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# Towards Official Balance Sheet Estimates for South Africa's Household Sector

by Janine Aron, John Muellbauer and Johan Prinsloo[1]

*Abstract:* Official balance sheet estimates for the household sector are not currently available in South Africa. Yet with South Africa's well-developed financial sector and deep capital markets, asset market channels are likely to be important determinants of aggregate consumer spending and saving, consumers' demand for credit and their broad money holdings. This paper aims to produce comprehensive estimates of household balance sheets for South Africa. The paper draws, where feasible, on best practice from the Office of National Statistics of the UK. The paper assesses the quality of the data sources and suggests areas where additional surveys or improvements in data collection procedures would be helpful to further improve the quality of the balance sheet estimates. Furthermore, quarterly balance sheet measures to 2003 are provided, and linked to quarterly measures constructed in Aron and Muellbauer (2006a). The main balance sheet categories are liquid assets, household debt and various categories of illiquid financial and tangible assets, including pension wealth, directly held shares and bonds, and housing. Revised debt estimates and new estimates of tangible assets for households and unincorporated businesses are provided. The paper describes the trends of the estimates of the household sector's balance sheets and of total net wealth.

# 1. Introduction

Substantial changes in equity values and the value of residential real estate over the past decade have generated new interest internationally in the potential influence of household-sector wealth on the final consumption expenditure of private households (Aoki et al, 2002; Boone et al, 2001 and Catte et al, 2004). This is equally true in South Africa. Final consumption expenditure by households relative to gross domestic product rose from an average of 56 per cent in the 1980s to an average of 62 per cent between 1990 and 2003. By contrast, gross saving as a percentage of gross domestic product, declined from an average of 24½ per cent during the 1980s to only 16 per cent on average between 1990 and 2003. Likewise, gross saving by the household sector relative to gross domestic product declined from 6½ per cent to 3½ per cent for the corresponding period. Household balance sheet evidence is likely to help explain these phenomena.

Official balance sheet estimates for the household sector are not currently available in South Africa, similar to many emerging market economies. Yet with South Africa's well-developed financial sector and deep capital markets, asset market channels are likely to be important in the determination of aggregate consumer spending and saving, consumers' demand for credit and their broad money holdings. As other emerging market countries develop their credit markets, stock markets and other financial institutions, the monetary transmission mechanism will alter and asset price fluctuations will become more relevant (see Coricelli et al, 2005). The macro-econometric models which inform policy for these economies will need to take these behavioural shifts into account. But in the absence of liquid and illiquid household sector wealth measures, the important domestic asset and credit channels of the monetary policy transmission mechanism will be poorly estimated. Household balance sheets are also required for an assessment of the distribution of wealth and liquidity. This motivates the effort to construct time series of market value data for the main components of household sector wealth.

The current paper produces comprehensive quarterly estimates of household balance sheets for South Africa to 2003. The main balance sheet categories are liquid assets, household debt and various categories of illiquid financial and tangible assets, including private pension wealth, directly held shares and bonds, and housing. Another aim is to draw lessons for emerging market countries from South Africa, not only in terms of how to create balance sheets, but also of how the liquid and illiquid asset composition can alter over time as markets deepen.

The national income and expenditure accounts of South Africa are long established. Estimates of final consumption expenditure by households[2] and net saving are available on an annual basis since 1946

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[2] The household sector data in South Africa, as in many countries, also includes non-profit institutions which serve households. Unincorporated business enterprises, such as sole proprietorships, farmers, unincorporated professional firms and the informal sector, are also included in the household sector, despite the fact that they are production units rather than final consumers.

and with a quarterly frequency since 1960. The South African Reserve Bank (SARB) has published flow-of-funds data from 1970. Information on households' holdings of government and public-enterprise debt securities, their interest in unit trusts (mutual funds), and pension and long-term insurance funds (using a mix of book values and market values) and household debt data also date back to the 1970s. From these data and other sources, it is possible to construct a profile of the main components of households-sector wealth stretching back to the 1970s.

The paper extends the earlier work of Aron and Muellbauer (2006a), particularly in a broader treatment of tangible and foreign assets (though still incomplete), and some refinements in the measurement of housing and liquid wealth. The historical data for liquid assets and the pension liabilities of long-term insurers from 1970 to the early 1990s were constructed using the methodology in Aron and Muellbauer (2006a), as were private pensions up to 1998. The methods rely, where relevant, on accumulating flow-of-funds data using appropriate benchmarks, and, where necessary, converting book to market values using appropriate asset price indices. Thereafter these estimates are linked to data published in the *Quarterly Bulletin* of the SARB. For ordinary shares, government and corporate stocks and official pension funds, these methods provide data up to 2003. Debt estimates and comprehensive estimates of tangible assets for households and unincorporated businesses were mainly compiled from money and banking and national accounts statistics obtained from the SARB.

In the absence of fully integrated balance sheets for the institutional sectors, Section 2 describes elements of balance sheet estimates for the household sector in South Africa. Cross-references are made to the methodology used in the Office of National Statistics (ONS) of the United Kingdom (UK) for estimating the various asset and liability categories. Suggestions are given for possible improvements in data quality in South Africa. Section 3 discusses the trends in the components of household wealth. Section 4 concludes.

## 2. Household balance sheet estimates for South Africa

The first part explains the methodology for estimating fixed assets and financial assets available for the household sector in South Africa, while the liabilities of the household sector is presented in the second part of the section. The sources for the data used in constructing estimates of fixed and financial assets, and liabilities, are summarised in Table 1.

### 2.1 Tangible assets

The fixed or tangible assets[3] of households in the compilation of aggregate wealth numbers for the household sector in South Africa, comprise the market value of residential buildings and the capital

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[3] Although calculations of the stock of durable consumer goods are available, in keeping with international practice, they do not form part of the institutional sector balance sheets and are therefore not included in the wealth estimates.

stock (derived from fixed capital formation, and the book value of inventories) of unincorporated business enterprises.

### *Residential buildings*

The asset value of residential buildings owned by households, including unincorporated business enterprises in the agricultural sector, is derived from the existing capital stock at constant values using the Perpetual Inventory Method (PIM). The capital stock at constant prices for private dwellings[4] is inflated by an average house price index[5] obtained from one of the larger commercial banks, Absa. These calculations provide a reliable proxy of the market value of residential buildings owned by households. The land value of residential property is calculated, using an average ratio of the land value for existing and new houses relative to the purchase prices of the buildings excluding the value of the land. An average ratio of 32.7 per cent was obtained from unpublished surveys conducted by Absa between 1966 and 2004.

By comparison with the UK, the valuation of property for assessment rate purposes is not conducted on a uniform basis by local government throughout all the provinces in South Africa. Consequently, employing the tax records of the local authorities to estimate the market value of housing stock, as in the UK, is currently not a viable option.

### *Non-residential buildings and non-residential land*

Unfortunately, the asset value of fixed investment of non-residential buildings and other fixed assets by unincorporated business enterprises can only be estimated indirectly. By the use of the information obtained from the Economic Activity Surveys (EAS) per industry, conducted annually by *Statistics South Africa* since 1998, it is possible to make a split between incorporated and unincorporated business enterprises. Fixed ratios (per industry) as calculated by the National Accounts Division of the SARB from the most recent EAS surveys, are applied to capital stock data[6] obtained from the National Accounts Division, to allocate a certain portion of fixed assets (per industry) to the household sector.

There are no appropriate official prices indices to define market values, so the stock of non-residential buildings at constant values is inflated by a derived price index of the market value non-residential

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[4] Note that since private dwelling includes some residential rented property owned by corporations and pension funds, this will overstate the ownership by the household sector.

[5] The average house price index is based on the total purchase price of houses, comprising small, medium and large houses within a range of $80 - 400m^2$. In addition, the index covers the nine provinces and twelve regions within the provinces.

[6] The capital stock data are based on the PIM of non-residential buildings and other fixed assets in the private sector.

buildings. This annual index back to 1974 is calculated from rental values and capitalisation rates of industrial buildings, offices and shopping centres in the larger metropolitan areas.

The value of the land for non-residential property is estimated from unpublished balance sheet ratios calculated from the 2002 EAS. The ratio of the book value of land relative to non-residential buildings for the various industries excluding agriculture - estimated at an arithmetic average of about 14 per cent - is applied to the derived market value of non-residential buildings of unincorporated business enterprises. This ratio was used to obtain an approximate value of land for 1975-2003. For agricultural land, annual estimates at market value were obtained from the National Department of Agriculture. The allocation of land value to the household sector is based on an annual average ratio of the operating surpluses of incorporated and unincorporated enterprises in the agricultural sector, obtained from the National Accounts Division.

The difference between the UK and South Africa's methodology for fixed asset values of unincorporated enterprises, is that the UK surveys capture fixed assets at market values, while in South Africa the surveys on these balance sheet items only reflect book values. Balance sheet items are only included since 1998 in the questionnaires of *Statistics South Africa*. Before 1998, the method of using a fixed ratio, discussed above, was applied to get estimates of fixed assets of unincorporated enterprises.

### *Other fixed assets*

Estimates of the replacement value (a proxy for market value) for vehicles, plant and machinery, construction works (structures) and cultivated assets recorded in the balance sheet of the household sector were derived from net capital stock measures (calculated using the PIM per industry, as compiled by the National Accounts). The allocation of the asset value of these types of assets was derived using the ratios between incorporated and unincorporated enterprises by industry, as discussed above, from the EAS. These ratios were also used to obtain a split of the market value of inventories between incorporated and unincorporated enterprises. The value of inventories is available from quarterly surveys conducted by *Statistics South Africa*. The market value of inventories is captured similarly to the UK case, where information is obtained from direct returns.

### 2.2    Financial assets

The financial assets incorporated in the calculation of wealth estimates for households in South Africa are deposits with banks and mutual banks, interest in pension funds and the pension business of the long-term insurers, participation mortgage bond schemes, unit trusts, equities, issues of bonds by

government and public-owned enterprises and corporate bonds. In addition, an assumption of the average value of coin and bank notes in possession of the household sector (i.e. in circulation outside the monetary sector) is also included. Unfortunately, only limited information exists on individual ownership of foreign assets and only for recent years.

*Liquid asset stocks*

Household liquid asset data include deposits of individuals, unincorporated enterprises and non-profit organisations with banks and mutual banks, the Postbank and the Land and Agricultural Bank. It also includes deposits with non-monetary financial institutions. These deposits cover the entire maturity spectrum; from cheque and transmission accounts to long-term fixed and notice deposits. The SARB publishes a quarterly analysis of bank deposits by type of depositor in its *Quarterly Bulletin*, but only from the third quarter of 1991. The quality of these data sources[7] is sound and in keeping with the methodology used in the UK.

Prior to the third quarter of 1991, in the absence of other data, the methodology in Aron and Muellbauer (2006a) was employed to cumulate the relevant flow-of-funds categories[8] using a second benchmark for 1969Q4 and matching the 1991Q3 benchmark. The benchmark calculation draws on US and UK experience, see Aron and Muellbauer (2006a) for details.

From the third quarter of 1991, summing the components for the personal sector provides a series for personal broad money holdings and a benchmark for the third quarter of 1991. Unpublished counterpart data obtained since 1995 from the Land and Agricultural Bank comprises the deposits of forced stock sales by the unincorporated business enterprises in the agricultural sector. Before 1995 an average of 35 per cent of call money deposits with the Land and Agricultural Bank was used as a proxy of forced stock sales. The 35 per cent assumption was based on the average ratio of forced stock sales relative to call money deposits between 1995 and 2003. The cumulated stock of deposits with "other financial institutions" (item 13), obtainable from the flow-of-funds, was added to this total (see details in Aron and Muellbauer, 2006).

Finally, notes and coin held by the household sector outside the banking sector are derived from the total notes and coin issued by the SARB, less the total notes and coin held by banks. This approach is

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[7] Deposits by households at banks, the Postbank and Land and Agricultural Bank are counterpart data obtained from direct returns to the South African Reserve Bank, see Table 1. These aggregates are included in the balance sheet of the institutions as total liabilities of the banks to the household sector.

[8] "Liquid assets" comprise the following flow-of-funds categories as published in the *Quarterly Bulletin* of the SARB: (10) Cash and demand monetary deposits, (11) Short/medium-term monetary deposits, (12) Long-term monetary deposits, (13) Deposits with other financial institutions. An adjustment was made for missing data on unincorporated businesses (see Aron and Muellbauer, 2006).

similar to that of the UK and seems to be the best available option. To allocate an asset value of this balance to households, the operating surpluses between 1975 and 2003 of the household sector and the corporate sector were used to obtain a proxy for such a division. Over the long run - 1975 to 2003 - an average of about 70 per cent of notes and coin held outside the banking sector can be allocated to the household sector.

*Other deposits*

In the flow-of-funds, a further type of deposit is listed: 'deposits with other institutions', such as households' deposits with municipalities. This is a very small category throughout the period. It was decided to group this category with directly held illiquid financial assets. The series is derived by cumulating the relevant flow-of-funds category (item 14) with respect to a benchmark for 1969, as in Aron and Muellbauer (2006a).

*Foreign Deposits*

Households' foreign exchange denominated deposits, made in terms of the relaxation of exchange control since 1997, should be included in the liquid asset data. Previously, individual residents could not acquire any foreign assets, while all residents had to obtain permission to borrow funds abroad. After 1994, the government gradually relaxed exchange control over residents, and gave institutional investors the opportunity to acquire foreign portfolio investments.

Historically, however, many South Africans took funds offshore illegally, commencing well before the 1980s, but probably increasing substantially between 1985 and 1994 – a time of international sanctions against South Africa and the eventual change over to a new political dispensation. Not only did this contravene the Exchange Control Regulations but in some cases these individuals failed to declare the income they derived on their offshore funds.

In 1997, individuals became subject to tax on investment income from their foreign assets; and in 2001, South Africa's worldwide tax system became fully operational, raising the risk for individuals of holding undisclosed foreign assets. An Exchange Control amnesty was announced in February 2003 to enable violators of Exchange Control and certain tax acts to regularise their affairs in respect of foreign assets derived from these violations.[9] Between June 2003 and February 2004, the Amnesty Unit received 43 000 applications and the National Treasury indicated that after the adjudication of 42762 applications, a total of R68.6 billion worth of foreign assets were disclosed (about 11 billion US dollars). As there are no data on the build-up of these assets over the past 25 years, it would be

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[9] The deadline for foreign exchange amnesty was later extended from November 2003 to February 2004.

difficult to provide realistic estimates for balance sheet purposes. Thus, we do not include it in the total wealth measure given in Table 2.

*Interest in pension funds*

Households' vested interest in pension funds comprises the accumulated funds of official pension and provident funds (providing pensions for public sector employees) as well as private funds. The official pension funds are those funds administered by the Department of Finance, Transnet, Telkom and the Post Office. The privately administered funds consist of funds registered in terms of the Pension Funds Act of 1993, foreign funds registered in South Africa, funds established in terms of individual agreements, and state-controlled funds exempted from the requirements of the Act. To avoid double counting, underwritten funds covered by insurance policies or group insurance schemes and included with long-term insurers, discussed below, are excluded.

Data for both private and official pension funds are obtained from returns submitted by these institutions to the SARB, and are published in the *Quarterly Bulletin*. However, in the case of private funds, data at market value became available only from March 1999, while data for official pension funds are still reported at book value. Book value data for both categories of pension fund were accordingly adjusted to market values employing the methodology in Aron and Muellbauer (2006a).

To derive the corresponding market values, the net holding gains by the end of the period on the market value of the stock at the beginning of the period have to be added, as well as any holding gains on net purchases made during the period. The revaluation adjustment can be explained as follows. Let $A_{t-1}$ be the market value of an asset at the end of the period, t-1. Let $\pi_{t-1}$ be the corresponding price index. Let $NPA_t$ be net purchases of the asset in the period. Then

$$(1) \qquad A_t = A_{t-1}(\pi_t / \pi_{t-1}) + (NPA_t)(\pi_t / \tilde{\pi}_t)$$

where $(\pi_t / \tilde{\pi}_t)$ is the revaluation adjustment of net purchases made in period t, and $\tilde{\pi}_t$ is the average price level recorded during the period of purchases, since purchases are assumed to be spread over the period. Given an asset benchmark at an initial date, data on the net purchases in the period and the corresponding price indices, the revaluation adjustment in equation (1) can be used to convert book to market value data.

For private self-administered pension and provident funds, there are quarterly data on the portfolio composition of assets back to 1963, and annual data back to 1958, both on a book value basis. There are seven groups of assets subject to revaluation. The adjustment of the book values of the assets to

market value was made by applying equation (1), and using 1961Q4 benchmarks and constructed price indices for each of the seven groups. Details on price index construction are provided in Aron and Muellbauer, 2004, Appendix 2.

For official pension funds, there are annual book value portfolio composition data back to 1974. Prior to 1974, there are annual data for total assets at book value, going back to 1948. These funds started investing in ordinary shares, other company securities and fixed property only in 1990, when quarterly data begin. Prior to 1990, government, local authority and public enterprise bonds accounted for more than 85 per cent of total assets purchased. To convert book to market values throughout the period, 1961Q4 benchmarks were employed with equation (1) on quarterly, interpolated data.

*Interest in long-term insurers*

Households' interest in long-term insurers is derived from the pension activities of long-term insurers. Around half the liabilities of long-term insurers represent personal sector pension assets.[10] The pension business represents those activities of the long-term insurers conducted on behalf of the pension funds and the underwriting of annuities. The data for unmatured policies of pension business are directly surveyed from the relevant institutions by the Research Department of the SARB and published in the *Quarterly Bulletin*.

However, as with the pension funds, the earlier data are reported at book rather than market value. The first reliable market value data are reported from 1991q4. Consequently, data prior to this were adjusted to reflect market values using the methodology in Aron and Muellbauer (2006a). For long-term insurers, quarterly data on the portfolio composition begin in 1963, and annual data in 1946. The procedure outlined above for pension funds can be followed using 1961q4 benchmarks. However, there is one quite serious difficulty. Between 1985q3 and the 1991q3, some insurers reported at market values and others at book values, while from the fourth quarter of 1991, all insurers were required to switch to the market value basis. Unfortunately, the proportions which reported on either basis are not known, and the proportions appeared to alter after the October 1987 stock market crash. Details of the assumptions made which give the most plausible outcome, are found in Aron and Muellbauer (2004), Appendix 2.

*Units in domestic and foreign unit trusts*

Table 1 includes the aggregate unit trust holdings as a memorandum item. The unit trust data are *not* included separately; they are subsumed into other categories which are summed to achieve the total

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[10] In this paper it was assumed that the non-pension business of long-term insurers does not contribute to personal sector assets.

wealth aggregates. Table 1 indicates the unit trust component of the various categories, namely liquid assets, directly held illiquid assets and pension funds and insurance companies. However, investment into foreign unit trusts - discussed below - should add to total wealth.

The market values of unit trust security holdings, including cash, deposits and accrued income, are published in the *Quarterly Bulletin*. The data comprise the net investment position after subtracting liabilities (such as dividends declared but unpaid, liabilities in respect of derivative instruments and other operational liabilities) and domestic intra-industry assets, i.e. to exclude double counting of investment between unit trusts themselves. However, to exclude double counting of investment in unit trusts on behalf of households, the investment in unit trusts by official and private pension funds and long-term insurers is subtracted from the official time series of unit trusts as published. Unpublished data are used for this adjustment from about 1997, see Table 1. This is basically in keeping with the methodology used in the UK.

In addition, there are foreign investment schemes in which individuals can invest that should be included in the calculation of total assets of households. Further exchange control relaxation in 1998 allowed resident households to make investments directly into foreign portfolio assets. Investors can invest in these investment schemes by using their foreign exchange allowance. Currently this amounts to a maximum of R750 000 for individuals (in the 2006/07 Budget this has been increased to R2 million per person). On account of these developments, the Balance of Payments Division of the SARB compiled, according to the Co-ordinated Portfolio Investment Survey (CPIS), under the auspices of the International Monetary Fund (IMF), data on foreign investment by residents since 2001. Unpublished estimates of resident households' portfolio investment in foreign assets (excluding cash deposits) for the period 2001 to 2003 amounted to an annual average of approximately R20 billion[11]. If these data could be sensibly extrapolated back to 1998, they could be incorporated as part of the foreign asset component part of total net wealth in the balance sheet estimates for the household sector. Nevertheless it should be noted that these data are still an underestimate; the investment comprises that part of the allowance invested by fund managers abroad in foreign equity and debt securities, but excludes investment in cash through fund managers. We include these figures in total wealth (Table 2).

***Participation mortgage bond schemes***

Participation mortgage bond schemes are in some respects similar to unit trusts. A pool of funds of a large number of smaller lenders is constructed in order to finance large mortgage loans. The

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[11] The data for 1998-2003 for foreign equity and debt securities held by households abroad according to the CPIS survey are R5.0 billion, R10.3 billion, R17.7 billion, R20.7 billion, R21 billion and R19.3 billion, respectively.

participation is similar to long-term deposits of five years or longer. Investors are largely households seeking high, yet secure returns on their capital. Deposits received from participants (individuals) are directly reported in the *Quarterly Bulletin*. Funds are also loaned to individuals and these funds are treated as liabilities on the households' balance sheet. Similar deposit and loan instruments are not available in the UK.

*Government and public enterprise assets*

In the absence of other data, the flow-of-funds data were used to construct measures of household holdings of the bonds issued by government and by publicly-owned enterprises, using the methodology in Aron and Muellbauer (2006a). The government and public enterprise components of the flow-of-funds comprise short-term and long-term government stock, and the securities of local authorities and public enterprises.[12]

The benchmarks for short-term and long-term government stocks come from data on the ownership of end-1969 stocks in *Public Finance Statistics* of the SARB; while quarterly figures on the personal sector ownership of the securities of local authorities and public enterprises are available from 1970 in *Capital Market Statistics* of the SARB.

All these figures are on a book value rather than a current market value basis, and require the revaluation adjustment using equation (1). The methodology for estimating price indices for fixed interest securities is given in Aron and Muellbauer (2004), Appendix 1.[13] However, short-term yields are roughly constant during 1965-69, suggesting the 1969 book values are reasonable approximations to the market values.

*Corporate bonds and equity*

An accurate assessment of the direct investment in shares by households is one of the most difficult calculations to make, due to the lack of reliable information in South Africa. The available data on ownership by the personal sector are unsatisfactory, since surveys of share registers and of household finances are not carried out in South Africa (as they are in the US and UK). One option investigated was to assume that from the ordinary shares listed on the South African stock market – Johannesburg Securities Exchange SA (JSE), the average dividend yield and the market capitalisation could provide

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[12] Non-marketable government debt was omitted due to data inconsistencies; but the holdings fortunately are small (for instance, relative to liquid assets).

[13] Historical data on government bond price indices from the Johannesburg Stock Exchange (JSE) - and more recently from the JSE Securities Exchange - begin in 1980, while the Reserve Bank has published a bond price index only from 1999. Aron and Muellbauer (2004; 2006) therefore use standard price-yield relationships to derive price indices for short and long-duration government bonds before 1980. Coupons and maturities are held fixed for quarter to quarter comparisons, and these indices are chained.

an estimate of total dividend payments.[14] However, fluctuations in dividend payments by the corporate sector - due to economic developments and changes in tax policies and the foreign stock market listing of some large companies in recent years - made the series highly volatile, and unreliable for any one year's estimates.

The stock of shares directly held by households was estimated using the flow-of-funds data of ordinary shares held by households, from the methodology in Aron and Muellbauer (2006a). The flow-of-funds categories were cumulated using a benchmark of the value of ordinary shares held by households in 1969, calculated from relevant ratios in the UK and US.[15] Conversion from book to market value of stocks was carried out using the JSE all share index, adjusted for assumed trading or management costs - see Aron and Muellbauer (2006a).

## 2.3    Liabilities

On the liability side of the household-sector balance sheet, the two main components of debt are mortgage advances and other credit extended to households. The latter, sometimes referred to as "consumer credit", is, in turn, subdivided into open account credit, personal loans extended by banks, credit card facilities, instalment sale transactions and lease agreements, other personal loans and non-bank loans.

The bulk of household debt is borrowings from the banking sector. Relevant data are obtained from monthly and quarterly returns (Forms DI 900) to the Bank Supervision Department of the SARB, in compliance with section 90 of the Banks Act, 1990 (Act No. 94 of 1990).

*Mortgage advances*

Mortgage advances are extended as households buy residential property and other fixed property and provide the property concerned as security for the loan. For details on data sources, see Table 1. South African credit markets developed markedly during the 1980s and 1990s. From 1995, special mortgage

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[14] From the income and expenditure accounts of incorporated business enterprises the net dividends paid by the corporate sector can be calculated. Dividends received by households can be derived from these, less dividends paid abroad, and adjusted for dividends received by long-term insurers and pension funds. Likewise, households' direct share in total equities can be derived from total market capitalisation of shares multiplied by the ratio of dividends received by households relative to total dividends paid. The resultant ratio of 16 per cent of the market value of shares listed on the JSE, 1975-2003, could be assumed to be the asset value of shares directly held by households.

[15] For ordinary shares, estimates are sensitive to the chosen benchmark for 1969. The assumptions made in this paper imply that households owned 41 per cent of market capitalisation of the JSE at the end of 1969 and 18 per cent at the end of 1997 (see details in Aron and Muellbauer, 2006a).

accounts ("access bond accounts") allowed households to borrow and pay back flexibly from these accounts up to an agreed limit set by the value of their housing collateral.

### Open accounts[16]

Open accounts of households include all outstanding debits to retailers, and also those amounts payable to buy-aid associations[17] for the purchase of goods and services from retailers. Estimates for outstanding debt on open accounts are indirectly derived from information on retail sales using credit financed by the retailers themselves (as opposed to banks), which is reported monthly by *Statistics South Africa* in its news release on retail sales. This is a somewhat different approach to that in the UK, due to differences in data availability. In the UK, the outstanding debt to trade creditors is derived as a residual of unpaid bills of accounts of individuals with companies.

### Personal loans at banks

Personal loans granted by banks consist of overdraft facilities made available by banks to their clients and other advances granted to individuals. Only that part of the overdraft facility that is actually drawn by the consumer is included in household debt (for data sources, see Table 1).

### Credit cards

Banks make credit card facilities available to consumers, offering a convenient method of making purchases and deferring the payment of the purchase price. Debit balances on credit card accounts are usually payable within one calendar month after the cardholders receive their accounts, but "budget" facilities are also provided to postpone the payment over longer periods. The outstanding debit balances at the end of each calendar month, and not the total credit available, are taken into account in calculating total consumer credit (for data sources, see Table 1).

### Instalment sale and lease agreements

An instalment sale agreement (hire-purchase agreement) is a transaction in terms of which goods or services are provided to the buyer, but where the purchase price is paid in instalments over a period in the future. Instalment sale transactions are used almost exclusively to finance the purchase of durable

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[16] Balances of trade creditors and debtors on households' balance sheets are difficult to estimate. The numbers are not fully incorporated into the current analysis. However, changes in these aggregates are not volatile and this omission should not have a meaningful impact on trends in the overall net worth position.

[17] Buying Associations are clubs that negotiate benefits such as trade credits and trade discounts for consumer members at various suppliers. The traders are paid by the associations after three months, while the members pay the buying associations one or two months after purchase of the goods. At year-end, members are rewarded with a bonus (from net profit) in accordance with their purchases during the year.

consumer goods with prices high in relation to the income of the buyer, and where the expected economic life of the goods is long, for instance three to five years or longer.

Hire-purchase debt data are sourced from hire-purchase agreements financed by banks (for data sources, see Table 1). Hire-purchase agreements with households by the trade sector itself are sourced indirectly using the trend of instalment sale transactions recorded by retailers in the monthly news release on retail sales of *Statistics South Africa.*

Lease agreements are transactions in terms of which goods are leased with or without an arrangement that the debtor will become the owner of the goods at any time during or after the expiry of the lease period. The leasing of equipment takes two forms; operating and finance leasing. In the case of a financial lease agreement, the right of ownership of the asset concerned are transferred from the lessor to the lessee. Consequently, the commitments in terms of a financial lease are included in household debt. The same considerations do not apply in the case of operating lease transactions, and these agreements should therefore not be included in the estimates of total household debt.

Information on debt incurred through lease agreements is sourced from Form DI 900 on a monthly basis. More disaggregated information is sourced by type of transaction with a split between financial and operating leases (quarterly, from Form DI 920).

### *Other personal loans*

Other personal loans consist of loans granted to individuals by long-term insurers and through participation mortgage bond schemes where the surrender value of a policy serves as security for the loan (so-called "loans against policies"). This information is directly obtained from quarterly surveys from all long-term insurers. These data are published with a lag of two quarters in the *Quarterly Bulletin*. Similar estimates in the UK are obtained from surveys of the annual accounts of long-term insurers.

### *Other non-bank loans*

The exponential growth of the micro-lending industry, especially during the 1990s, firmly established the role that micro-lenders have played in increasing access, particularly by low-income households, to credit extension. Micro-lending has been regulated by the Micro-Finance Regulatory Council

(MFRC) since 2002[18]. The expansion of the micro-lending industry was also partly responsible for growing concern about the levels of indebtedness of the household sector.

South Africans were indebted to micro-lenders (gross loans outstanding) to an amount of R16.5 billion in 2003. However, relative to total household debt outstanding, estimated at a level of about R390 billion at the end of 2003, the debt extended by micro-lenders amounted to less than 5 per cent. Micro-loans are targeted at the middle to low-income section of the households, whereas unregulated cash lenders are active among households with minimum living standards.

Little of the gross loans granted by the micro-lending industry should be added to the existing level of household debt. About 52 per cent of the debt granted by micro-lenders comes from banks and is consequently already measured as part of household debt (data from the MFRC). Another 3 per cent of the loans extended by micro-lenders arises from co-operatives and trusts, which are part of the household sector, and hence are not part of the liabilities of the household sector to other sectors. The remaining 45 per cent of micro-debt granted to individuals arises from close corporations (e.g. small retailers) and public and private companies, and should be added to aggregate household debt. However, it is estimated that about 50 per cent of this debt is already captured in the total debt figures (the debts households owe to retailers).

The balance of approximately R7.5 billion in 2003, we include in total household debt under the category: "other" non-bank loans. We use the MFRC numbers from 1999 and established a benchmark for "other" non-bank loans of R 7.5 billion in 2003. This was interpolated backwards and incorporated in the total debt from 1969. Thus, this allows for miscellaneous debt outstanding not elsewhere classified.

## 3. Trends in assets, liabilities and net wealth

Real household spending has recorded brisk increases in recent years and is partly explained by trends in the net wealth of the household sector. Although net wealth (excluding consumer durables) as a percentage of personal disposable income of households fell from an average level of 315 per cent in 1980-1998 to an average of 283 per cent for 1999–2003, preliminary estimates indicate that this ratio has increased again and in 2005 actually exceeded the high average levels reached during the 1980s and 1990s.

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[18] The MFRC was established in accordance with the Usury Act Exemption Notice of 1 June 1999, and is a company incorporated under Section 21 of the Companies Act. It has been recognised as the official, single regulator of all money lending transactions falling within the scope of the Usury Act Exemption Notice.

The considerable fluctuations in total net personal wealth (excluding consumer durables) are shown in Figure 1, relative to a four quarter moving average of personal disposable income[19]. The relatively high wealth-to-income ratio in the early 1970s, associated with strong economic growth and high gold prices, declined in the mid to late 1970s as the world economy faltered and as domestic political difficulties increased. The ratio rose following a gold price boom around 1980, when buoyant share prices were followed by house price and investment booms. Economic and political difficulties increased in the 1980s, and the debt crisis of 1985 and international trade and financial sanctions severely constrained access to capital and trade. Growth weakened and real house prices began a long-term decline. Recovery in the gold price in the late 1980s temporarily raised the wealth-to-income ratio; but since 1988, it has fluctuated in a relatively narrow range, despite the positive political changes in South Africa.

However, there are considerable compositional changes in the components of net wealth underlying this trend. Most striking are the rise in the value of pension wealth and the trend decline of directly-held securities, the decline and recent recovery of housing wealth, and the rise in household debt and concomitant decline of liquid assets from the early 1980s to the late 1990s. Figure 1 also shows debt and liquid asset to income ratios, while Figure 2 shows pension assets, gross housing assets, directly held financial assets and consumer durables, relative to income.

## 3.1    Household debt

Van der Walt and Prinsloo (1995) and Prinsloo (2002) publish detailed charts of total household debt and its main components, and information on the institutional framework, data sources and determination of household debt. Table 2 below includes entries on consumer credit and mortgage debt.  Aggregate household debt has risen over the past three decades, raising concern that debt levels might become excessive. However, scaling household debt by household income or rising aggregate debt does not necessarily provide a suitable benchmark. The growth of consumer credit and mortgage debt can be examined from various viewpoints; as a fraction of total debt extended to the private sector, as a proportion to income, as a proportion of wealth, and in terms of debt service ratios. We briefly analyse the last three viewpoints.

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[19] In modelling household expenditure or portfolio decisions in the current quarter, one would normally use asset data at the end of the previous quarter, and current quarter personal disposable *non-property* income rather than the moving average of personal disposable income (PDI), see Aron and Muellbauer (2000a,b). However, PDI is more comparable internationally, while its non-property variant is subject to approximations of varying complexity, see Blinder and Deaton (1985).

*Household debt as a proportion of household income*

There are important macroeconomic implications arising from the larger stock of household debt. Lower inflation has two effects on the debt to income ratio; it boosts the numerator of the ratio as a result of increased borrowing by households at lower nominal interest rates; and it lowers the growth of nominal household income. Consequently, households may be surprised in future years by the proportion of income still required to service debt, and hence have to lower their desired consumption. The higher aggregate debt to income ratio implies that households will be more exposed to interest-rate shocks.

Figure 3c displays the real prime interest rate, followed closely by mortgage rates[20]. The <u>positive</u> correlation between the real interest rate on borrowing and the debt to income ratio (Figure 1), particularly since 1980, with a correlation coefficient of 0.75 for 1980-2003, contradicts conventional expectations. This is likely to be the result of two factors. Inflation has tended to be correlated with negative real returns until monetary policy shifted, and correlated also with a fall in the value of nominal debt outstanding relative to nominal income. The correlation coefficient between annual inflation and the debt to income ratio for 1980-1997 is -0.52. A second factor is financial liberalisation. The removal of quantitative controls over credit in the early 1980s, associated with a move to controlling credit expansion via higher interest rates, induces a positive correlation between a supply-driven credit expansion and higher interest rates. This phenomenon has been observed in other countries which underwent financial liberalisation in the 1980s, such as the UK and Scandinavia, (see Berg, 1994, and Lehmusaari, 1990). The strong growth in credit demand in the mid-1990s was underpinned by the introduction of private-label credit cards, aggressively marketed by leading retail outlets in partnership with banks.

An international comparison shows that although South Africa's ratio of household debt to disposable income increased strongly in the 1980s and again in the first half of the 1990s, it was lower than most of the Organization for Economic Co-operation and Development (OECD) countries, and significantly lower than in the United States of America, Japan, Canada and the United Kingdom, where household debt is well above 100 per cent of disposable income.

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[20] The ex-post real interest rate is measured by $r - \Delta_4 lnpc$ where $r$ is the four quarter moving average of the nominal prime interest rate and pc is the consumer expenditure deflator.

*Household debt as a proportion of household wealth*

Household debt relative to *tangible* assets (largely residential housing) for the period 1975 to 1984 fluctuated around an average of 25 per cent, but subsequently rose faster, reaching a high of 76 per cent in 1996. Since then this ratio has declined to an average of 53 per cent in the calendar year 2003. Household debt relative to directly held assets[21] rose from an average ratio of 91 per cent between 1975 and 1984 to an average of 120 per cent in the second half of the 1990s. In 1999, this ratio receded to 100 per cent before rising to 122 per cent in 2003.

*Debt service ratios*

Capital gearing (i.e. household debt to total assets) of households has improved, given moderate growth in the aggregate debt incurred by households and the coincident increase in asset prices. Total capital gearing of households deteriorated slightly from an average of 16 per cent in the 1970s and the beginning of the 1980s, to an average of 19½ per cent in 1996 and 1997. However, this ratio improved to 15½ per cent in 2002 and was only marginally higher at 16 per cent in 2003.

Likewise, the debt service ratio of households rose from an average of 5 per cent in the 1970s to a high of 14 per cent at the end of 1998. The reduction in interest rates from the high levels of 1998 contributed to its persistent decline. More recently, the 550 basis points reduction in interest rates in 2003 over five successive meetings of the Monetary Policy Committee (MPC) saw the ratio fall to 6½ per cent in the fourth quarter of 2003.

### 3.2    The Liquid Asset to Income Ratio

The ratio of liquid assets to income underwent a long-term decline to the mid 1990s, after which there was a small recovery. Some of the decline is accounted for by financial liberalisation from 1983 and extending into the 1990s; with improved access to credit, the precautionary, buffer-stock and consumption smoothing motives for holding liquid assets, see Deaton (1992), declined. There may have been an overall wealth effect, with the net wealth to income ratio influencing the liquid asset ratio - see Thomas (1997) for such an effect in the UK. Political credibility effects, inducing currency substitution away from domestic assets and toward illegal foreign assets, may have been a factor in the declining liquid asset to income ratio from 1976 and after the debt crisis of September, 1985, reversing with the democratic elections of 1994.

However, the main factor is likely to have been that for an average tax-payer, the real after-tax return on liquid assets has been negative from the early 1970s to the early 1990s - apart from a brief spell in

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[21] Directly held securities are defined as the sum of all government and private bonds, deposits at participation mortgage bond schemes, equity and "other deposits" (i.e. longer-term deposits), see Table 1.

1984-5 (see Prinsloo, 2000, p.17). The weighted average of marginal tax rates rose from around 10 per cent to over 30 per cent from 1970 to the 1990s, before declining again in recent years. Higher returns help explain the renewed rise in the liquid asset to income ratio from the late 1990s. On balance, it seems that households' saving in the form of deposit-type investments was adversely affected by negative to extremely low after-tax real interest rates.

## 3.3    The Gross Housing Assets to Income Ratio

The ratio of housing wealth to income can be decomposed into the ratio of the constant price housing stock to real income and the ratio of house prices to the consumer price deflator. These ratios are shown in Figure 3a. Since the housing stock evolves only very slowly, poor income growth between the early 1980s and 1990s is reflected in a rise in the real stock to real income ratio, while stronger growth since 1994 has seen a fall in the ratio. However, most of the rise in the early 1980s and subsequent decline in the value of housing assets relative to income is due to the rise and then decline in the real house price index, Figure 3a. Despite an increase at an average annual rate of 8 per cent between 1999 and 2003, the real value of houses at the end of 2003 still remained about 22 per cent below the peak in 1984. The subdued real rate of return over a long period, on investment in fixed property seemed to have encouraged households to concentrate their saving in risk-averting institutions and financial assets rather than in riskier undertakings and fixed assets. However, from 2003 to the end of 2005, South Africa has seen exceptionally strong house price rises, alongside rising income, reductions in nominal interest rates and buoyant business and consumer confidence.

Econometric work on house prices in South Africa, Aron et al (2003), suggests plausible long-run income effects on house prices in line with international evidence, with elasticity in the range 1.5 to 2. The importance of interest rate effects is confirmed, while credit growth and inflation volatility (linked to interest rate uncertainty) are important in explaining house prices.

## 3.4    The Ratio to Income of Pension Assets and Directly Held Securities

Households' interest in financial assets is mostly concentrated in pension funds and at long-term insurers. Over the long run, these assets constitute on average 52½ per cent of total household financial assets. During the 1990s this ratio rose to more than 60 per cent compared with an average of about 40 per cent during the 1970s. The relatively high level of investment by households in pension funds and long term insurance is not surprising given the fact that South Africa has a well developed contractual saving and investment industry.

The rise in the pension assets to income ratio relative to that of directly held securities to income, is illustrated in Figure 2. In Figure 4, the log pension ratio is plotted against the log total return indices in equities and long bonds.[22] It also shows the rising proportion of pension assets invested in equities - from 20 per cent in the early 1970s to over 50 per cent by the 1990s. The correlation between the pension to income ratio and the total returns index for equities is high throughout (the decade by decade correlation coefficient exceeds 0.87 for all three decades from 1970). A substantial part of the rise in the log ratio of pension assets to income can be explained by a weighted average of the total returns indices for equities and bonds. This correlation is likely to be even greater for a more sophisticated weighted total returns measure, giving cash, short-term bonds, real estate and other asset classes their due. Thus, a fairly passive investment strategy of holding securities and reinvesting the income in the same securities could account for a considerable part of trends in the pension ratio, and its short-term fluctuations.

Regulatory changes have also played an important role, however. The early 1980s saw a relaxation of government-prescribed asset ratios applying to private pension funds and pensions invested with insurance companies, making it possible to expand the proportion invested in equities, on which rates of return were higher. From 1990, official pension funds were no longer restricted to invest only in public fixed interest securities. And, the concern to move official pension funds to an approximately fully funded basis, raised contribution rates into these funds. Relative, after-tax returns in alternative assets – directly-held financial securities, liquid assets and housing - are probably also part of the explanation for the rise in pension wealth relative to income. Tax incentives favoured investment in pensions over directly held financial securities. The tax-disadvantage of directly-held securities is shown in Figure 5, where the pensions and the directly held securities ratios are plotted against the differentials between taxed and untaxed total return indices for bonds and for equities. For pensions there were no taxes on dividends or interest[23], while for directly held securities, dividend income was taxed[24]. Real returns on liquid assets, particularly after tax, were poor until the 1990s (with a brief exception in the mid-1980s). Returns in the housing market were weak between 1983 and 1999.

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[22] The quarterly total return index is defined as: $(P_i/P_{i-1}) \times (1 + QY_i)$, where $P_i$ is the price index of an asset, i, and the per-quarter yield is $QY_i$. Cumulating quarterly log return indices give cumulative log total return indices. While the equity and bond yields are assumed free of tax in the case of pensions, this would not be the case for private households holding these assets directly.

[23] Following the Katz Commission (1996), pension fund income began to be taxed. Pension payments are taxed at the respective tax rates of the individuals in receipt of pensions. These tend to be low since other income is usually low during retirement. Also, a substantial part of the pension is paid out as a tax-free lump sum at retirement.

[24] For equities, we apply the tax factor (1-mtd), where mtd is the tax rate on dividends, 12.5 per cent in recent years; and for bonds, the factor (1- mt), where mt is the average of marginal income tax rates. South Africa had no capital gains tax until after the Budget of 2000.

## 4. Conclusion

There is no doubt about the strategic importance of the household sector and the influence it has on consumption and saving in any economy, but the lack of balance-sheet data for the household sector in many countries is a serious shortcoming that hampers the effective assessment of households' consumption behaviour and how a country's national wealth is managed. The South African research provides an example to data-poor countries suggesting it is unnecessary to compile the full sequence of the national accounts, including the financial accounts and balance sheets, before obtaining usable wealth estimates for the household sector. The judicious use of other data sources, the indirect calculation of assets and liabilities, the use of counterpart data and the exploitation of all relevant data sources and administrative records, could go a fair way in the compilation of wealth estimates. An alternative approach would compile the financial account and balance sheet for a single institutional sector, like the household sector, rather than for the full sequence of institutional sector accounts. This could be an opportunity to use the framework of the national accounts to get a proxy of wealth estimates for the household sector, avoiding the constraint of reconciling the integrated economic accounts across all sectors when adequate data sources are not yet available.

Moreover, the trends found in South Africa, of the falling importance of liquid assets and the rise of share-holding, pension assets and debt with developed financial markets would be expected to occur more generally as countries liberalize markets and develop more fully. Yet while saving and borrowing flows provide a window on how the household sector is adjusting its balance sheet, it is the balance sheet itself – the stock position – that matters for the assessment of the economic outlook. In practice, changes in the household sectors' net financial wealth are dominated by valuation changes, in particular changes in share prices. In South Africa, notwithstanding the fact that net saving flows have declined over the past decade, the net worth to income ratio rose during the 1990s and beyond as a result of the buoyancy of asset markets. The effect of any wealth revaluation remains difficult to quantify and can vary between countries and evolve within a country as financial development takes place.

Aron and Muellbauer (2006b) distinguish three facets of financial liberalization, which the previous literature does not bring out clearly. The three facets imply both a shift in the average propensity to consume and important interaction effects, for example with housing wealth, income growth expectations, interest rates and indicators of uncertainty. First, financial liberalization reduces credit constraints on households engaging in smoothing consumption when they expect significant income growth. Second, it reduces deposits required of first-time buyers of housing. And third, it increases the availability of collateral-backed loans for households already possessing collateral. The pure 'housing wealth effect' could be quite small and is uncertain. Individuals planning to purchase their

own houses may reduce their consumption because of higher house prices, as they will have to save more in order to meet higher deposits and repayments requirements, offsetting the wealth effect from owners.

For these reasons, the aggregate 'wealth effect' is uncertain and can even be negative if access to credit is very restricted. Changes in house values may influence household consumption, even if pure wealth effects are absent, to the extent that they influence the borrowing capacity of households. Households' ability to borrow will in practice depend strongly on their capacity to provide collateral as security for repayments, and real estate is the most widely used collateral asset. Consumers can withdraw part of the increase in housing equity by increasing their borrowing secured on rising property values, and use part of the proceeds to finance additional consumption. Aron and Muellbauer (2006b) provide evidence that the collateral effect in South Africa is strong. Between 2003 and 2005, strong house price and share price growth have plausibly made important contributions to strong consumption growth and a lower household saving rate. It is likely that similar developments will occur or are already under way in other emerging market economies as their financial and legal systems develop.

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**Annexure 1**

**Table 1: Summary of data sources and methodology for compilation of quarterly household balance sheet of assets and liabilities in South Africa**

| Assets/liabilities | Source of data |
|---|---|
| **Assets** | |
| Liquid assets | |
| Total liquid assets | From 1975 to 1991Q4, data were compiled from flow-of-funds data from the *National Financial Account*, using the methodology in Aron and Muellbauer (2006a). "Liquid assets" comprise the following flow-of-funds categories: (10) Cash and demand monetary deposits, (11) Short/medium-term monetary deposits, (12) Long-term monetary deposits, (13) Deposits with other financial institutions. An adjustment was made for missing data on unincorporated businesses (see Aron and Muellbauer (2006a)).<br><br>From 1992Q1, stock data on bank deposits were used directly to construct liquid assets, comprising the categories: notes and coins; and deposits with banks, mutual banks, the post bank and land bank, and public investment corporations. The cumulated flow of (13) "Deposits with other financial institutions" was added to this total – using the methodology in Aron and Muellbauer (2006a). |
| *Notes and Coin see footnote 1)* | Compiled indirectly from data on notes and coin outside the monetary sector, obtained from Form DI 900, a monthly return from the banks to the Banking Supervision Department of the SARB, available on the SARB web site: www.reservebank.co.za. The gross operating surpluses of the household sector relative to those of the corporate sector were used as a proxy to allocate 70 per cent of notes and coin to the household sector (see section 3). (Note, the series KBP1000M for notes and coin, as published in the *Quarterly Bulletin* of the SARB, also includes the cash held by banks at the Reserve Bank, which should not be included in the calculation for households' assets.) |
| *Deposits at the Postbank* | Counterpart data obtained from the Postbank [time series KBP1209M, *Quarterly Bulletin*]. |
| *Deposits at the Land Bank* | Unpublished counterpart data obtained since 1995 from the Land Bank, comprising the deposits of forced stock sales by the unincorporated business enterprises in the agricultural sector. Before 1995, an average of 35 per cent of call money deposits at the Land Bank [time series KBP1270M, *Quarterly Bulletin*] was used as a proxy of forced stock sales. The 35 per cent assumption was based on the average ratio of forced stock sales relative to call money deposits between 1995 and 2003. |
| *Deposits at Banks, Mutual Banks and the Public Investment Commissioners* | Counterpart data of deposits at banks are compiled directly from Form DI 900 returns, available on the SARB web site: www.reservebank.co.za [or time series KBP1148M+ KBP1149M, Quarterly Bulletin]. In addition, deposits held at mutual banks and the Public Investment Commissioners (PIC) are included in this total, and obtained monthly and quarterly from the two institutions, respectively [time series KBP1204M and KBP2544K, *Quarterly Bulletin*]. |
| Other deposits | For the whole period, compiled from flow-of-funds data from the *National Financial Account*, using methodology in Aron and Muellbauer (2006a). "Other deposits" comprises the flow-of-funds category: (14) Deposits with other institutions. |
| *Of which* unit trusts holding are | [Time series KBP2414K, *Quarterly Bulletin.*] |
| Deposits at Participation Mortgage Bond schemes | Counterpart data compiled directly from quarterly surveys to the SARB [time series KBP2372K, *Quarterly Bulletin*]. |
| Government and public enterprise assets (*see* footnote 2) | For the whole period, compiled from flow-of-funds data from the *National Financial Account*, using methodology in Aron and Muellbauer (2006a). "Government and public enterprise assets" comprises flow-of-funds categories: (19) Short-term government stock; (20) Long-term government stock; (22) Securities of local authorities; (23) Securities of public enterprises. |
| *Of which* unit trusts holding are | [Time series KBP2410K, *Quarterly Bulletin.*] |

| Assets/liabilities | Source of data |
|---|---|
| Corporate bonds and equities | |
| Other loan stock and preference shares | <u>For the whole period</u>, data were compiled from flow-of-funds data from the *National Financial Account*, using the methodology in Aron and Muellbauer (2006a). "Other loan stock and preference shares" comprises flow-of-funds category (24). |
| *Of which* unit trusts holding are | [Time series KBP2411K, *Quarterly Bulletin.*] |
| Ordinary shares | <u>For the whole period</u>, data were compiled from flow-of-funds data from the *National Financial Account*, using the methodology in Aron and Muellbauer (2006a). "Ordinary shares" comprises flow-of-funds category (25). |
| *Of which* unit trusts holding are | [Time series KBP2412K, *Quarterly Bulletin.*] |
| Equity in unincorporated businesses | - |
| Equity in other unlisted securities | (see footnote 3) |
| Pension funds | |
| *Private self-administered pension Funds* | Quarterly stock data on the portfolio composition begin in 1963, and annual stock data in 1958 (*Capital Market Statistics*), both on a *book value* basis. In 1999q1, these funds were required to shift to a market valuation basis.<br><br><u>From 1975 to 1998Q4</u>, data were compiled from *Capital Market Statistics* data, using the methodology in Aron and Muellbauer (2006a).<br><br><u>From 1999q1</u>, data were compiled directly from quarterly returns to the SARB, published quarterly [time series KBP2342K, Quarterly Bulletin]. |
| *Pensions with long-term insurers* | Quarterly stock data on the portfolio composition begin in 1963, and annual stock data in 1946 (*Capital Market Statistics*), both on a *book value* basis. Between 1985q3 and l991q3, some insurers reported at market values and others at *book values*. From l991q4, all insurers were required to switch to the market value basis.<br><br><u>From 1975 to 1991Q3</u>, data were compiled from *Capital Market Statistics* using the methodology in Aron and Muellbauer (2006a).<br><br><u>From 1991q4</u>, data were compiled directly from quarterly returns to the SARB, published annually [time series KBP2215J, Quarterly Bulletin]. |
| *Official pension funds* | Annual stock data on the portfolio composition begin in 1974, and prior to 1974, there are annual data for total assets back to 1948 (*Capital Market Statistics*), both on a *book value* basis.<br><br><u>For the whole period</u>, compiled from *Capital Market Statistics* data, using the methodology in Aron and Muellbauer (2006a). |
| Foreign assets | Unpublished data obtained from the Balance of Payments Division of the SARB for 1998-2003. This is compiled according to the Co-ordinated Portfolio Investment Survey (CPIS) conducted since 2001, under the auspices of the IMF (section 3.1, unit trusts). |
| **Liabilities** | |
| Total household debt | Household debt (comprising credit and mortgage debt) is indirectly published since 1969 as a ratio to disposable income of households [time series KBP6525L/J, *Quarterly Bulletin* – see also Van der Walt and Prinsloo (1995) and Prinsloo (2002)]. |
| Mortgage debt | Data obtained from Form DI 900, a monthly return from the banks to the Bank Supervision Department of the SARB, available on the SARB web site: www.reservebank.co.za . Disaggregated mortgage advances by type of institution and asset are available on a quarterly basis from Form DI 920 |
| Household credit | |
| *Trade credit* | Open Accounts: compiled indirectly from information of retail sales on credit, |

| Assets/liabilities | Source of data |
|---|---|
| | financed by own business (obtained from monthly surveys conducted by *Statistics South Africa* and published in a statistical release P6242.1, i.e. *Retail Trade Sales*). |
| *Personal loans at banks* | Data obtained from Form DI 900, a monthly return from the banks to the Bank Supervision Department of the SARB, available on the SARB web site: www.reservebank.co.za |
| *Credit cards* | As for personal loans at banks, above. |
| *Instalment sales and lease agreement* | As for personal loans at banks, above, and also for more disaggregated transactions, quarterly via Form DI 920. For hire-purchase agreements by the trade sector itself, this is calculated indirectly from instalment sale transactions. Obtained from same source as for Open Accounts, above. |
| *Other personal loans* | Loans granted to individuals by long-term insurers and through participation mortgage bond schemes. The data are obtained directly from quarterly surveys, and are published quarterly [time series KBP2237K and KBP2378K, *Quarterly Bulletin*]. |
| *Other non-bank loans* | Mainly credit granted by micro lenders, and obtained from quarterly records of the Micro Finance Regulatory Council (MFRC). |
| Tangible assets | |
| *Residential buildings* | Compiled from the capital stock at constant prices according to the Perpetual Inventory Method (PIM) for private dwellings - unpublished data obtained from the National Accounts Division of the SARB, and inflated by an average house price index for all sizes of new and old houses (published by *ABSA Bank Ltd.*). |
| *Non-residential (commercial, industrial and other ) buildings* | Compiled from unpublished data of the capital stock at constant prices according to the PIM for unincorporated business enterprises obtained from the National Accounts Division of the SARB, and inflated by a derived price index of the market value of non-residential buildings. This price index is calculated from rental values and capitalisation rates of industrial buildings, offices and shopping centres in the larger metropolitan areas. Unpublished data for these calculations were obtained as from 1974 from *Rode and Associates*, one of the largest property valuation firms in South Africa. |
| *Land: residential property* | Compiled from the annual average ratios of the land value for existing and new houses relative to the purchase price of the buildings excluding the value of the land. The data, on an annual basis, are obtained from unpublished surveys since 1980, conducted by *ABSA Bank Ltd*. |
| *Land: non-residential property* | Derived indirectly from the ratio of the book value of land relative to the book value of non-residential buildings, calculated from the balance-sheets data of industry published in the annually Economic Activity Surveys (P8001) of *Statistics South Africa*. This ratio is applied to the derived market value of non-residential buildings of unincorporated business enterprises. |
| *Agricultural land holdings* | Unpublished annual estimates of the market value of agricultural land are obtained from the National Department of Agriculture. |
| *Vehicles, plant and machinery, construction works and cultivated assets* | Compiled from unpublished estimates of the replacement value for these assets, obtained from the capital stock according to the PIM as estimated by the National Accounts Division of the SARB. |
| *Inventories* | Compiled from unpublished estimates obtained from the National Accounts Division of the SARB. Basic information on the value of inventories comprising finished goods, raw materials and work in progress, is available from quarterly surveys conducted by *Statistics South Africa* and published in a statistical release P8042, i.e. Quarterly Financial Statistics. |
| Consumer durables (total) | Compiled from national-accounts data of household consumption expenditure on furniture and household appliances, personal transport equipment and other durable goods, including recreational and entertainment goods [time series KBP6050-6054J, *Quarterly Bulletin*]. For the whole period, the capital stock data are calculated according to the PIM and reflect the historical cost values – see Aron and Muellbauer (2006a). |
| **Addendum items** | |
| *Unit trust holdings* | Compiled directly from quarterly returns to the SARB, published quarterly [time |

| Assets/liabilities | Source of data |
|---|---|
| | series KBP2415K, *Quarterly Bulletin*]. To avoid double counting an adjustment is made from unpublished data obtained from the Financial Markets Division of the SARB for that portion of long-term insurers, private and official pension funds' investment in unit trusts. The unpublished data for these adjustments were only available from 1997Q1 in the case of long-term insurers and private pension funds, and for official pension funds from 1999Q1. However, data for those years and prior to that, seem to be negligibly small. |
| *Personal disposable income* | [Time series KBP6246L, *Quarterly Bulletin.*] |

Notes:

1. The Form DI 900 provides a breakdown of the assets and liabilities of the banks to the Bank Supervision Department of the SARB in compliance of section 90 of the Banks Act, 1990 (Act No. 94 of 1990). Relevant data of assets and liabilities from the Form DI900 related to the household sector is available from August 1991 and published on the SARB web site www.reservebank.co.za from 1993. Prior to August 1991 related information was obtained from unpublished time series from the Money and Banking Division of the SARB. These time-series data of the assets and liabilities of banks were, historically, compiled from the Form BA 9 returns by banks to the Registrar of Banks that used to report to the Department of Finance.

2. Government and public enterprise assets also include flow-of-funds categories: (15) Treasury bills, (16) Other bills and (21) Non-marketable government bonds. Category (21) became negative and the series was omitted. Categories (15) and (16) are omitted because the flow-of-funds record zero transactions for the household sector.

3. It has not proved practical to calculate households' interest in private (unlisted) companies. A possible option for the future would be to use a ratio relative to the share for listed companies (in the UK, it appears as if a fairly constant ratio is used).

4. Note: a direct link to *Quarterly Bulletin* series is not always possible, because of the use of more disaggregated detail of unpublished time series that are available from the various divisions in the Research Department of the SARB.

**Annexure 2**

**Table 2: Household balance sheet of assets and liabilities relative to personal disposable income for selected years**

| Selected Dates | 1975 | 1980 | 1985 | 1990 | 1995 | 2000 | 2003 |
|---|---|---|---|---|---|---|---|
| **Liquid assets** [1] | | | | | | | |
| Liquid assets total | 0.915 | 0.849 | 0.794 | 0.536 | 0.436 | 0.504 | 0.561 |
| *Other deposits* [2] | 0.004 | 0.004 | 0.004 | 0.003 | 0.002 | 0.003 | 0.004 |
| *Participation bonds* | 0.055 | 0.028 | 0.030 | 0.018 | 0.012 | 0.006 | 0.004 |
| *Government and public enterprise assets* [3] | | | | | | | |
| (19) Short-term government stock | 0.003 | 0.006 | 0.002 | 0.002 | 0.002 | 0.002 | 0.000 |
| (20) Long-term government stock | 0.009 | 0.004 | 0.007 | 0.006 | 0.005 | 0.002 | 0.001 |
| (22) Securities of local authorities | 0.003 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| (23) Securities of public enterprises | 0.003 | 0.004 | 0.017 | 0.014 | 0.008 | 0.005 | 0.005 |
| *Corporate bonds and equities* | | | | | | | |
| (24) Other loan stock and preference shares | 0.025 | 0.015 | 0.007 | 0.008 | 0.006 | 0.006 | 0.004 |
| (25) Ordinary shares | 0.443 | 0.664 | 0.542 | 0.464 | 0.593 | 0.457 | 0.420 |
| *Equity in unincorporated businesses* | - | - | - | - | - | - | - |
| *Equity in other unlisted securities* | - | - | - | - | - | - | - |
| *Pension funds* [4] | | | | | | | |
| Private self-administered pension funds | 0.215 | 0.311 | 0.383 | 0.405 | 0.597 | 0.440 | 0.358 |
| Pensions with long-term insurers | 0.156 | 0.268 | 0.371 | 0.468 | 0.536 | 0.499 | 0.437 |
| Official pension funds | 0.146 | 0.140 | 0.176 | 0.229 | 0.405 | 0.509 | 0.570 |
| *Foreign assets* [5] | - | - | - | - | - | 0.030 | 0.024 |
| *TOTAL financial assets* | *1.014* | *1.363* | *1.186* | *0.964* | *1.353* | *1.361* | *1.322* |
| *Liabilities* [6] | | | | | | | |
| Total household debt | 0.482 | 0.466 | 0.574 | 0.595 | 0.624 | 0.552 | 0.533 |
| Mortgage debt | 0.269 | 0.249 | 0.250 | 0.279 | 0.342 | 0.301 | 0.296 |
| Consumer credit | 0.176 | 0.183 | 0.263 | 0.270 | 0.248 | 0.211 | 0.207 |
| *TOTAL liabilities* | *0.482* | *0.466* | *0.574* | *0.595* | *0.624* | *0.552* | *0.533* |
| *Tangible assets* [6] | | | | | | | |
| Residential buildings (incl. land) | 1.100 | 0.970 | 0.959 | 0.754 | 0.605 | 0.618 | 0.775 |
| Other tangible assets | 1.028 | 0.851 | 0.664 | 0.455 | 0.298 | 0.240 | 0.228 |
| *TOTAL non-financial assets* | *2.128* | *1.822* | *1.624* | *1.208* | *0.903* | *0.858* | *1.002* |
| **Consumer durables (total)** [7] | 0.590 | 0.494 | 0.603 | 0.526 | 0.433 | 0.448 | 0.428 |
| *TOTAL net wealth* (incl. consumer durables using shares benchmark of 15:1 for 1969) [8,9] | *4.214* | *4.145* | *3.986* | *3.294* | *3.314* | *3.219* | *3.286* |
| *TOTAL net wealth* (excl. consumer durables using shares benchmark of 15:1 for 1969) [8,9] | *3.624* | *3.651* | *3.384* | *2.768* | *2.881* | *2.771* | *2.858* |
| *TOTAL net wealth* (excl. consumer durables, using shares benchmark of 25:1 for 1969) [8,9] | *3.916* | *4.083* | *3.732* | *3.061* | *3.220* | *3.033* | *3.100* |
| Total personal disposable income (R millions) | 16857 | 35860 | 76213 | 181531 | 349183 | 587724 | 796349 |

*SOURCES:* Household debt data (published from 1991) and income data from the Quarterly Bulletin, South African Reserve Bank. Pensions with long-term insurers from Capital Market Statistics, South African Reserve Bank (market value data reported from 1991). Unit trusts data from Capital Market Statistics, South African Reserve Bank. Unpublished data on total household debt (pre-1991), household mortgage debt, consumer credit (after 1992) – see also Prinsloo (2002), and constant price housing stock, were kindly provided by the South African Reserve Bank. All other data: authors' calculations, as explained in the text. Note that for liquid assets and long-term insurers, the first set of assumptions apply as regards the sensitivity analysis in Aron and Muellbauer (2006a), Table 1; but for ordinary shares, the second assumption is used, of a 15:1 benchmark for 1969, for directly-held equity relative to unit trusts held (Table 1, Aron and Muellbauer (2006a)).

1. Liquid assets up to 1991 comprise categories: (10) Cash and demand monetary deposits, (11) Short/medium-term monetary deposits, (12) Long-term monetary deposits, and (13) Deposits with other financial institutions, where numbers in parentheses refer to flow-of-funds categories from the National Financial Account, South African Reserve Bank. A correction was made for missing data on unincorporated businesses (see Aron and Muellbauer, 2006a). After 1991, stock data on bank deposits are used directly to construct liquid assets.

2. Other deposits comprise the category: (14) Deposits with other institutions.

3. Government and public enterprise assets also include categories: (15) Treasury bills, (16) Other bills and (21) Non-marketable government bonds. Category (21) became negative and the series was omitted. Categories (15) and (16) are omitted because the flow-of-funds record zero transactions for the household sector.

4. Pension funds comprises category: (29) Interest in retirement and life funds, from Capital Market Statistics, South African Reserve Bank, which combines private self-administered pension funds (reported at book values until 1998Q4), pensions with long-term insurers (reported at book values before 1985, at a mix of book values and market values between 1985 and 1991, and at market values from the end of 1991), and official pension funds (still reported at book values). The assumptions refer to the proportions of funds (prop) reporting at market value in the following periods:

   (i) 1961:4 1985:2: prop=0; (ii) 1985:3 1986:4: prop=0.15; (iii) 1987:1 1987:3: prop=0.3; and (iv) 1987:4 1991:3: prop=0.15.

5. The following data were unavailable: equity in unincorporated businesses and in other unlisted securities. Data on foreign assets are incomplete, but for 1998-2003, annual CPIS data on foreign equity and debt are available (see section 3.2, unit trusts). We have included these in total net wealth. However, we have not included data on foreign assets derived from the Amnesty Unit, National Treasury (see section 3.2, foreign deposits).

6. On tangible assets, see categories in Table 1.

7. Consumer durables comprise categories: (A) furniture, household appliances, etc; (B) personal transport equipment; (C) recreational and entertainment goods; (D) other durable goods (jewellery etc). There are published figures for consumer semi-durable goods.

8. Total net wealth sums the above categories.

9. For ordinary shares, finding the appropriate benchmark for 1969 is controversial. The proportion of equities held directly by the household sector could be expected to be at least as large as in the UK and the US, given a similar culture of share ownership but greater inequality in share ownership in South Africa. We compare two alternative benchmarks for South Africa in 1969, of 15:1 and 25:1 to unit trusts (details on benchmark construction in Aron and Muellbauer, 2006a).

**Annexure 3**

**Figure 1: Ratios to Annual Personal Disposable Income of Net Wealth, Liquid Assets and Debt.**

Ratios to annual income
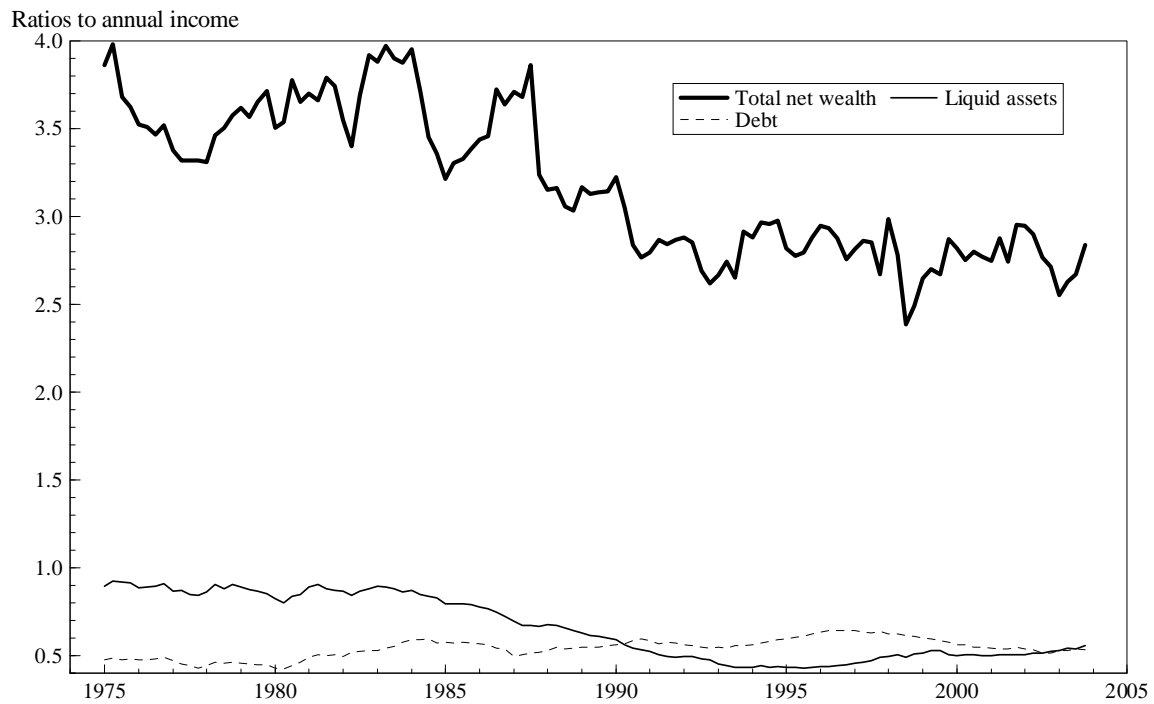


*Note:* Net wealth excludes durables (Table 2).

**Figure 2: Ratios to Income of Pension Assets, Housing Assets, Directly held Illiquid Financial Assets and Stocks of Consumer Durables.**

Ratios to annual income
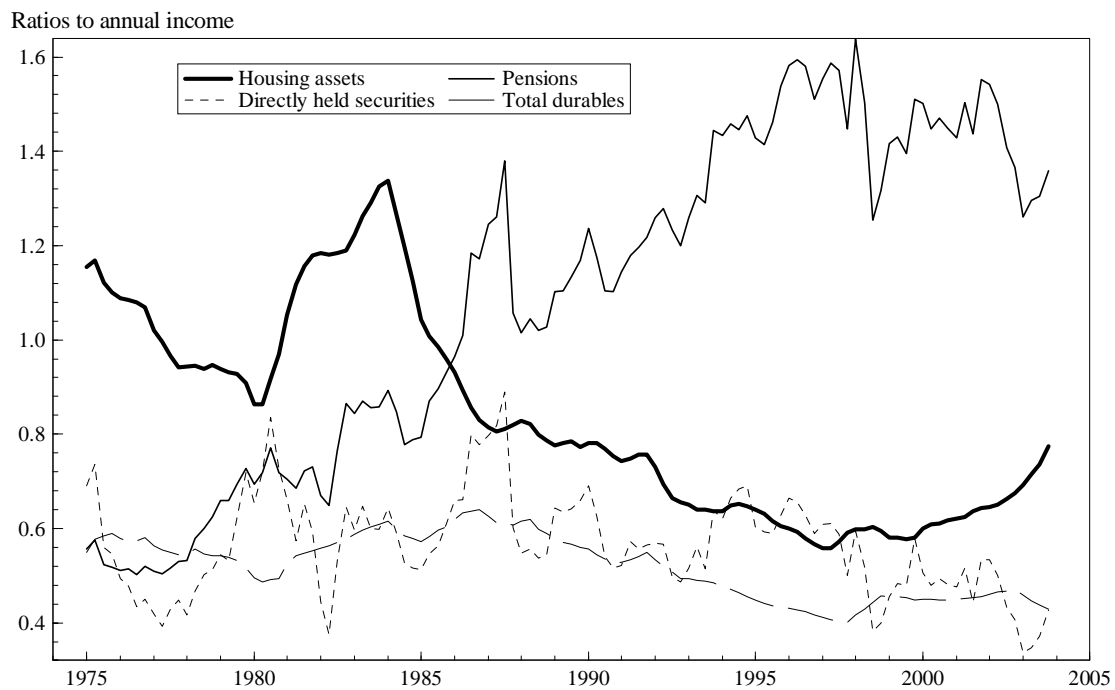
**Figure 3abc: Ratios to Income of Stocks of Housing and Consumer Durables versus Relative Prices and Real Interest Rates.**
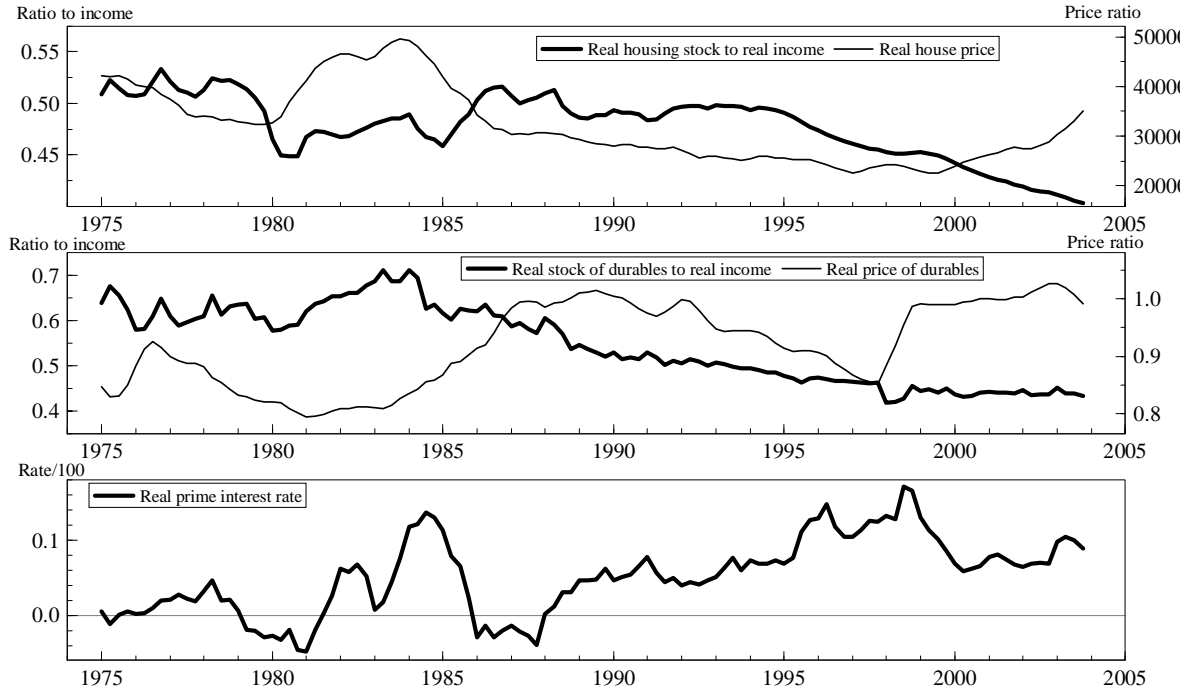


**Figure 4: Ratios to Income of Pension Assets versus Total Return Indices for Equities and Bonds and Proportion of Equities in Pension Assets.**
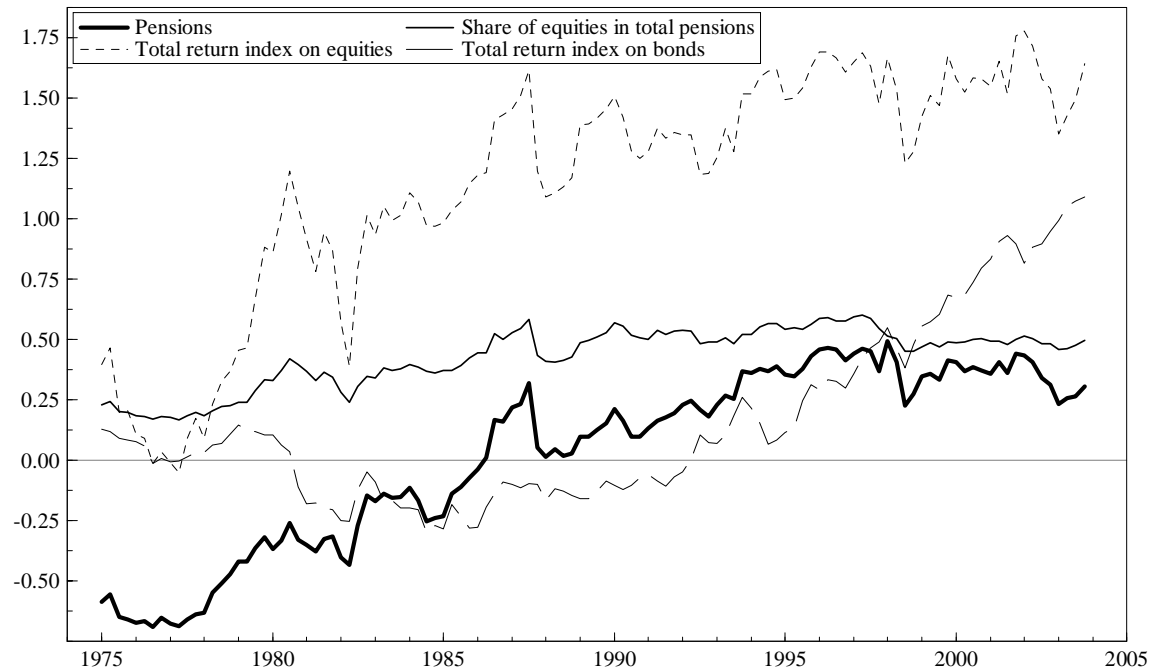


*Note:* Pensions and the return indices are in logs. The share of equities is a proportion between 0 and 1.

**Figure 5: Ratio to Income of Pension Assets and Directly held Illiquid Financial Assets versus the Difference between Taxed and Untaxed Log Total Return Indices.**



*Note*: The return index differentials are in logs. Pensions and directly held securities are shown as ratios to income.