7	-2.7	-2.5	-3.2	-2.7	-3.5	-2.7	-1.2	-1.8
France	4.8	4.0	4.8	4.3	3.7	3.9	4.1	5.0	4.1	4.0	3.2	3.1	3.2	3.3	4.9	4.6
Germany	3.1	3.3	3.3	3.5	3.5	3.7	4.6	4.7	5.8	6.1	6.5	5.9	5.6	5.6	6.4	6.0
Italy	9.4	9.6	7.2	4.7	4.5	2.7	4.1	4.4	3.5	4.0	4.1	3.5	3.0	3.0	2.7	1.6
Japan		4.6	5.4	7.0	5.8	7.1	3.5	0.9	2.3	1.1	1.1	0.9	2.2	2.2	4.1	2.5
Spain						1.3	0.6	0.3	0.0	-1.0	-1.7	-2.6	-2.7	1.0	6.9	3.9
UK	3.8	3.0	3.5	1.8	-0.1	-0.6	0.1	-1.5	-1.4	-3.2	-2.9	-3.8	-4.0	-2.1	2.7	1.7
US	1.8	1.7	1.2	0.7	-2.2	-4.6	-1.5	-2.6	-1.1	0.5	-2.7	-3.2	0.8	3.4	2.8	5.0

<b>C. Residual effect (including price effect)</b>																
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Canada	-1.7	8.1	2.4	-0.8	5.1	-4.0	-4.4	-2.7	4.3	4.7	7.8	6.8	3.1	-10.9	19.1	2.0
France	-7.2	-0.1	-1.0	0.3	6.1	-5.5	-10.2	-6.8	0.0	-1.4	1.3	2.1	-2.6	-11.0	6.4	-1.8
Germany	-0.7	-1.1	0.9	2.0	3.0	-4.0	-4.7	-7.1	-0.1	-4.1	-2.1	-9.2	-4.9	-11.0	1.7	-5.5
Italy	-17.3	3.4	1.3	5.3	1.6	-0.4	-9.3	-4.4	-3.8	-0.9	0.0	-3.5	-8.1	-1.2	-6.5	-2.7
Japan		-4.5	-5.9	-2.2	1.2	-8.9	-3.8	-0.9	2.4	-1.6	4.3	-0.5	-8.9	-3.4	5.6	-5.9
Spain						-7.6	-3.1	-5.9	6.2	1.5	9.6	9.7	-1.0	-14.7	0.7	-3.6
UK	4.6	0.0	3.7	4.5	8.0	-8.5	-6.7	-7.8	13.0	7.2	5.9	11.2	2.9	-17.8	7.3	2.5
US	6.0	-1.8	11.1	0.9	12.0	-0.4	-7.5	-11.1	4.1	0.9	11.6	5.1	-2.8	-15.4	12.5	-3.5

As far as “net lending/net borrowing” figures are concerned, in Canada, the UK, the US and Spain, households were net borrowers for most of the period 2002-2007 while in the other countries households confirmed their traditional role as net lenders. In the same years, in Canada, the UK, the US and Spain, price and other effects were the decisive factors influencing changes in financial wealth.



#### 4. The composition of financial assets

The analysis of the composition of financial wealth conveys a lot of information on the characteristics of market economies. Figure 6 shows the percentage composition of household financial wealth in our eight countries from 1980 to 2011, taking into account four instruments: deposits; debt securities (i.e. bonds); shares and other equity (including mutual funds); insurance and pension fund products.<sup>10</sup> Table 3 shows a more detailed comparison for the end of 2011.

*Deposits.* In Germany, Spain, and mostly in Japan deposits have represented the dominant form of household asset over the last 30 years. The percentage share of deposits decreased in most of the countries until 2007. Only in Japan did the deposit component remain steady over time, at more than 50 per cent of total household wealth. Certainly, deposits looked attractive in a permanent scenario of deflation. Moreover, another distinctive characteristic of Japan is the behavior of banks and other intermediaries. They reinvest the funds collected through deposits in bonds issued by the general government: this explains why foreign residents hold only a negligible portion of Japan's large public debt (more than 230 per cent of GDP in 2012; see Hoshi and Ito 2012). After 2007 the financial crisis was reflected in an expansion of deposits across the board, though in some countries this tendency started as early as 2001 after the burst of the dotcom bubble.

*Bonds.* Italy has the highest percentage of debt securities held directly by households: during the 1980s and the early 1990s general government securities were predominant in household portfolios while subsequently bonds issued by banks increased their share. In Italy bonds represent 20 per cent of total household financial wealth, while this percentage is smaller than 5 per cent in most of the countries. However, this evidence must be interpreted with caution because households hold bonds indirectly through institutional investors.

*Shares and other equity.* The combination of shares and other equity (quoted and unquoted shares, mutual fund units, other), also illustrated in Table 3 below for 2011, has always been the most important component of aggregate financial wealth in the US only. The same was true in the early 1990s in France, when the authorities fostered the development of financial markets through reforms (see Schmidt, Hacketal and Tyrell 1999). Also in Italy from 1997 to 2007 households moved strongly towards Stock Exchange investments (see Filippa and Franzosi 2001 on quoted shares and mutual funds in the second half of the 1990s).

Shares and other equity is a very heterogeneous item: it includes not only quoted shares and mutual fund units, but also unquoted shares and other equity (see Heaton and Lucas 2000 on substitution effects between the different instruments). While quoted shares and mutual funds are important in the US, unquoted shares and other equity are crucial in Italy (because of the large

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<sup>10</sup> When looking at portfolio composition a caveat is important. Due to the strong inequalities in the distribution of wealth, we cannot infer from macro financial data any indication about representative portfolios and representative individual investors. Macro data do allow us to provide a general picture of the relative weight of broad categories of financial instruments. On the comparison between micro and macro data see Antoniewicz *et al* (2005) and Bonci, Marchese and Neri (2007).

number of small firms owned by individuals), but also in France. Shares and other equity account for a very low percentage of total household wealth in Germany, where the appetite for Stock Exchange investment remains subdued. The low percentage of shares held by households in Japan and the UK is more apparent than real: in these two countries individuals participate in financial markets through life insurance and pension funds.

*Insurance and pension funds.* An important common feature for all countries and the entire period is the steady expansion of the share of insurance technical reserves. As previously stated, pension funds and life insurance are important holders of bonds and shares on behalf of households. The institutionalization of financial wealth reflects the tendency of households to delegate the management of their assets to pension funds, life insurance and mutual funds (see Fano 2011, pp. 114-116). As government retreats from full protection of household life-cycle needs, be it for retirement, education, temporary unemployment or health, households need to rely increasingly on their own savings. As well as providing standardized services, institutions may allow investment risk to be pooled and diversified. The institutionalization of savings, however, has given rise to new forms of risk for households beyond traditional market risks – related to the volatility of equities and bonds – and specifically to principal-agent or counterparty risk. While “do it yourself” finance has its drawbacks in terms of shortsightedness and lack of diversification, institutionalized assets also have their own limitations, as the recent crisis has highlighted.

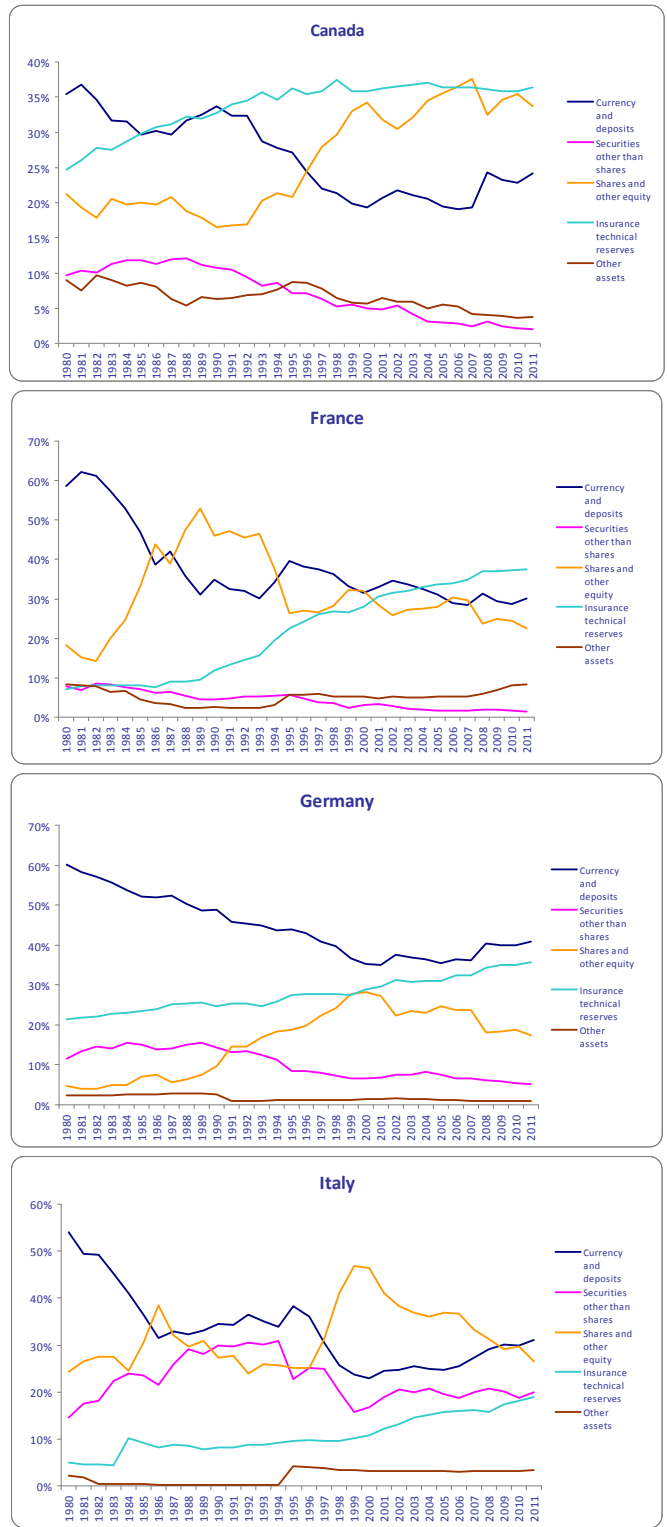
In all the countries, insurance technical reserves are today greater in household portfolios than in the 1980s. The largest stocks of insurance and pension products are found in the UK and the US, where the generosity of State pension schemes is small by international standards. Pension funds and insurance companies are much more numerous in the UK than in the US, where individuals prefer to invest directly or through mutual funds. Intermediate levels of insurance technical reserves are registered in Japan, Germany and France, while low levels prevail in Italy and Spain.

**Table 3. Household financial asset composition in 2011 (percentages)**

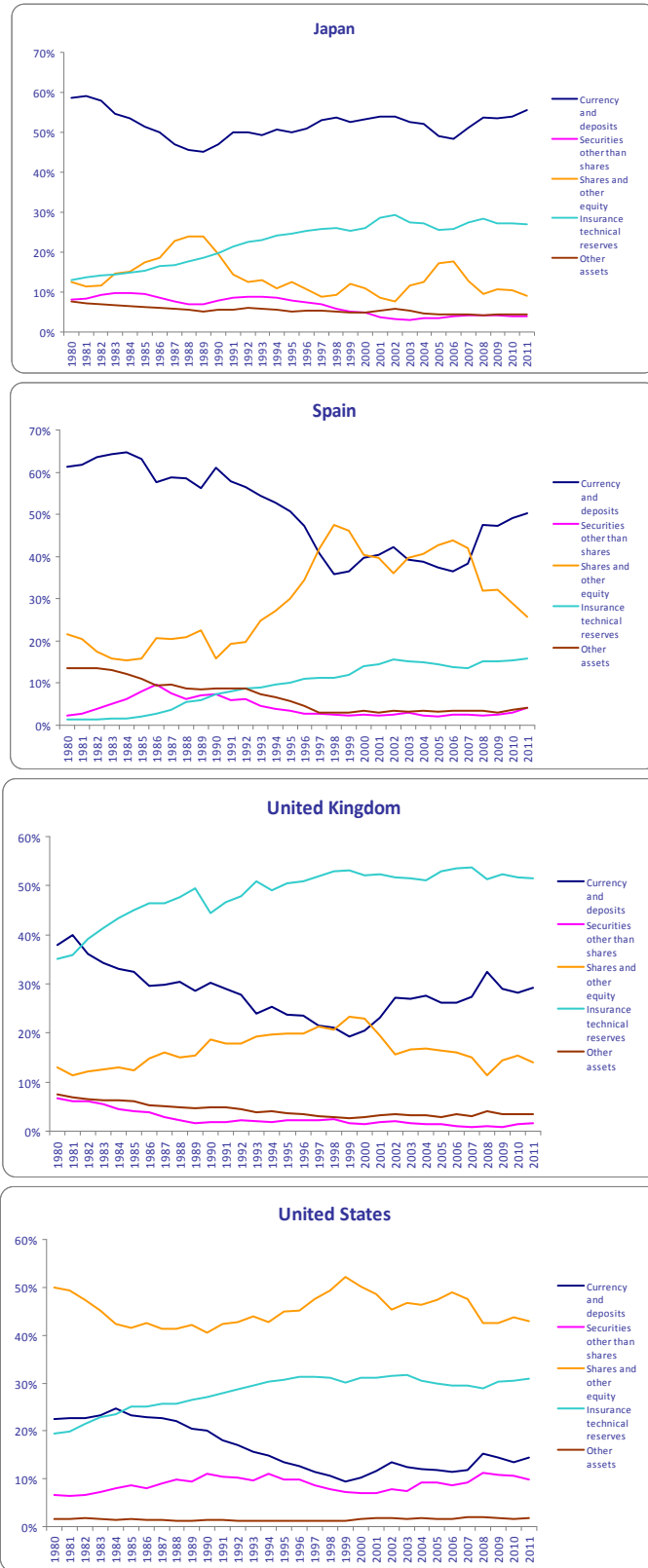
	Currency and deposits	Securities other than shares	Shares and other equities		Insurance technical reserves	Other assets	
			<i>of which quoted shares</i>	<i>of which mutual funds</i>			
Canada	24.1	2.0	33.7	<i>n.a.</i>	<i>n.a.</i>	36.4	3.7
France	30.0	1.5	22.4	3.4	6.8	37.6	8.4
Germany	40.9	5.2	17.4	3.7	8.4	35.7	0.8
Italy	31.2	20.0	26.6	2.1	7.0	18.9	3.3
Japan	55.5	4.0	9.1	3.5	3.6	27.0	4.3
Spain	50.3	4.1	25.6	5.4	6.9	15.9	4.1
United Kingdom	29.2	1.6	14.1	4.1	3.1	51.6	3.5
United States	14.4	9.8	43.0	17.8	11.5	31.0	1.7

Source: OECD.Stat except for Japan (Bank of Japan Flow of Funds). The item "quoted shares" for the United States is estimated.

**Figure 6. Household financial assets composition: 1980-2011 (percentages)**



**Figure 6 (follows). Household financial assets composition: 1980-2011**



It is interesting to take a closer look at mutual funds, insurance products, and pension funds by using a more detailed presentation than that of the current financial accounts (Table 4).

**Table 4. Breakdown of household institutional investments relative to GDP (2000-2010; percentages)**

		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Investment fund shares	Canada	23.4	22.0	19.6	19.6	22.2	23.1	25.8	26.9	19.9	24.5	25.5
	France	17.2	16.3	14.7	15.4	14.7	15.0	16.4	14.4	12.6	13.4	13.4
	Germany	20.0	20.7	19.9	21.6	21.0	23.2	22.4	22.6	20.4	23.1	23.5
	Italy	38.2	31.2	25.3	25.5	23.2	23.3	20.4	17.0	14.2	16.8	17.7
	Japan	6.7	6.0	5.6	6.6	7.3	10.4	12.8	12.3	9.4	12.0	11.0
	Spain	22.8	20.8	18.4	19.9	21.3	22.4	21.7	19.5	13.7	14.1	12.0
	United Kingdom	15.7	13.5	10.3	10.6	11.7	11.4	12.8	11.9	5.5	7.3	9.1
	United States	36.8	36.3	31.1	34.9	36.7	36.8	39.9	42.6	34.6	39.5	39.8
Net equity of households in life insurance reserves	Canada	17.1	18.2	19.1	18.7	18.4	17.9	18.0	17.6	17.1	19.3	18.9
	France	42.6	43.6	44.0	46.3	49.1	50.3	53.2	54.6	53.8	60.2	62.1
	Germany	28.2	29.2	29.9	31.1	31.8	33.2	33.7	33.7	33.4	36.8	36.8
	Italy	13.8	15.5	17.4	20.1	22.2	24.5	25.0	23.4	21.7	25.3	26.9
	Japan	47.1	47.4	47.4	46.8	46.4	45.8	45.1	43.9	43.9	45.8	45.4
	Spain	11.3	11.8	12.3	12.2	12.1	12.1	11.8	11.2	11.2	12.4	12.2
	United Kingdom (*)	163.9	150.1	129.5	132.8	133.6	150.0	155.4	153.6	129.6	152.8	154.3
	United States	8.3	8.6	8.7	9.1	9.0	8.6	7.9	7.7	7.4	8.0	7.9
Net equity of households in pension funds	Canada	111.6	106.0	97.9	102.4	108.0	113.5	119.6	122.6	101.1	122.4	124.7
	France	5.1	5.3	5.5	5.9	6.3	6.7	7.3	7.3	7.6	8.2	8.5
	Germany	18.1	18.4	19.0	20.0	20.7	21.6	22.1	22.4	23.0	25.3	25.2
	Italy (+)	11.6	11.8	12.1	12.4	12.7	13.3	13.5	13.2	13.3	14.0	14.1
	Japan	27.0	35.5	38.1	36.6	36.1	36.3	38.1	39.6	41.5	43.3	41.9
	Spain	9.7	9.6	9.4	9.9	10.2	10.6	11.0	10.6	9.5	10.4	10.5
	United Kingdom (*)											
	United States	92.7	85.6	77.3	87.6	90.2	91.2	95.8	95.9	73.2	85.9	90.6

(\*) For the UK pension funds are not separate from life insurance.

(+) Includes severance pay funds.

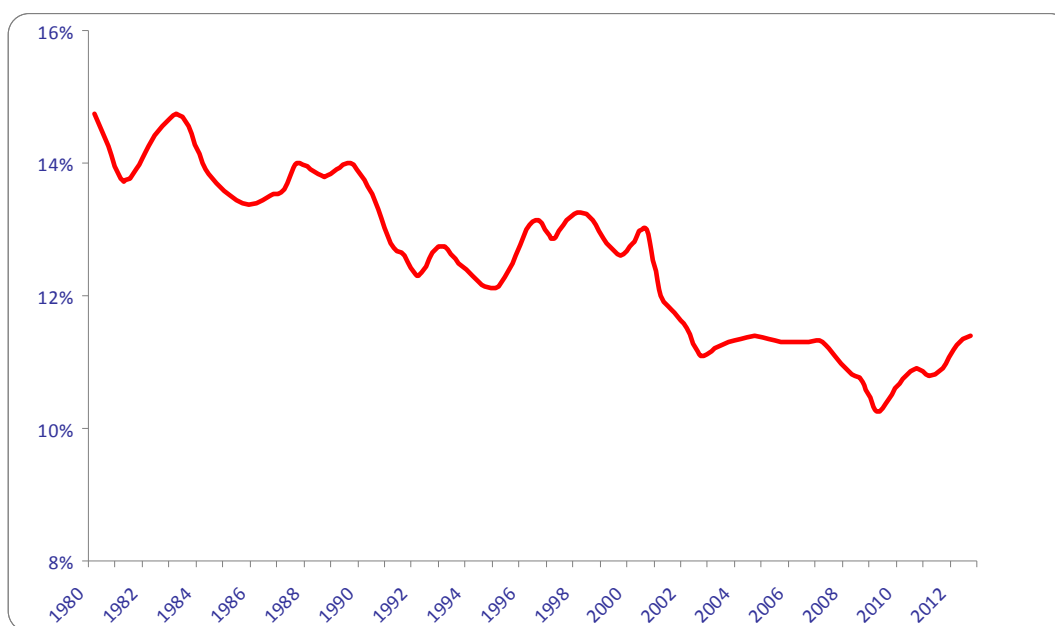
After 2007 the financial turmoil and the related increased volatility in markets negatively affected the share of mutual funds, except for the US. The decline was particularly great in Italy and Spain, and smaller in Germany. In the 2000s life insurance reserves recorded impressive growth in all the continental European countries considered (with the exception of Spain), while they retained a minor role in the US. Funded pension funds have been developing in all the countries, except France, where they are virtually non-existent. France, has “pay-as-you-go” second pillar vehicles, though not to the extent of the US, where they already represent the dominant component of financial wealth.

## 5. Convergence and its underlying factors

Convergence across countries of the weight of household financial assets relative to GDP might be the result of increasing financial integration and of the effort of some countries to reach, through reforms, a higher degree of financial development.<sup>11</sup> Some highlights are provided below.

Sigma-convergence measures whether countries tend to become more similar in terms of deviation from the benchmark over time. We measured sigma-convergence using the standard deviation of the logarithm of the ratio of household financial assets to GDP (Figure 7a). In 1980 the standard deviation of the indicator was around 15 per cent, while in 2008 it decreased to around 10 per cent.

**Figure 7a. Sigma-convergence of financial assets to GDP ratio (percentages)**

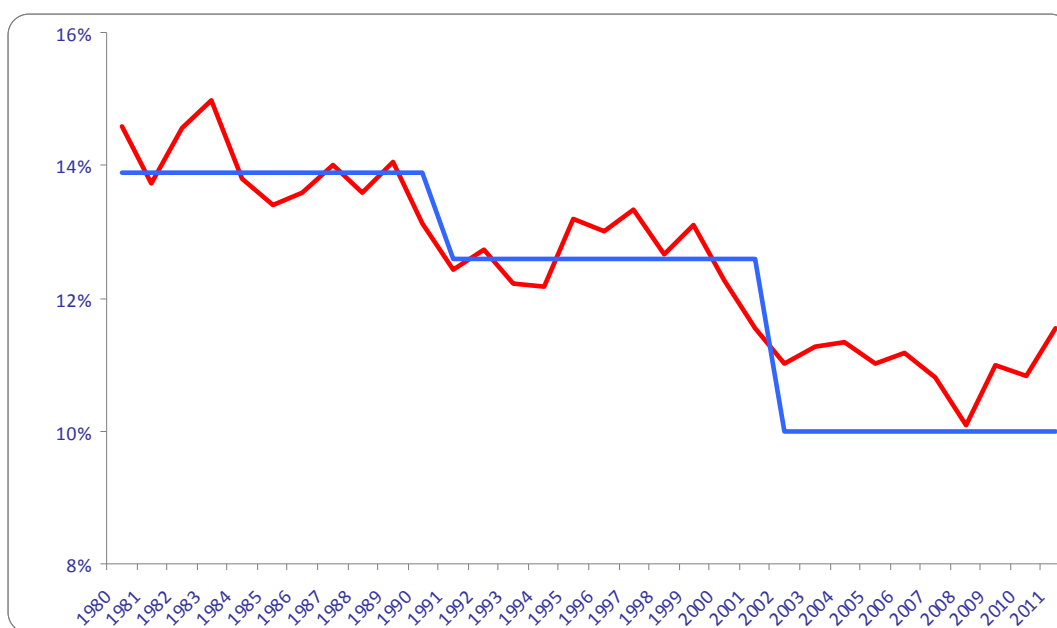


Since 2008, if the convergence process has not gone into reverse, it has certainly come to a halt. It is therefore interesting to look at tests of significance. We conducted a Chow test, commonly used to assess whether time series have significant break points. These are illustrated in Figure 7b, where a 5 per cent significance threshold was used. As readers can see for themselves there is a significant break point at the beginning of the 1990s. In those years, the liberalization of capital flows was expanded by many countries, for instance in the UK and Italy. It is also probable that European directives on the harmonization of banking regulation and the introduction of the common European market in 1993 favored convergence. Another break appears at the beginning of the 2000s. This period was characterized by the start of the common

<sup>11</sup> See IMF (2000), and Bruno, De Bonis and Silvestrini (2012).

monetary policy in 1999 and the introduction of the euro in 2002, two clear candidates for convergence acceleration. Finally, the post-2008 divergence does not appear significant. It looks as if the financial crisis of 2007-2008 has not interrupted the long-term tendency towards convergence (on this issue see also Di Giacinto and Esposito, 2012).

**Figure 7b. Sigma-convergence of financial assets to GDP ratio: break analysis**



Another factor behind long-term convergence may be related to private pensions. Continental European countries had, at the beginning of the period, very strong first pillar social security systems as well as unfunded second pillar pay-as-you-go arrangements. In the same countries, first pillar replacement rates have been gradually diminishing, while governments have provided incentives for second and third pillar fully funded complementary insurance and retirement systems. The development of such vehicles has been a constant of the period.<sup>12</sup>

Using the same data set on household assets analyzed in this paper, Bruno, De Bonis and Silvestrini (2012) found beta-convergence for total financial wealth, shares and insurance products. This result may be interpreted as a confirmation of the increasing importance of capital markets all over the developed world. In contrast, mixed results – and often no convergence – were obtained for debt securities and deposits due to differences across countries in the weight of national public debts and the role of banks.

<sup>12</sup> The SNA08 introduced a recommended supplementary table aimed at highlighting pension entitlements deriving from State pension schemes. This will enable more effective comparison of wealth levels than is possible today. For more on this issue see Fano (2011), pp. 66-68, and Semeraro (2012). On retirement wealth in Canada see O’Hagan (2012b).

Next we asked whether the evolution of the ratio of financial assets to GDP has been smooth or has proceeded through “break points”.<sup>13</sup> In Figure 8 Chow tests are extended to the evolution of the stock of household financial assets in single countries. Breaks occur between the late 1980s and early 1990s, consistent with the sigma-convergence detected in the previous section. In those years financial innovation accelerated, with measures of capital movement liberalization, greater monetary integration experiments in Europe, strong growth in the institutional investment industries, and buoyant securities markets in an era of disinflation and growth. Other breaks are detected around the second half of the 1990s in European countries, probably reflecting common steps and reforms aimed at the creation of the euro area. Again, as already remarked in the case of sigma convergence, the crisis of 2007-2008 did not imply significant breaks.

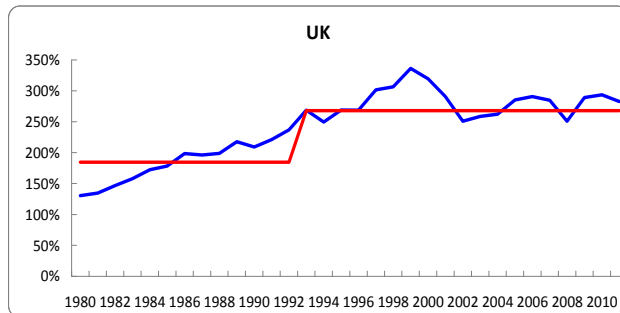
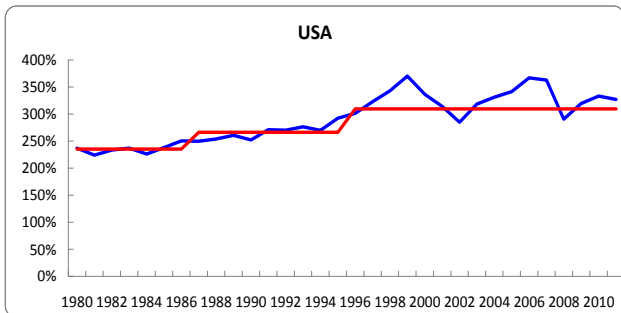
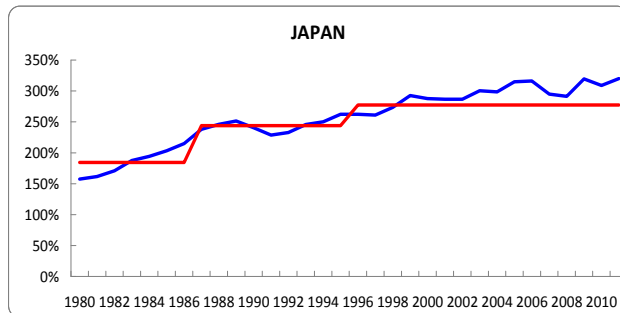
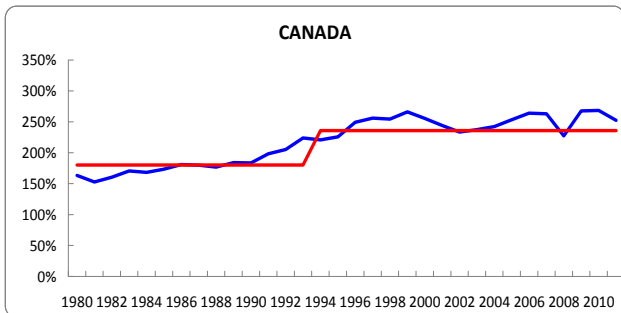
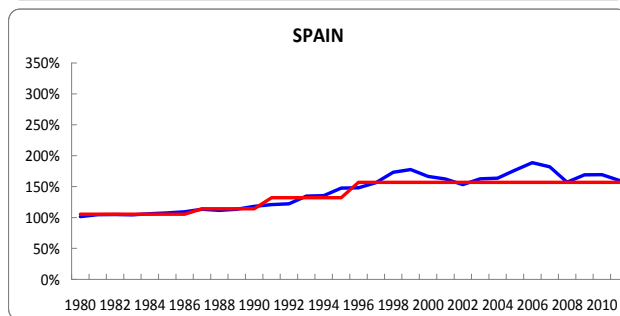
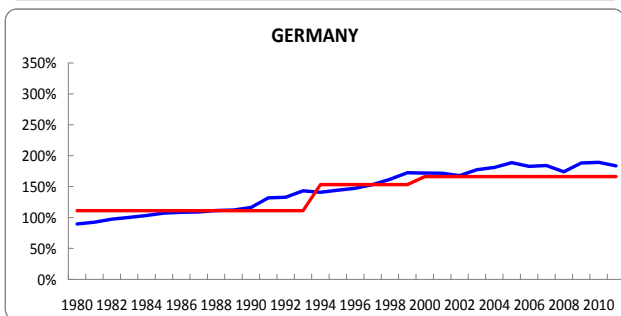
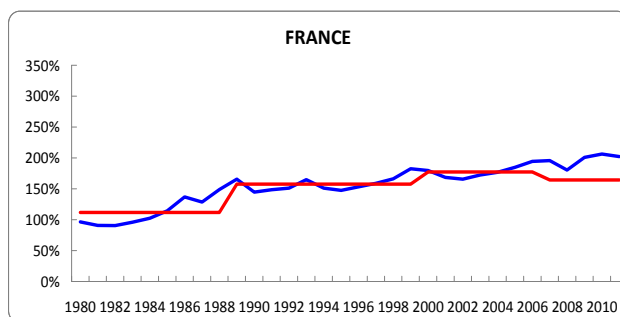
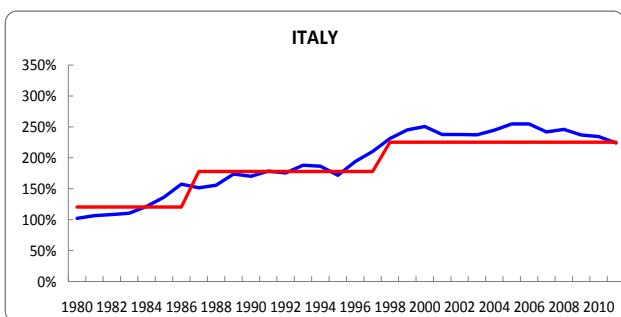
Of course there are idiosyncratic episodes. For instance a break is detected in Italy around the mid-1980s, following the introduction of mutual funds in 1983, when investors exploited the Stock Exchange boom for several years before the 1987 slowdown. In Germany breaks are observed at the beginning of the 1990s, after unification, and at the end of the 1990s, probably in connection with the creation of the euro area and the absorption of the main unification imbalances. Japan is a case apart, because after the bubble of the 1980s and its subsequent explosion, financial assets appeared to remain relatively stable during the 1990s and the 2000s.

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<sup>13</sup> Though a period of over thirty years may appear to be a long one, from a “centennial” perspective, it may appear as a relatively short one. In his search for factors in financial growth in the UK Raymond Goldsmith, the pioneer of national wealth time-series analysis, went back as far as the late seventeenth century. See Goldsmith (1985).



**Figure 8. Structural breaks in household financial assets as a percentage of GDP**



## 6. Household liabilities and net financial wealth

A large literature has investigated the factors that may influence household indebtedness. Religion and cultural and social norms may influence individual attitudes towards debt (Guiso, Sapienza and Zingales, 2003). Countries with a high household saving rate might have low indebtedness (and vice versa, see the UK and US) but this is not always true, as testified to by the experience of Spain and Japan. A period of low interest rates may favour the growth of household debt, together with a large tax deductibility of interest payments (in the Netherlands household debt reached a staggering 130 per cent of GDP because interest payments on mortgages are fully deductible). Household debt dynamics are also interconnected with trends in real estate prices (see Section 7). Financial innovation may influence debt, enlarging the menu of loan contracts and the combination of fixed and variable interest rates. The existence of the mortgage equity withdrawal mechanism was probably the major financial innovation influencing mortgages (Greenspan and Kennedy 2007 and the Bank of England 2003). Finally, in countries like Italy the low efficiency of loan guarantee recovery procedures in the event of debtor insolvency may have negatively affected the attitude of banks towards granting mortgages.

Figure 9 shows household liabilities – mainly represented by loans received from banks and other intermediaries – relative to GDP. In the 1980s household debt increased slowly in all the main OECD countries. With reference to its levels, debt was already high in Japan, Canada, the US, and, rather surprisingly, Germany. Indebtedness was lower in the UK and particularly low in France, Spain and Italy. This picture did not undergo major changes in the 1990s: for the entire decade the ratio of debt to GDP was more stable compared to the growth of financial assets that characterized the years of the dotcom bubble.

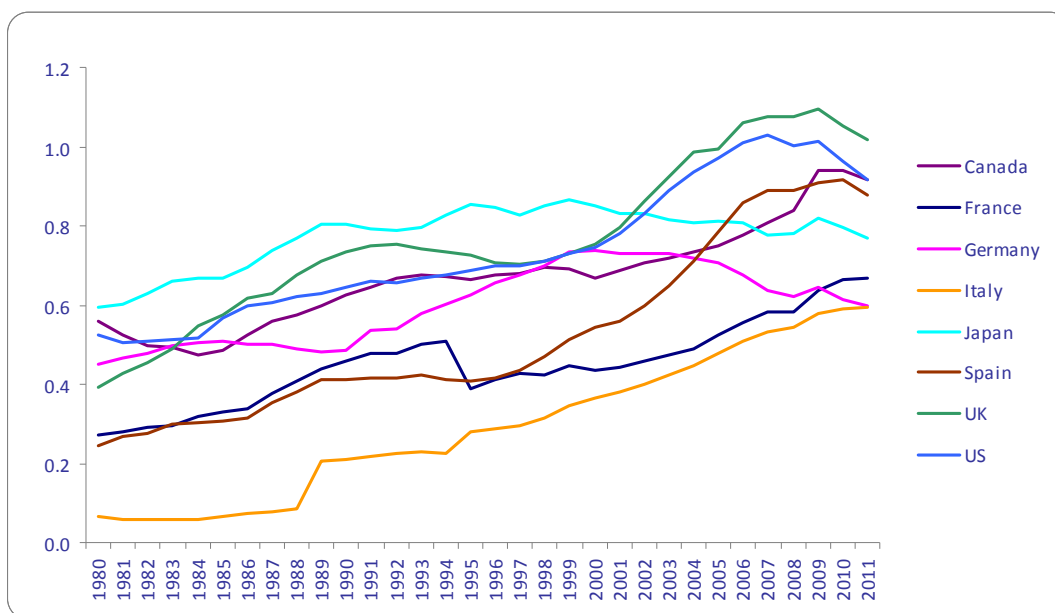
By contrast, since the early 2000s the picture has changed dramatically. Exploiting credit availability, low interest rates and financial innovation like mortgage equity withdrawal, household debt grew considerably in the UK, the US and Canada. More importantly, household indebtedness – linked to the real estate price bubble – exploded in Spain. Economic stagnation determined a slowdown of debt in Japan. Debt was also sluggish in Germany while it continued to increase in France and Italy.

The crisis of 2007-2008 interrupted the growth of debt in the UK, the US and Spain. France and Italy are two exceptions, because debt relative to GDP went on increasing in recent years too, while remaining at one of the lowest levels by international standards. In 2011 household liabilities were more than 100 per cent of GDP in the UK, and around 90 per cent of GDP in the US, Canada, and Spain; on the contrary debt was less than 60 per cent of GDP in Italy.

Until the financial crisis of 2007-2008 the growth of household debt was considered a key component of the “great moderation” interpretation of the evolution of many economies. The sub-prime crisis in the US, and the instability due to high household indebtedness in many countries, implied a reversal of the idea of a positive association between economic growth and household debt. Koo (2011 and 2012) underlined that the world is in a balance sheet recession analogous to that which hit the Japanese economy in the 1990s: in the years to come, despite very low interest rates the private sector of industrial nations will go on

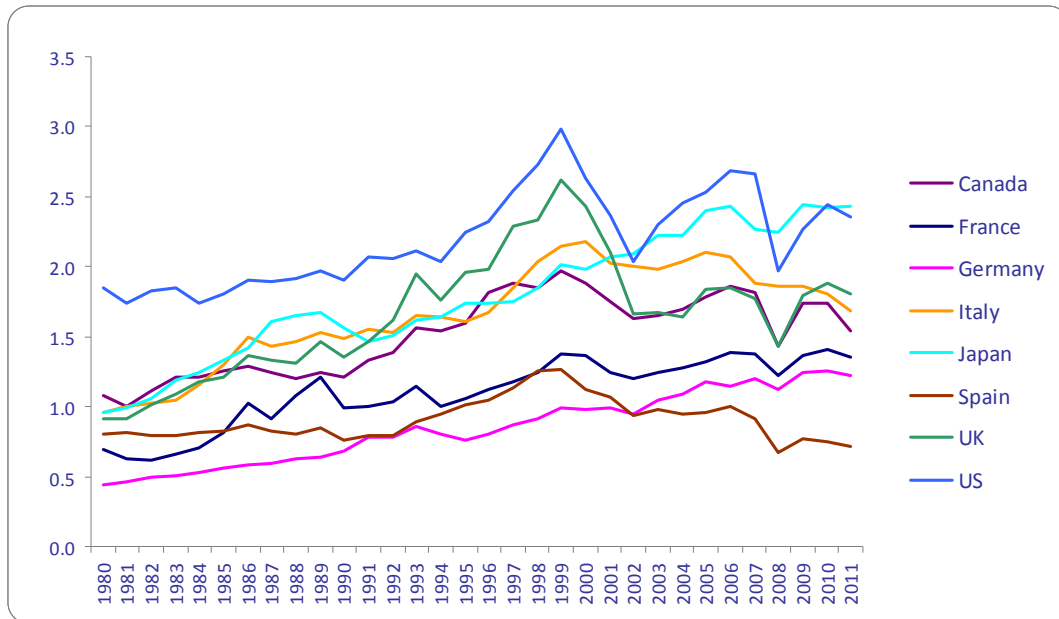
minimizing debt. Also, according to the OECD (2012), when private debt levels are high recessions are typically longer and deeper; the large costs associated with high debt recessions support the adoption of policies to prevent an excessive build-up of debt. In fact, central banks and international organizations have put in the policy agenda a strict monitoring of household (and firm) debt. For instance, private debt is among the indicators selected by the European Commission Alert Mechanism (European Commission 2011 and 2012). The IMF noted that, historically, the growth of household debt in the run-up to a bust implies weak growth in the years that follow (IMF 2012). According to the most extreme academic views, debt is viewed as pollution: it imposes costs on other agents that the borrowers fail to take into account (Jeanne and Korinek, 2010) and a better allocation of resources would be gained by introducing a tax on debt (Bianchi and Mendoza, 2010). Even if we do not share this extreme, negative view of debt, it is probable that household deleveraging will continue in the years to come in most industrial countries.

**Figure 9. Household total financial liabilities: ratio to GDP (1980-2011)**



Net financial wealth, reported in Figure 10, is the difference between household gross assets and debt. Section 2 above showed that household gross wealth is greater in Japan, the UK, the US and Canada than in the euro area, with Spain occupying the last position. The analysis of net financial wealth paints a different picture. Japanese and American households maintain the highest rankings. Because of their low debts, Italian net financial assets are now in line with the Canadian and English values. Spanish households – because of their large indebtedness – are even more distant from the French and the Germans.

**Figure 10. Household net financial wealth: ratio to GDP (1980-2011)**



## 7. Household real assets

Household real assets are greater than financial assets in most OECD countries (two notable exceptions are the US and Japan). Therefore the analysis of household wealth must include a focus on real assets, whose changes are crucial for their consequences on the economy and for financial stability concerns (see de Bandt, Knetsch, Penalosa and Zollino 2010 for a comprehensive picture). Strong differences exist among countries in the ratio of real assets to GDP (Figure 11; per capita figures broadly confirm the gaps between nations).<sup>14</sup>

Spain is a case apart as far as the weight of real assets is concerned. Real wealth was already considerable in the 1990s, probably reflecting the low investment of individuals in financial products discussed in Section 2. This position of predominance was exacerbated by the boom in house prices in Spain that lasted from the early 2000s until 2007. According to the latest available figures, in Spain the ratio of household real assets to GDP is greater than 5.

In Italy, France and the UK this ratio is between 3 and 4. In Italy the importance of real assets is ascribable to many structural and short-term factors. The social role of the family is peculiar to Italy and this influences intergenerational transfers of assets, notably of houses. In the 1970s and the 1980s houses were seen as safe investments against inflation, in the years when financial markets were still underdeveloped. Housing was considered part of the retirement strategy of an ageing population, worried by the reforms of the public pension system (these reforms were actually completed in 2011). The stock market difficulties in the years 2000-2003 and the crisis of mutual funds from 2000 until recent years have stimulated housing demand. The imperfections in the market for rented property have probably also animated house purchases. Nobili and Zollino (2012) estimated that since the end of the 1980s house prices in Italy have reacted positively to an increase in household disposable income, demographic pressures, monetary easing and credit supply.

Turning to the UK, since the early 2000s this country has experienced one of the sharpest increases in house prices in industrial countries. Taking into account an inelastic housing supply (OECD 2005), demand was spatially concentrated, given the role of London as a business centre. In France too, the increase in house prices – similar in dimension to that of Spain – has been attributed to the strong concentration of inhabitants in Paris.

In Germany, Japan and Canada household real assets are lower than in the previously mentioned countries (around 2 times GDP). In Germany low house prices prevailed in the former East Germany and house prices remained stable until recent times in the whole country (prices started to expand only in 2012). Moreover, Germany has a large social housing sector and the owner-occupation rate is less than 50 per cent, a small percentage compared with other countries.

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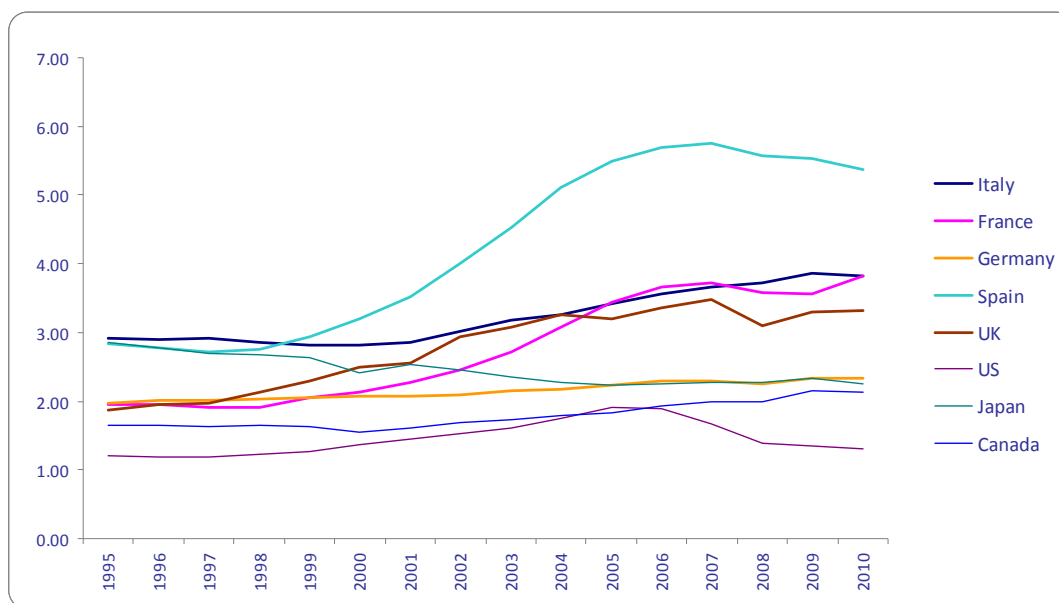
<sup>14</sup> Real assets include dwellings, land valuables, non-residential buildings and plant and machinery. The data collected by the OECD reveal a degree of harmonization that is lower than the statistics on financial assets. Therefore prudence must be exercised in the analysis. We focus on total real assets because the single components of wealth are not available in all the countries. However, dwellings (or real estate) are the most important component, reaching 80 per cent in the UK, the US and Italy. In this section we also draw on Bartiloro et al (2012).

In Japan, general deflation and a sharp decline in land prices caused a decrease in national wealth during the 1990s. Japan is the only country where the ratio of household real wealth to GDP is today lower than fifteen years ago. A large literature has investigated the possible negative links between house prices and population ageing (see Takats 2010). The theme is traditionally under scrutiny in Japan (Iwaisako 2003).

As said above, household non-financial assets are lower in the US than in the other countries (1.3 times GDP). The US has an extremely low population density (about 30 people per kilometer), an abundance of cheap land, a relatively efficient rental market, high worker mobility, and, as discussed in Section 3, a very high participation rate in financial markets. These factors may have contributed, *coeteris paribus*, to low household real wealth. Between 1998 and 2006 soaring house prices were mainly a coastal phenomenon, affecting metropolitan areas where the supply of the new houses is often restricted; on the other hand, the increase in house prices left the internal states largely untouched (Glaeser, Gottlieb and Tobo 2012). During the phase of increasing prices, household real assets in the US approached the levels of Japan but as soon as prices collapsed the value of real assets returned to the lowest ranking traditionally occupied by the US.

The dispersion of the ratio of household real wealth to GDP is today much larger than in the 1990s, confirming that since the early 2000s house price changes have differed across countries.

**Figure 11. Non-financial assets: ratio to GDP (1995-2010)**



## 8. Concluding remarks

The availability of longer-term time series for national financial accounts is an important tool for better understanding developments in household wealth. Our analysis may be summarized in five main points.

*Financial deepening.* In the last 30 years the importance of financial assets increased in all the selected OECD countries. This evolution may be split into six broad cycles: the quiet 1980s, when the growth of financial wealth was moderate apart from Japan; the boom in asset prices in the second half of the 1990s linked to the Internet expansion; the burst of the dotcom bubble from 2000 to 2003; the temporary recovery of financial assets between 2003 and 2007; the destruction of financial wealth that occurred between the second half of 2007 and the early months of 2009, especially after the collapse of Lehman Brothers; and the years after 2009, marked by various trends. As of December 2011 in France, Germany and Japan's household financial assets had recovered the highest levels reached at the end of 1999, while in the other countries they were still below the peaks reached at the end of the Internet bubble.

*Why does the size of financial wealth differ across countries?* Household gross financial assets are higher in the US, Japan, the UK and Canada; Italy is in an intermediate position, actually quite close to Canada, while Germany, France, and Spain occupy lower rankings. Even if there is no formal theory of the determinants of financial wealth, direct and indirect participation in financial markets, the extension of public pension schemes, the substitution effects with real assets, and the accumulation of saving and price effects, are among the key explanations of these differences. The link between saving and wealth is not direct: since the 1990s the propensity to save has diminished in most of the countries while price effects appear to have played a major role. As underlined by the literature investigating global imbalances as a prerequisite of the 2007-2008 crisis, from 2002 to 2007 households became net borrowers in the US, the UK, Canada and Spain.

*The composition of financial wealth and convergence.* In most OECD countries there was a trend towards commercial bank disintermediation, leading to a decreasing role of deposits in household wealth. Since the 1980s bank-based systems like those of France and Italy introduced reforms to increase the efficiency of the Stock Exchange, but holdings of shares declined following the two negative cycles of share prices in 2000-2003 and 2007-2008. Life insurance and pension funds reported consistent growth in all the countries. There are signs of sigma-convergence and beta-convergence for the incidence of financial wealth over GDP, shares and other equity and insurance technical reserves, but not for deposits and securities holdings. As said above, bank disintermediation was widespread but deposits remain central in Japan, Spain and Germany. In Italy 20 per cent of household wealth is invested in bonds, a much higher percentage than in other countries, due to the weight of State securities and bank bonds.

*Household debt and net financial wealth.* The growth of household debt before the financial crisis was seen as a way of improving inter-temporal allocation through the development of new contracts. More cautious considerations have subsequently been expressed because of the sub-prime crisis and the global recession. Household debt remains very high in the UK, Japan, Spain

and the US, while it is smaller in the other countries. Thanks to low indebtedness levels, the net financial wealth of Italian households is very close to that of the English and Canadian ones; for Spanish households net financial wealth is lower than in all the other countries.

*Household real assets.* In view of the interrelations between economic activity, financial stability, consumption and changes in house prices, there is a wide policy debate on the monitoring of the value of house wealth. In Europe Spain is a special case with its large household debt linked to the very high level of real assets. Household real wealth is also important in France, Italy and the UK. Real assets are lower in Japan, in large part caused by the bursting of the housing bubble in the 1980s; in Germany, where private ownership of houses is low; in Canada, and especially in the US.

Given the existence of relevant endogeneity issues, we plan to extend the analysis by looking more deeply at determinants of aggregate household assets and debt. We leave these econometric exercises to further research.



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## Appendix

### Sources and methodology: SNA93 vs OECD Golden Books

We have worked on the recent series from OECD.Stat, based on the SNA93, and on the previous OECD Golden Books, the database managed by the OECD DAFPE Directorate. The possibility of superimposing data from the old and new time series for a number of years – different in each country – has allowed us to check the consistency of the reconstruction. We have highlighted a set of differences in the years for which both sources provide data. The results of this analysis have been sent to the participating countries, in order to discuss the discrepancies directly with each country’s Central Bank, and to collect further suggestions about which source to rely on.

In this paper data published directly by the Central Banks are used whenever possible.

#### 1. SNA93 versus the Golden Books








The sector breakdown of the Golden Books is more or less the same as the one requested by the SNA93 and used in the OECD.Stat. The main difference between the two classifications concerns the instruments, the SNA93 being more detailed because of the introduction of new instruments as in the conversion table that follows:

<b>SNA93</b>		<b>Golden Books</b>	
<b>Sectoring</b>		<b>Sectoring</b>	
Total economy .....	S1	Financial institutions .....	31F, 31B
Non financial corporations .....	S11	General government .....	32F, 32B
Financial corporations .....	S12	Other domestic sectors (NEI) .....	33F, 33B
General government .....	S13	1 Non financial enterprises, corporate and quasi-corporate	
Household and non profit institutions serving household .....	S14 - S15	2 Household )including private non financial unincorporated enterprises and private non-profit institution serving households	
Rest of the world .....	S2	3 Also social security when independent and not allocated	
		Rest of the world .....	34F, 34B
<b>Classification of instruments</b>		<b>Classification of instruments</b>	
AF1 Monetary gold and special drawing rights		1 Gold	
AF2 Currency and deposits		2 Cash and other transferable deposits	
AF21 currency		3 Other deposits	
AF22 Transferable deposits		4 Short-term securities	
AF23 Other deposits		5 Short-term loans	
AF3 Securities other than shares		6 Trade credits	
AF4 Loans		7 Bonds	
AF5 Shares and other equity		8 Shares	
AF51 Shares and other equity, excl. Mutual funds		9 Long term loans	
AF511 Quoted shares		10 Net equity of household on life insurance reserves and pension funds	
AF512 Unquoted shares		11 Others	
AF513 Other equity			
AF52 Mutual funds			
AF6 Insurance technical reserves			
AF61 Life insurance and pension			
AF611 Life insurance reserves			
AF612 Pension fund reserves			
AF7 Other accounts receivable			



## 2. Conversion table

In order to merge data from the two sources, we have constructed the following conversion table to obtain a good degree of correspondence both over time and across the majority of the countries analyzed:

Golden Books		SNA93	Instruments
1		AF1	Monetary gold and special drawing rights
2+3		AF2	Currency and deposits
4+7		AF3	Securities other than shares
5+9		AF4	Loans
8		AF5	Shares and other equities
10		AF6	Insurance and pension technical reserves
11+6		AF7	Other accounts receivable

## 3. Sources by country<sup>15</sup>

**Canada** – The Central Bank/NSO data set covers the period from 1961 to 2011. Looking at the relevant 1969-1970 period for household series, the data line up fairly well, with the major difference being a historical revision affecting government unfunded pension schemes.

**France** – Official data are available for France since 1976 from different sources (Bank of France, OECD.Stat, OECD Golden Books). The Bank of France is working on a further analysis aimed at verifying and improving the quality of the time series.

**Germany** – The complete German financial accounts since 1991, following ESA95, are available on the Bundesbank web site. Data up to 1991 is available through a Bundesbank publication of 1994, which contains complete information on all the sectors and instruments with stocks and flows for the period 1960-1992.

**Italy** – The complete Italian financial accounts, following ESA95 since 1995, are available on the Bank of Italy web site on a quarterly basis. In Italy, the household sector includes Non-Profit Institutions Serving Households and Non-Financial Quasi-Corporate Enterprises with less than 5 employees, while those with a larger number of employees are classified among Non-Financial Corporations. For more information see Banca d'Italia (2003) and (2007). Bonci and Coletta (2007) presented estimates of annual stocks of financial accounts from 1950, aggregating the original data according to the ESA95 definitions of instruments and sectors.

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<sup>15</sup> For a more detailed analysis see “Project on Historical Financial Accounts Time Series”, OECD Working Party on Financial Statistics, 9-10 October 2007.

**Japan** – Data on Japan’s financial accounts are taken from the Bank of Japan, Japan’s Flow of Funds Accounts. The Bank of Japan has been releasing the FFA statistics since 1954 based on the international standards formulated by the United Nations Statistics Commission. The Bank has begun releasing the following retrospective data for the Flow of Funds Accounts (based on SNA93): data from the fiscal years 1980 to 1989, and stock data from the end of the fiscal year 1979 to the end of the fiscal year 1988.

**Spain** – The complete Spanish financial accounts since 1990, following ESA95, are available on the Banco de Espana web site. Data up to 1991 are available from the Golden Book OECD publication.

**UK** – Current data available (source Office of National Statistics, SNA93 classification) covers the period 1987-2011. Pioneer work on balance sheets in the UK was presented in Revell (1967). That work was later extended by Revell and Roe, with CSO and Bank of England sponsorship, to include annual estimates for the period 1957-1966. Information on the balance sheet figures by sector is available in the annual national accounts (Blue Book) publications for 1975-1986.

**USA** – The US started publishing financial accounts in the 1950s (see De Bonis and Gigliobianco 2012). The financial accounts data are taken from the publication Flow of Funds Accounts of the United States, edited by the Federal Reserve Board of Governors. In the definition of the institutional sectors, the data on households (households and non-profit organizations) do not include artisan firms, which are included in the statistics on non-financial businesses. The reaction of the United States to the OECD project has been to provide the OECD with long times-series from 1950 to 2011.