MAIN STRUCTURAL DRIVERS OF PRIVATE SAVINGS:
A REVIEW OF THE AVAILABLE EVIDENCE

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ABSTRACT

It is widely recognized that two of the main potential determinants of household saving in the next decades are ageing population and the ensuing adjustments in social security systems. The paper reviews the literature on the replacement effects between public pension and discretionary wealth as well as between retirement and other forms of saving. The evidence suggests that, while ageing reduces personal saving, the latter may be boosted by less generous public pensions and greater contributions to private funded pension schemes. The paper also investigates the determinants of the recent rise in saving by non-financial companies in industrial countries.

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Introduction

Any analysis of the impact of institutional investors on the global financial system relies upon a sound understanding of the main factors driving household saving over the medium to long run. In this perspective, financial industry representatives, academics and policy-makers alike all emphasize that population ageing and the growth of funded pension schemes are among the forces that will shape the pattern in household saving on a global scale over the next decades (see, for instance, Group of Ten, 2005).[3]

This paper reviews the empirical literature on the effects of ageing and retirement saving on the overall level of personal saving. It also analyses the factors behind the rise in corporate saving observed in recent years in many industrial countries.

The structure of the paper is as follows. After a broad overview of recent trends in private saving in all the major economic areas (Section 1), the vast literature on the effect on household saving coming from ageing population and the ensuing pressure on social security is reviewed, considering both the theoretical explanations and the empirical analyses (Section 2). Then the paper presents the evidence on how the development of institutional investors may foster household saving (Section 3); this section also includes a discussion of the implications for households' asset allocation of a greater recourse to institutional investors. The focus of study shifts to corporate saving and the paper examines the determinants of its recent increase (Section 4). The last section contains a brief summary of the main conclusions.

1. Recent trends in private savings on a global scale

Since the middle of the 1990s, there have been important changes to trends in private savings on a global scale.

In the main industrial countries, the gross saving rate in the private sector has tended to fall; in 2005 it averaged around 18 per cent of GDP, about 2 percentage points lower than ten years earlier (Figure 1). This pattern has been common to all the largest countries except Japan. The deterioration in private saving rate has been much more pronounced in the US than in the euro area, though this could partly reflect differences in how savings are accumulated in official accounts (see below). In the US, the propensity to save by the private sector declined over the 1990s, though it has recovered a little since, broadly stabilising around 14 per cent of GDP. In the euro area timing and intensity of changes have been different across the main member countries. In Germany private saving, after stabilising following the sizeable deterioration in the aftermath of the unification, fell in the late nineties, down to around 19 per cent of GDP in 2000, before recovering to just

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[3] For the policy debate, see Bernanke (2006), Trichet (2006), Roth (2006), Visco (2006) and Weber (2006). Recent simulations of general equilibrium overlapping generations models can be found in Oliveira Martins, Gonand, Antolin, de la Maisonneuve and Yoo (2005) and Saarenheimo (2005). Demographic estimates and projections for all countries and areas of the world are regularly prepared by the Population Division of the Department of Economic and Social Affairs of the United Nations.

below 23 per cent in 2005. In France, it was broadly stable over the nineties around 20 per cent, and started declining in the current decade, averaging below 14 per cent in the last two years. In Italy, the propensity to save in the private sector decreased gradually over the nineties, then recovered from around 18 per cent in 2000 up to almost 20 per cent in 2005. In the euro area as a whole private sector's propensity to save is now about 20 per cent. In the UK the saving rate fell over much of the period, before recovering to almost 16 per cent in 2004.

Figure 1

PRIVATE SAVING IN SELECTED COUNTRIES
(percent of GDP)

Legend (left chart):
- G7
- United States
- Russia
- Central and Eastern Europe
- Newly Industrialized Asian Economies

Legend (right chart):
- Oil-producing economies
- China
- India
- Other Developing Asia (excluding China & India)
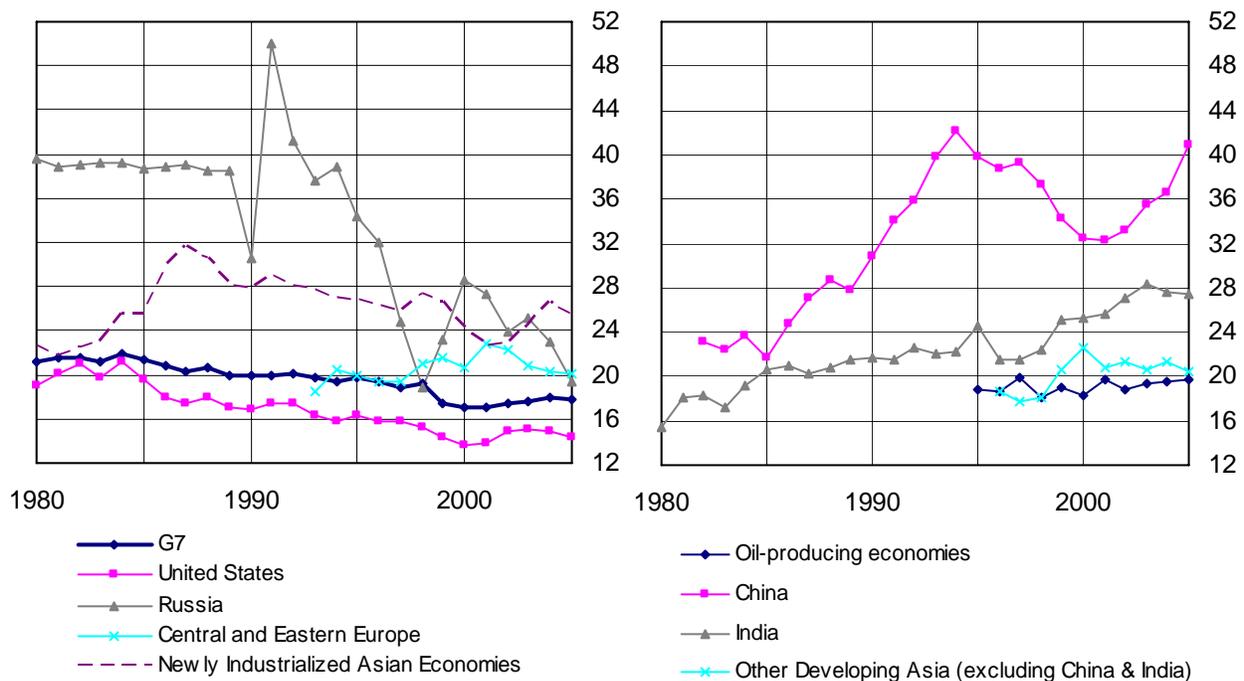
Source: based on IMF data.

In emerging economies, private saving was virtually stable over the nineties and has tended to rise over the last five years. The main contribution has come from China, where the saving rate in the private sector has resumed its strong upward trend, now almost hitting 41 per cent of GDP. In India, the positive trend started at the beginning of the 1990s, raising the saving rate to an historical high of around 29 per cent in 2003. In the other Asian emerging countries, the increase has been more limited than in China and India, with the private saving rate standing now at about 20 per cent.

In the oil producing countries, private saving in recent years has stabilised at around 20 per cent. In Russia the private saving rate almost halved over the nineties; by 2005 it was lower than 20 per cent of GDP.

These figures illustrate two major trends. In the first place, the diverging pattern in private saving rates between industrial and emerging countries (reinforced even further when the public sector is included), compared with broadly opposite developments in the propensity to invest (Figure 2). As a result, in emerging and oil exporting countries as a whole, investment rates are now almost one percentage point of GDP lower than saving rates, generating an increasing surplus in the current accounts. In industrial countries, on the contrary, investment rates tend to be higher than saving rates.

In the second place, in industrial countries the deterioration in private saving is largely due to the behaviour of households, with improvement in corporate sector providing a partial offset (see Section 4). The trend has been apparent since the beginning of the decade, largely reflecting the strong acceleration in corporate saving in Japan and, to a more limited extent, in the US. Recent developments in the two sectors are much more balanced in the euro area, where household saving rates have been on the rise since 2000, reaching about 10 per cent of GDP in 2005, and corporate saving rates have been practically unchanged.

Several forces may have contributed to the long term downward trend of private saving ratios in the main industrial countries. A factor common to many countries is the huge wealth effects, stemming from the rise in stock market indices in the second half of the nineties and, more recently, the climb in house values. To the extent that increases in financial or housing wealth translate into higher household consumption, the ratio of the latter to GDP will tend to rise.[4] Capital gains also raise key measurement issues which will be analysed below. Another factor which has likely contributed to lower the ratio of personal saving to GDP in many countries is financial innovation in consumer credit.[5] As for the slight increase in saving ratios observed in several advanced economies in the first half of this decade, a possible explanation is an increase in labour income uncertainty, due to the expansion of temporary employment and greater wage flexibility.[6]

A thorough analysis of these determinants is beyond the scope of this paper. In Sections 2 and 3 we will rather focus on the impact on personal saving of ageing, reform of social security and growth of retirement saving. As already mentioned in the introduction, in a medium to long term perspective these are the three forces that are likely to have a major impact on both household saving ratios and the size of institutional investors throughout the world.

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[4] Recent contributions related to the US experience are Lehnert (2004) and Juster, Lupton, Smith and Stafford (2004).
[5] See, for instance, Borzekowski, Kiser and Ahmed (2006) for recent developments on the US market of debit cards.
[6] See, for instance, Benito (2006).

Figure 2

Saving and Investment
Per cent of GDP
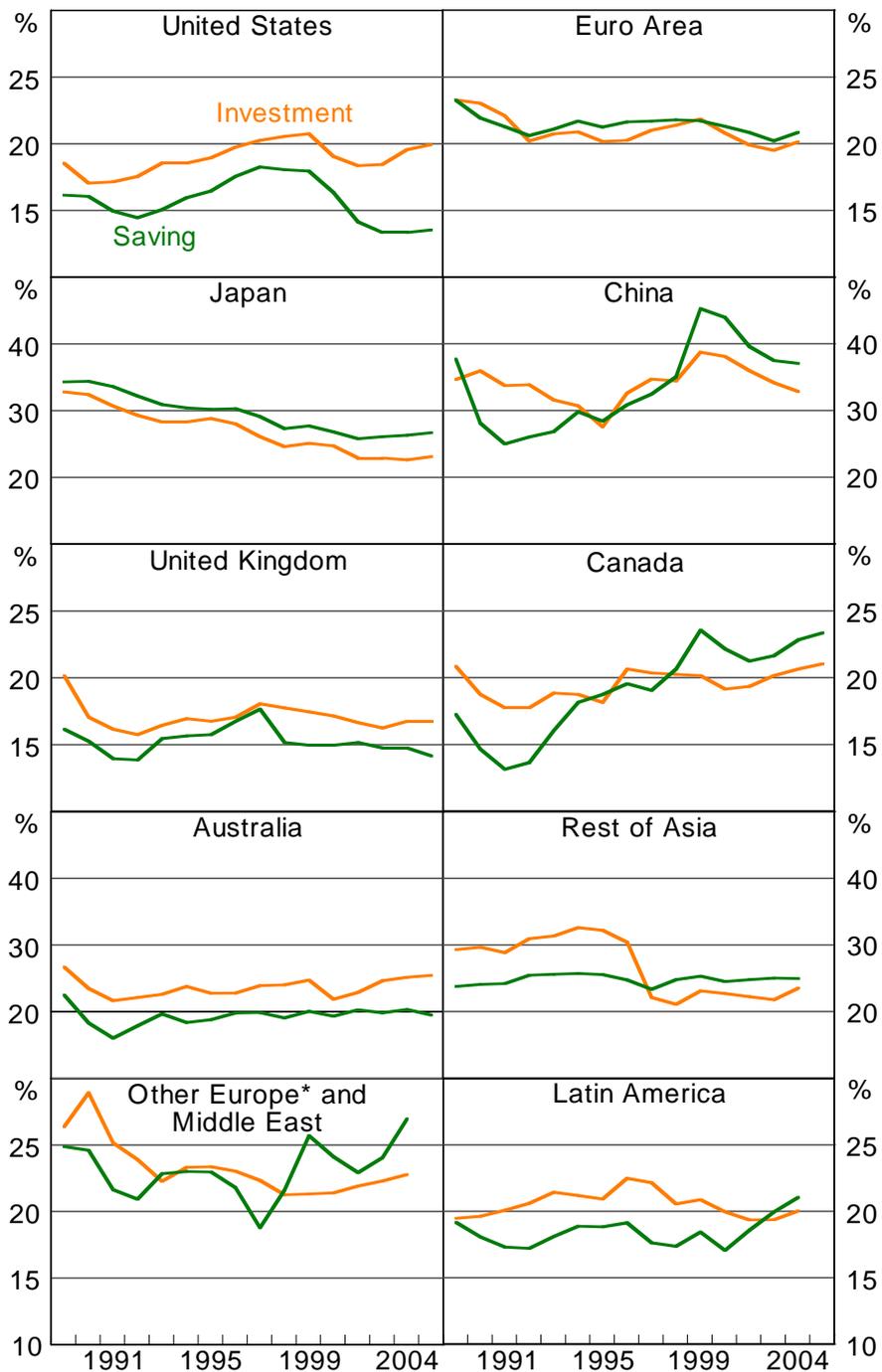
Source: based on IMF data.
(*) Includes Central European and Eastern European countries.

Measurement issues when savings are accumulated in the form of capital gains. One of the thorniest issues in the measurement of saving is the treatment of changes in net worth due to asset price movements. The common measure of savings is calculated from national accounts data as the difference between disposable income (either net or gross of depreciation) and consumption expenditure. It measures that portion of current-period income that is not consumed in the current period but rather made available for future consumption.

However, one can also think about a broader measure of savings defined as the change in net wealth, which would incorporate total capital gains (and losses) on assets. While their treatment in the measurement of current income is controversial due to different practices across countries, capital gains should be considered a form of savings to the extent that they contribute to permanent income. This depends on the source itself of the capital gains. If the appreciation of an asset is due to a positive productivity shock hitting the issuer of the security, then the capital gain should be included in income, thereby affecting the level of saving for any measured consumption expenditure.[7] However, if the capital gain results from a change in risk premia (driven by time-varying uncertainty or shifts in preferences) or other speculative movements, the capital gain has not contributed anything to increasing future income or production and so should not affect saving developments. The difficulty in practice is determining the source of the capital gains. There has been disagreement, for example, about whether the run up in US share prices in the late 1990s should be considered part of savings given the view of some that it was due in large part to a fall in the equity risk premium. Other adjustments to measures of savings have been discussed in the literature (see Gale and Sabelhaus, 1999).[8]

Moving from conventional measures of savings to broader measures that incorporate capital gains will matter most for countries which have a relatively high proportion of their wealth invested in assets (such as equities) for which capital gains account for a large part of the overall asset return.

Countries which have had relatively high household saving rates as conventionally measured, e.g. some countries in Europe,[9] tend also to be those where there has been a larger share of bank deposits and fixed interest in household assets. Moving to a broader measure of savings therefore may have less effect for these countries. On the other hand, in countries with low household savings on conventional measures (e.g. Australia and the US), households have tended to hold a greater proportion of their assets in equities. A

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[7] The argument does not hold if this kind of capital gains is already included in the measurement of current income. For example, the European System of Accounts (ESA95) requires that assets revaluation due to retained dividends or reinvested earnings in mutual funds is part of the property income.

[8] For example, the conventional savings measure includes nominal interest receipts in income and interest payments in expenditure, whereas in the presence of inflation, only real interest receipts and payments should be included. There is also inconsistency in the treatment of housing and consumer durables – even though both are physical assets and provide a stream of consumption benefits in the future, spending on housing is included in savings, whereas spending on consumer durables is treated as consumption expenditure.

[9] Although, as mentioned above, in the European Union some kinds of capital gains are already included in the household disposable income account.

simple calculation, which disregards differences in national account practices and possible discrepancies between financial and economic accounts, shows that including capital gains makes a much more significant difference to the household savings rates in these countries (Table 1). These rough figures suggest that savings rate could be, on average, higher than conventional measures and even exhibit a non-declining trend.

Table 1: Comparison of Household Savings Rates
Percentage Annual Average 1994-2004

	Conventional Savings Rate	Change in Net Financial Assets as Percentage of Household Disposable Income
Australia	2.9	18.5
Canada	5.1	13.5
France[a]	12.0	15.3
Germany	10.2	11.1
Italy	13.2	19.1
Japan[a]	9.7	10.9
United Kingdom	6.8[b]	19.1
United States	3.1	23.6

(a) Average 1994-2003.
(b) Gross savings rather than net savings.
Sources: ABS; Bundesbank; OECD; RBA; US Federal Reserve.

2. Demographic trends and reforms of social security: the effects on households' savings

In this section we focus on the impact that changes in a pay-as-you-go social security scheme, the prevalent pillar in the current state of pension systems in industrialized countries, may have on private savings. We also address its linkages with an ageing population.

The predictions of the theory. The effect of government transfers on private wealth accumulation has long been the subject of a large body of literature. The prevailing approach has been centred upon the idea, espoused by the life cycle model in the seminal contribution of Modigliani-Brumberg (1954), that the main motivation for personal saving rests on the need to finance consumption after retirement. According to the theory, an individual worker starts with a low, potentially negative, saving when young, with increasing higher propensity from maturity to retirement, followed by dissaving once the worker retires. In this framework, an immediate implication is that the start of mandatory contributions to fund future pension benefits would be offset by a decline in individuals' voluntary savings over working life, with a potentially important impact on social

welfare.[10] The result is proved in an overlapping generation framework under certainty, rigid factor supply and negligible altruism. In a more general set-up however, both the sign and size of the incentive coming from future pension entitlements on savings become controversial and the key issue boils down to quantifying the degree of substitutability between pension and non-pension wealth.

In the first place, if current generations feel altruistic towards their offspring, who are eventually called upon to finance the current payouts, the expansion of the social security system may lead to increased private saving in order to augment intergenerational transfers and compensate for future larger contributions (Barro, 1978).

In the second place, the elasticity of labour supply implies that the establishment of a social security system induces earlier retirement, therefore leading people to increase savings in working age in order to finance consumption over a longer retirement period (Feldstein, 1974 and Munnel, 1974). Moreover, if contributions and benefits are imperfectly linked, the resulting changes in effective tax on labor could affect its supply, which would in turn impact on personal saving (Feldstein-Samwick, 1992).

In the third place, credit market imperfections reduce the relevance of the life cycle motive for saving, with borrowing constraints limiting the extent to which social security crowds out private savings (Diamond-Hausman, 1984 and Dicks Mireaux-King, 1984). The same holds true when annuity market imperfections prevent a fair assessment of the wealth effects related to social security (Bernheim, 1987).

Given uncertain longevity and income, an additional reason why social security may induce lower personal saving is a diminished motive for precautionary saving (Kotlikoff et al. 1987 and Hubbard et al. 1995). However, this effect would prove smaller if uncertainty surrounded both the financial sustainability of the social security system itself and its impact on the households' economic status in retirement (Carroll-Samwick, 1992 and Bernheim, 1995).

Scant economic literacy and limited financial attitude may hinder individual's assessment of the risk/return profile of different assets; this may also limit the extent of the offset between pension and non-pension wealth (Bernheim, 1997 and Thaler, 1994). A similar prediction comes from non-standard preferences such as hyperbolic discounting (Laibson, 1996); in this case social security would prove to be a commitment technology for workers to raise enough saving for their own retirement. This would reinforce the psychological argument first put forth by Katona (1965) whereby social security may increase personal saving by inducing a higher preference for saving on the part of

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[10] An extensive welfare analysis is not in the reach of the paper (for references and discussion, see Blanchard and Fisher, 1989 and Diamond, 1998). It is important to recall, however, that a key role is played by the magnitude of the corresponding change in national saving, for which the funding status of the social security system would matter. The expected sign of this change would be negative under a pay-as-you-go scheme, since the reduction in personal saving would not be offset, *ceteris paribus*, by an increase in public saving; the opposite holds true under a fully funded scheme. This point is however controversial if bequest motives are operative (for a full appraisal, see Seater, 1993).

otherwise very impatient households[11]. The issue of the effective ability to plan future consumption and to exploit information is more recently on the research agenda of behavioral economics (Bernheim-Garrett, 2003), with extension on expected future entitlements (Bottazzi et al., 2006).

Finally, as regards to ageing, it is important to remember that the effect of a change in pension wealth may depend on the position of individuals over their life cycles at the time of the reform. The larger effect on pension wealth is likely to be felt by people closer to retirement age (Gale, 1998).

The empirical evidence. The effect of demographic changes on consumption finds clear empirical support in a time series analysis provided by Horioka (1997), with negative and significant coefficients on the shares of minors and of aged on the total of Japanese working age population in the long run regression for individual savings. Using a cross-section analysis for industrial countries, Masson and Tyron (1990) found a unit negative elasticity from the dependence ratio to the saving rate, a value that drastically reduces to -0.2 in Loyaza et al. (2000). As for micro-evidence, survey data qualitatively suggest a hump-shaped profile of consumption across age groups, with the highest expenditure provided in the early stage of working life. Quantitative measurement of the effects of ageing is however less definitive, depending on the time the surveys are collected and the composition effects, in terms of age groups and generational experiences (Poterba, 2004), as well as the coverage of social security. Recent evidence across industrial countries confirms that ageing provides a strong drag on the propensity to save, with the intensity partly reduced by generous pension benefits (Oliveira Martins et al., 2005).

As for this last factor, in view of the inconclusive results of theoretical models, predicting the impact of changes in the coverage of social security on aggregate private savings comes down to empirical analysis. However, disagreement arises in this field too, with a variety of conclusions coming from different data sets and econometric methods since the first contribution by Feldstein (1974). In line with the theoretical debate, attention has focused on the size of the offset between pension and non-pension wealth in consumption demand. The results have shown great variability over time and across countries, with high sensitivity to methods and errors in the measurement of social security wealth and to the level of aggregation in adopted data (Modigliani, 1986 and Engel et al., 1999). The specification of the empirical model may also play a role in affecting results, especially as for the choice of functional form and the set of included regressors (Feldstein-Leibman, 2001).

A first wave of empirical studies was prompted on one side by the time series evidence provided by Feldstein (1974) that pension wealth would perfectly substitute for

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[11] While deviation from rational behavior with foresight augments complexity in theoretical models of social security and saving, some irrationality in households' decisions helps to explain the very existence of a social security system in modern economies (Kotlikoff, 1987). The evidence that a substantial part of households reach retirement with a very low stock of net financial assets (Poterba *et* al., 1994) may provide some support.

discretionary wealth by US consumers, with the coefficient for the former proving by large higher than for the latter. The result, broadly confirmed in Munnel (1974), was challenged by the finding in Barro (1978) that including regressors such as unemployment rate or public budget balances would overwhelm the apparent importance of pension wealth, thereby reducing it to statistical insignificance in affecting consumption demand in a life-cycle model. On the other side, micro-data evidence found in King-Dicks-Mireau (1982) pointed to a 25 cent decrease in Canadian household financial wealth following 1 dollar increase in pension wealth. A similarly small offset was also documented based on US micro-data by Diamond-Hausman (1984) and Hubbard (1986); these findings again largely downsize the previous cross-section evidence provided by Feldstein-Pellecchio (1979), showing that each dollar increase in social security wealth would reduce financial asset accumulation by 70 cents. Empirical literature available from a wider range of countries confirms the controversy on the intensity of the impact of pension reforms on saving, while the sign proves, on average, negative. In Japan, time series evidence delivers a high offset between pension and non pension wealth, with the coefficient above or close to unity depending if the positive impact on saving coming from earlier retirement is included or excluded from the regression (Horioka, 1989 and Yamada-Yamada, 1988). Micro data confirm a negative effect of pension on Japanese household saving, with increasing intensity over time (Kitamura et al., 2001). In the UK experience, where the public pillar plays a more limited role in the pension system, the impact on saving proves slightly negative in the short run, and negligible in the long run (Browning, 1982).

A broad literature originates from the Italian experience with a multi-step pension reform, since the first contribution by Brugiavini (1987). Like the evidence collected in other countries, a lack of consensus has arisen as to the size of the replacement effect between pension and other wealth for Italian households. In Rossi-Visco (1995) and Beltrametti-Croce (1997), aggregate time series analysis shows high values of the offset between pension and non-pension wealth, with estimates around respectively 0.7 and 1.0 for the period 1954-1993. This value does not exceed 0.2 in Brugiavini (1991) and Jappelli (1995) as a result of cross section analysis based on the micro data.

For other countries, evidence is scanty and fraught with measurement issues affecting the statistical significance of the coefficients. The point estimate of the effect of pension benefits on saving proves negative in the former Federal Republic of Germany (Pfaff et al., 1979). In the Netherlands, evidence proves inconclusive due to identification issues affecting the micro estimates of pension wealth (Alessie et al. 1997). In Sweden, empirical results support an overall negative impact on individual saving rates, with an increasing intensity over time, but the interpretation is controversial as the model specification takes simultaneously account for both wealth and income effects attached to the benefits and the funding of social security (Markowski-Palme, 1979). In France, the hypothesis of a significant impact coming from pension wealth is rejected on the basis that the income insurance at retirement does not prove to be a driving force in individual savings, which are mostly affected by risk aversion and housing investment motives (Oudet, 1979).

With increased pressure on restrictive pension reforms coming from ageing, the relationship between social security and private saving has recently come back on the research agenda. More emphasis is now attached to the demographic transition in modelling the effect of social security changes, since the evidence found in Gale (1998) pointed to a significant offset, up to a value of 0.8, between discretionary and pension wealth when ageing is included in the analysis. In a similar vein, Attanasio and Rohwedder (2003) let the measure of substitutability between the two stocks depend on individuals' age and found evidence, based on UK microdata, supporting a substantial offset on the part of pension wealth, progressively increasing from 0.5 for people aged between 32-42 up to 0.7 for those between 54-64 people; only for younger workers the effect proved negligible. An age dependent schedule is found also on Italian microdata, albeit following a U-shaped pattern (Attanasio-Brugiavini, 2003): pension wealth proves a pretty good substitute for discretionary accumulation for people in middle-age, for which the coefficient spans from 0.4 up to 1 according to different specifications. For all households, on average, the degree of substitutability proves higher than in previous studies, up to 0.7 from a minimum of 0.3. By enlarging the analysis to include distribution across different Italian households of information and uncertainty about future pension provisions, Bottazzi et al (2006) found as high value for the average offset with private wealth as 0.5, with estimates running between 0.4 and 0.8 for more informed groups, and between 0.2 and 0.4 for the less informed. More on the Italian experience, which delivers a particularly interesting case due to the long track of pension reforms in the last three decades, a fresh time series analysis points to declining substitutability between pension and discretionary wealth since the substantial restrictions occurred in benefit entitlements in the early nineties: when we compare estimates obtained in the period 1951-2004 with that obtained in the sub-period 1951-1992, the degree of substitutability almost halves to 0.3 (Zollino, 2006).[12]

3. The institutionalisation of savings

Effect on household savings. The development of institutional investors may exert by itself a positive effect on the overall level of savings. At first glance this conjecture is unlikely to hold.[13] In countries where institutional investors are more developed, such as the US and UK, households' savings rates (conventionally measured) are quite low by international comparison. Moreover, from a theoretical standpoint, if markets are complete and individuals are lifetime optimizers a larger recourse to institutional investors will be fully offset by a decrease in the direct holdings of securities or by a rise in borrowing, with no effect whatsoever on the overall level of savings.

Yet these arguments are far from convincing. In the real world many factors account for individuals' propensity to save, financial systems are quite distant from delivering a complete markets setting and individuals' behaviour often turns out to be inconsistent with the full rationality paradigm. In such an environment, institutional investors prove to

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[12] In the study control is also made for both dependence ratio and life expectancy at birth, with the two revealing significant forcing variables in the long-run equilibrium between saving and different wealth components, including pensions, financial assets and real assets.

[13] Davis and Steil (2001), p. 288.

be a very effective arrangement for pooling savings, diversifying financial risks and facilitating the efficient allocation of resources. Therefore, the possibility cannot be disregarded that the growth of institutional investors has an effect on the overall level of savings, as well as on the composition of households' financial wealth (see below).

A first channel through which institutional investors may exert an impact on aggregate saving is the imperfect substitutability between financial instruments having different degrees of liquidity. In general, in households' portfolios there are substitution effects across financial assets: a rise in one asset may well be in part or fully offset by a decline in another asset. However, since long-term saving instruments, such as life insurance policies and pension funds, are illiquid, a rise in wealth held in the form of claims on such long-term institutional investors may cause a less than one-to-one reduction in other forms of saving, such as bank deposits, mutual funds and direct holdings of securities. This leads to an increase in personal saving.

A major case in point is that of the growth of funded pension schemes. The general result is that personal saving is boosted by a rise in pension fund contributions, but the effect is less than one-to-one; greater pension funds contributions are partly offset by a reduction in discretionary saving. For U.S. defined benefit funds substitution effects are quite low; for every unit increase in pension fund assets, the estimated increase in saving ranges from 0.4 to 0.8.[14] As for defined contribution pension funds, a widely analysed case is that of 401(k) accounts in the US; Poterba, Venti and Wise (1993, 1996, 1998, 2000) find that the latter have added to aggregate saving. The European experience with pension reform and the onset of private pension funds is discussed in Börsch-Supan and Brugiavini (2001) and Guiso, Haliassos and Jappelli (2002). One of the most interesting examples of how retirement saving through institutional investments may increase total personal saving is the Australian experience with Superannuation (Box 1).

A second channel hinges upon the existence of borrowing constraints. If individuals are credit rationed, any forced saving (in the form, for instance, of life insurance premium or pension fund contribution) may not be offset by a rise in borrowing or a decline in discretionary saving. In particular, substitution effects may be negligible for lower-income individuals, who are likely to be more exposed to borrowing constraints because of scarcity of collateral and greater exposition to employment risk.

Institutional investors may exert an impact on aggregate saving also through expected returns. They may lift expected returns in at least two ways: 1) institutional investors enlarge the set of asset classes individuals may invest in (allowing the latter, for instance, to put small stakes in stocks of emerging markets or in corporate bonds) and, by doing so, they may raise the expected rate of return on financial wealth; 2) long-term saving in the form of pension funds and insurance companies is typically encouraged by tax incentives, which increase the expected returns of these types of assets. The rise in expected returns has two opposite effects on saving: (*i*) a positive intertemporal substitution effect, i.e. an increase in saving due to the fact that the rise in expected returns makes more rewarding to give up one unit of current consumption; (*ii*) a negative income effect, i.e. a reduction

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[14] See references in Davis and Steil (2001), p. 289.

in saving due to the fact that, since expected future consumption increases, current consumption has also to increase in order to keep marginal utility constant over time. Therefore, the effect on saving of a rise in expected returns may be positive or negative, depending on whether the substitution effect prevails over the income effect or not.

Box 1: The Superannuation Guarantee Contribution in Australia

The Superannuation Guarantee (SG) is a mandatory private retirement savings scheme introduced by the Government in 1992. It requires employers, with very limited exceptions, to provide a prescribed minimum level of superannuation support for each employee. These contributions must be fully vested in the employee and are fully preserved until retirement on or after preservation age. Employers are required to make SG contributions on behalf of their employees at least quarterly to the employee's choice of superannuation fund.

The compulsory nature of the SG together with its limited exclusions has meant that the coverage of superannuation has increased considerably since its introduction. Figures for 2005 suggest that over 90 per cent of employees were covered, with near universal (98 per cent) coverage of full-time employees.

To what extent has this mandatory savings scheme generated an overall rise in household savings, or have other forms of savings simply fallen to offset increased superannuation savings? Research by Connolly and Kohler (2004) provides a recent estimate of the extent to which this mandatory savings scheme has generated an overall rise in household savings.

Using an overlapping generations model, Connolly and Kohler identify two channels by which the scheme may influence the level of private savings. First, mandatory pension schemes force a certain portion of income to be saved until retirement. As already mentioned, compulsory saving is expected to increase the saving rate if there are individuals that are not able or not willing to offset the superannuation contributions through a reduction in other saving or increased borrowing. Second, the introduction of a mandatory pension scheme may reduce uncertainty about the adequate level of retirement savings. In this case, superannuation may serve to indicate an 'appropriate' level of saving for retirement, a level higher than what some may have considered as being necessary.

Using a thirty-five year annual dataset to 2001/02 – which encompasses the SG period and the earlier period when occupational superannuation also extended superannuation coverage – Connolly and Kohler estimated that around 38 cents of each dollar of compulsory superannuation contributions were offset by reductions in voluntary savings.[15] In other words, an estimated 62 cents in each dollar was saved additionally, suggesting that compulsory superannuation may have increased the household saving rate by up to 2 per cent of GDP in recent years.

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[15] Tests of significance on this point estimate indicated that it was significantly below a full offset and not significantly different from no offset at all.

Effect on the asset allocation of households' wealth. As mentioned above, institutional investors allow households to manage their financial wealth more efficiently. Specifically, they make portfolio diversification easier and cheaper; they alleviate the burden of information gathering and attenuate the risks arising from scant financial expertise, myopic behaviour and other instances of irrationality; they help to overcome borrowing constraints and short sale constraints; they exert leverage on firms much better than individuals do; they provide life insurance.

There is little doubt that the growth of institutional investors has allowed households to remarkably improve the diversification of their financial wealth. Institutional investors make it easier for households to gain exposure to long-term and corporate bonds, equities and foreign securities.

The recourse to institutional investors, however, has also some shortcomings compared with direct holdings of securities. First, the fees, charges and costs of institutional investors may be high and scantily transparent. Second, institutional investors pose to households a variety of principal-agent problems,[16] which, if not adequately managed, may result in poor investment performance. Finally, in countries where banks represent the bulk of financial intermediation, their control of distribution networks and possible conflicts of interests with institutional investors may weaken competitive pressures, leading to higher prices and lower performance. It is worth observing also that, the move from defined-benefit to defined-contribution pension schemes, the growing diffusion of index or unit-linked life policies and, more generally, the narrowing of the investment objectives of the claims issued by institutional investors[17] imply a considerable shift of investment risk from governments, firms and intermediaries to households. This means that households are increasingly responsible for the strategic asset allocation of their financial wealth.

4. The rise in net lending by non-financial corporations in industrialized countries

Non-financial corporations normally are net borrowers of funds in order to finance their investments. In recent years, however, in many industrial countries they have become net lenders. According to IMF (2006), for the non-financial corporate sector of the G-7 countries net lending, i.e. the difference between saving and capital expenditure, has become positive since 2002, being on average larger than 1 percent of GDP. The rise is concentrated in Anglo-Saxon countries and Japan (Figure 3).

Many factors may account for the build-up of net lending by non-financial corporations.

Net lending has first of all reflected the rapid rise in corporate profits. In all the major industrial countries, since 2003 indicators of firms' profitability have definitively pointed upwards. According to IMF (2006), this upsurge in corporate earnings has been driven

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[16] Committee on the Global Financial System (2003).
[17] Committee on the Global Financial System (2003).

less by an improvement in operating profits than by the decrease in interest expense and corporate tax payments.

A second factor contributing to make firms become net lenders has been the slackness of investment. Even in the United States, where investment has been quite strong for the last four years, its growth rate has been lower than in the analogous expansionary phase that occurred between 1991 and the first half of 1995. In particular, the recovery in spending on information and communication technology has lagged, reflecting huge investment in the second half of the nineties.

Moreover, excess cash flow has been used by companies to repay debt (bank loans and corporate bonds) and reduce leverage: over the period debt-to-capital ratios of the non-financial corporate sector have decreased in all the major economies, after having peaked at the beginning of the decade. In fact, one might argue that the lift in corporate net lending has been caused by the necessity to repay the huge debt accumulated at the end of the nineties. Brierley and Bunn (2005) show that the leverage of UK firms is higher than its target level.[18] They also show that its convergence towards the long-run equilibrium is likely to be very gradual and is causing firms to pay lower dividends, issue more equity and perhaps invest less than they otherwise would have done.

Finally, in the United Kingdom and in some other countries companies have increased their cash holdings. This fact may be interpreted in two ways (IMF, 2006). First of all, cash holdings might just play a buffer role. This explanation would be consistent with the evidence that in 2004 cash accumulation was stronger in those sectors (resources and information technology) recording strong profits. Secondly, the build-up of a monetary cushion might represent precautionary saving. Panel estimates conducted at firm level by the IMF over the period 1996-2004 show that firms having more cash tend to operate in a more uncertain environment (proxied by more volatile sales), suggesting that cash holdings might in part be related to greater uncertainty on business prospects.

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[18] The target value of corporate leverage is estimated as a function of two factors: the tax benefits of debt and the risks of financial distress (the trade-off model).

Figure 3

NON-FINANCIAL BUSINESS:
NET LENDING IN INDUSTRIAL COUNTRIES
(percent of GDP; yearly data)

United States

United Kingdom

Australia

Canada

Japan

Euro area
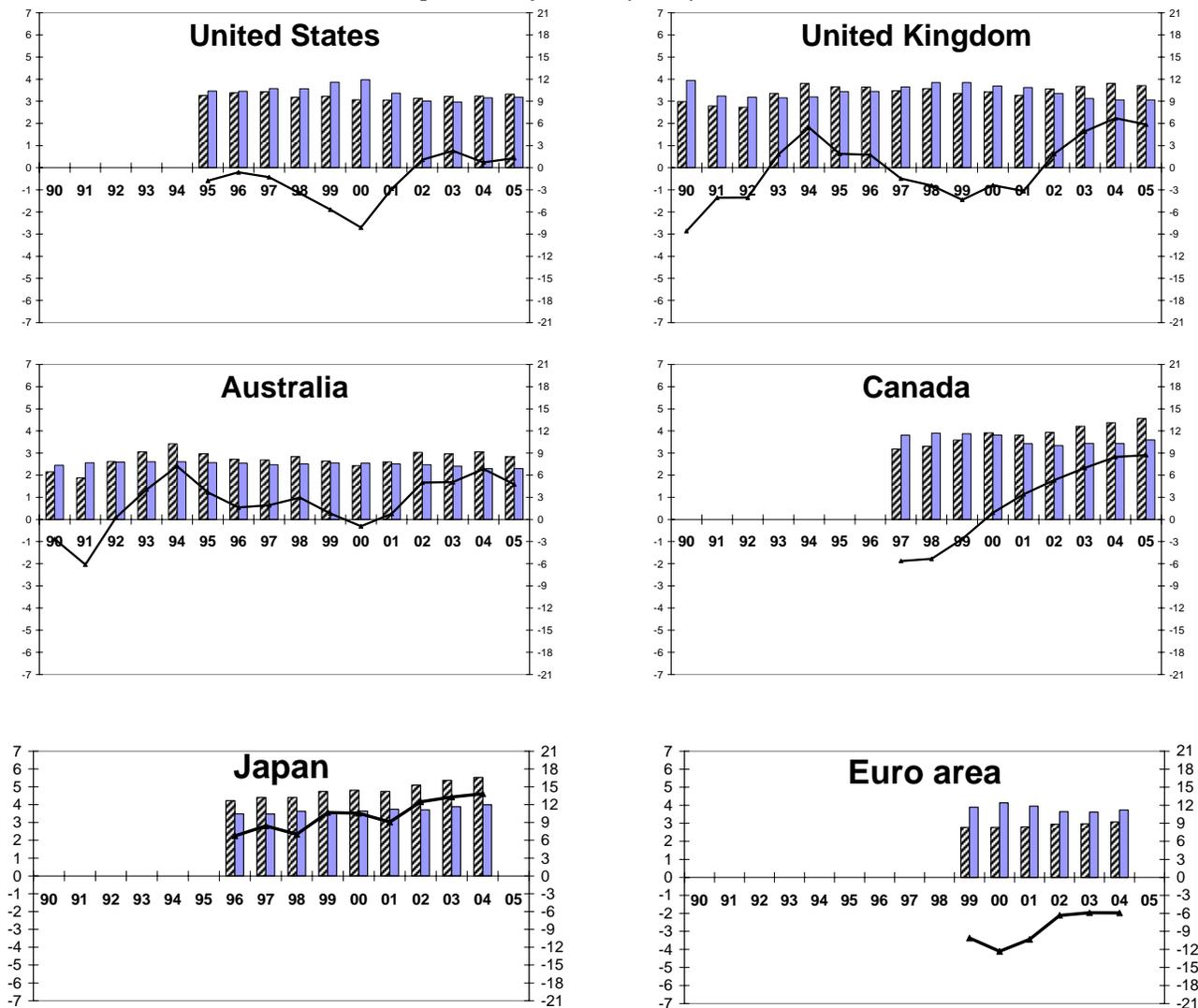
⬚ **Gross saving (right scale)** ⬛ **Gross capital formation (right scale)** ⊹ **Net lending**

Source: based on Eurostat and national statistical agencies data.

These econometric estimates, however, barely explain half of the increase in the share of cash, implying that other factors have played an important role. IMF (2006) argues that one plausible missing variable is unfunded pension liabilities, which have risen considerably in the G-7 countries:[19] cash holdings could represent precautionary saving against a rise in future contributions to defined benefit pension plans. It is not clear, however, whether firms with underfunded pension plans belong to those sectors experiencing greater cash accumulation.

The econometric studies on the impact of pension contributions on corporate behaviour provide mixed signals. For a large panel of US firms between 1990 and 1998, Rauh (2003) finds that *a mandatory increase* in pension contributions has a very large negative effect on investment, while its impact on dividends, retained earnings and other corporate variables is not significant. On the contrary, using a large panel of quoted UK firms from 1983 to 2002, Bunn and Trivedi (2005) find that *an increase* in pension contributions leads firms to cut dividends, with no strong effect on investment expenditures. According to these authors, therefore, the adjustment to company balance sheets following higher pension contributions comes mainly through financial rather than real channels. While the two studies are based on very different methodologies and data samples, they both highlight a huge sensitivity of corporate choices to the funding of pension plans, suggesting that greater uncertainty on the latter may well strengthen the supply of precautionary saving on the part of corporations.

Conclusions

Over the past decade private saving has steadily declined in all the main industrial countries, with the notable exception of Japan. This reflects a negative trend in household saving, although measurement difficulties may have played a role. Corporate saving has provided a partial offset. In emerging market and oil-producing economies, private saving has instead been stable or on the rise.

Several factors account for recent patterns in household propensity to save. Looking ahead, one of the most powerful drivers of personal saving across the globe will be ageing and ensuing adjustments in social security systems.

As the theoretical models of life cycle provide a very wide range of predictions, any assessment of the impact of ageing on household saving needs to be closely supported by the data. The large empirical literature has achieved some general findings, but quantitative estimates continue to show a great variability over time and across countries, with high sensitivity to data availability, measurement issues, estimation techniques and specifications of the empirical models.

As for the impact of ageing as such, both micro survey and econometric estimates suggest that it could have a strong negative impact on household saving. Quantitative

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[19] See Table 4.3 in IMF (2006).

estimates, however, are quite controversial, also because of the complex interaction of the population structure with the characteristics of social security systems and other determinants of savings.

Econometric research has focused on the effect of changes in future public pension benefits on household saving. The question is by how many cents saving would increase for each reduction of one dollar in public pension provisions. Studies using advanced methodologies find a substantial offset between saving and pension wealth, with estimates averaging around 0.5. These approaches also highlight a strong dependence of the substitution effect on individuals' characteristics such as age and information about future pension provisions. Overall, this suggests that possible cuts in public pension systems may well prompt substantial increases in household saving rates.

Another potential driver of household saving is the growth of funded retirement saving per se. There is in fact widespread evidence that an increase in long-term saving instruments, such as claims on pension funds, would only partly be offset by a reduction in other forms of savings, such as bank deposits, mutual funds or direct holdings of security. Although the econometric estimates differ considerably in this case too, they suggest that substitution effects between retirement saving and other forms of saving are much lower than one-to-one. Therefore, the expansion of private pension schemes has a positive impact on personal saving, whether or not it is generated by population ageing.

A distinct feature of many advanced economies in recent years has been a rise in saving by non financial corporations. This has reflected the considerable improvement in corporate profitability recorded across the board, due, on the one hand, to efficiency gains and, on the other, to lower interest expenses and corporate tax payments. Given weak investment, the increase in saving has led companies to operate in the financial system as net lenders of funds, instead of net borrowers. The greater amount of internally generated resources has been used by companies to reduce their debt, to buy back their own shares, to finance mergers and acquisitions and to accumulate cash. The latter effect, more pronounced in the United Kingdom, might in part represent greater precautionary saving in the face of actual or expected unfunded pension liabilities.

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