The savings depreciation factor and economic growth

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Introduction

The term "depreciation" is generally used as a measurement of the reduction in values over a time period. For instance, it often reflects the amounts written off per period in values of cars and in equipment used in the production processes. Certain types of assets reduce in value through their use.

What economists have often overlooked is that some other types of assets can be subject to a depreciation of a different kind. In the case of cars, their depreciation is measured through resale value. What is the car worth after a number of years in use? The money spent on a second hand car reflects the perceived use an individual can get out of a car over its remaining life cycle. There are however other assets, mainly financial assets plus homes, which do not depreciate through their use. House prices, share and bond prices may go up or down not as a consequence of their remaining life period, but because of their links with income, savings and interest rate developments in a country.

It has been a well accepted fact that when average incomes grow slower than the CPI index, individual households cannot continue to buy the same package of goods and services as in previous years. The purchasing power of the income level is reduced. This can be called the "income depreciation" factor. The depreciation takes place not on the goods side, but on the money side. Savings values can also depreciate. Savings can buy homes, shares and bonds.

In the case of homes, the key ingredient in the demand level is the availability of home mortgages -outside equity- as most prospective buyers need one. The annual volume of home mortgages granted can have a volume effect in building more homes as well as a price effect. The latter appears when the average price of homes increases in excess of the CPI index, provided that average incomes increase in line with the CPI index. This excess price effect means that outside equity -savings provided by individual households other than the buyer- increases the own equity level for all those already owning their homes, but simultaneously reduces the value of a dollar in savings out of incomes for those intending to buy their own home. This latter reduction in the value of a dollar saved is the subject of this study. The excess price effect on homes causes outside equity to reduce the value of own equity. In these circumstances a dollar saved, as outside equity, assumes a different value to a dollar saved in the current period as own equity; this creates an unsustainable economic situation and was the main cause of the 2005-2006 individual households' equity crisis and the subsequent financial crisis in 2008.

The "savings depreciation factor" measures how average incomes and savings out of incomes are impacted by the asset price developments of homes, of shares and bonds and of the changes in government debt levels.

The relationship between the savings depreciation factor and economic growth will be explored in this paper.

1 The savings depreciation factor and economic growth

1.1 Introduction

To a very large extent, the decisions about the use of savings have been taken away from individual households and granted to third parties. These parties may be banks, asset management companies, pension funds, life insurance companies, hedge funds, private equity funds, stockbrokers and all other financial sector entities.

These third parties have different objectives. A pension fund is set up to look after the income streams of individuals after retirement. A hedge fund is set up to achieve maximum gains out of a portfolio of investments that uses advanced strategies such as employing leverage to enter into long, short and derivative positions in both domestic and international financial markets with the goal of generating high returns (either in the absolute sense or over a specified benchmark). High net worth individuals are their customers. Illiquidity is a common feature of hedge funds. A mutual fund on the other hand shares the savings of many individual households, but it usually invests in a range of funds, which may have a high, median or low risk profile. The individual household mostly decides about the preferred general allocation of funds, but professional managers do the "stock-picking". Life insurance companies take risks on the life expectancy of their client base. Investment banks help companies raise capital, to list their securities on stock markets and help in the merger and acquisition process of one company taking over another. They are also active in the securitization markets. Stockbrokers help their client base to choose individual stocks to buy and sell. Stock exchanges facilitate the sale and purchase of bonds, shares and other financial instruments.

The users of all these savings allocations are governments, companies and individual households acting as borrowers.

It would be a miracle given the conflicting objectives of all these financial institutions, if the current savings allocation process were to pave the way for a sustained level of economic growth.

The experience over the last ten years has shown that such miracles do not exist.

The main reason is that financial assets do not behave as physical ones. For financial assets there is no fixed write-down period. Shares do not depreciate over time as they depend on the income performance of the company involved. Bond prices are closely correlated to interest rate developments in a country. The performance of a home mortgages portfolio depends on the income developments of individual households and on the interest rate developments. There is also no precise life expectancy indicator or an average income growth predictor.

However, what can be analyzed is the interaction between the use of savings from past incomes and their allocation. The latter may lead to price and volume changes in (financial) assets and the growth in income patterns and the accompanying new savings allocations.

1.2 The emergence of the savings depreciation factor, the U.S. case

In the U.S., over the period 2000-2006, the combined mortgage debt of individual households increased from $4.814 trillion as at the year-end 2000 to $9.874 trillion as per the end of 2006, an increase of 105.1%[1]. Over the same period the median income level of individual households moved up in nominal terms from $41,186 in 2000 to $47,262 in 2006, an increase of 14.75%. Taking into account the increase in the number of individual households from 104.705 million in the year 2000 to 114.384 million in 2006 than the average amount of outstanding mortgage debt moved up from $45,977 in 2000 to $86,323 in 2006; an increase of 87.75%. The conclusion can be drawn that mortgage debt expanded approximately six times faster than medium income levels. This rapid expansion of lending for home buying purposes plus the packaging of such home loans into mortgage backed securities lies at the heart of the causes for the 2005-2006 individual households' own equity crisis and the subsequent 2008 financial crisis.

Table 1: Excess house price inflation over consumer price inflation for the period 1996-2008.

Year	'96	'97	'98	'99	2000	'01	'02	'03	'04	'05	'06	07	'08
Total U.S. Mortgage portfolio x US $ trillion	3.54	3.75	4.05	4.43	4.81	5.30	5.98	6.83	7.81	8.91	9.90	10.58	10.5
Year on Year increase x US$ billion	218	216	301	377	383	507	680	850	944	1099	990	683	-57
House Price Inflation % y.o.y	2.24	5.10	4.61	5.81	7.67	6.04	6.48	7.29	11.08	10.44	3.33	-1.95	-13.3
CPI Inflation % y.o.y	2.95	2.29	1.53	2.16	3.25	2.77	1.56	2.23	2.59	3.28	3.12	2.77	3.70
Excess HPI over CPI %	-0.7	2.81	3.08	3.65	4.42	3.27	4.92	5.06	8.49	7.16	0.21	-4.72	-17

[1] http://www.federalreserve.gov/releases/z1/current/accessible/b100.htm

In tables 2 and 3 below the annual housing starts are compared with the volume of home mortgage lending per annum. This was done to show the money allocated to a volume increase and the amounts of money allocated to the increase in house prices over the CPI inflation index.

Table 2: U.S. annual new housing starts[2] as at 1 July, seasonally adjusted over the period 2000-2013

Year	Housing starts x 1,000	Year	Housing starts x 1,000
2000	1463	2007	1354
2001	1670	2008	923
2002	1655	2009	594
2003	1897	2010	546
2004	2002	2011	623
2005	2054	2012	741
2006	1737	2013 (1 August)	883 (annualized)

Table 3 below shows how outside equity has raised house prices and reduced the value of own equity for those not yet on the housing ladder.

Table 3: U.S. Net new mortgage amounts divided by new housing starts for the period 1996-2007 and same housing starts and average price on a CPI based basis (1996 = 100)

Year	1. Housing Starts x million	2. Increase in Mortgage amount U.S. $ x billion	3. Average Mortgage amount Per new House U.S. $	4. Average price Per new House On CPI base (1996 = 100)
1996	1.472	218	148,098	148,098
1997	1.437	216	150,313	152,467
1998	1.698	301	177,267	154,800
1999	1.669	377	225,883	158,143
2000	1.463	383	261,791	163,282
2001	1.670	507	303,593	167,806
2002	1.655	680	410,876	170,424
2003	1.897	850	448,076	174,224
2004	2.002	944	471,528	178,737
2005	2.054	1,099	535,053	184,599
2006	1.737	990	569,948	190,359
2007	1.354	683	504,431	195,632
2008	.923	- 57	negative	202,870

[2] http://research.stlouisfed.org/fred2/data/HOUST.txt

1996 can be regarded as a good base year for the purpose of comparing the value of outside equity with own equity. In 1996 the change in the House Price Index was lower than the change in the CPI index. Outside equity, as reflected in the average mortgage amounts allocated to new housing starts, did increase at a slower pace than the CPI index change.

As Prof. Robert Shiller has pointed out, homes in the U.S. used to be for living rather than for speculation. From 1950 to 1996 house prices moved up with the CPI inflation level or slightly above it.

During this long period of 46 years, average incomes and savings out of incomes did generally keep up with the change in house prices. This pattern started changing from 1997. Average house prices started to increase at a faster pace than average incomes and savings. The link between incomes and savings out of incomes and average house price movements was broken. House prices started to represent both a volume increase –the number of new homes built per year- plus the average price increase –above the CPI index level- for all existing homes. Outside equity –as column 3 of table 3 shows- was used in a manner that no longer only reflected building costs –the economic use of savings- but was simultaneously used to increase house prices faster than the CPI index change – the financial or non-economic use of savings.

All of this came to a head in the years 2005 and 2006. During these two years outside equity was used to increase all house prices to the extent of 66.6% of the annual mortgage amounts. Only 33.4% of the outside savings allocated to the housing market was used for building new homes.

The median annual income level in nominal terms moved up from $41,186 in 2000 to $47,262 in 2006, which was slightly below the corresponding CPI inflation level changes. From a house buying perspective in order to have maintained the same purchasing power of the savings out of such income, one would have needed a median income level of $60,873 in 2006. As the median annual income level was only $47,262 in 2006 in the U.S., the savings depreciation factor was 28.8% over the period 2000-2006. The latter reflects the difference between the median actual annual income level and the needed income level to acquire a home without changing the savings percentage out of incomes.

The calculation of the savings depreciation factor was based on the following data. Over the period 2000-2006 average U.S. home prices moved up from $207,000 in 2000 to $305,900[3] in 2006. In 2000 assume the average income and savings out of income could afford a home priced at $207,000. The income and savings out of income/house price multiple was 5.026. If the latter multiple continued to 2006 than the new income level of $47,262 would have supported a

[3] http://www.census.gov/const/uspricemon.pdf

home priced at $237,538. The prevailing average house price level was $305,900, therefore the actual price was 28.8% above the price based on the income and savings level applicable to the income level of $47,262. In conclusion the average income level would have needed to be 28.8% higher than the prevailing income level or in actual amounts it needed to be at $60.873 in order to afford the prevailing average house price during 2006. As savings, rather than 100% of incomes, are used to purchase a home, the savings depreciation factor was 28.8%. The purchasing power of savings lost 28.8% of its value over the period 2000-2006.

1.3 The savings depreciation factor and its economic relevance

Table 3 sets out what did happen to the annual outside savings (equity) used for the construction of new homes. In 2000, for each new home built, the mortgage amount allocated was $261,791; for 2006 it had risen to $569,948. If home prices had risen in line with the CPI inflation index, they would only have increased from $163,282 in 2000 to $190,359 in 2006. The Constant Quality Price index for new family homes under construction[4] moved up from 75.9 in 2000 to 106.0 in 2006 with 2005 as base at 100. In the first four years 2000-2003 the average annual increase was 3.3%, but the pace quickened from 2004-2006 when the average annual increase reached 5.9% per annum. Still these data show that the costs of constructing new homes increased somewhat above the CPI inflation index but well below the House Price Index.

Over the period 2000-2006 the economic costs of allocating savings to newly built homes increased by 118% -the average increase in the savings amount used per new house built- but the economic benefit went up by only 16.6% -the house prices based on the CPI index.

Savings (outside equity which equals borrowed funds) were used to inflate the house value (= own equity base) of existing homeowners. Such a use of savings can be called a financial use of savings or even better a non-economic use of savings. The latter reflects the fact that such use of savings was allocated not to building more homes –an economic use of savings- but to inflate the average price level of homes.

Just because asset prices of homes change, does not mean that economic growth increases. The use of savings for the purpose of driving up house prices above the CPI level does not create more output and neither more employment. Savings – outside equity- were allocated to a non-economic use of funds.

[4] http://www.census.gov/construction/cpi/pdf/price_uc.pdf

Moreover individual households, who save to get onto the property ladder, see their savings values reduced as a consequence of the price effects of excess lending. At the same level of savings, they can no longer buy a home they could have afforded before the excess price rise. Their efforts to save are undermined by the allocation of existing savings from previous periods to home mortgages. The historic non-economic use of savings, which created the price of homes to increase faster than the CPI index, lowers the values of existing savings in the current period.

The circumstances under which this may happen need to be spelled out precisely. In the case that the volume of new mortgages is used not only to have new homes built –the volume effect-, but is simultaneously used to get house prices to rise above the CPI inflation index, under the understanding that incomes keep pace with the CPI inflation index, -the price effect- the allocated savings from the past for home mortgages reduce the value of new savings out of current incomes to get onto the property ladder. The price effect helps existing homeowners, but reduces the values of savings for prospective ones.

As Prof. Robert Shiller pointed out, homes in the U.S. used to be for living rather than for speculation. From 1950 to 1996 house prices moved up with the CPI inflation level or slightly above it. From 1997, and particularly from 2002 the price effect of new mortgage lending above the CPI level started to dominate house price developments. The financial, the non-economic use of savings edged out the economic use.

Once speculation fever sets in, the financial markets do not correct themselves automatically. On the prospective homebuyers side, new homebuyers became desperate to get their foot on the property ladder for fear that future house price increases would make it even more impossible to purchase a home. On the lending side, banks fell over themselves to devise products –the so-called sub-prime mortgages- which seemed to promise a stake in the housing market at ever increasing prices. All tricks in the lending schemes were used to entice individual households to sign up to such mortgages, such as low or no down payment, artificially low two year fixed rate start-up rates, followed by variable interest rates thereafter and self certification of income levels without any outside checks done.

Table 3 showed the effects of this speculation. If all new mortgages funding per year had only been used to build new homes rather than for house price speculation, than instead of the 1.737 million new housing starts in 2006, the volume of savings allocated to finance home purchases, could have afforded to start building 5.201 million new homes, reflecting the price of new homes on a CPI basis as shown in table 3 column 4. In real life in 2006 only 33.4% of the funds used went to new housing starts and the remainder to increase the price of existing homes.

The speculation fever, especially in the period 2002-2006, drove up the savings depreciation factor to higher and higher levels. For prospective buyers the savings out of incomes levels became more and more inadequate in order to afford to buy a home. Prospective buyers were locked out of the housing markets not because they did not want to buy a home, but because the house price developments made it impossible for them to afford a home from their savings levels. The non-economic use of savings had driven out the economic use.

It is generally accepted that when the average growth in incomes lags behind the increased costs of the same package of goods and services, a recession will set in. When savings values fall behind the asset prices of homes, a similar reaction should be expected. Savings depreciation does not occur as a one off event. It reflects a gradual process.

Individual households have a choice in accepting a mortgage loan or not. However individual households cannot and do not control the level of mortgage lending made available by the collective banking sector in any particular year. Individual households are reliant on the collective financial sector to stop lending when lending levels cause house prices to rise faster than the CPI index. For banks individually, any profit made is a profit, whether the profit has been derived from a financial use of savings or from an economic one. Banks are different from companies in that they can make profits from a financial use of savings. Banks can collectively cause the value of new savings to be depreciated as compared to asset prices. Banks can cause savings depreciation and the savings depreciation factor to increase dramatically.

1.4 The benign neglect of individual households' equity base by central banks and governments

Central banks, including the Federal Reserve, placed great confidence in the marketplace, gambling that an oversupply of homes would be reduced through falling house prices.

What they would have realized, but did not act upon, was the overturning of two enshrined markets economics principles in the build-up to the individual households' equity crisis in 2005 and 2006. Firstly the past no longer provided accurate and reliable guidance as to the future. Ever since the 1950's and up to the end of the 90's, U.S. house prices had shown an average annual return over CPI inflation of less than 0.5%. Only following 1998 did the U.S. housing market started to behave differently.

Secondly the concept that banks are similar to companies and should be able to behave without undue outside interference has been enshrined in many

economic philosophies. Markets are ultimately supposed to know best and self-police according to these theories.

What was not considered is that banks were and are different from ordinary companies. A company makes its profits by combining outside savings and its labor force to produce output so that products and services can be sold to third parties. What companies do not do and cannot do is to use outside funds to increase the value of their own asset base: only profits can. Companies cannot easily speculate on their own asset values.

What U.S. banks did after 1998 is to make homes go up in value above the CPI index, which simultaneously harmed all those individual households saving to get onto the property ladder. Profit levels for banks are based on any use of funds, even if this means harming those who are prospective customers. Banks make use of the funds entrusted to them and earn money on an economic use of funds –the use of funds that leads to output and employment growth- and on a financial use of funds –funds which do not lead to output and employment growth-. Hence the term "non-economic" use of funds.

The harm done –amplifying the savings depreciation factor- was initially not regarded as a harm to the banks. By collectively pushing through more mortgages, banks' profits grew. The facts are that in 2005 and 2006 this led to the extreme situation of a 66.6% use of new annual mortgage allocations for increasing house prices above the CPI index, as was shown in the previous section. Such high level of a non-economic use of savings did not stop the banks registering more profits. The fact that such a lending pattern took large sums of savings away from assisting economic growth did not seem to bother the banking sector.

Bank profits have a different character to those of companies. Company profits reflect the income difference between the costs of the use of savings and labor and the sales proceeds. Their use of funds is always linked to an economic use of savings. Companies aim to increase output and employment levels in order to satisfy market demands. Banks can use funds for an economic use, but also for a non-economic use. Banks count as profits the net income made over all home mortgages. However in the years 2005 and 2006 only 33.4% of all new home mortgages contributed to economic growth. The 66.6% of new mortgages in these two years, which were running at the historically highest level of annual new mortgages ever, did not help economic growth and did substantial harm to the savings efforts of individual households to get onto the property ladder. It undermined the latters' chances to get a home. Company profit drives cannot cause such harm to the values of savings.

From a macro-economic perspective, the individual households aspiring to get onto the property ladder, should have received assurance from the regulators that the value of their savings would not be undermined by the actions of the

collective of banks. It is not just the stable value of a currency that is important, but individual households may also expect that the value of a dollar saved in the current period would be equal to that of any dollar saved in the past.

The second main aspect of the individual households' equity crisis was that the collective of U.S. banks sold about $5 trillion out of their about $10 trillion home mortgage portfolio to outside suppliers of savings; many of which resided in Europe. This spread savings depreciation to many parties outside the U.S. Central banks in the countries that bought up such mortgage-backed securities did nothing to stop this spread. Only the Bank of Spain did not allow such purchases from overseas. Spain however, had its own home made savings depreciation disaster to contend with, originated by its local banking sector.

1.5 Prevention is better than a cure

What central banks and governments could have done was to contain the non-economic use of savings. In hindsight this would have been the best course of action, but was not acted upon at the time. One possible idea is to set up a traffic light system for all banks involved in the mortgage lending process. Green being the light for going on doing what you are doing; amber for slow down the growth of the mortgage-lending portfolio and red for exceeding the growth speed limit. The penalties for straying into the red could be substantial fines and public censure. The same traffic light system could have been applied to the distribution process of mortgage-backed securities.

What in reality was done was that the Fed increased its base rate from 1% in June 2004 to 5.25% by July 2006. The latter base rate stayed at this level until August 2007.

Did this action stop the use of the non-economic application of savings or slow down all home mortgage lending, including the useful allocation of funds to new home building? The setting of interest rates does not distinguish between a volume effect on home mortgage lending or on house prices. Once the base rate has been increased, it has effects on both price and volume. The volume effect did affect all individual households with a variable rate mortgage. They saw their monthly charges go up, reducing their disposable income level. Potential new buyers were also affected, as their savings values were no longer sufficient to get onto the property ladder. An interest rate increase has the same effect as an excess price increase in homes; it causes savings to depreciate in value.

What was not done was to temporarily reduce the "non-economic supply of savings" to the home mortgage market. Through the use, for instance, of the traffic light system such a preventative measure would have had fewer side effects and would not have affected the costs of funds to individual households or companies; the latter had played no part in the allocation of savings organized by the U.S. banking sector to the U.S housing markets. As it was, individual households were hit hard in their incomes and savings values, companies had to

cope with a substantial increase of their funding costs and the key element of the non-economic use of savings was only indirectly curtailed.

Apart from the non-economic use of savings, a second element played a major role in the run up to the individual households' equity crisis in 2005-2006 and the subsequent financial crisis in 2008: the home mortgage risk acceptance principles. The regulatory authorities would have been fully aware of it. The risk underwriting principles of extending home mortgages in the U.S. were substantially loosened in the run up to 2005 and 2006. Low two-year fixed interest rates were used to entice lower income families to sign up to mortgages. Also no down payment mortgages were used as well as self-certification of incomes, without any outside check on the reliability of the data provided. These so-called sub-prime mortgages "only" accounted for some 12% of the total outstanding home mortgage volumes in 2007 ($1.2 trillion), but their indirect influence was substantially bigger. This influence was brought to bear through the securitization process in which safe and risky mortgages were repackaged together. When the obligors of the risky mortgages started to default on their obligations, the contagion effect brought the whole market for mortgage-backed securities down. On August 9, 2007 BNP Paribas suspended three mortgage backed securities investment funds as "a complete evaporation of liquidity" had occurred. The $5 trillion U.S. generated mortgage backed securities market trembled on its weak foundations.

These three elements together: the lack of appreciation about the non-economic use of savings by the banking sector, the reaction to increase base interest rates and the poor risk underwriting criteria used in writing home mortgages, especially the act of turning them into variable rate mortgages after the initial two year period, led to the collapse of the mortgage-backed securities market and the parallel collapse of the housing market.

Out of the above one can also conclude that those on low-income levels, below the median income level, suffer the most when the savings depreciation factor goes up and subsequently comes down again. Their savings values are proportionally more affected than those above the median income level.

Some central banks are considering or acting upon the risk underwriting procedures or reserve requirements for home mortgages. Both are, in principle, sound actions, but the danger is that all mortgage lending is affected including the economic uses of savings.

2 The clash between financial markets and individual households

2.1 The character of the clash

All economists seem to agree that the cause of the 2008 banking crisis was based on what happened to the funding structure of the U.S. housing market in the preceding period. Capital markets and money markets were intertwined.

Mortgage loans were outstanding and a relevant number of such loans turned into non-performing loans. The problems were globalized due to the sale of U.S. mortgage backed securities to buyers around the world. The operation of key derivative contracts, like credit default swaps and currency swaps spread the risks even wider.

There is nothing wrong with this analysis, but it is perhaps not the full story. The emphasis in this article has been put on the analysis of the run up to the crisis, the sales efforts of the collective of banks, the inappropriate products brought to the U.S. mortgage markets, the speculation elements both on the side of the banks and of the individual households, the securitization and risk distribution process and last but not least the emphasis on the wish to buy a home by individual households. For the latter group the reality doomed that the value of savings were more and more eroded as compared to average house prices. The ultimate determinant of house price levels is the value of savings, the own equity base for each individual household on which borrowings can be based. Undermine this value base and the bottom is taken out from under the pyramid.

Homes are not like other goods and services, they are an essential element in the need for shelter. Economies do not function well if such need cannot be accommodated.

Savings are supposed to create output and employment so that the reward for savings is linked with economic growth levels. In case savings are used for non-economic uses, like forcing up house prices above the CPI inflation level and provided that average income growth keeps pace with the CPI levels, than two things happen. Firstly the value of savings for those individual households not yet on the housing ladder depreciates. Their chance to buy a home becomes further and further remote. Secondly by allocating higher and higher amounts of savings to a non-economic use and thereby forcing asset prices up lead automatically to a reverse process. The clash occurs when financial markets create the price rise in homes over the CPI level and the demand for homes by individual households is for a steady level of new homes built based on population growth, average individual household size, affordability levels and the savings levels out of incomes.

The “non-economic” use of savings occurred as a result of the savings allocations made by the collective banking sector in the U.S. However the consequences were all borne by these individual households.

What happened in the real world was that banks went after all individual households who could not fully meet their home mortgage obligations. In the U.S. over the period 2004-2012 21.4 million individual households were put under immense financial pressure as foreclosure proceedings were started against them. This represented more than 4 out of every 10 mortgagors. Secondly for 5.4 million households –or more than 1 of every 10 mortgagors-, it

was the end of the road as they lost their homes through repossession. With it, these households also lost their accumulated savings in their homes.

Over the period 2006-2011 U.S. house prices dropped by 28.9% in value and by $6.6 trillion in actual amounts. The reaction of the collective of individual households, who had a mortgage, was to reduce the volume of outstanding mortgage debt by $1.2 trillion over the period 2008-2012. According to the latest figures on the Balance Sheet of Households and Nonprofit Organizations as per 31 December 2013, the owners of homes had managed to increase their own share of equity as a percentage of household real estate from 38.4% in 2009 to 51.7% as per end of December 2013. The volume of outstanding mortgages went down and the savings allocated out of current incomes to restore the owners' equity percentage went up. Over the period 2007-2013 8.714 million fewer homes were built as compared to the 2005 level of new housing starts. None of these three facts helped economic growth. The growth in the U.S. population should have led to a higher rather than a lower demand for mortgage funding, a higher level of new housing starts at about 1.7 million units per year and an increase in the total outstanding mortgage level. Individual households reacted in the way they could to counteract the effects of the savings depreciation factor by saving more out of incomes. It shows again that from an economic growth perspective managing the savings depreciation factor avoids the boom (in prices) and the subsequent bust in economic growth.

Another element, which causes future income and savings levels to be affected, is the level of government borrowings. In the U.S. over the period 2000-2006 the outstanding government debt level went up from $5.674 trillion to $8.506 trillion, an increase of 49.9%. The median income level over the same period went up by 14.75%. Adjusted for the growth in the number of households over the same period, U.S. government debt per household went up by 37.2%. Funding the U.S. government debt has partially been achieved by attracting funds from foreign savings sources, however the servicing and repayment of such debt is clearly the responsibility of individual households in the U.S.

As a consequence of the substantial "non-economic" use of savings by the banking sector and the subsequent pressure on incomes put on individual households, government debt financing increased very rapidly over the period 2006-2012. It increased from $8.506 trillion in 2006 to $16.066 trillion in 2012, an 88.9% increase. Government expenditure helps to maintain consumption in the years that such expenditure takes place. However in the years after such expenditure has been made and if there is no repayment source other than tax revenues, government debt becomes another example of a "non-economic use of savings". The savings allocated to funding previous years governments deficits no longer contribute to output and employment growth.

Rather than acting as a correcting mechanism as has been suggested in the Keynesian economic theories, the accumulated debt level causes the level of savings allocated to an "non-economic use" to go up rather than to come down.

Of course, there is no question that tax revenues come down when individual households incomes are under pressure and when companies' turnover grow less rapidly. What should not be forgotten is that the original cause of the individual households' equity crisis was not caused by the U.S. government, but by its banking sector. A secondary crisis was created, as the government could not reduce its expenditure fast enough.

The clash between the financial sector and individual households also involved governments. Forcing the hand of the U.S. government to maintain expenditure levels, which were no longer in line with tax revenues, compounded the original error of judgment by the banking sector.

What the clash did not solve was how to change the allocation from a non-economic use of savings back to its economic use. This means helping individual households back to work to earn their incomes and improve their ability to save.

2.2 The savings depreciation factor and central banks' actions

If the objective for central banks was changed from protecting the economy from excess CPI inflation to protecting individual households from their savings depreciation, then a number of the policy instruments used would need to be adjusted.

In the context of interest rate policies, a housing market overheats when the collective of banks are granting home mortgages at too high a speed. Raising the base rate slows down all lending, including the economy boosting mortgages granted to finance new home building. Raising the base rates also punishes individual households that have opted for a variable mortgage rate; their disposable income will be reduced. Raising the base rate will also affect the company sector as their funding costs will go up, notwithstanding that the increase in house prices had nothing to do with them. All in all, one may draw the conclusion that perhaps raising the base rate is only an indirect method to reduce the savings depreciation factor and one with substantial negative side effects. Indeed the initial effect of a base rate rise is that the savings depreciation rate goes up rather than comes down.

Looking at reserve requirements for home mortgages, if a central bank increases the reserve requirements for home mortgages, banks will automatically transfer such costs to their borrowers. All mortgage rates will go up with the effect that mortgage lending will slow down, but at the same time the savings depreciation factor will go up. Actions to mitigate against the price effect of the excess use of savings has an unwanted negative volume effect on new housing starts.

Another policy tool is quantitative easing. The effects of buying up government bonds and in the case of the U.S. also mortgage-backed securities, creates more savings in the financial markets. It is questionable whether more savings were

needed or whether the root cause of the individual households' equity crisis was rather the non-economic use of savings. If the latter, then pumping more savings into the long-term savings markets may not have been the most direct way of solving the crisis. Of course, it helped governments to finance their own debt at a cheaper rate and it made more savings available to the financial markets in order for them to select other financial assets, like shares for instance. Did it help individual households in a manner that lowered the savings depreciation factor? Again the probable answer is yes, but with a very long lead-time, as individual households had first to sort out their own financial position, before considering any more borrowings.

In the context of credit risk acceptance criteria for home mortgages, the thresholds are set for the banking sector to apply; such criteria are not a flexible instrument to adjust when the non-economic use of savings period is over. However in the case of the U.K. where house prices are certainly rising faster than the CPI index and average incomes, such precautionary methods make sense. It should not be forgotten that such methods only became needed, as no direct action was taken to contain the non-economic use of savings in the first place. To make it harder to get a mortgage will help in the short term to lower the overall volume of lending, but it does not help to bring the savings depreciation factor down.

Prevention is easier than finding a cure.

2.3 What could have been done and still can be done

As referred to in section 1.3 banks stand to make excess profits if they force through a high level of mortgages, which push up house prices above the CPI inflation level. In the U.S. in 2005 and 2006 66.4% of all new mortgages were used to inflate house prices above the CPI index. In bank profit terms 66.4% of the income over these new mortgages should not belong to the banks but to the individual households who suffered those savings depreciation factor. If one takes the year 2000 as the starting year of the savings depreciation then slightly more than 50% of all bank profits (including of investment banks) made in 2005 and 2006 on the product home mortgages should have been returned to the losers of the non-economic use of savings: the lower and middle income families trying to get onto the property ladder. Such transfer of profits would best be channeled to individual households. If it had been done, the savings base of individual households would have been substantially increased. It would have made it the most effective manner to close the savings value gap and simultaneously it would have neutralized the actions by the collective banking sector. Of course, this is all on the understanding that a traffic light system to prevent the non-economic use of savings would not have been in place. Central banks are not in a position to authorize such income transfer. Only elected governments can do so.

All these considerations may be instructive in avoiding or mitigating the next crisis, but what about options to enhance economic growth to-day?

The key objective needs to be lowering the savings depreciation factor for especially for the lower and middle-income groups: the very groups, which have to make the most use of outside savings.

In an article: "The benign neglect of the individual households' equity crisis"[5] the author has explored a number of possible corrective mechanisms. A domestic "economic easing" scheme could be used with the help of the pension funds sector for countries like the Netherlands and Sweden for example. A "cross border" economic easing scheme could be set up for some Southern European countries with the help of the European Central Bank. The latter would not create additional savings –savings are in abundance rather than in short supply-. The scheme would involve the ECB taking up a ten-year Euro loan, transferring the proceeds to for instance the Bank of Spain to be distributed on an equal amount basis to individual households in Spain. The repayment would come, after a two or three year grace period from increased tax revenues as a consequence of higher growth rates. In contrast to the effect to the savings depreciation such a scheme would help the lower income classes proportionally more than the wealthier individual households.

3 Conclusions

The tension between the allocation of savings and individual households is one of the legal against the economic systems. Legally, individual households enter into mortgage contracts to which they are bound under all circumstances. Individual households depend on the financial sector to employ savings in a manner, which leads to a positive return in terms of economic growth and employment. Individual households have no powers to stop the financial sector when it abuses such trust. The profit motive of banks and investment banks did not stop the non-economic use of savings, as the latter use also contributed to their profit levels. In terms of economic rights, individual households are not protected against the non-economic use and distribution of savings.

The groups of individual households, which suffer most from the savings depreciation factor, are the low-income groups, the unemployed and the households with low savings levels. Keeping the savings depreciation factor under control means economic growth, higher employment and prosperity rather than recessions and the erosion of homes and savings values. In the U.K. the latest survey of the Office of National Statistics showed that the richest 10% of the population owned 44% of total household wealth and the poorest 50% of

[5] http://mpra.ub.uni-muenchen.de/53273/

the population only 9%. The latter group depends heavily on using outside equity -savings- to buy a home. This will be a realistic ambition for them if the economic system in a country is organized in a way that savings depreciation is curtailed. If it still occurs and the financial sector operates outside of the relevant country policy parameters/constraints it is up to governments and central banks to ensure that the financial sector compensates such individual households for the loss in savings values.

The clash is not one between the rich against the poor. It is not one between those who own and those who owe money in society, but it is one of equal status when it comes to the allocation of savings. Only by avoiding the savings to depreciate in value can such equality be achieved.

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