Household debt, interest rates and insolvencies in South Africa

Johan van den Heever[1]

Introduction

The level of indebtedness of the household sector in South Africa has recently scaled new heights, raising interest in this aggregate and leading to concerns in some quarters regarding its sustainability and regarding the general health of household finances.

This brief note first discusses the estimation of household debt in South Africa. Secondly, it gives an outline of recent developments in the debt aggregates. An important indicator of financial distress in the household sector is the level of insolvencies of individuals and partnerships. In an attempt to capture the sensitivity of insolvencies to interest rates, a short-term empirical model is developed in the third section of the paper, linking household debt, interest rates and insolvencies. Due attention is paid to the lags involved. This is followed by a concluding section.

Estimation of household debt in South Africa

The level of indebtedness of the South African household sector is estimated by the South African Reserve Bank on a quarterly basis, and the ratio of household debt to disposable income is published in the Bank's *Quarterly Bulletin*. Data on household debt has been calculated going back to 1969.

In the absence of a regular census of household finances, South Africa relies on creditor data in order to estimate the level of household debt.

As can be seen from the accompanying table, the banking sector is by far the most important source of credit to households. In total, the banking sector was responsible for more than 90 per cent of the total household debt at the end of March 2006.

In South Africa, the banking sector is dominated by banks in the private sector, with quite limited involvement by banking institutions in the public sector. Among the banking institutions in the public sector, only the Land Bank provides significant amounts of credit to farmers, whose unincorporated businesses are classified in the household sector. The Land Bank and the private sector banks provide monthly balance sheet information to the South African Reserve Bank. This information is of good quality, with the banks taking considerable care in reporting their most detailed balance sheets. It is quite helpful that these balance sheets are disseminated per individual bank on the South African Reserve Bank's website and are analysed in great detail by numerous analysts, some of them inside the banking sector, to pick up trends and changes in market share.

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[1] Head, Research Department, South African Reserve Bank. The views expressed are those of the author and do not necessarily reflect the views of the South African Reserve Bank. Data can be obtained from and comments sent to the author at Johan.VandenHeever@resbank.co.za.

Table 1

**The composition of household debt
at the end of March 2006**

Component	Amount R billions	Share of total per cent
Bank loans and advances to the household sector		
Mortgage advances	403	59
Instalment sale and leasing finance	112	16
Credit card advances	32	5
Overdrafts and other bank advances	80	12
Non-bank loans and advances to the household sector	54	8
Total household debt	**681**	**100**

Source: Research Department, South African Reserve Bank.

Non-bank loans and advances to the household sector are obtained from various sources. These include quarterly surveys of non-bank financial institutions conducted by the South African Reserve Bank, estimates based on information obtained from Statistics South Africa (the national statistics office) and other sources on the credit extended to the household sector by non-financial institutions such as shops, and information on microlending disseminated by the relevant regulatory authorities.

An appendix table at the end of this note summarises the sources of data for the calculation of household debt. A thorough discussion of the methodology used to estimate not only household debt but also all the other components of the household balance sheet in South Africa is contained in Aron, Muellbauer and Prinsloo (2006). For purposes of this brief exposition, only a handful of measurement issues which must be kept in mind when interpreting the level of household debt are highlighted.

Firstly, household debt by definition consists of debt incurred by the household sector. The demarcation of the household sector seems straightforward. However, it should be kept in mind that the household sector's finances can be strongly interwoven with that of the corporate sector. For instance, in South Africa many individuals choose to set up a close corporation to own their fixed property, rather than to own it directly. Should a loan be required to acquire such property, it would generally be a loan to the close corporation, which forms part of the corporate sector. However, the individual would have to pay the instalments on such loan from his or her household income, and would often also in his or her personal capacity guarantee that the close corporation will honour its commitments. Therefore, the level of debt which has to be serviced from household income may in fact be higher than the household debt. The lines of demarcation between the corporate and household sectors are clear, but users should be aware of the implications of the sectorisation framework adopted. Additional information on loan guarantees given by the household sector, and on the extent of lending to close corporations (rather than to companies) could be helpful in this regard, but are not currently available in South Africa.

Secondly, securitisation can complicate the measurement of household debt, and has gained in importance in South Africa in recent years. As mentioned above, the level of household indebtedness in South Africa is not established through a survey of households, but by surveying lenders such as banks, asking them how much they have lent to households and adding up the creditor data obtained in this way. However, securitisation frequently involves a bank which packages some of its mortgage, instalment sale or leasing advances and sells

it to a non-bank investor. Accordingly, the securitised advances disappear from the balance sheet of the banking sector. Tracking securitisation activity and obtaining appropriate information from non-bank investors can be challenging. While much refinement remains to be done, Gumata and Mokoena (2005) obtained useful data in this area, such data having been published in the December 2005 *Quarterly Bulletin* of the South African Reserve Bank. Difficulties include establishing how much of the securitised loans are loans to the household rather than to other sectors.

Thirdly, there is the issue of advances to households by insurers and pension funds. Life insurers frequently lend money to individuals against the security of life policies, with the loan usually repayable in instalments. Life insurers also extend mortgage advances. In South Africa in certain instances an employee may also borrow part of his accumulated savings from his own retirement fund to acquire fixed property. Repayments are generally made on a monthly basis at a market-related interest rate and are spread over many years, much like the repayment of a mortgage loan. While it is reasonably easy to obtain data in respect of lending by life insurers, obtaining information from the numerous retirement funds in South Africa on their loans to the household sector can be fraught with difficulties.

Finally, the microlending industry has an interesting history. This industry extended - and still extends - large numbers of small loans, mainly to individuals, at comparatively high interest rates. However, over the past decade many of the microlending organisations were acquired by banks. Most microlending is therefore now reported under *other bank advances*. The remainder is obtained from information released by the Micro Finance Regulatory Council (MFRC). The functions of the MFRC have recently been transferred to a new body, the National Credit Regulator. However, some microlending by entities that are not registered with the regulator persists. Its extent is impossible to fathom, since the lenders prefer to remain illegal and some of the borrowers using such finance are probably in embarrassing financial difficulty. Both parties are likely to refrain from providing information to outsiders.

Description of developments in household debt

Household debt is often expressed as a ratio of annualised disposable income of households. The graph below shows this ratio for South African data, covering the period from the first quarter of 1969 to the first quarter of 2006.
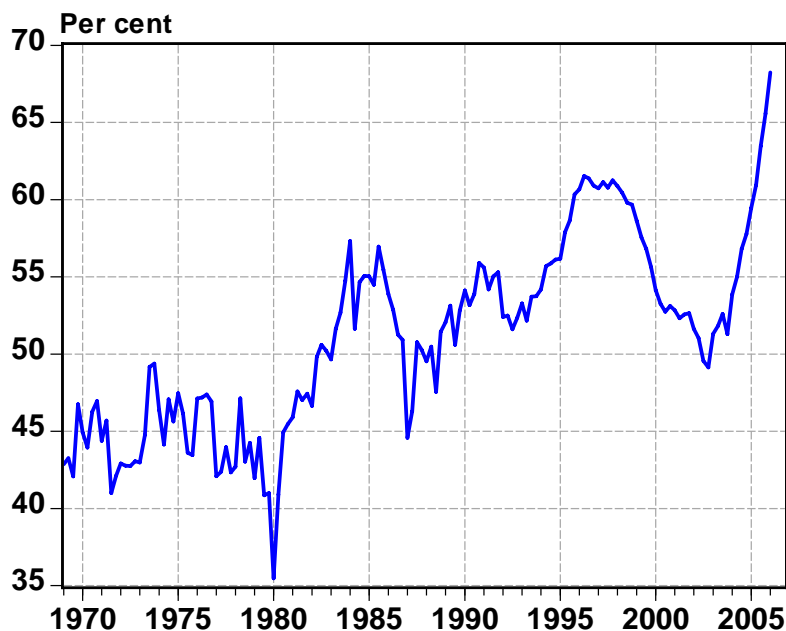
It will be noticed that the household debt ratio fluctuated around a broadly horizontal trend during the 1970s. It should be kept in mind that credit ceilings were in force from the late 1960s to 1972, moderating the rate of growth in bank credit extension. Credit growth picked up strongly from 1972 as the ceilings were lifted, but at the same time nominal disposable income rose vigorously on account of a rising gold price and accelerating inflation. (Inflation reached double-digit levels from 1974, and only returned to a single-digit level in the early 1990s.) Accordingly, the increase in the household debt ratio was fairly moderate. From 1976 to 1980 credit ceilings were again imposed, curtailing the rate of growth in bank credit extension. When they were finally abolished in September 1980, credit-hungry consumers streamed to the banks to take up credit which had previously not been available. Another gold boom, rising levels of employment and income, low interest rates and financial liberalization blunted sensitivity to borrowers' creditworthiness and fuelled strong increases in household debt in the early 1980s.

Following the rapid increase in the household debt ratio up to the mid-1980s, a sharp tightening of monetary policy and deterioration of economic prospects dampened households' appetite for debt. The prime overdraft rate, which serves as a benchmark lending rate, was raised very rapidly in 1984 to a level of 25 per cent per annum. In addition, financial sanctions were imposed on South Africa, damaging economic prospects and confidence. In this process the debt ratio declined significantly.

In the late 1980s the upward trend in the debt ratio was resumed as banks developed innovative financial products such as flexible mortgages. In addition, the repeal in the late 1980s and early 1990s of discriminatory legislation opened up the opportunity for black South Africans to acquire businesses and real-estate in previously forbidden areas, and to make use of the banking system - including its credit facilities - on a greater scale than before.

Figure 1

**Ratio of household debt to
disposable income**

Source: Research Department, South African Reserve Bank.

The upward trend in the debt ratio continued until 1996, leveling off as a tight monetary policy was maintained. However, following the Asian crisis of 1998 interest rates were raised quite rapidly to new record levels, with the prime overdraft rate rising as high as 25,5 per cent per annum. This suppressed expenditure, dampened real-estate activity and prices, caused construction activity to slow, and stopped households' use of credit in its tracks. Despite a considerable reduction in interest rates from 1999 to 2001, households remained hesitant to increase their borrowing.

A comparatively moderate tightening of interest rates in 2002 also contributed to subdued growth in household debt. The debt ratio only started rising again by 2003, as interest rates were lowered. Rising house prices reinforced the demand for and supply of mortgage finance, while the ready availability of such finance, alongside strong consumer confidence, contributed to rising house prices. Robust final consumption expenditure simultaneously raised the demand for other types of finance. The increases in the household debt ratio has been sustained from 2003 to the present day, with successive new record highs being reached.

Modelling key relationships

This section endeavours to illustrate the usefulness of the household debt data in the context of a simple empirical model. An attempt is made to estimate how sensitive insolvencies are

to changes in interest rates, and to establish the time horizon over which this response is observed. Similarly, an attempt is made to estimate how sensitive household debt is to interest rates. The modeling is kept simple and straightforward, and instead of dealing with long-term equilibria it rather focuses on behaviour within a business cycle time horizon.

The number of *insolvencies* of individuals and partnerships in South Africa is small relative to the population - generally only a few hundred per quarter, in a country with a total population which currently exceeds 47 million. Insolvency is not a popular outcome from the point of view of creditors. With insolvency, creditors typically collect a fairly small amount relative to the debtor's outstanding debt, and thereafter can no longer claim any further amounts from the insolvent debtor. By contrast, less dramatic court orders, such as judgements for debt, leave creditors in a position where they retain the option to claim payment from the debtor's future income.

Nevertheless, insolvency is usually a demonstration of severe financial distress and a worthwhile economic indicator to watch closely. High interest rates may be expected to lead to more insolvencies through at least two channels: Firstly, through the cost-of-debt channel, where those agents who are heavily indebted find that the cost of servicing that debt escalates as interest rates rise, reducing their cash flow and ability to service that debt to the point where some are declared insolvent. This is aggravated through the second channel: Where the demand for products is interest-rate sensitive, higher interest rates reduce sales and thereby also the cash flow of the producers, pushing some of them closer to insolvency.

In determining how strongly the number of insolvencies responds to changes in interest rates, both nominal and real interest rates were employed. Various lag structures were also investigated, since it takes some time for changes in interest rates to work through to household finances, and further time for the legal process to run its course in instances of insolvency.

It was found that the level of nominal interest rates, as proxied by the prime overdraft rate, is statistically more successful in explaining insolvencies than real interest rates. This can probably be viewed as confirmation of the importance of cash flow - influenced by the level of nominal interest rates - in shaping the financial health of households. Had South Africa experienced very high or hyperinflation, it is of course quite possible that the finding regarding real interest rates being less relevant would have had to be revisited. In finding an appropriate lag structure, an Almon lag using a second-degree polynomial with endpoint restrictions was found to be reasonably successful. The chosen function is as follows:

		t–value
$INSPM_t =$	−11,37	(−7,18)
	+0,10516 $PRIME_{t-3}$	
	+0,18694 $PRIME_{t-4}$	
	+0,24536 $PRIME_{t-5}$	
	+0,28041 $PRIME_{t-6}$	
	+0,29210 $PRIME_{t-7}$	
	+0,28041 $PRIME_{t-8}$	
	+0,24536 $PRIME_{t-9}$	
	+0,18694 $PRIME_{t-10}$	
	+0,10516 $PRIME_{t-11}$	
Sum of lags	1,92784	(19,28)

Where INSPM = Quarterly number of insolvencies per million of the population

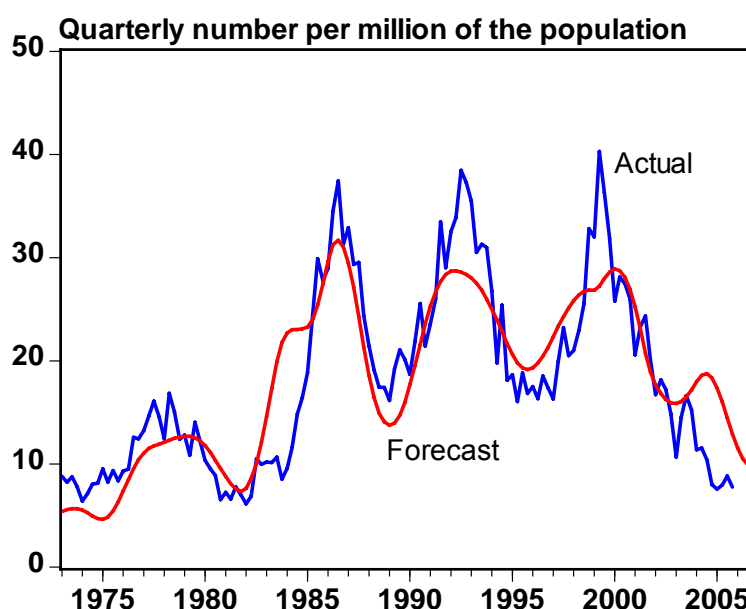PRIME = Prime overdraft rate of the banks, per cent per annum

Method: Ordinary least squares.

Sample (adjusted) 1972Q4 to 2005Q4; 133 observations

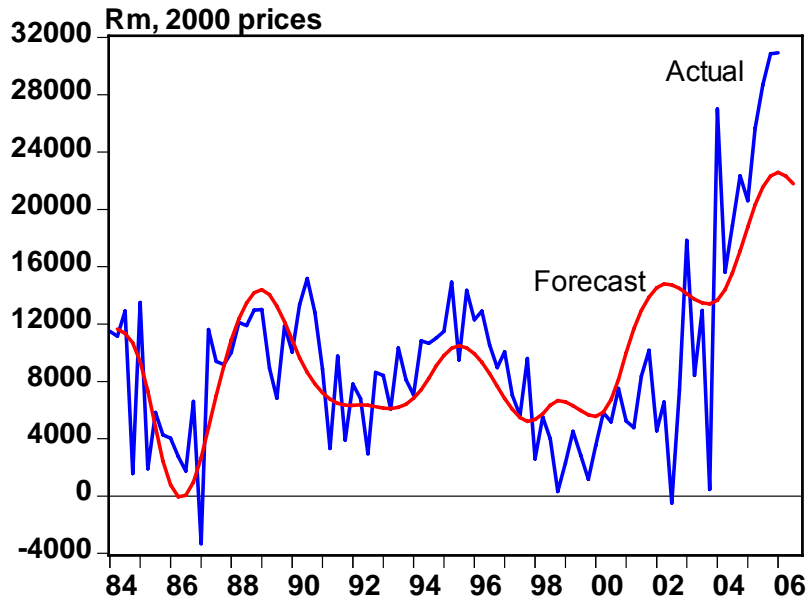|	
R-squared	0,739559
Adjusted R-squared	0,737571
S.E. of regression	4,570724
Durbin-Watson stat	0,376694
Dependent variable: Mean	18,21610
Standard deviation	8,922350
F-statistic	371,9937

Figure 2

Insolvencies

Source: Research Department, South African Reserve Bank.

As sustained increase by one percentage point in the prime overdraft rate is therefore calculated to give rise to an increase of 10,5 per cent in the number of insolvencies after 11 quarters, evaluated at the mean level of insolvencies over the sample period. The elasticity of insolvencies with respect to interest rates is 1,6, evaluated at the sample mean levels of the relevant variables.

Similarly, the modelling of *household debt* was investigated. In view of the rising trend in the level of nominal household debt and the associated statistical problems which could be expected, the quarterly changes in the real value of household debt was used as dependent variable. This was modelled as a function of nominal interest rates and of house price inflation - the latter because more than half of household credit consists of mortgage finance, with rising house prices making it more attractive to incur debt in order to acquire a house. Again, Almon lags were employed using second-degree polynomials with endpoint restrictions.

Figure 3

Changes in household debt

Source: Research Department, South African Reserve Bank.

The chosen function is as follows:

		t−value
$DRDEBT_t =$	26644	(6,93)
	−64,682 $PRIME_{t-1}$	
	−114,990 $PRIME_{t-2}$	
	−150,924 $PRIME_{t-3}$	
	−172,485 $PRIME_{t-4}$	
	−179,672 $PRIME_{t-5}$	
	−172,485 $PRIME_{t-6}$	
	−150,924 $PRIME_{t-7}$	
	−114,990 $PRIME_{t-8}$	
	−64,682 $PRIME_{t-9}$	
Sum of lags	118,583	(−6,03)
	+17,17 $INFHOUSE_{t-1}$	
	+30,52 $INFHOUSE_{t-2}$	
	+40,06 $INFHOUSE_{t-3}$	
	+45,78 $INFHOUSE_{t-4}$	
	+47,69 $INFHOUSE_{t-5}$	
	+45,78 $INFHOUSE_{t-6}$	
	+40,06 $INFHOUSE_{t-7}$	
	+30,52 $INFHOUSE_{t-8}$	
	+17,17 $INFHOUSE_{t-9}$	
Sum of lags	+314,75	(4,20)

Where DRDEBT = Change in real household debt at constant 2000 prices, using CPI as deflator

PRIME = Prime overdraft rate of the banks

INFHOUSE = Inflation over four quarters in house prices, per cent, based on data obtained from Absa bank

Method: Ordinary least squares. Sample (adjusted) 1984Q2 to 2006Q1

R-squared	0,502664
Adjusted R-squared	0,490962
S.E. of regression	4783,034
Durbin-Watson stat	1,396989
Dependent variable: Mean	9500,167
Standard deviation	6703,914
F-statistic	42,95534

The period of bank credit ceilings (up to 1980) and initial catch-up growth in credit extension thereafter was excluded from the estimation. As with insolvencies, the long lag of more than two years before changes in the explanatory variables fully work through to changes in household debt is striking, although not unexpected.

Conclusion

South Africa's data on household debt is estimated using creditor information. Compilation is complicated by a number of factors, such as securitisation. Nevertheless, the aggregate level of household indebtedness is measured in a responsible and comprehensive way. Some refinements can nevertheless be contemplated and several qualifications need to be kept in mind when interpreting the level of aggregate household debt.

The paper illustrates the usefulness of the debt data in the context of a small econometric model. The relationships described in this paper can be expanded to include more variables, and to pay the necessary attention to long-term equilibria.

More ambitiously, household debt is but one part of the household balance sheet. Recently, comprehensive timeseries data on the household balance sheet were constructed by Aron, Muellbauer and Prinsloo (2006), making it possible to more adequately reflect wealth effects, and also to develop integrated models of the stocks and flows related to the household sector.

Since the distribution of household debt across the household sector is important in fathoming the degree of robustness or fragility of the household sector's finances, further work in this area may be contemplated. In this connection, the national register of credit agreements envisaged in Section 69 of the National Credit Act is likely to be an invaluable source of information.

Appendix

Data sources for the calculation of household debt

Type of instrument	Sources and notes
Mortgage advances	
Banks' regular mortgage advances	Banks' monthly balance sheets
Other mortgage advances	Data on securitisation obtained from banks, the Bond Exchange and non-bank financial institutions; data on regular mortgage advances obtained from non-bank financial institutions.
Other advances	
Bank's regular instalment sale and leasing finance	Banks' monthly balance sheets
Other instalment sale and leasing finance	Data on securitisation obtained from banks, the Bond Exchange and non-bank financial institutions; data obtained from vehicle finance companies; data obtained from Statistics South Africa and extrapolated using sales data and industry sources.
Banks: Overdrafts	Banks' monthly balance sheets
Banks: Credit card advances	Banks' monthly balance sheets
Banks: General advances	Banks' monthly balance sheets
Non-bank microlending	Data from National Credit Regulator/ Micro-Finance Regulatory Council
Other financial sector advances	Data from insurers and pension funds
Non-financial sector advances	Data obtained from Statistics South Africa and extrapolated using sales data and industry and other sources.

Note: Household debt includes debt of unincorporated businesses.

Source: Research Department, South African Reserve Bank.

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