Expert opinion

Associate Professor Steve Keen

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Part I

Expert Opinion

1 Code of Conduct acknowledgement

I acknowledge that I have read and agree to be bound by the expert witness code of conduct (Schedule 7 to the Uniform Civil Procedure Rules).

2 Qualifications

1. My professional position is Associate Professor of Economics and Finance at the University of Western Sydney. My previous academic roles were:

   - Senior Lecturer in Economics & Finance at the University of Western Sydney from 1996 till 2000
   - Full-time Ph.D. student on an APA priority rate Scholarship and University of New South Wales Department of Economics Supplementary Scholarship from 1993 till 1996
   - Associate Lecturer in Economics at the University of New South Wales from 1987 till 1993

2. My academic qualifications are:

   (a) Ph.D. (UNSW) 1998
   (b) M. Comm (Hons) in Economics & Economic History (UNSW) 1990
   (c) Dip. Ed. (Sydney Teachers' College) 1977
   (d) LL.B. (Sydney University) 1976
   (e) B.A. (Sydney University) 1974

3. My primary research specialisations in economics and finance are:

(a) Nonlinear dynamics and complexity theory (Refereed papers 2, 10, 11, 12, 14, 16, 17, 18; Books 2; Chapters 1, 8, 10, Encyclopaedia entries 2, 3)

(b) Macroeconomic dynamics and the "Financial Instability Hypothesis" (Refereed papers 2, 10, 11, 16, 17, 18; Chapters 1, 9; Encyclopaedia entries 1, 4)

(c) Critical assessments of economic theory (Refereed papers 1, 3, 4, 5, 6, 7, 8; Books 1; Chapters 2, 3, 4, 5, 6, 7)

(d) Classical political economy and the history of economic thought (Refereed papers 15, 19, 20; Chapters 6, 9; Encyclopaedia entries 5)

My relevant specialisations for the purpose of this expert opinion are 3a, 3b and 3c. Research done for paper 15 was also drawn upon.

3   Economics as a field of specialised knowledge

1. Economics is clearly a field of specialised knowledge, though one which, as well as having many different sub-specialisations, is also highly contested, as I discuss below in Appendix A.

2. Within economics, the subject of this expert opinion raises specific issues in the sub-specialisations of macroeconomics, finance and microeconomics.

3. Unlike sciences like Physics, Chemistry, etc., and applied areas like Engineering, experts in economics can disagree because they take different philosophical approaches to the entire subject area of Economics.

3.1   Special features of economics

1. Sub-specialisations are a common feature of intellectual disciplines. In this sense, Economics is no different to, for example, Engineering, where Electrical Engineers are unlikely to be experts in Civil Engineering, or Mechanical Engineering, etc. Where Economics differs from sciences, and has much more in common with humanities subjects, is that economists who are experts within the same sub-specialisation may take very different approaches to it, because they come from different schools of thought within economics (See Appendix A, and references [26], [31], [43]).

2. These two aspects—sub-specialisations and competing schools of thought—often overlap, so that some sub-specialisations are dominated by specific schools of thought. A third complication arises from economic data itself, which can sometimes stubbornly refuse to conform to the predictions of any given school of thought, even the one that dominates a given sub-specialisation.

3. All three of these issues collide in the circumstances of this expert opinion.

4. Superficially, this topic itself fits mainly into the sub-specialisation of finance. An expert from the dominant school of thought in this area—the "Neoclassical" —might argue, on the basis of this School's core hypothesis and model in finance (respectively the "Efficient Markets Hypothesis" or *EMH*, and the "Capital Assets Pricing Model" or *CAPM*), that this is the *only* area of relevance. As detailed below, the *CAPM* model argues that the manner in which agents finance the purchase of assets has no impact on macroeconomics ([41]).

5. However, over time, finance market data have strongly contradicted the *EMH/CAPM* predictions, to the extent that the most prominent advocates of the *CAPM*—Professors Eugene Fama and Kenneth French—have recently concluded that "the failure of the *CAPM* in empirical tests implies that most applications of the model are invalid" ([20, p. 26]). This, in turn, implies that the manner in which asset prices are financed *does* have an impact on the macro-economy, since only if the *CAPM* were strictly true could a complete separation between finance and macroeconomics be maintained.

6. There are thus two main *theoretical* approaches an economist could take to offering an expert opinion on this topic. He/she could reason in the negative from a *CAPM* perspective, by stating what the theory predicts, and then reasoning what its failure to hold in practice implies for this issue; or he/she could reason from a competing perspective to the *CAPM*. I will rely predominantly on the latter approach, since, as noted above, I am an expert in a competing "Keynesian" perspective on finance, the "Financial Instability Hypothesis" (*FIH*).

7. Regardless of Schools of thought, there are often *empirical* imperatives in the data that force economists of all persuasions to take similar approaches. This is certainly the case with the issue of the robustness or otherwise of the financial system, and the impact of rising debt levels upon it.

4   Assumptions

1. The Cooks' only significant asset is their home.

2. Loans 1 to 5 obtained by the Cooks, described below, were secured by mortgages over the Cooks' home and paid out earlier loans obtained by the Cooks.

3. In 1998 the Cooks obtained a 25 year home loan from the Commonwealth Bank pursuant to which the sum of $110,000 was advanced.

4. In September or October 2000 the Cooks defaulted on the Commonwealth Bank loan and were unable to obtain finance through any other banks.

5. In order to avoid the sale of their home by the Commonwealth Bank, the Cooks obtained in January 2001 a 12 month interest-only loan ("Loan 1"). Loan 1 consisted of one loan of $120,000, secured by first mortgage, interest on which was 11.75% per annum but reduced to 9.25% per annum provided that payment was made within 7 days of the due date of the monthly repayment and all other covenants of the mortgage had been met. The cost of obtaining loan 1 was approximately $5,208.

6. In April 2001 the Cooks defaulted on Loan 1 and in August 2001 the Cooks obtained a further 12 month interest-only loan ("Loan 2") pursuant to which the sum of $138,000 was advanced, secured by first mortgage, interest on which was 8.75 per annum with a late payment fee of 2.5% per annum.

7. In April 2002 Mr. Cook obtained the release of $12,000 from his superannuation from the Australian Prudential Regulatory Authority which was used to make repayments on Loan 2.

8. The Cooks were in default on Loan 2 by May 2002 and on 1 August 2002 the Cooks obtained a 12 month loan ("Loan 3") from Liberty Financial pursuant to which the sum of approximately $174,000 was advanced, secured by first mortgage, the interest on which was 7.5% with a default interest of 11.5%.

9. In or about September or October 2002 the Cooks borrowed $22,000 to make repayments on Loan 3 ("Loan 4"). Loan 4 was of $22,000, secured by second mortgage, the interest on which was 102% per annum with a default rate of 144% per annum.

10. The Cooks were in default on both Loan 3 and Loan 4 by February 2003. In May 2003, the Cooks obtained the two 12 month interest-only loans that are the subject of these proceeding ("Loan 5") pursuant to which the sum of $245,000 was advanced. Loan 5 consisted of:

    (a) one loan of $200,000.00, secured by first mortgage, the interest on which was 13.8% per annum but reduced to 8.8% per annum provided that payment was made within 7 days of the due date of the monthly repayment and all other covenants of the mortgage had been met; and

    (b) one loan of $45,000.00, secured by second mortgage, the interest on which was 19.5% per annum reduced to 17% per annum provided that payment was made within 7 days of the due date of the monthly payment and all other covenants of the mortgage were met.

        i. The average on-time rate of interest on these two loans is 10.31%:
        $$\frac{200000 \times 8.8\% + 45000 \times 17\%}{245000} = 10.31\%$$

11. Loan 5 was used to repay loans 3 and 4, the transaction costs of Loan 5 and rates and utility bills.

12. The Loan Repayment Ability Declaration for Loan 5 contains on its face the following handwriting by the witness: "This loan is to pay out a previous loan with Liberty Financial which is in default". As noted in 8, the "previous loan with Liberty Financial" is Loan 3.

13. On the Application for Mortgage Finance on Loan 5, the Cooks did not answer the questions relating to their income. However on the Loan Repayment Ability Declaration form for Loan 5, the Cooks stated their gross income p.a. as $68,940.

14. The Cooks fell into immediate default on Loan 5.

15. The transaction costs to the Cooks of obtaining loan 5 were approximately $15,000.

16. Around the time of entering Loan 5, the Cooks' house was valued at approximately $320,000.

17. In order to repay Loan 5 at the end of 12 months the Cooks had to either:

    (a) sell their home; or
    (b) obtain a further loan.

18. The transaction costs of any further loan were likely to be similar to those for Loan 5, that is about $15,000.

19. The amount of any further loan was likely to be in excess of $260,000, taking into account the likely transaction costs of the further loan, and the amount required to pay out Loan 5 (which would include default payments and any enforcement costs).

20. For the financial year ending 30 June 2002, Michael Cook's gross earnings were $36,493.00. For the financial year ending 30 June 2003, Michael Cook's gross earnings were $27,775.00. During the period 6 July 2001 to 20 June 2003, Karen Cook received social security payments totalling about $27,000.00.

    (a) I assume for simplicity that Karen Cook's income of $27,000 was evenly distributed over the two financial years.

21. For the financial year ending 30 June 2002 Mr. and Mrs. Cook had fixed outgoings consisting of council rates, telephone, mobile phone, water rates, electricity and car payments of about $7,500, and similar fixed outgoings in relation to the financial year ending 30 June 2003. In addition, they had expenses related to a car loan, the running expenses of their car, the cost of food for themselves and their first child (who was born in 1996), costs in relation to that child's schooling, and general living expenses.

(a) The car loan repayments were \$3679.52 p.a.., based on fortnightly repayments of \$141.52, for the financial years ending 30/6/02 and 30/6/03. The monthly equivalent payment was \$306.63.

22. In relation to the cost of obtaining Loan 5, the fees that were legislative comprised no more than about \$500.00 of the total cost. This legislative component probably would have been about the same in relation to the other loans.

23. The cost of obtaining Loan 5 was taken out of the \$245,000.00 advanced.

24. The same solicitor actor for the lenders in relation to Loans 1, 2 and 5.

25. The solicitor had no involvement with Loan 3. However, as noted in 12 above, the lenders in Loan 5 knew of the default on Loan 3, via the witness's statement on the Loan Repayment Ability Declaration.

26. The Cooks signed a declaration, in relation to Loan 5, stating that the credit was to be applied wholly or predominantly for business and/or investment purposes. However, they did not submit a business plan, or any evidence of owning a business, in applying for Loan 5.

27. The lender for Loan 5 required the provision of an accountant's certificate, which stated, inter alia, that "I am aware of the borrowers income and expenditure and based on that knowledge and the mortgagors financial position I am of the opinion that the mortgagor is able to pay the interest on the loan and repay the principal in accordance with its terms and without financial hardship."

5 Summary of this expert opinion

1. I have been asked to provide my expert opinion "as to the consequences or potential impact of the lending typified in Loan 5 on the economy generally" [42]. In summary my opinion is:

   (a) Standard home loans are limited in size by the need for the borrower to establish that he/she can repay the loan out of income.

   (b) Legitimate "Low Doc Loans" are a necessary development of income-based loans in light of the changing composition of the Australian workforce.

   (c) Ponzi Loans are loans that can only be repaid by either taking out a larger subsequent loan, or by selling the asset that was financed using the loan.

   (d) Ponzi Lending can occur in Low Doc Loans because the loosening of income-verification standards enables loans to substantially exceed the size that could be met out of borrower's actual income.

(e) Loan 5 to the Cooks was a Ponzi Loan.

(f) The financial system is, on the evidence, unstable enough in the absence of widespread Ponzi lending to warrant serious concern by the relevant government authorities.

(g) Were the practice of Ponzi Lending to become widespread, it would substantially increase the tendency of the Australian financial system to asset bubbles and subsequent financial crises, by:

  i. accelerating the accumulation of excessive debt during the upswing to an asset bubble;
  ii. accelerating the rate of decline during the bursting of the bubble; and
  iii. causing the recovery to take much longer.

(h) Ponzi Loans thus have adverse social and economic consequences that extend well beyond the immediate parties to the loan agreement.

(i) A Ponzi Loan is arguably an economically illegitimate contract, in that it may be entered into with the expectation by one party that the other:

  i. will not benefit from the contract; and
  ii. will not live up to its contractual obligations.

6 Nature of Loan 5

1. Loan 5 is a type of "Low Doc" Loan (LDL). The Reserve Bank of Australia (RBA) describes LDLs in its most recent Financial Stability Review as:

   (a) loans for which borrowers self-verify their income in the application process. They are designed mainly for the self-employed or those with irregular income who do not have the documentation required to obtain a conventional housing loan.[48, p. 39]

2. In this sense, LDLs are an economically essential development, given the changing composition of the Australian workforce. They have developed in response to the increasing number of Australians who are not full-time long-term employees of a single employer, but are instead self-employed, contractors, or part-time employees of one or more employers. Such individuals cannot provide the kind of income-earning histories required by traditional lenders, and LDLs provide a legitimate means by which these persons can access credit for house purchases, etc.

3. However LDLs open up another possibility that, while it is feasible with standard loans, is not a systemic feature of them. This is that the repayment obligations on an LDL can exceed the borrower's actual capacity to finance the loan out of the sum of current income, and the anticipated

income stream from the asset. When this applies, the only way the loan can lead to a mutually beneficial outcome to both parties is if the asset is sold for more than its purchase price, plus accumulated interest and other charges.

4. *LDL*s thus have two quite different economic impacts, depending on the nature of their financing:

   (a) Where an *LDL* enables someone to buy an asset who *does* have the capacity to finance its purchase out of income, but cannot document it, *LDL*s are an economically necessary development.

   (b) Where an *LDL* enables someone to buy an asset who *does not* have the capacity to finance its purchase out of income, *LDL*s are an economically damaging development.

5. 4a can be described as Income-Based *LDL*s.

6. 4b can be described as *Ponzi Loans*,[1] which are loans than can only be repaid by either

   (a) selling the asset that the loan enabled the borrower to buy for more than the purchase price of the asset plus loan servicing costs; or

   (b) repaying the loan by taking out a larger loan at some later date.

7. In the following calculations, I use the Cooks' actual income, rather than their declared income. The economic issue at hand is that a Ponzi loan enables a borrower to take out a loan that exceeds his/her capacity to pay out of actual (and to some extent anticipated) income. The issues of the consequences of the Cooks providing a false or misleading income statement, and the interpretation of the lenders' capacity to know whether their claimed capacity to repay the loan was true or false, are legal issues on which I am not qualified to comment.

8. On the basis of the economic definitions in 4, I would characterise Loan 5 to the Cooks as a *Ponzi Loan*. The reasons for this are:

   (a) Loan 5 was taken out during financial year 2002-2003 (Assumption 10).

   (b) The Cooks' actual income for financial year 2002-2003 was $41, 275 (Assumption 20).

   (c) Loan 5 exceeded the maximum loan that the Cooks could have borrowed with an unblemished borrowing record from a standard lender by:

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[1] 1(c)iii explains the choice of this name.

    i. between \$7,507 under the most generous assumptions, and \$102, 475 under the most restrictive assumptions, without taking into account their car loan

    ii. between \$58,910 under the most generous assumptions, and \$133, 324 under the most restrictive assumptions, taking into account their car loan

(d) The issue of whether this was a Ponzi loan depends on whether, given their actual loan repayment capacity, the Cooks could have received Loan 5 from a lender who used actual capacity to repay as the basis of deciding the maximum loan. As explained below under 8(e)i, the car loan *must* be taken into account when calculating this maximum. The relevant figures for evaluating whether Loan 5 was a Ponzi loan are thus given by the range in 8(c)ii. I include the figures without the car loan for the sake of comparison, since even without taking the car loan into account, Loan 5 qualifies as a Ponzi loan.

(e) These estimates were derived in the following fashion:

    i. The Commonwealth Bank on-line "How much can I borrow calculator" [16] was used as a guide to the maximum loan and monthly repayment amount that would be allowed under a standard 25 year mortgage at the Commonwealth Bank's current interest rate of 7.32% p.a.. The only expense inputs this calculator allows are other loan repayments, and rent.

    ii. In September 2005, the Cook's income as specified in Assumption 20, split between the two persons as specified, with one dependent child and no other loan repayments, would enable a maximum 25-year loan at 7.32% interest per annum of \$163,392.

        A. Taking their car loan into account, this maximum falls to \$124,153.

    iii. According to the RBA, on-line calculators like the Commonwealth Bank's base their cost of living estimates on the Henderson poverty line, which is revised each year. [47, p. 43]. The cost of living as measured by the CPI was 5.91% lower in March 2003 than in September 2005. Therefore the September 2005 calculator is likely to understate the amount the Cooks could have borrowed in May 2003. This can be compensated for by deriving a notional 2003 income for the Cooks, using this change in the cost of living as a guide.

    iv. Adjusting the Cooks' income upwards by 5.91% yields an adjusted notional income of \$43,715 as an input into the September 2005 loan calculator.

        A. On this basis, and without taking their car loan into account, the maximum standard home loan they could have taken out was \$181,078 at the September 2005 interest rate of 7.32% p.a.. The corresponding monthly repayment was \$1,326: this

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amount was used for all subsequent calculations as an indicator of the maximum amount that a standard lender believed borrowers with the Cooks' income could afford, in the absence of any other loans.

B. Taking their car loan into account, the maximum standard home loan they could have taken out was $141,669 and the corresponding monthly repayment was $1,039.

v. These monthly repayment amounts ($1,326 and $1,039 respectively) represent the maximum amounts to which a lender would allow a borrower to commit him/herself, using capacity to repay as a guide to the maximum affordable loan. These amounts are therefore used in all subsequent calculations to assess the Cooks' capacity to repay Loan 5 out of income.

vi. With $1,326 as the monthly repayment of a 25 year mortgage, at the average rate of interest the Cooks were charged on Loan 5 (10.31%), the maximum income-based loan the Cooks could have received was $142,524.

A. On an interest-only loan with these terms, the maximum income-based loan would have been $154,393.

vii. With $1,039 as the monthly repayment of a 25 year mortgage, at the average rate of interest the Cooks were charged on Loan 5 (10.31%), the maximum loan the Cooks could have received was $111,676.

A. On an interest-only loan with these terms, the maximum loan would have been $120,977.

viii. With $1,326 as the monthly repayment of a 25 year mortgage, at the standard variable rate applying in May 2003 ([52][2]), the maximum loan the Cooks could have received was $195,479.

ix. With $1,039 as the monthly repayment figure, the maximum loan the Cooks could have received was $170,328. *I regard this as the most realistic comparison to Loan 5, had the Cooks had an unblemished lending record. With such a record, they should have been able to secure a loan of this type and magnitude.*

A. On an interest-only loan with these terms, the maximum loan, without taking the car loan into account, would have been $237,493.

B. Taking the car loan into account, it would have been $186,090

C. A more realistic interest rate for an interest-only loan, secured over a house, for borrowers of the relatively insignificant stature of the Cooks, is the average of the standard variable rate and the unsecured term loan variable rate. This was 8.97% in May 2003. With this interest rate, the maximum loan would have been $177,292 without taking account

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[2] This is data set FILRHLVBS in F05hist.xls

of the car loan, and $138,919 taking account of the car loan. *I regard $138,919 as the second most realistic comparison to Loan 5, had the Cooks had an unblemished lending record. Its interest rate is realistic—and close to the average rate they were actually charged on Loan 5; however it is unlikely that lenders like the Cooks could have secured an interest-only loan of this magnitude, let alone that shown in 8(e)ixB.*

    x. The most realistic likely maximum loan to the Cooks under a standard housing loan in May 2003 was between $138,919 and $170,328; Loan 5 exceeded this realistic range by between $74,672 and $106,081.

9. Loan 5 thus exceeded, by a substantial margin, the maximum loan that the Cooks could realistically be expected to service out of their income. As Assumptions 17 and 19 correctly state, the only way that the Cooks could repay this loan was by selling their house, or obtaining a larger loan.

10. Loan 5 is thus a Ponzi loan.

7 Macroeconomic implications of Ponzi Loans

1. The economist Hyman Minsky first coined the term "Ponzi finance" in 1963 ([39]), when posing the question of whether another Great Depression could occur at that time, after a sudden steep fall of the US Stock Market. He described three "financial postures" that an entity in a market economy could have: "Hedge", "Speculative", or "Ponzi".

   (a) *Hedge*, where "the cash flows from participation in income production are expected to exceed the contractual payments on outstanding debts in every period";

   (b) *Speculative*, where "the total expected cash flows from participation in income production when totaled over the foreseeable future exceed the total cash payments on outstanding debt, but the near term payment commitments exceed the near term cash flows from participation in income production"; and

   (c) *Ponzi*, where "the income component of the near term cash flows falls short of the near term interest payments on debt so that for some time in the future the outstanding debt will grow due to interest on existing debt."

       i. Ponzi units differ from Speculative ones in that, while both "can fulfill their payment commitments on debts only by borrowing (or disposing of assets)", "The amount that a speculative unit needs to borrow is smaller than the maturing debt whereas a Ponzi unit must increase its outstanding debts."

ii. As a result, the only basis on which a "Ponzi finance unit" can remain solvent in the medium term is "upon the expectation that some assets will be sold at a high enough price some time in the future". [40, p. 22]

iii. Minsky used the term "Ponzi" in mock honour of the 1920s fraudster Charles Ponzi, who developed a pyramid finance scheme which became the archetype of such schemes. Minsky did not mean that Ponzi finance itself was fraudulent—though many Ponzi-financiers, such as, in Australia's recent past, Alan Bond, Laurie Connell and Christopher Skase, do turn out to be fraudulent—but rather that the only manner such financiers can continue is by (a) asset sales into rising markets and (b) borrowing ever-larger sums of money.[3]

2. The concept of "Ponzi finance" played a major role in Minsky's "Financial Instability Hypothesis" (*FIH*). Though this hypothesis is not universally accepted in economics, there is no dispute that, were Ponzi financing a widespread phenomenon, the integrity of market economies would be seriously undermined. Economists and schools of thought that dispute Minsky's thesis instead argue that various mechanisms in a market economy prevent Ponzi finance from becoming a major factor.

3. The main rival theory in finance to the *FIH* is the Capital Assets Pricing Model, *CAPM*. This model has dominated academic thinking on finance since its development in 1964[55], and for most of the subsequent 4 decades, opposition to *CAPM* marked one as a maverick. Nonetheless, alternative theories were developed, and academic publications critical of the CAPM were published.

4. However, evidence against *CAPM* has mounted inexorably, and in recent years the tide of academic support has started to turn. This culminated with the publication last year of the paper "The Capital Asset Pricing Model: Theory and Evidence" by Eugene Fama and Kenneth French [20].

(a) 35 years earlier, Eugene Fama published a paper with a very similar title, "Efficient capital markets: a review of theory and empirical work" [19]. This paper played a critical role in the rise to dominance of the *EMH/CAPM* approach to finance. In this paper, Fama concluded that:

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[3]Though there had been similar schemes in the past, Ponzi's occurred in the heartland of America's political and economic elite (the epicentre of the scheme was Boston, Massachusetts), just after the end of *WWI*, when America's pre-eminence in world affairs had become obvious, and at the time of the very first radio news broadcasts. See http://en.wikipedia.org/wiki/Charles_Ponzi for a biography of Ponzi and http://en.wikipedia.org/wiki/Ponzi_scheme for a description of a typical fraudulent Ponzi scheme.

    i. For the purposes of most investors the efficient markets model seems a good first (and second) approximation to reality. In short, the evidence in support of the efficient markets model is extensive, and (somewhat uniquely in economics) contradictory evidence is sparse. [19, p. 416]

  (b) In contrast, with the benefit of 35 years additional evidence on the behaviour of finance markets, Fama and French stated in 2004 that:

    i. The attraction of the CAPM is that it offers powerful and intuitively pleasing predictions about how to measure risk and the relation between expected return and risk. Unfortunately, the empirical record of the model is poor—poor enough to invalidate the way it is used in applications. [20, p. 26][4]

5. With this paper, opposition to the *EMH/CAPM* as an explanation of finance entered the mainstream. It would be fair to say that, while the EMH/CAPM combination still dominates academic training in finance, this is because (a) most academic finance economists are not sufficiently aware of alternative theories, (b) many economists resist these alternative theories because they require economists to reject long-held beliefs about human behaviour being always and everywhere rational[5]; and (c) none of these competing theories has as yet been developed to the stage where it is as appealing a "theory of everything" in finance as was the *EMH/CAPM*.

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[4] Nor do Fama and French hold out any hope that derivative models from the EMH/CAPM may overcome the basic theory's shortcomings. In a footnote to their conclusion, they state that "The problems are compounded by the large standard errors of estimates of the market premium and of betas for individual stocks, which probably suffice to make CAPM estimates of the cost of equity rather meaningless, even if the CAPM holds (Fama and French, 1997; Pastor and Stambaugh, 1999). For example, using the U.S. Treasury bill rate as the risk-free interest rate and the CRSP value-weight portfolio of publicly traded U.S. common stocks, the average value of the equity premium $R_{Mt} - R_{ft}$ for 1927-2003 is 8.3 percent per year, with a standard error of 2.4 percent. The two standard error range thus runs from 3.5 percent to 13.1 percent, which is sufficient to make most projects appear either profitable or unprofitable. This problem is, however, hardly special to the CAPM. For example, expected returns in all versions of Merton's (1973) ICAPM include a market beta and the expected market premium. Also, as noted earlier the expected values of the size and book-to-market premiums in the Fama-French three-factor model are also estimated with substantial error." [20, p. 34, footnote 7]

[5] This is not to say that "rational" as economists use the term actually implies "rational" as meant in common parlance. Fama and French note that an essential assumption of the CAPM is that investors are complete agreement "on the joint distribution of asset returns from $t-1$ to t. And this distribution is the true one—that is, it is the distribution from which the returns we use to test the model are drawn." [20, p. 26] Translating this into less flattering English, the theory assumes that all investors know the future. In this sense, "people have rational expectations", a popular concept with neoclassical economists, translates as "people have the ability to prophesise the future" in ordinary language. Fama and French, in common with most neoclassical economists, justify assumptions of this nature with the proposition that "all interesting models involve unrealistic simplifications, which is why they must be tested against data." [20, p. 30]. Regardless of the methodological merits of this attitude to counter-factual assumptions (see [31, Chapter 7, "There is madness in their method"]), the *EMH/CAPM* has clearly failed when tested against the data.

6. Despite the absence of a comprehensive alternative theory, the empirical failure of the *CAPM* does have significance for the concept of Ponzi finance. The assurance that critics of the *Financial Instability Hypothesis* gave that Ponzi finance would not, and could not, be a major problem, was based on the correctness of the *CAPM*. The *CAPM* in turn asserted that finance market priced assets correctly, on the basis of their discounted expected future earnings.[6] If asset prices *did* reflect future earnings, then there was no possibility for an asset's price to exceed the debt servicing costs: Ponzi finance would thus be impossible in general, and so too would Ponzi loans. At best, they could be a statistical anomaly.

7. The empirical falsification of the *CAPM* means that asset markets *do not* price assets on the basis of their discounted expected future returns. It is therefore quite possible for an asset to be sold for more than its future earnings during a boom, and for less than its future earnings during a slump.

8. This both makes Ponzi finance possible, and also means that debt dynamics become an unavoidable feature of market economies. Just as asset prices will never be "Goldilocks", neither will the level of debt be "just right". Today, far from being "just right", the level of household and corporate debt has become a serious concern for Central Banks worldwide. The particular worry of Australia's Reserve Bank in 2005 is the explosion in household debt—something that a widespread practice of "Ponzi loans" would exacerbate.

7.1 Financial crises without Ponzi Loans

1. Adam Smith is regarded by most economists as the father of economics, and also a champion of *laissez faire* policies. Aphorisms like "It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest"[57, Book 1, Chapter 2] are regularly referenced by those who oppose government intervention. Yet even Adam Smith supported the imposition of legal controls on the rate of interest.

2. Smith's reasoning was largely macroeconomic, and remains relevant today. He argued that, in contrast to other markets, controls on the price of loans would benefit, not merely the borrower, but the lender too, and the economy in general, by preventing credit being wasted on speculative ventures:

   (a) The legal rate ... ought not to be much above the lowest market rate. If the legal rate [is much higher], the greater part of the money which

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[6]The rate of discount applied was the risk-free rate of interest plus a risk premium for the given class of asset.

was to be lent would be lent to prodigals and projectors, who alone would be willing to give this high interest...

(b) A great part of the capital of the country would thus be kept out of the hands which were most likely to make a profitable and advantageous use of it, and thrown into those which were most likely to waste and destroy it.

(c) Where the legal rate of interest, on the contrary, is fixed but a very little above the lowest market rate, sober people are universally preferred, as borrowers, to prodigals and projectors. The person who lends money gets nearly as much interest from the former as he dares to take from the latter, and his money is much safer in the hands of the one set of people than in those of the other.

(d) A great part of the capital of the country is thus thrown into the hands in which it is most likely to be employed with advantage. [57, Book II, Ch. 4]

3. That same fear, that an unregulated market for loans can lead to a country's capital being allocated to speculative ventures that "waste and destroy" it, motivates today's Central Banks.

4. Central Banks, as institutions charged with ensuring the stability of the financial system, largely came into being in the aftermath of the Great Depression.[7] In Australia today, this role is fulfilled by the Reserve Bank of Australia (RBA).[8]

5. The RBA's initial controls over banking institutions were quite direct, including both legal directives about where banks could invest their assets, the maximum interest rates they could set for various classes of loans, and personal directions to the Chief Executives of banks.

6. For the early post-WWII period from 1945 till the mid-1960s, the global financial system was relatively quiescent, and fears of another financial crisis like the Great Depression subsided. Though many factors were involved (including a shift in economic theory from the dominance of "interventionist Keynesian" to "non-interventionist Neoclassical-Monetarist" ideas), this absence of crises encouraged Central Banks to become less concerned with systemic stability, which seemed assured, and more focused upon controlling commodity price inflation.

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[7] Fisher and Kent observe that the Commonwealth Bank, the Reserve Banks' predecessor, "did not contribute the to more stable position of the financial system leading into the 1930s depression, either in terms of monetary policy, or in terms of playing a regulatory role in the banking system."[21, p. 14]

[8] After the Great Depression and WWII, the Commonwealth Bank was given responsibility for both general banking and systemic supervision. In 1959, the regulatory and supervisory functions were vested in a new institution, the Reserve Bank of Australia (RBA). For the sake of simplicity, I will refer exclusively to the RBA when discussing the function of ensuring stability of the financial system. For a brief history of the RBA, see http://www.rba.gov.au/AboutTheRBA/History/history_of_the_rba.html

7. There was, therefore, a deliberate move away from regulatory control of financial institutions towards market-oriented methods of intervention. After a largely unsuccessful period of attempting to control the rate of growth of the money supply, the main policy tool of Central Banks today is their capacity to set the reserve rate of interest.

8. However, tranquility have given way to an increasing number of financial crises, both international and national, especially in the last 20 years. The fear of systemic fragility has arisen once more, as a seemingly inexorable and almost exponential trend for debt levels to rise relative to GDP has taken the world's leading economies into uncharted territory. As Figure 1 shows, total credit in Australia has risen from less than 23 per cent of GDP in 1953, to almost 140 per cent today.[9] Similar rises in debt to GDP levels have occurred in many OECD countries, most notably the USA, the UK, and Japan.[10]
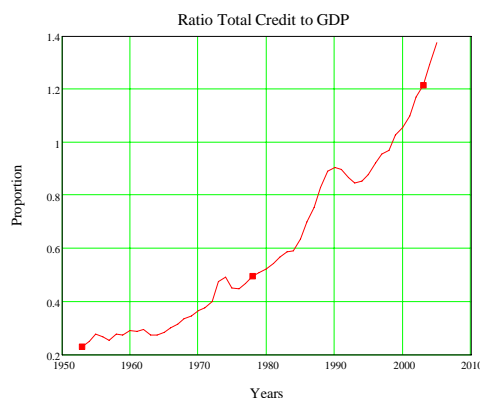

Figure 1: Total credit as per cent of GDP

9. The combination of rising debt levels in OECD countries, and an increasing frequency and severity of financial crises (with the Asian financial crisis being probably the most severe to date), has forced Central Banks to shift focus once more, from the control of inflation (which now seems relatively quiescent) back to systemic stability. Indicators of this shift include the formation of the *Financial Stability Forum* by OECD Central Banks in 1999,[11] the establishment by the RBA of its *Financial System Stability* division, and the RBA's publication, since March 2004, of the semi-annual *Financial Stability Review*.

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[9] The following percentage of GDP charts were derived from RBA data files D02hist & G12hist [52] and Table 3.2 [46]

[10] This increase in debt levels is not simply a function of a country running a balance of trade deficit, as the inclusion of Japan in this list indicates.

[11] See http://www.fsforum.org/home/home.html

10. There are two aspects to financial crises: a bubble before the crisis, and a financial collapse in its aftermath. No significant financial crisis has occurred without a significant boom prior to it, in one or more asset markets. Thus the official and academic discussion of how to avoid financial crises is intimately interwoven with discussion of "asset bubbles"—whether they are good, benign, of mixed consequences, or dangerous; whether Central Banks should attempt to attenuate them; and if so, whether Central Banks have the means to act against them.

11. There is general agreement amongst economists that asset bubbles are, per se, bad: prior to the Internet Stock Market bubble (and crash) of 1995-2000, there was still debate about whether bubbles actually existed, with proponents of the EMH/CAPM perspective arguing that they did not.

12. Between 1997 and 1999, Professor Stephen Cecchetti was an academic observer who "sat on the backbench at the meetings of the FOMC [Federal Reserve Open Market Committee]" during its meetings to set US interest rates. In [13], he gives an interesting history of this role, and his interplay with policy officials who had to deal with the actual state of US markets. Cecchetti notes that, at the time, Federal Reserve economists were factoring in a 10-20 per cent fall in US Stock Market, and observes that

    (a) At the time this was all happening, I confess that I was scandalised. I regularly ranted about the practice of forecasting a dramatic decline in the stock market. *Like the vast majority of academics, I adhered to the efficient markets view. How could the Board staff forecast a stock market decline? Hadn't they read any of the thousands of papers showing that stock market movements aren't predictable?* Yes, there are anomalies at the level of individual stocks, but in the aggregate, the market looks very efficient. So while we needed to assume something about the stock market, shouldn't we assume the equity index would stay constant at its current level indefinitely? After all, if we were so smart why weren't we rich? [13, p. 78; emphasis added]

13. Subsequent events changed the views of Cecchetti, and many other—though not all—academic economists. Cecchetti continues that:

    (a) This happened five years ago (which is why I can talk about it now), and in the interim I have changed many of my views. I have a new appreciation for what the Board staff was doing—what they had to do—and have been working to understand the consequences of my changed view for how policy-makers should go about their jobs. [13, p. 78]

14. Having now acknowledged that such bubbles do exist, Cecchetti gives a pithy summary of why economists and policy makers see them as deleterious to the economy:

(a) Nearly everyone agrees that asset-price bubbles are bad and that we would all be better off without them. Abrupt changes in asset prices affect virtually every aspect of economic activity. Wealth effects cause consumption to expand rapidly and then collapse. Increases in equity prices make it easier for firms to finance new projects, causing investment to boom and then bust. The collateral used to back loans is overvalued, so when prices collapse it impairs the balance sheets of financial intermediaries that did the lending. [13, p. 78][12]

15. Unfortunately Central Banks are far less confident about what is needed to avoid bubbles and financial crises—or at least attenuate their severity—than they were about what was needed to control inflation. There is certainly consensus, however, that high debt to output and income levels make the economic and financial system more fragile and susceptible to crisis.

16. A bubble at a time of low debt levels is likely to have only minor consequences; a bubble of the same magnitude during a time of high debt levels could have a serious crisis as its aftermath. The difference arises because of way aggregate debt levels alter the ability of a financial shock to propagate through the economy.

17. A single financial failure, as well as meaning that a borrower cannot repay his/her lender, also has financial consequences for parties beyond the immediate parties to the loan. Other parties—builders, equipment suppliers, etc., in the case of a default on a housing loan—will have made direct financial commitments on the basis of the borrower's pre-default situation. Work in progress but not yet paid for, products bought wholesale but not yet delivered to the borrower, or products delivered but not yet paid for, have generated financial commitments by third parties that will now not be recompensed by payment by the borrower. This leaves a string of unsecured creditors who will lose money because of the borrower's default, and therefore have to draw down their own financial reserves to compensate.

18. More generally, third parties would have made indirect financial commitments, with the scale of these depending on the financial significance of the borrower. Additional staff may have been hired for anticipated future work. Investment may have been undertaken on the basis of expected growth in demand. Clearly these effects will be minor to non-existent for a single, *LDL* borrower; they will however be substantial when a single large borrower—a Qintex or a Bond—goes bankrupt, and also when many small borrowers fail.

19. When debt to income levels are relatively low, the flow-on effect from one large or many small failures on the rest of the economy is limited, because most other economic agents have sufficient financial buffers to be able to

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[12]Cecchetti lists many additional problems with bubbles. See [13, pp. 79-80]

absorb the shock. Losses are made but are also absorbed; profit rates fall, some employees lose their jobs. But the overall integrity of the economic and financial system is unimpaired.

20. However, when debt to income levels are quite high, even a small financial failure can have serious repercussions for the rest of the economy. The failure of the borrower(s) to pay contractors and suppliers causes some of them to also go bankrupt, disrupting the financial relationships they in turn have with parties that were neither directly nor indirectly involved with the parties to the original loan(s), and so on. The initial financial disturbance can be amplified in a manner akin to a nuclear fission chain reaction.

21. As is well-known, a chain reaction in uranium can only be sustained if there is a sufficiently high ratio of U_{235}, the fissile isotope of Uranium, to U_{238}, the comparatively stable isotope, and this requires that naturally-occurring ore be refined.[13] A similar concept of refinement applies here: the ratio of debt to income must be high enough for financial failures to cause a cascade of further failures, resulting in an economic crisis. Such a crisis need not be the economic simile to an atomic bomb—which requires a deliberately unrestrained accelerating chain reaction—but merely the simile to a controlled reaction in a nuclear power plant.

22. Here the analogy between debt and nuclear fission breaks down, for two reasons. Firstly, in contrast to a nuclear reactor where sustained fission is the desired object, the economy functions better if self-sustaining chains of bankruptcies do *not* occur. Secondly, whereas nuclear reactors are built with generally effective systems for controlling the level of sustained fission, Central Banks do not have a means by which the level of chain-reaction bankruptcies can be controlled. Nor do they necessarily have a means to halt the economic equivalent of a nuclear reactor meltdown—a "debt-deflation", in which falling commodity prices combine with excessive debt levels to cause a runaway collapse.

23. Three years ago, Ben Bernanke, now Governor-elect of the United States Federal Reserve Board, asserted that "printing money" was the equivalent of "scramming"[14] a runaway nuclear reactor, in the event that excessive debt and falling prices locked an economy into a "debt-deflation":[15]

    (a) under a fiat (that is, paper) money system, a government (in practice, the central bank in cooperation with other agencies) should always

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[13] There is, however, one uranium deposit—the Oklo deposit in Gabon—where the U_{235} concentration was high enough to allow "natural" chain reactions to occur on about 15 occasions about 1.7 billion years ago. See http://en.wikipedia.org/wiki/Nuclear_chain_reaction, http://en.wikipedia.org/wiki/Oklo, and http://www.ocrwm.doe.gov/factsheets/doeymp0010.shtml

[14] See http://en.wikipedia.org/wiki/Scram.

[15] This term was first coined by Irving Fisher in 1933,[23] in an attempt to explain the causes of the Great Depression. I return to the dynamics of debt-deflation below.

be able to generate increased nominal spending and inflation, even when the short-term nominal interest rate is at zero... prevention of deflation remains preferable to having to cure it. If we do fall into deflation, however, we can take comfort that the logic of the printing press example must assert itself, and sufficient injections of money will ultimately always reverse a deflation. [8]

24. Bernanke's confidence here is not widely shared by other economists. Gordon de Brouwer specifically referred to an earlier paper by Bernanke when he commented that:

   (a) There is no shortage of expert advice about whether and how economic policy-makers should respond to asset-price movements. Many of the 'names' of macroeconomics have written on this and they pretty much make every recommendation possible, ranging from not using monetary policy to respond to asset prices (Bernanke and Gertler 2000), using monetary policy to respond to asset prices (Cecchetti et al 2000; Bordo and Jeanne 2002), or using alternative market-specific instruments to deal with the bubble (Schwartz 2002).[17, p. 257]

25. Nor is Bernanke's analysis supported by the data on the most recent instance of deflation in the global economy, Japan from 1992 till (at least) 2004. Even extreme increases in *M1*, the component of the money supply under Central Bank control, had little impact on either broader measures of liquidity (*M2* and "broad money"), or deflation. As Figure 2[16] shows, Japan's monetary authority has increased *M1* by between 3 and 27.5 per cent per annum (an average rate of 9.1 per cent), yet consumer prices across this period have changed by between 1.6 per cent and minus 0.9 per cent per annum (an average of 0.24 per cent), while wholesale prices fell by on average 1 per cent per annum. The correlation of *M1* with changes in the *CPI* is actually negative—the reverse of the direction of correlation assumed by Bernanke.[17]

26. Central Banks, therefore, do not have a simple cure for a debt-deflation, should one come about. The only point in Bernanke's argument about which there is consensus is that economies should avoid falling into the debt-deflationary trap in the first place.

27. The level of debt is thus one of the two most important determinants of whether a financial disturbance will have limited or extensive impact on the economy (the other being whether inflation is high or low—with

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[16]On page 22.

[17]The correlation of changes in *M1* to changes i the *CPI* is -0.51; it increases if we consider lagged *CPI*—so that we assume that changes in *M1* this year affect prices next year—but is still negative. I return to this issue of the failure of the "logic of the printing press" in section 7.5.
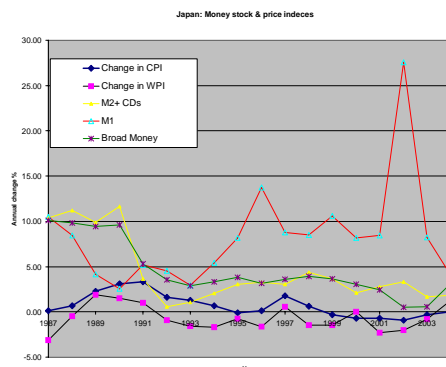
Figure 2: Change in Money and Prices, Japan 1987-2004

low inflation being the undesirable situation). As RBA Deputy Governor Glenn Stevens rather expressively put it, though Central Banks have become obsessed with asset price bubbles, it is not the bubbles themselves that are the problem, but the debt levels that are associated with them:

(a) it is really the leverage that accompanies asset-price movements which is the issue, rather than the asset-price movements themselves... all sizeable asset-price misalignments presumably do some damage, but the ones which do the most damage are those which were associated with a big build-up in leverage, which always carries the risk of forcing abrupt changes in behaviour by borrowers and their lenders when the prices turn. To coin a phrase, 'it's the leverage, stupid'. [59, p. 295]

28. In the late 1980s in Australia, the source of rapidly growing leverage was corporate borrowing. As Figure 3 shows, corporate debt expanded rapidly during the 1980s, almost tripling as a percentage of GDP at a time of high and generally rising interest rates. This expansion in debt was a world-wide phenomenon [56, pp. 30-37], and a major underlying factor in the stock market boom of 1983-87. With the sudden collapse of the Stock Market,[18] the bubble simply relocated to commercial property—a common feature of asset bubbles [17, p. 251]. The twin bubbles of 1987-89 finally collapsed into "recession we had to have"—with assistance from the high official interest rates that were imposed to quell the boom.

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[18] On October 16 1987 the Dow Jones Industrial Index fell 4.6 per cent, followed by a further 22.6 per cent fall on October 19; the Australian market followed suit, with falls of 3.7 per cent on the 19th and 25 per cent on the 20th. As Simon observes, "There was no clear reason for the US market to fall and the only reason for the Australian market to fall was that the US had fallen." [56, p. 34]

29. After this "near death experience", the commercial sector rapidly reduced its debt levels—though in part this reduction reflected the removal from the corporate register of many of the most indebted companies of the 1980s. Simon observed that

    (a) The level of corporate gearing increased rapidly in the 1980s to over 100 per cent on average from below 50 per cent. As the later sample shows, the companies with the highest gearing, on average, are no longer in the sample. This suggests that these companies went out of business because of the high debt levels they accumulated. This was certainly the case for Qintex and the Bond group of companies. [56, pp. 30-32]

30. Irrespective of the cause, corporate debt levels fell rapidly during the early '90s recession. The business debt to GDP ratio reached a minimum in 1995 that was, nonetheless, almost twice the level that applied in the 1970s—though now in an environment of low and relatively steady interest rates. It then resumed an upward trajectory, but has since stabilised: Australia's business debt to GDP ratio today is no higher than it was in 2001 (See Figure 3).

Figure 3: Business debt as per cent of GDP

31. In stark contrast, Australia's household debt to GDP ratio has risen from 57 per cent of GDP in 2001 to over 86 per cent in 2005, and, as Figure 4[19] shows, fivefold from the mid-1970s. With the exception of a dip in the 1985-87 period when the Stock Market was the focus of speculative frenzy in Australia, the housing debt to GDP ratio has been rising exponentially for at least 25 years. The focus of RBA concern today is therefore on borrowing by households.
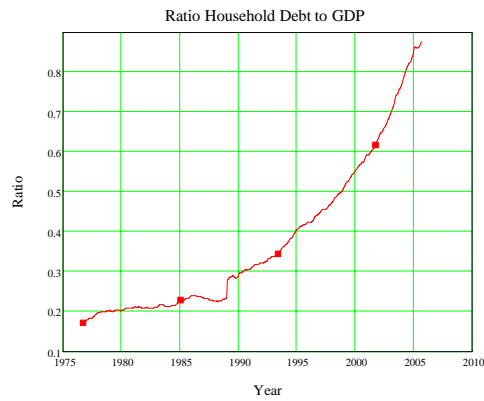
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[19] On page 24.

Figure 4: Ratio of household debt to GDP

32. Similar rises in household debt have occurred throughout the English-speaking countries, but even so the increase in Australia has been the most rapid. As Figure 5[20] indicates, household debt has risen at an average of approximately 12 per cent per annum in Australia since 1990, though the growth was also highly cyclical. This compares to an average rate of growth of household debt of about 8 per cent in the USA.
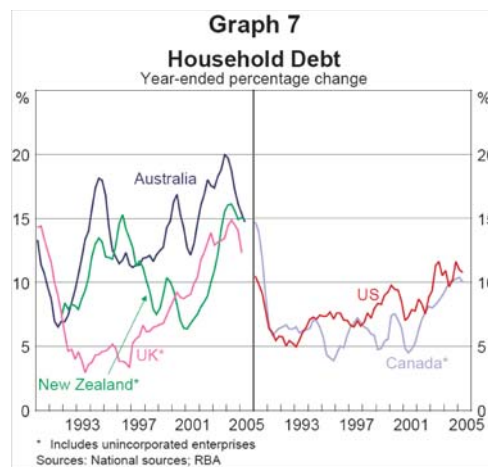

Figure 5: RBA Financial Stability Review September 2005 p. 6

33. These apparently minor percentage differences compound to quite substantial differences over time: at an average annual growth rate of 12 per

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[20]On page 24.

cent, Australian household debt is 5.5 times higher in 2005 than it was in 1990; the American growth rate of 8 per cent translates into 3.2 times as much household debt in 2005 as in 1990. Both are worrying levels, but the Australian level is far more serious. However, what is peculiar about Australia is not the total level of debt per se—since, as Figure 6[21] shows, the aggregate US debt to GDP ratio, at roughly 140 per cent, is very similar to Australia's—but the extent to which this debt is concentrated in household rather than corporate balance sheets. Whereas the USA's debt weighs equally on households and businesses, in Australia's the pressure of debt is being exerted predominantly on households.
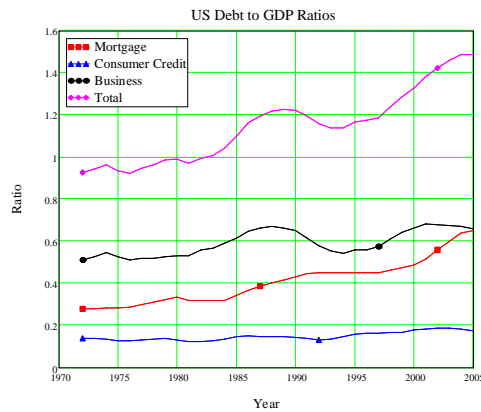

Figure 6: Breakdown of USA Debt to GDP

34. A potent indicator of the level of financial stress now being felt by Australian households is the ratio to household disposable (after tax) income. This ratio has more than tripled since 1981, and the explanation that this is due to falling interest rates ceased being viable about two years ago. The rise in debt has eclipsed the impact of generally lower interest rates since the early 1990s, so that, as the second panel in Figure 7[22] indicates, interest payments by households now consume more of household disposable income than they did when standard home loan rates peaked at 17 per cent in 1989—even though the average variable rate is now just 7.05 per cent [52, Indicator Lending Rates, F05hist.xls].

35. Figure 8[23] from the March 2004 *FSR* shows the breakdown of household debt as a proportion of household disposable (after tax) income. By far the largest increases have come from housing finance (personal loans show no trend, while credit card debt has roughly doubled, but from a much

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[21] On page 25.
[22] On page 26.
[23] On page 26.

Graph 14
Household Indebtedness
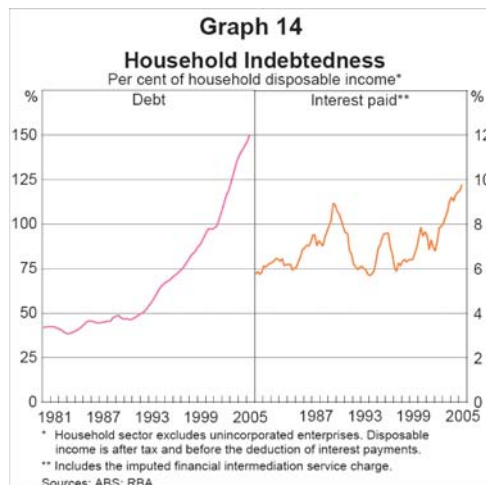Per cent of household disposable income*

Figure 7: RBA Financial Stability Review September 2005 p. 11

smaller base). Aggregate owner-occupier debt has risen from about 30 per cent to over 80 per cent of aggregate disposable income, while investor housing has risen from an extremely low base of about 5 per cent to approximately 40 per cent of disposable income.

Graph 4
Household Debt
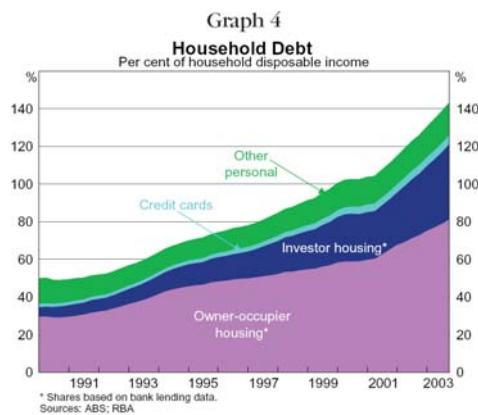Per cent of household disposable income

Figure 8: RBA Financial Stability Review, March 2004, p. 6

36. This growth in housing debt had several consequences in terms of the proportion of Australians experiencing financial stress from housing debt. First home buyers as a proportion of all home owners dropped to the lowest level ever recorded in 2003, of less than ten per cent of housing

loan approvals (Figure 9),[24] and as a result the proportion of Australians renting their residence rose from 19 per cent in the mid-1990s to 22 per cent in 2003.

37. This trend reduced the proportion of Australians with mortgage repayment obligations; however the proportion of Australians who were free of mortgages on their residence fell, as many mortgage-free owner-occupiers took on mortgages to "unlock the equity" in their homes for other purposes—including purchase of "investment" properties. The mortgage-free group fell by roughly 5 per cent (from 41.8 per cent in 1994 to 36.4 per cent in 2003) and the mortgage-encumbered group rose by a similar proportion (from 28.3 to 33.1 per cent).[3, p. 158]

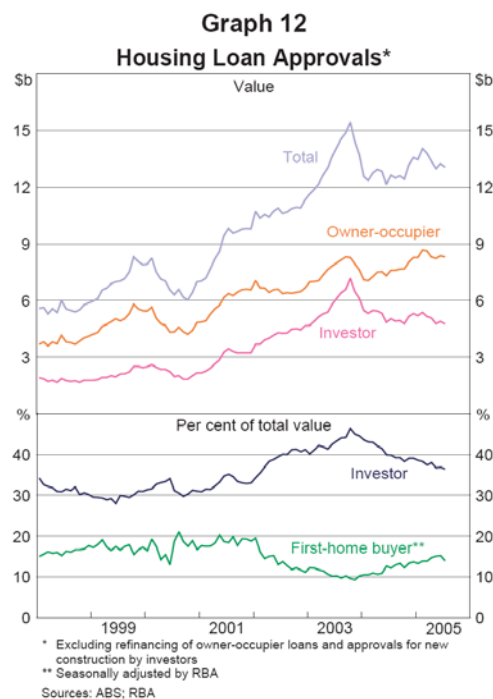Figure 9: Monthly housing Loan approvals by value and type of borrower

38. This borrowing has been mainly to finance speculative real estate purchases—by both owner-occupiers, and the much expanded class of "buy to lease investors". Figure 10[25] shows the longer term trend: housing debt has risen from 12 per cent to 74 per cent of GDP the last 30 years, but the

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[24]On page 27.
[25]On page 28.

real increase can be dated to 1988: the year after the 1987 Stock Market collapse.

Figure 10: Ratio of housing debt to GDP

39. There is no doubt that this rise was part of a "housing bubble", that has only in the last year started to deflate. As discussed below, this bubble is the continuation of a process that began in the mid-80s; its shift from stocks to houses is simply a reassertion of the historic focus of Australians on housing rather than shares.

40. Simon provides a useful if informal definition of a bubble:

    (a) Bubbles occur when the initial reason for investing becomes subsumed in a general demand for assets whose prices have risen in the past, regardless of the initial reason for the rise... a bubble is an asset market event where prices rise, potentially with justification, rise further on the back of speculation, and then fall dramatically for no clear reason when the speculation collapses. [56, p. 18]

41. Australia's tendency towards housing bubbles is as notable as the American proclivity for stock market bubbles that Keynes commented upon in 1936:

    (a) It is rare, one is told, for an American to invest, as many Englishmen still do, 'for income'; and he will not readily purchase an investment except in the hope of capital appreciation. This is only another way of saying that, when he purchases an investment, the American is attaching his hopes, not so much to its prospective yield, as to a favourable change in the conventional basis of valuation, i.e. that he is, in the above sense, a speculator. Speculators may do no harm as bubbles on a steady stream of enterprise. But the position is serious

when enterprise becomes the bubble on a whirlpool of speculation. When the capital development of a country becomes a by-product of the activities of a casino, the job is likely to be ill-done.[33, p. 159]

42. The first major spin of the roulette wheel in Australia's casino of choice occurred in Melbourne in the 1880s-1890s [56, pp. 19-23]. In that unregulated and macroeconomically unmanaged time, "Ponzi Loans" and Ponzi financing in general played a crucial role in bringing about arguably the greatest Depression in Australia's economic history.

7.2 The 1891 Melbourne Land Boom Bust: Australia's first "Ponzi Loan" experience

1. This historical episode contains many instructive guidelines about Ponzi Loans, and how society should deal with them. Ponzi loans are, in essence, loans whose sole rationale is the expectation that the assets whose purchase they fund will rise in value by much more than the rate of interest. While it might be thought that such loans are a modern phenomenon, they were the foundation of the Melbourne Land Boom (*MLB*), and its undoing when the exponential increase in prices came to an end.

2. As with the current bubble, bank credit was the major driving force in the *MLB*—where bank, though defined as narrowly as in today's definition, includes institutions with the capacity to issue their own notes, since this role was not taken over by the public sector until after the Depression that followed the *MLB*. Figure 11[26] indicates starkly how much and how rapidly bank credit grew at this time.
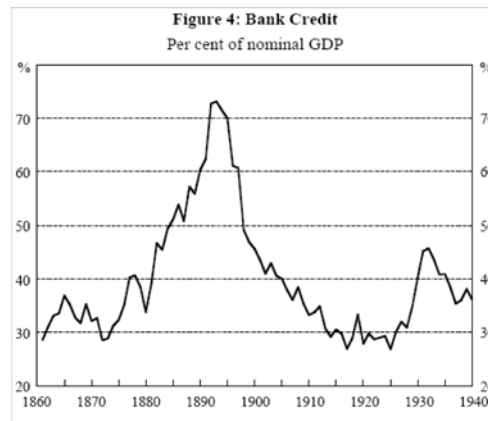

Figure 11: Bank credit as a percentage of GDP, 1860-1940. [21, p. 7, citing [9]]

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[26]On page 29.

3. Also as with the current boom, though the bulk of finance was provided by mainstream banks, a fringe of non-bank lenders added additional fuel to the speculative fire. Fisher and Kent note that the share of fringe lenders, though small, almost doubled at the peak of the bubble:

   (a) the cycle in total credit was likely to have been even more pronounced during the 1890s than it was for bank credit because of the behaviour of building societies, finance companies and the 'land' and other 'fringe' banks. Data on credit provided by these financial institutions are difficult to obtain. However, data on assets of financial institutions show that building societies and finance companies grew extremely rapidly through the 1880s—their share of financial system assets rose from 12 per cent in 1885 to more than 21 per cent by 1892. [21, p. 8]

4. The modern term "building societies" can give a misleading impression of the function of these 19th century institutions. Fisher and Kent note that these "building societies" were allowed to speculate in land in their own right, and primarily lent to finance speculation by others:

   (a) The land boom was supported by the large number of building societies that opened and the view that one couldn't lose money by investing in land. Legislation covering building societies was changed in 1876 to allow them to buy and sell land themselves. This resulted in building societies becoming little more than 'speculative operations' which added to the inflationary pressure on land and property values.[21, p. 22]

5. As with Australia's most recent bubble, conventional banks provided the bulk of the debt finance that fuelled the Melbourne Land Boom. However, these 1980 Ponzi lenders played a significant role in the final acceleration of the bubble. Simon notes that

   (a) From the end of 1887 many reputable banks restricted their lending for land purchase substantially. Regardless, the market continued to grow for another four years largely supported by the activities of the land banks. [56, p. 23]

6. This speculative finance led to an enormous increase in prices that was self-sustaining for about 12 years:

   (a) Although an accurate time series of property price data is unavailable, Silberberg (1975) presents data suggesting that the average net nominal annual rate of return on land in Melbourne was about 35 per cent from 1880 to 1892.[21, p. 22]

7. A net nominal rate of return of 35 per cent per annum translates into land prices being 36 times higher in 1892 than they were in 1880. Though price rises would have been lower outside the restricted area examined by Silverberg, it is clear that Melbourne was in the grips of a speculative frenzy that exceeds even what we have experienced. Fisher & Kent observe that

   (a) From 1875 to 1891, building activity as a share of GDP averaged around 14 per cent, compared with an average of only 9 per cent from 1920 to 1930. It would not be an overstatement to claim that this level of activity over the 17 years to 1891 represented the most extravagant of building booms.[21, p. 21]

8. As with most booms, the initial impetus was real: population in Melbourne (and Australia generally) was growing, prosperity was rising (on the back of pastoral and mining industries), and, initially, houses were in short supply (though the physical building boom rapidly overcame this shortage). John Simon summarises these real factors that triggered the boom:

   (a) The 1880s in Melbourne were a time of great growth. Melbourne developed rapidly through this period supported by the wealth that had been created by the earlier gold rushes. The introduction of cable trams and trains made suburban living much more convenient. New lines were opened to Richmond, Fitzroy, Brunswick and Carlton, to name a few, beginning in 1885. Telephones were gradually being introduced, once again reducing the inconvenience of living in the suburbs, and electricity was beginning to be used for industry. In addition to the introduction of tram and train services, other technological innovations, such as hydraulic lifts, allowed taller buildings to be built, and thereby, increased Melbourne City land values. Part of the exuberance of the period could be seen in substantial growth in the share market. Tramway shares were an object of great speculation and discoveries of silver by BHP fuelled a rise in mining shares.[56, pp. 19-20]

9. Once a true bubble had formed however, it sole basis was the expectation that it would continue. For quite some time it did, but ultimately, it terminated in 1891, to be followed by an, on average, 50 per cent fall in land prices over the three years from 1891 till 1894.[27]

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[27]Simon notes that Figure 12 (on page 32) probably understates the extent of the bust, since the Yearbooks on which it is based were themselves a victim of the bust. They ceased production in 1892, and "only resumed in 1902 with a much reduced quantity of data." The reason was indicative of the nature of the bust: "the Government Statist at that time, Henry Hayter, was in serious financial trouble in 1891, and finally declared insolvency in 1894 when he retired from his position as Government Statist." [56, p. 39]
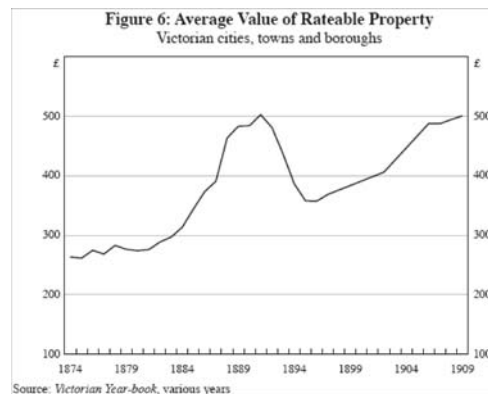
Figure 12: The Melbourne Land Boom, value of rateable property [56, p. 21]

10. Simon observes that, as with the bursting of most bubbles, there was no identifiable trigger for the burst. Some real factors included the withdrawal from the market of more reputable lenders in 1887, as noted earlier (5a), and the fall in rental yields—due mainly to the dramatic rise in prices, but also to over-supply caused by the building boom itself.[56, pp. 23] There was no necessary level at which these real factors would cause the boom to reverse, but phenomena like this always play a part by indicating that a bubble has driven asset prices far above levels that can be justified on the basis of the income flows they generate.

11. Bubbles can persist, however, because the gains on the capital appreciation side outweigh the losses on the income side. Nonetheless, even with this effect driving the bubble, problems of income and cash flow manifest themselves increasingly as the bubble continues. Time delays now become critical, so that a slowdown in the rate of turnover of properties can cause a speculator to run out of money before a sale can be affected, thus leading to bankruptcy and a forced asset sale. Several such failures can cause a lender itself to fail.

12. Once the bubble burst, the effect was a calamitous chain reaction of financial failures for the unregulated financial system of the 1890s:

    (a) Mortgage defaults and bank runs eventually led to a number of financial institutions going under. This then started a chain of events that led to the bubble completely deflating. Many of the land banks had only recently been floated and had issued partly paid shares. In an effort to continue operating they issued calls for the remainder of the capital, which, in turn, required shareholders to sell land to meet the call on their shares. The additional selling pressure pushed prices down significantly, thereby inducing further financial problems. This
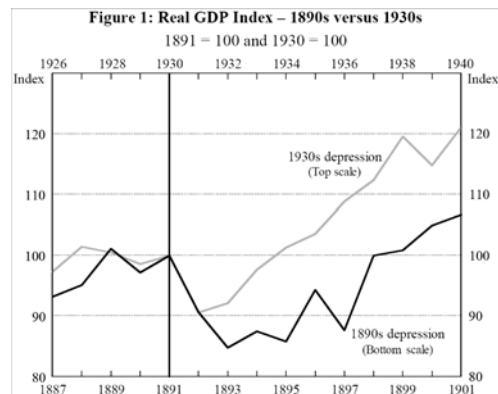
32

Figure 13: Comparative impact of the 1890s Melbourne Land Boom Depression and the Great Depression [21, p. 4]

> then became a full-blown financial collapse, which led into a more general depression.[56, pp. 23]

13. Fisher and Kent mount a convincing case that this Depression was more severe than the Great Depression of 1930-36. Real output took less than four years to recover during the Great Depression, whereas real output levels did not return to the 1891 level for eight years. Figures on unemployment are not available, but Fisher and Kent reasonably speculate that it was worse. Simon notes that Melbourne's population fell by 6.5% in six years "as people sought better opportunities elsewhere" [56, p. 23]

14. Fisher and Kent discern four reasons why the now largely forgotten *MLB* was so much more damaging to Australia than the still infamous Great Depression.

   (a) The size of the speculative bubble that preceded it, and in particular, the level of speculative investment and the level of growth of bank and non-bank credit;[28]

   (b) The unregulated nature of the banking system in the 1890s, in particular the impact of the "building societies";

   (c) The much lower attention to risk management by lenders in the 1890s than in the 1930s; and

   (d) The much greater number of bank failures (and of course collapses by non-bank lenders).

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[28] Compare the bubble in credit for the 1890s in Figure 11 (on page 29) with that for the 1930s.

15. Of these four factors, the first three remain relevant today, and Ponzi Loans play a role in each.[29]

16. This is not to suggest that the housing bubble and events like it could not occur without Ponzi Loans. As outlined above, debt levels have risen to worrying levels largely on the back of conventional, income-based loans. However, as I explain below in Section 7.4, Ponzi loans extend and accelerate this process, as they did during the Melbourne Land Boom.

17. Ponzi loans are also not the only necessary source of Ponzi-like behavior by lenders. The level of income that is regarded as sufficient to enable a borrower to be able to repay a loan out of income is an arbitrary measure. In the aftermath to the Great Depression, banks set this at 30 per cent of the income of the "breadwinner" in a family; during the 70s, this was amended to include two income-earners. Both these policy changes increased the amount that a given family unit could borrow, thus increasing the potential debt-servicing burden. More recent changes have added to this trend.

7.3 "Ponzi-like" developments in Income-Based Loans

1. Using the Commonwealth Bank's on-line calculator as a guide [16], banks now allow borrowers to include the income of up to four persons in a loan [16]. Recently, some banks have developed loan packages that allow parents' incomes to be included in calculating eligibility for a loan [14]. These new developments have occurred on top of the gradual increase in the ceiling that banks impose on the amount of a borrower's income that can be devoted to debt repayment.

2. The Commonwealth Bank's current Home Loan brochure [15] states that:

   (a) So your loan remains manageable for you, we prefer that its repayments and any other commitments you have (e.g. credit card repayments and other borrowings) in total don't exceed 40% (this percentage may be lower depending on your income) of your before tax income – whether you're a single or joint borrower. Again, however, this can depend on your circumstances. If you're buying an investment property, up to 70% of your rental income may also be included as income before tax in assessing your ability to repay the loan.[15, p. 19]

3. The Reserve Bank has expressed concern about the relaxation of this limit, and also noted that, when the borrower's gross income is $60,000

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[29]The fourth, the absence of bank failures, is a result of the RBA's role in ensuring that financial crises do not lead to bank failures. They can still occur, as the Tricontinental experience of the 1990s indicates, but RBA action will preserve depositors' assets and should prevent "bank runs".

p.a.., banks' on-line loan calculators now allow a maximum debt-service ratio (ratio of principal repayment plus interest to gross income) of up to 49 per cent:

(a) the maximum debt-servicing ratios lie in a range of 43 to 49 per cent, with a median outcome of around 47 per cent, well above the 30 per cent benchmark used in the past... a debt-servicing ratio of 47 per cent of gross income corresponds to an initial loan size of nearly $5\frac{1}{2}$ times gross annual income.[47, p. 44]

4. The RBA's explicit concern was that:

(a) given the availability of loans with high debt-servicing ratios, there is the possibility that some borrowers could overextend themselves and be at greater risk of default if there was an adverse change in their economic circumstances, including a loss of income due to unemployment.[47, p. 44][30]

5. The RBA also implied concern that "The banks' loan calculators appear to regard the bulk of income after tax and living expenses as being available for debt servicing" [47, p. 43], which leaves no room for discretionary expenditure or unexpected events. The impact of these changes on loan affordability is evident in the data above, but the RBA has become sufficiently worried about this trend to single it out for mention in the most recent Financial Stability Review [48]. As Figure 14[31] indicates, the size of new housing loans has risen exponentially since 1980,[32] and the ratio of these loans to average income has approximately doubled. The RBA observed that:

(a) For example, since 1996 the average new owner-occupier housing loan has more than doubled in size from $99 000 to $215 000, and the ratio of the average new loan to average household income has increased by 50 per cent. [48, Box A: Rates of Indebted Home Ownership, p. 20]

6. However, even with these increased limits, there is at least still some link between income and the maximum loan that a lender will extend to a borrower. This link does not exist with Ponzi Loans, where conceivably a borrower with *no* income could be given a substantial loan. In a rising market, this could then be used to buy an asset, and pay the first few loan

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[30] The RBA's concern was attenuated by the observation that "Despite their apparently high borrowing capacity, most borrowers take out loans with debt-servicing requirements well below the maximum implied by estimates from online calculators. Discussions with banks confirm that customers with high debt-servicing requirements are typically those with high, and often diversified sources of, income." [47, p. 44]

[31] On page 36.

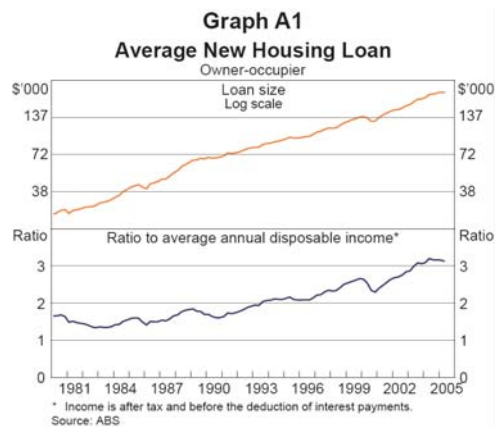[32] A straight line in a log plot means exponential growth at a rate given by the slope of the line.

Figure 14: Average size of new home loan ($'000 and ratio of disposable income) 1980-2005. [48, p. 20]

installments before the asset was on-sold for a profit and the debt paid off.

7. Though this was not the case with the specific loan that led rise to the request for my expert opinion, it is evident that many such loans did occur during the recent housing bubble, under the opaque cover provided by the rubric of "Low Doc Loans".

7.4 Financial crises with Ponzi Loans

1. As well as noting the rising size of average new housing loans in general, the RBA expressed concern that "Low Doc Loans" are significantly exacerbating this trend. The most recent Financial Stability Review has a special feature on "Low Doc Loans",[48, pp. 39-40] and notes that

    (a) "Recent estimates based on securitised loans suggest that new low-doc loans are on average around 30 per cent larger than conventional loans." [48, Box B: Developments in the Low-doc Loan Market, pp. 39-40]

2. On the evidence above, and the specific instance of Loan 5, it is clear that many of these loans have been "Ponzi" in nature. Such loans can be successful for lender and borrower during a boom, but damaging for other parties by driving up the level of home process. They are also deleterious to the economy as a whole, by increasing the debt level, and accelerating the rise of systemic fragility. The RBA's concern about the tendency for LDLs to lend on the basis of the asset valuation, rather than the capacity of the borrower to service the loan out of income, is worth quoting in full:

36

(a) As competition has picked up, lenders have also increased the maximum loan-to-valuation ratios (LVR) they allow on low-doc loans. While many lenders initially restricted the loan to between 60 per cent and 75 per cent of the property value, most lenders now allow borrowers to take out a loan with an LVR of 80 per cent, with some even allowing LVRs as high as 95 per cent. As a result, the average initial LVR on securitised low-doc loans has increased over the past few years, both in absolute terms and relative to LVRs on conventional loans.

(b) The reduction in the interest-rate premium on low-doc loans, together with increases in maximum loan sizes and LVRs, raises the possibility that some lenders may not be adequately factoring in the higher risk of default of these loans. The arrears rate for securitised low-doc loans is currently around three times higher than for conventional loans. Even if estimates of the expected loss rate on low-doc loans take account of this higher arrears rate, they may still understate the risks involved because low-doc loans have only existed during the past few years of economic expansion, so their quality has not been tested during a period of weaker activity. This risk is heightened by the fact that lenders know little about the characteristics of low-doc borrowers, specifically how many have overstated their income to obtain larger loans. [48, p. 40]

3. It is clear that, with loan to valuation ratios of up to 95 per cent, many of these loans are Ponzi Loans, on the criteria outlined above in Section 6, 4b. However, since the proportion of Low Doc Loans that are Ponzi in nature is obviously not disclosed, there is no way of separating the genuine, income-based *LDL*s from their Ponzi cousins, and thus quantifying the solely Ponzi component to Australia's housing debt figures.

4. Nonetheless, it is possible to estimate the significance of *LDL*s in general by disaggregating loans into those on the balance sheets of AFIs[33] and those that are not. In the following argument I refer to non-AFI loans as *LDLs*.

5. "Low Doc Loans" have had a significant impact on the increase in the burden of debt. As Figure 15[34] shows, this class of loans has risen from zero in the mid-1980s to 16.7 per cent of GDP today.

6. Their impact on aggregate debt levels has been marked. As Figure 16[35] shows, the aggregate private debt to GDP ratio would be of the order of 120 per cent, rather than closer to 140 per cent, without *LDL*s. While it is quite feasible that non-LDL debt would have been higher had LDLs not

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[33] "'Authorised Financial Institutions". The RBA states that "AFIs' refers to banks, credit unions, building societies, SSCIs, RFCs and the RBA" [52, Explanatory notes to tables]
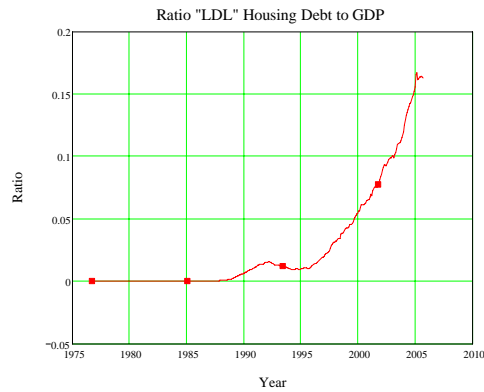
[34] On page 38.

[35] On page 38.

Figure 15: Ratio of "Low Doc Loans" to GDP [52, D02 Lending and Credit Aggregates]

evolved, there is little doubt that aggregate debt levels would have been lower. As is well-known, and applies in the case of the Cooks, many *LDL* borrowers were refused credit by standard, regulated loan providers.
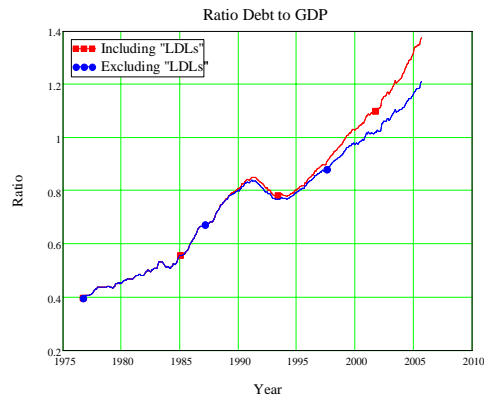
Figure 16: Debt to GDP ratios including and excluding "LDLs"

7. The provision of credit to borrowers deemed not credit worthy by regulated lenders has now reached a level where it has potentially significant macro-economic effects. As Figure 17[36] shows, Low Doc Loans now contribute more to overall indebtedness than all non-housing forms of personal debt, and are one third the level of business debt.
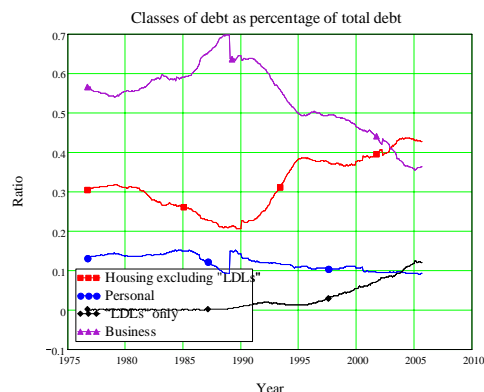
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[36] On page 39.

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Figure 17: Classes of debt as percentages of total debt.[52, D02]

8. Their contribution to the debt servicing burden is harder to gauge, since reliable records of interest rates are not available—and as Loans 1 to 5 here indicate, the recorded interest rate can greatly understate the actual amount charged, when both penalty rates and extremely high fees are taken into account. However the RBA has estimated that the spread between standard loans and LDLs has fallen from about one per cent in 2001 to 0.6 per cent in 2005. Using the latter figure as a guide, it appears that LDLs require more than 1 per cent of Australia's GDP to service (Figure 18).[37]

9. A significant fraction of these are Ponzi Loans, which can only be serviced if asset prices are rising substantially faster than the rate of interest—thus enabling the borrower to repay the lender and make a profit after transaction costs (which are substantial in the case of real estate, as are the time delays in transactions). During a boom, these loans necessarily add to the debt level. During a slump, these loans necessarily accelerate the rate of bankruptcy, and—prior to the borrowers being made bankrupt—increase debt levels by requiring the capitalisation of unpaid interest.

7.5 Contested topic: Possible market limits to the impact of Ponzi Loans

1. It is thus clear that, from an economic point of view, Ponzi Loans are undesirable—as undesirable, in their own way, as theft as a form of economic transaction. Economists from most schools of thought would agree on this point; where they would disagree is whether the economy has mechanisms that limit the extent to which Ponzi Loans can become a signifi-
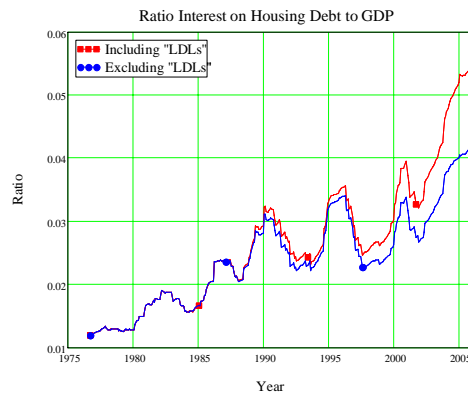
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[37]On page 40.

Figure 18: Ratio of interest paid on housing debt to GDP. Calculated from [52, D02 and F05] and [48, p. 40]

cant economic problem—to make the move from the economic equivalent of petty theft to grand larceny.

2. Prior to the Stock Market crash of 2000, as Cecchetti notes above, many academic economists argued against any action with respect to asset prices —and, by inference, loan contracts for the exchange of assets—on the basis of the Efficient Markets Hypothesis. While it would be possible to find economists who still argue that position, it is unlikely that one could find many Central Bankers who would listen.

3. The theme that asset bubbles had to be addressed ran throughout the discussion at the Reserve Bank Of Australia 2003 *Conference on Asset Prices and Monetary Policy*; there was no dissent from Cecchetti's argument, as summarised by the conference proceeding's editor, that Central Banks could not:

   (a) simply ignore the possibility of asset market bubbles by appealing to the idea that efficient financial markets would eliminate them.[53, p. 5]

4. A second argument that could support inaction against Ponzi Loans is the proposition, still dominant in economic pedagogy and theory, that the money supply is exogenously determined by the government (effectively, therefore, by the Central Bank), and that any phenomenon like an asset bubble or a rising debt level reflects badly not on the private sector, but on the government itself. What should be stopped, from this point of view, is not the extension of Ponzi loans by private financiers, but the government's mismanagement of the money supply.

5. This is part of a debate (or, perhaps more aptly, a failure to communicate) in economics between Neoclassical economists, who believe that the money supply is exogenous—determined by the Central Bank—and "Post Keynesian" economists[38] who believe it is endogenous—set by the behaviour of lenders and borrowers in the financial markets.

6. If the former position is correct, then Central Bank manipulations of "Base Money"[39] determine the amount the private sector can lend, and the Central Bank is at fault, not lenders awash with more cash than they desire. If the latter position is correct, the private lending contracts determine the amount of credit in the economy, and the Central Bank is forced to accommodate this by its management of the Money Base.

7. This is not the place to try to resolve this divide. However, there is empirical research that does fairly conclusively decide the issue in favour of those who believe the endogenous position. This resolution is all the more conclusive because the researchers who undertook it are otherwise staunchly in the Neoclassical camp—and were, in fact, recipients of the Nobel Prize in Economics for distinctly Neoclassical contributions to research.

8. Economists use at least five classifications—the Money Base, M_1, M_2, M_3, and "Broad Money"—with the earlier units being more easily controlled by the Central Bank and the later units less under its control. If the money supply is exogenous, then changes in the components of the money supply more under the control of the Central Bank should precede changes in the components that are less under their control: therefore, if the money supply is "exogenously determined", changes in the Money Base and M_1 should precede changes in M_2, M_3, etc.

9. Kydland and Prescott found that the reverse was true: changes in M_2 preceded changes in M_1. They concluded that:

   (a) There is no evidence that either the monetary base or M_1 leads the cycle, although some economists still believe this monetary myth. Both the monetary base and M_1 series are generally procyclical, and, if anything, the monetary base lags the cycle slightly... The difference of $M_2 - M_1$ leads the cycle by even more than M_2 with the lead being about three quarters. [35, p. 14]

10. This empirical finding means that the government—more specifically the Reserve Bank—cannot control the amount of credit being generated by private lenders by manipulating the supply of the physical currency, or

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[38] In brief, Post Keynesian economics is a School of thought that derives its inspiration from John Maynard Keynes, and argues that his theories were misinterpreted and emasculated by Neoclassical economists.

[39] The RBA defines the "Money Base" as "holdings of notes and coins by the private sector plus deposits of banks with the Reserve Bank of Australia (RBA) and other RBA liabilities to the private non-bank sector." [49, See "monetary aggregates"]

the size of the Federal Budget Deficit, or by selling government bonds to or buying them from the public.

11. In the context of Ponzi Loans, it means that the Reserve Bank has no economic policy means to control how much credit, and hence debt, is generated by them. This inability to affect a major determinant of the economy's performance that, when left to its own devices, may be financially destabilising, explains why Central Bankers are once again discussing the need to regulate the behaviour of private lenders.

12. I return to this issue in Section 9 below. Next I address some of the microeconomic issues raised by Ponzi Loans.

8 Microeconomic implications of Ponzi Loans

1. In a market economy where home ownership is commonplace, housing loans are necessary because houses cost far more than the amount that can be saved by the average income earner prior to purchase. A housing loan enables a borrower to purchase an asset, and reap the benefits of that asset—whether as an owner-occupier or investor-rentier—while paying off its costs over time.

2. In this sense, a loan is no different to any other contract of exchange between two parties, where each gives something of which he/she has an excess, in return for something of which he/she desires more. Where coercion is absent, such exchanges result in both parties gaining in utility. Just as importantly, in an economic simile to the legal cliche that "Justice must not only be done, but be seen to be done", each party *expects* the other to gain. All economists—even Karl Marx[40]—recognise this as the legitimate basis of exchange in a market economy. The expectation of mutual gain imparts market economies with a degree of social cohesion that is absent in societies where one party's gain is seen as requiring the other party's loss.

3. A housing loan is an instance of an exchange between an agent with a "low time preference" (the lender) and one with a "high time preference" (the borrower), with the rate of interest being the price of the exchange.[41] An example illustrates the reason why economists attribute "high" time preference to the borrower and "low" to the lender, and why both lender and borrower are said to gain out of a loan contract.

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[40] "So far as regards use-values, it is clear that both parties may gain some advantage. Both part with goods that, as use values, are of no service to them, and receive others that they can make use of... With reference , therefore, to use-value, there is good ground for saying that 'exchange is a transaction by which both sides gain.'"[38, p. 155]

[41] Bentham made one of the earliest statements of this when he wrote that "Putting money out at interest, is exchanging present money for future" [7]. Irving Fisher provided the modern economic rationale when he argued that the rate of interest "expresses a price in the exchange between present and future goods" [22, p. 61]

4. Consider a sum of \$1000 and two parties, L who is willing to exchange the \$1000 in return for six payments of \$200 over the next six years, and B who is willing to make those six payments in order to receive the \$1000 today. Then it must be the case that an incoming stream of \$200 payments over the next six years gives L more utility than \$1000 today. Conversely, B must get more utility from \$1000 today than he loses from an outgoing stream of \$200 payments over the next six years. Technically, economists say that L applies a *lower* rate of time discount than B. Thus the lender has a low time preference and the borrower has a high time preference.

5. Say that the lender regards \$200 now as worth \$206 in a year's time, while the borrower regards \$200 now as worth \$220 in a year's time—then the lender has a "rate of time discount" of 3 per cent, while the borrower has a (higher) rate of time discount of 10 per cent. If L lends B \$1000 now, then given their differing approaches to the time value of money, they both gain:

$$
\begin{aligned}
L \quad : \quad & Get - Give \quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad (1)\\
= \quad & \left(\frac{200}{1.03} + \frac{200}{1.03^2} + \frac{200}{1.03^3} + \frac{200}{1.03^4} + \frac{200}{1.03^5} + \frac{200}{1.03^6} \right) - 1000\\
= \quad & (194.17 + 188.52 + 183.03 + 177.70 + 172.52 + 167.50) - 1000\\
= \quad & \$83.44
\end{aligned}
$$

$$
\begin{aligned}
B \quad : \quad & Get - Give \quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad\quad (2)\\
= \quad & 1000 - \left(\frac{200}{1.10} + \frac{200}{1.10^2} + \frac{200}{1.10^3} + \frac{200}{1.10^4} + \frac{200}{1.10^5} + \frac{200}{1.10^6} \right)\\
= \quad & 1000 - (181.82 + 165.29 + 150.26 + 136.80 + 124.18 + 112.89)\\
= \quad & \$128.95
\end{aligned}
$$

6. In this hypothetical loan, the actual rate of interest on the loan is 5.47%, lying between the two rates of time discount.

7. However, economists also acknowledge that loan contracts are intrinsically different to exchanges of goods.

8. Economics theory only regards as legitimate exchanges which take place in the absence of coercion. In a standard exchange of goods, coercion has to be either explicit—robbery, standover tactics, etc.—or due an extreme imbalance of bargaining power.[42] However, in a loan contract, implicit

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[42] The desire to limit this possibility explains the extreme emphasis economists have placed upon competition policy. In my professional judgment, economists misunderstand the nature of competition, and thereby exaggerate the impact of its absence on the price charged by firms that do not face competition [32]. However, the absence of competition in the real world can undoubtedly result in a firm imposing a higher markup than would be the case with competition.

coercion can arise solely out of the circumstances of one party to the loan transaction (normally the borrower). Fisher detailed two such circumstances, both of which are relevant to the Ponzi Loans. Firstly, poverty, and the extreme immediate need for goods it engenders, can lead to a borrower being implicitly coerced into a loan:

(a) the effect of poverty is often to relax foresight and self-control and to tempt us to 'trust to luck' for the future, if only the all-engrossing need of present necessities can be satisfied. [22, p. 72]

9. Secondly, exaggerated expectations of future gain can lead a borrower to be reckless about debt commitments, a phenomenon that is far less likely to apply in purchases of commodities:

(a) A man who is now enjoying an income of only $5000 a year, but who expects in ten years to be enjoying one of $10,000 a year, will today prize a dollar in hand far more than the prospect of a dollar due ten years hence. His great expectations make him impatient to realize on them in advance. He may, in fact, borrow money to eke out this year's income and promise repayments out of his supposedly more abundant income ten years later [22, p. 73]

10. These considerations explain the willingness of economists to accept legal constraints on lending, which is in contrast to their standard preference for freedom of contract and for allowing the market to determine quantities and prices. As noted above in Section 7.1-1, no less a figure than Adam Smith supported the imposition of legal limits on the rate of interest that could be charged on a loan. Today, the formal housing loans market no longer has a legal ceiling on the rate of interest,[43] and the market is highly competitive and visible. But it is nonetheless highly regulated, with management by the *RBA* and supervision by the *APRA*.

11. This regulatory framework does not apply to "Low Doc Loans".

12. As noted above in Section 7.1-2, an *LDL* on which the lender is genuinely taking on faith the borrower's assertion of a capacity to pay is a legitimate sub-class of an income-based loan. However, the unregulated *LDL* lenders can and have indulged in "Ponzi Lending", something that was last a widespread practice in Australia during the late 19th century ([21, pp. 33-34]).[44] While the prime impact of "Ponzi Loans" is macroeconomic, as discussed above, their microeconomic (contract) nature is also very different to *IBL*s.

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[43] The formal ceiling on rates was lifted in 1980 as part of the deregulation of the Australian financial system. [56, p. 30]

[44] Though Fisher & Kent do not use the term "Ponzi" lending, they did speak of "lending for speculative purposes" (p. 34), which is the same concept.

13. With a Ponzi Loan, the fundamental basis on which the loan is extended is the lender's assessment of the value of the asset, and the amount that could be recouped by its enforced sale if the borrower defaulted on the loan. The lender is comparatively unconcerned about whether the borrower can or will meet his/her obligations out of his/her existing income, or the income stream the asset will generate. Though outwardly the same as an income-based loan, a Ponzi Loan does not really involve the time value of money calculations shown in (1) and (2).

14. There are thus arguably three classes of *LDL*s:

    (a) An income-based loan in which calculations of the spirit of (1) and (2) have been undertaken, and the lender accepts the borrower's assurance that he/she has the capacity to honour the loan out of future income;

    (b) A Ponzi Loan in which both lender and borrower expect the asset purchased using the loan to be sold for a profit; or

    (c) A Ponzi Loan on which the lender expects the borrower to default on the loan, thus ceding control of the asset to the lender.

15. The micro-economic assessment of each of these types of *LDL* differs.

16. 14a is micro-economically legitimate, and has no adverse macro-economic implications—indeed, given the changing composition of the Australian workforce, the development of 14a may well be necessary to sustain economic development.

17. 14b is micro-economically legitimate, since both parties do expect a gain, and neither are being coerced into the transaction. However this class of *LDL*s is only feasible in a rising market, *and* when the asset has been purchased with the express purpose of resale. This has significant macro-economic implications about which the RBA has expressed serious concerns ([50]). I return to these below under (**??**).

18. 14c is micro-economically illegitimate in a falling market, in that

    (a) Calculations of the nature of (1) do not take place. Instead the lender compares the value of the loan to the value of the asset he/she would take possession of if the borrower defaults, as expected.

    (b) If calculations of the nature of (2) occur, they are done either

        i. under the implicit coercion of effective poverty, as Fisher identified it above (8a); or

        ii. under the delusion of "great expectations", as Fisher identified it above (9a)

    (c) Mutual gain is not expected by one or both parties. Instead, in the case of 14c, the lender expects to profit by the loss of the borrower.

19. 14c is micro-economically legitimate in a rising market, *if* the asset has been purchased with the express purpose of resale, and the borrower had great but false expectations of the type alluded to by Fisher in 9a above. Though the lender's motives are suspect, it is difficult to argue on micro-economic grounds alone that a borrower should be prevented from exercising his/her delusions—especially since the future is uncertain and it is difficult, if not impossible, to classify expectations as deluded *ex ante*.

20. As well as macroeconomic grounds for being critical of Ponzi Loans, there are, therefore, good micro-economic grounds for arguing that they are an illegitimate form of commerce when prices in the asset market in question are falling, or when the asset is a home and the loan is for owner-occupation rather than resale.[45]

9 Reactions of economic policy makers to rising debt levels

9.1 The revival of regulation

1. As noted above in Section 12a, Stephen Cecchetti was once a believer in the Efficient Markets Hypothesis, and as such opposed intervention in finance markets. Like many academic economists—though unfortunately not all—he rejected the Efficient Markets Hypothesis when it was manifestly contradicted by the facts. He, along with many others, is now searching for the balance between market and non-market mechanisms that will produce a better outcome than either unbridled speculation or repressive control. In this light, his brief aside on the role of regulation is significant:

    (a) Once monetary economists realised that high and stable real growth required a stable financial system, they became interested in financial regulation. [13, p. 83]

2. A similar enlightenment is striking many economists, who once opposed regulation almost "on principle". Instead, an awareness has arisen that the indirect, market-oriented controls once favoured as the only means by

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[45] On the basis of points detailed in 4, I would characterise Loan 1 to the Cooks as a legitimate *IBL* variant of an *LDL*. At the time of Loan 1, the Cooks had defaulted on their Commonwealth Bank home loan, but this is not uncommon for *LDL* borrowers. The lenders could legitimately claim that the loan gave the Cooks a chance to keep their home, and that their financial behaviour could be expected to be different after the experience of almost losing their property.

Loan 5 is, however, clearly an instance of "Asset Based Lending" . Since the same solicitor was an agent in loans 1, 2 and 5 (??), it is not credible to argue that the lenders were taking on faith the Cooks' ability to meet their repayment commitments under the loan. The lenders were instead "milking" the Cooks of their equity in their home until such time as this exercise was no longer profitable.

which a market should be managed, do not in fact do the job of ensuring systemic stability. A common feature in the discussions at the RBA 2003 conference on *Asset Prices and Monetary Policy* was that there was a role for regulation.

3. Summarising these arguments, then Chairman of the *Australian Prudential Regulation Authority* Jeffrey Carmichael observed that:

   (a) The answer seemed to lie in comparative advantage. Steve Cecchetti and Phil Lowe both pointed out that the primary damage from bubbles often lies in institutional failure—and institutional soundness is more a matter for regulators than for monetary policy. Indeed the discussion went further to suggest that prudential regulation could even play a role in dampening bubbles. Again the discussion implied that the task was not easy (in part because it required regulators to make judgements about the same bubbles that we agreed central bankers had trouble identifying). At the same time, it was agreed that regulation offers the prospect of targeted intervention and has the advantage that the intervention can be viewed as falling within the regulator's mandate of risk management and financial sector stability—though any regulator heading down this path would be well-advised to heed Gordon de Brouwer's warning against trying to be too cute with targeted intervention.

   (b) While no one actually pointed it out, I believe all would have been aware of the obvious parallel with market conduct regulation. If prudential regulation can be used to reduce the economic impact of institutional failure following property bubbles, maybe market conduct regulation could similarly be used to reduce the economic and social impact of fraud and misconduct that appear to accompany stock-price bubbles. While conduct regulation arguably still has a long way to go before it effectively combats the dangers present in stock-price booms, they have unquestionably come a long way since the South Sea bubble.

   (c) Following comparative advantage, a case could be made that the more active roles in combating bubbles—at least in minimising the damage that they might otherwise do—lie more with the regulators than with monetary policy. If the regulators manage their part successfully, monetary policy would be left largely with the responsibility of dealing with the aftermath—which, in an effective regulatory world with no fraud and no institutional failure, should be relatively minor. [11, pp. 289-290]

This position was a development of the views Carmichael and Esho expressed in 2001, where they concluded that "the role for financial regulation in controlling the emergence of, and damage from, assets price bubbles remains relatively limited" [4, p. 22].

However, Low Doc Loans present an inherent problem for a regulatory approach, because though some *ADI*s offer *LDL*s, and some *LDL* lenders face reporting requirements, in general, the vast majority of providers of *LDL*s exist outside the regulatory framework of APRA as "Non-Regulated Entities". Regulating their behaviour with respect to Ponzi Loans would therefore require enabling new legislation for APRA.

The past history of attempts to control the behaviour of financial intermediaries using regulation and legislation implies that this task will be difficult. One of the difficulties with regulation that led to the gradual abandonment of it as a means of controlling the financial system, was that laws and regulations have to be stated in exact prose, which then makes it possible for corporations to devise new ways of operating that fall outside the letter, but not necessarily the spirit, of the laws.

Part II
Supporting Documents

A   Economics as a contested field of knowledge

1. My own book Debunking Economics [31] is proof enough that economics is a contested field of knowledge. Only in a discipline subject to fundamental debate would a book challenging the majority opinion within the discipline be written by an Associate Professor from that same field.

2. Other readily available examples of critiques of economics by economists include [26], [43]. The full literature of such books would run into hundreds, if not thousands, of books, and certainly thousands of peer-reviewed journal articles.

B   Contested topic: The "Financial Instability Hypothesis" explanation for the long-term rise in debt ratios

1. The Financial Instability Hypothesis is one of many alternative theories to the *EMH/CAPM*. Others include

    (a) "Behavioral Economics and Finance" [29], [58];

    (b) "Econophysics" [37];

    (c) The "Inefficient Markets Hypothesis" [28]; and

    (d) The "Fractal Markets Hypothesis" [44].

2. While none of these theories is accepted by the "Neoclassical" mainstream of the economics profession, all of them explain—or attempt to explain—phenomena that, in general, the mainstream acknowledges should be addressed by economic theory. Prior to the empirical failure of the EMH/CAPM, neoclassical economists tended to argue that these phenomena—such as asset-market over-valuation—were economically insignificant.

3. All these alternatives theories are in general compatible with each other, but either focus upon different phenomena, or take different approaches to explaining the same phenomena.

4. The unique aspects of the Financial Instability Hypothesis are:

    (a) That it focuses on the dynamics over time of debt in a market economy; and

    (b) It attempts to answer the puzzle of why—until, arguably, the depression after the bursting of Japan's Bubble Economy in 1990—no major OECD nation has suffered a Depression since the end of WWII

5. Remarkably, Minsky began the development of this theory in the late 1950s, which was a time of unequalled economic tranquility. He started from the proposition that:

    (a) The most significant economic event of the era since World War II is something that has not happened: there has not been a deep and long-lasting depression. [40, p. xii]

6. To explain why, Minsky asserted that:

    (a) We need a theory which will enable us to identify which of the many differences between the economy of 1980 and that of 1930 are responsible for the success of the postwar era. [40, p. xii]

7. Minsky's thesis is set in historical time, with a cycle beginning when the economy has just returned to steady growth after a recent slump. The memory of crisis means that both firms and banks are conservative, so that the only projects initiated are those whose expected cash flows exceed debt repayment commitments at all times. However, this combination of conservative investments and a growing economy means that most investments succeed, which leads both firms and banks to believe that their previous levels of risk aversion were too high. The revision of risk premiums leads to a higher rate of investment, which increases the rate of economic growth, leading to a boom.

8. More external finance is needed to fund the increased level of investment, and these funds are forthcoming because the banking sector shares the increased optimism of investors [40, p. 121].

9. The accepted debt to equity level rises, liquidity decreases, and the growth of credit accelerates. This initial wave of increased investment meets with success, as the investment accelerator propels growth higher, and the increased money supply underwrites speculative ventures.

10. This ushers in what Minsky terms "the euphoric economy" [40, pp. 120-24], where both lenders and borrowers believe that the future is assured. Asset prices start to spiral upwards, since capitalist expectations are crystallised in the prices they are willing to pay for capital assets.

11. This also allows the emergence of "Ponzi financiers", as outlined above: speculators who borrow heavily to purchase assets, and the lenders who finance them, in the process generating debt commitments which always exceed the income generated by those assets

12. For a time, Ponzi speculators profit by selling those assets on a rising market. Their insensitivity to interest rates also helps fuel an endogenous rise in rates, which pushes investments which had been conservatively financed into the speculative range—where debt commitments exceed earnings for the early stage of a project.

13. More importantly, it converts some investments which were merely speculative into the "Ponzi" range, forcing the sale of these assets to enable debt to be repaid.

14. This sudden entry of new sellers into the assets market brings to a halt the upwards spiral of asset prices, forcing Ponzi investors to sell assets at a loss. Suddenly these once darlings of the finance sector go bankrupt, abruptly terminating the mood of euphoria and replacing it with panic. Asset prices collapse, investment ceases, and the boom becomes a slump.

15. What happens from this point on depends on the rate of inflation in the goods market, the size of the government sector, and the actions of Central Banks.

16. If the rate of inflation is low, then debts accumulated during the boom cannot be repaid during the slump, leading to a chain of debt-induced bankruptcies and a Depression. If it is high, then rising prices enable most debts to be repaid, even though turnover is depressed–as in the 1975-1985 experience of stagflation.

17. The key feature of the modern economy which prevents a Depression is, according to the FIH, "Big Government:

    (a) A cumulative debt deflation process that depends on a fall of profits for its realization is quickly halted when government is so big that the deficit explodes when income falls. [40, p. xx]

18. This fiscal barrier to Depression is bolstered by the "lender of last resort" actions of the Central Bank, which expands the monetary base, and loosens fiduciary strictures in times of crisis to prevent a run on the banks.

19. However, while prompt action by Central Banks can help avoid a liquidity crisis, this runs the risk that the speculative boom may simply transfer from one class of assets to another [40, pp, 68, 152]–as happened with the US Stockmarket Crash of 2000, when the focus of speculation moved from shares to real estate. Arguably, the same phenomena has repeated itself several times in Australia—with some intervening economic downturns— since the Stock Market Crash of 1987.

20. One of my research agendas is to develop dynamic, mathematical models of Minsky's hypothesis. The simplest such model adds a finance sector to a model of cyclical growth [27]. Though the mathematical form of the model is complex, it can be summarised in three simple verbal relations:

    (a) The rate of employment will rise if the rate of economic growth exceeds the sum of technological change and population growth;

    (b) The wages share of output will rise if workers' wage demands exceed the rate of technological change; and

    (c) The debt to output ratio will rise if the sum of investment and interest on outstanding debt exceeds the level of profits.

21. Though derived from a mathematical model,[46] each of these statements is effectively a truism. Simulations of this system can, given suitable initial conditions, lead to a series of cycles over which the debt to output ratio increases, leading ultimately to a level of debt that cannot be sustained. The economy then goes from a pattern of cycles into a complete collapse.

22. Though I have not yet fitted this (or more suitable, more complex models) to empirical data, the debt cycles of this very simple model, shown in 19[47] do bear an uncanny resemblance to the aggregate debt to output levels in the American economy shown in Figure 6,[48] and also the aggregate credit to GDP figures for Australia in Figure 1.[49] Certainly, the empirical

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[46] The actual model is
$$\frac{d\omega}{dt} = \omega \cdot (P(\lambda) - \alpha)$$
$$\frac{d\lambda}{dt} = \lambda \cdot \left(\left(\frac{k(\pi \div v)}{v} - \gamma \right) - \alpha - \beta \right)$$
$$\frac{dd}{dt} = d \times \left(r - \left(\frac{k(\pi \div v)}{v} - \gamma \right) \right) + k(\pi \div v) - \pi$$
where ω is workers' share of output, λ the rate of employment, π the share of profits in output, d the debt to output ratio, α the rate of technical change, β the rate of population growth, γ the rate of depreciation, v the capital to output ratio, r the rate of interest, $P(\lambda)$ the workers' wage demands function and $k(\pi \div v)$ the capitalists' investment function. The model is specified in [30]

[47] On page 52.
[48] On page 25.
[49] On page 17.

Figure 19: Cyclical growth in debt to output levels from a simple model of Minsky's "Financial Instability Hypothesis"

    reality that debt levels ratcheting up over time through a series of cycles is reproduced by the model.

23. The FIH also has an intuitive appeal that is grounded in common sense. It can be summarised by the proposition that investors commit themselves to debt during booms, but then find themselves having to pay this debt off during slumps. As a result, the level of debt "ratchets up" over time, leading ultimately to unsustainable debt levels and an economic collapse.

24. The model shown above is effectively one with only "income-based loans"— where the borrowers enter into debt obligations with the expectation of being able to meet them through future income flows. The inherent cyclical nature of the model and uncertainty about the future means these expectations are not met. Ponzi Loans would add an additional level of volatility to this model, causing a faster accumulation of debt during booms and a more drawn-out recovery during slumps.

C   List of publications

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