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**Drs Kees De Koning**

**23<sup>rd</sup> January 2014**

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## **Financial crisis, economic crisis and individual households' income and savings crisis.**

### **Summary**

The world's financial crisis happened in 2008, but the U.S. individual households' income and savings crisis happened before that: the latter one was already at crisis point in 2005 and 2006.

The key of any analysis about the households' income and savings crisis should start with the distinction between equity (=savings) accumulated out of an individual household's own income and equity (=savings) provided by other households to the individual household as a supplement to an individual household's own income and savings. In the case of the purchase of a home: is the outside equity helping to increase the volume of new housings starts or does it increase the price level of all homes above the CPI inflation level? In the latter case the outside equity reduces the value of the own equity. This is not because the asset has not increased in price on the open market, but because the savings out of income have a lower value to acquire such an asset. If incomes increase with CPI inflation and house prices increase at a faster rate, than for every new home one needs more equity, thereby reducing the value of the savings as compared to the previous period. If the costs of the outside savings go up due to a central bank's increase in interest rates, especially when the home owner is on a variable interest rate mortgage, the value of the equity out of the owner's own income drops further.

This value reduction in own equity is a gradual process; in the U.S. it happened over de period 2000-2006. In 2005-2006 65.5% of all outside equity in U.S. homes was used to inflate house prices over the CPI rate. The individual households' income and savings crisis had reached its breaking point.

## 1. The statistical evidence of own and outside equity in homes

Over the period 2000-2006 in the United States the combined mortgage debt of individual households increased from \$4.814 trillion as per the year-end 2000 till \$9.874 trillion as per the end of 2006, an increase of 105.1%. Over the same period the median income level of individual households moved up in nominal terms from \$41,186 in 2000 till \$47,262 in 2006, an increase of 14.75%. If one takes into account the increase in the number of individual households from 104.705 million in the year 2000 till 114.384 million in 2006 than the average amount of outstanding mortgage debt moved up from \$45,977 in 2000 till \$86,323 in 2006; an increase of 87.75%. The conclusion can be drawn that mortgage debt expanded by a factor practically six times faster than medium income levels.

Table 1 illustrates how own equity became worth less and less in income terms.

**Table 1: U.S. Mortgages outstanding 1996-2008, annual increments in mortgage amounts, house price changes and consumer price inflation levels.**

<b>Year</b>	<b>'96</b>	<b>'97</b>	<b>'98</b>	<b>'99</b>	<b>2000</b>	<b>'01</b>	<b>'02</b>	<b>'03</b>	<b>'04</b>	<b>'05</b>	<b>'06</b>	<b>07</b>	<b>'08</b>
<b>Total U.S. Mortgage portfolio x US \$ trillion</b>	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
<b>Year on Year increase x US\$ billion</b>	218	216	301	377	383	507	680	850	944	1099	990	683	-57
<b>House Price Inflation % y.o.y</b>	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
<b>CPI Inflation % y.o.y</b>	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
<b>Excess HPI over CPI %</b>	-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

Table 2 shows the pre and post 2006 developments in the volume of housing starts in the U.S.

**Table 2: U.S. annual new housing starts<sup>1</sup> per 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 (annualised)

Table 3 shows how outside equity has pushed up house prices and reduced the value of own equity.

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

Year	Housing Starts x million	Increase in Mortgage amount U.S. \$ x billion	Average increase Per new House U.S. \$	Average 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

1996 can be regarded as a good base year for the purpose of comparing the value of outside equity with own equity as the increase in mortgage amounts did not lead to an excess price increase in homes over CPI level. One may note that in 2005-2006 the outside equity was used to increase house prices to the extent of 65.5% of the increased mortgage amounts. The process started already in 1998-1999, but really took off in 2000 and subsequent years.

## 2 Sequence of events

<sup>1</sup> <http://research.stlouisfed.org/fred2/data/HOUST.txt>

The individual household's income and savings crisis led to the subsequent financial crisis which was the outside equity crisis. From the financial crisis the economic crisis followed. In a stylised format causes and effects have been set out below:

**Cause 1:** In 2005-2006 U.S. banks originated \$2.1 trillion in new mortgage loans, which was a 26.7% increase in outstanding mortgage amounts over end of 2004. 65.5% or \$1.38 billion was used to inflate house prices above CPI inflation rates rather than to fund new homes.

**Effects:** \$1.38 trillion of savings were allocated to a use which did not create output and employment. They also had a strongly negative effect on the value of future savings as incomes grew less rapidly than house price inflation.

**Cause 2:** Over 2004-2007 about \$1.2 trillion of sub-prime home mortgages were packaged into mortgage backed securities. The latter volume reached about \$5 trillion out of a \$10 trillion home mortgage market. Reason: commercial banks could continue writing new mortgages without the burden of having to increase reserve requirements and investment banks could profit from such transactions too. Such mortgage backed securities were sold mostly to European banks and pension funds. Most of the latter took out credit default swaps, mainly sold by AIG Holdings, plus Ginnie Mae, Fannie Mae and Freddy Mac in the U.S. Over 90% of sub-prime mortgages had adjustable interest rates, which led to payment problems when interest rates increased.

**Effects:** Banks offloaded credit risks to other financial institutions. Foreign banks scarcely needed to use reserve requirements as risks were offloaded through credit default swaps. Pension funds do not have reserve requirements as fund values are based on "mark-to-market" prices.

**Cause 3:** On August 9, 2007 BNP Paribas suspended three investment funds in mortgage backed securities as: "a complete evaporation of liquidity" had occurred. The outside equity crisis had come to the boil.

**Effects:** The securitisation process had turned 30 year mortgages into claims redeemable any day, any time and for the full amount. Short term savings were used to fund long term lending: a risky maturity mismatch.

**Cause 4:** In June 2004 the U.S. benchmark interest rate was 1% per annum; by July 2006 it had been increased to 5.25% and stayed at this rate till August 2007.

**Effects:** As 90% of sub-prime mortgages had a low start-up interest rate for two years and a variable rate thereafter, the increase in interest rates had a devastating income effect on sub-prime mortgage families and many defaulted on their mortgage loans, ultimately leading to BNP Paribas' action. U.S. house prices dropped by 1.95% in 2007 and a further 13.3% in 2008; in the period end of 2006 till end of 2011 U.S. house prices dropped by 28.9% in value and in actual amounts by \$6.6 trillion. Share prices stopped rising in 2007 and the value of the share holdings held by individual households dropped by 40.3% in 2008. The total net loss in individual households' net worth in 2008 was \$12.6 trillion. Unemployment levels surged from 4.6% in July 2007 till 10% in November 2009. Employment levels did drop from 146 million in 2007 till 138 million in January 2010. The level has increased back to 144.6 million by December 2013. However the labour force participation rate has kept dropping from 66.9% in July 2007 till 62.6% in December 2013.

**Cause 5:** In 2008 as a consequence of the losses experienced by the financial sector and as a consequence of a total mistrust in other banks' financial positions, interbank lending dried up to a very significant degree. Lehman Brothers went into administration.

**Effects:** In the U.K. Northern Rock had to be rescued as well as RBS and Lloyds Bank. In other European countries bank rescues were also needed for ABN AMRO in The Netherlands and Fortis in Belgium among others. Some banks in Spain were strongly affected not through contagion from the U.S, but from own excessive exposure to their home mortgage market.

**Cause 6:** The shift in funding structure from 2000 till 2006 away from equity funding from savings earned out of income by the home owner to the use of other peoples' savings led to price developments in the U.S. housing markets which far exceeded CPI inflation levels. This shift caused individual households to default; the situation was made worse when interest rates were raised substantially. The individual households' income and savings crisis preceded the financial crisis which subsequently turned into an economic crisis.

**Effects:** Governments around the world were faced with lower tax revenues than expected and they had to resort to a substantially increased level of government borrowings. For the Euro area GDP at market prices increased from Euro 9.265 trillion in 2008 till Euro 9.483 trillion in 2012: a nominal increase of Euro 218 billion. Euro area net government borrowings increased by Euro 2.174 trillion and unemployment levels showed a loss of 6,471,000 jobs over the same period. House prices in many Euro area countries still show significant losses. Wages increased generally below inflation levels. Youth unemployment levels in many Euro area countries have reached incredibly high levels.

**Cause 7:** The reaction of individual households to the housing crisis was to save more by paying back outstanding mortgage loans. In the U.S. over the period 2008 to the end of the second quarter 2013 individual households paid back \$1.2 trillion out of the outstanding national mortgage portfolio of \$10.5 trillion in 2008. This action was not taken in reaction to extremely low interest rates, but with the view to replace outside equity in the homes with own equity. According to the Fed's Balance Sheet of Households<sup>2</sup> the owner's equity -based on market prices- was 59.7% in 2005, it dropped to 38.4% in 2009 and thanks to the reduced level of borrowing increased back to 50.8% as per the end of the third quarter 2013. Notwithstanding repaying \$1.2 trillion, 5.4 million households had their homes repossessed out of a total number of 53 million households who had a mortgage.

**Effects:** The double whammy of reducing mortgage debt by saving more plus the repossession of 5.4 million homes affected new housing starts. Over the period 2007-2013, 8.714 million less homes were built over the period 2007-2013 as compared to the 2005 new housing starts. The lower level of new homes built represented a loss in spending of around \$2.5 trillion if one takes the average new home price at \$290,000 as it was in 2005. Furthermore 5.4 million households lost all their savings invested in their homes. These 5.4 million households represented mainly the lower earning income groups as richer households could afford to buy outright.

**Cause 8:** After 2008 individual households both in the U.S. and in the Euro area were hit by a perfect storm: On the income side: substantially higher unemployment rates were realised; wages grew (far) below the rate of CPI inflation for those lucky enough to have a job; the effective tax rates went up as Euro area governments increased their share of GDP from 44.8% of GDP in 2008 till 46.3% in 2012. On the savings side in the Euro area: individual households' equity position in

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<sup>2</sup> <http://www.federalreserve.gov/releases/z1/current/z1r-5.pdf>

savings was and still is under severe pressure as the Euro Stox index dropped from 4,500 in June 2005, till 2000 in January 2009 and is currently still only at the level of 3160; individual households' equity position in their homes is still under severe pressure with house prices dropping in all Euro area countries with the exception of Germany and Austria; individual households' savings income has been reduced to such extent that below CPI inflation returns have been and can still only be earned on bank deposits but also on 10 year government bonds. The latter fact is due to quantitative easing or in the case of the ECB long term liquidity funding in exchange for government bonds.

### **3 Conclusions:**

#### **3.1 Individual Households' income and equity positions**

1. When many households notice that they need more and more savings to get onto the housing ladder as compared to income growth and when many cannot keep up with their debt payments, the effects on the whole society are extremely serious as cause 8 has just set out. Income losses and equity losses follow. Over the period 2002-2006 \$2.9 trillion out of the \$9.9 trillion or 29.3% of the equity provided by other households for the use of home buying was used to inflate house prices in the U.S. over CPI inflation levels. By 2005-2006 this percentage had moved up to 65.5%. Such shift in the use of savings is counterproductive as subsequent events have shown.

In a recent paper: "Do savings promote or hamper economic growth? The Euro area example".<sup>3</sup> I have made the distinction between economic savings -those savings that help output and employment growth- and financial savings -those that do not do so-.

The data provided by the Fed on the Balance Sheet of Households<sup>4</sup> uses market prices for assessing home values and not CPI inflation corrected house prices. If both market prices and CPI inflation based house prices would have been used than the gap between own equity and outside equity would have shown up. With the current method of market prices only after the housing crash did the equity loss on homes show up in the statistics.

2. Apart from the allocation of equity to a home, most individual households also own equity in a pension fund and some own cash, shares and bonds, the latter two in companies and for bonds in corporate and government bonds. The allocation of savings to shares follows -at times- the same pattern as for the housing market. As governments are non-profit oriented households they do not have their own equity, but use only funds which have been provided by the collective of individual households. Government debt outstanding for longer than a year does no longer contribute to output and employment growth. It is a financial use of savings. It represents a claim on future incomes of individual households.

#### **3.2 Interest rates**

3. The interest rate instrument is a blunt instrument as it does not distinguish between the various uses of savings: the use of savings to fund government debt; the use of savings by the company sector for output and employment growth and the use of savings by individual households to acquire a home to live in. in the form of own equity and outside equity. In the U.S. individual

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<sup>3</sup> <http://mpira.ub.uni-muenchen.de/52533/>

<sup>4</sup> <http://www.federalreserve.gov/releases/z1/current/z1r-5.pdf>

households and large companies started saving more after 2008, not because the interest base rate dropped to practically zero, but to protect their equity stake in their homes or businesses.

The pre 2008 housing crisis was caused by a lack of understanding of how borrowed funds affected house price increases. The use of the interest rate weapon (base rates moved up from 1% in June 2004 to 5.25% in July 2006) to slow down price increases in homes led to the wrong results. New entrants to the home market were faced with both the inflated home prices plus the increased costs of borrowings to get onto the housing ladder. What could and should have been done is to use macro-prudential methods -in the above paper a “traffic light system” has been recommended- which increases the costs to the lenders at times that they lend too fast and create house price inflation. This stops house price inflation but should not affect the volume of new homes build, or the costs of new mortgages. The Fed could or should have known that variable interest rate mortgages incorporated in mortgage backed securities would lead to a high degree of defaults on such mortgage bonds once it increased its interest rates. The existence of Fannie Mae and Freddy Mac which help individual households to acquire 30 year fixed rate mortgages was forgotten in the run up to the housing crisis as banks competed to earn as much money in the shortest possible time period with the least banking equity requirements.

Companies benefit from low interest rates at any time. However demand for goods and services is a much stronger incentive to increase or reduce production levels as generally speaking labour costs and the costs of raw materials constitute a much higher percentage of total costs than the borrowing costs. Since the 2008 financial crisis, multinationals have accumulated huge amounts of cash on their balance sheets, not because of the interest rates on offer, they were at rock bottom, but because companies thought it unwise to invest part of their cash-flow as demand levels were lacking.

Governments have created an enormous maturity mismatch in their funding. Compared to the total maturity level of their debt, which in the U.S. is estimated to be over 70 years and for most Euro area countries is now well over such time period, governments borrow short and roll-over their debt for the whole borrowing period. Individual households will not lend for 70 years, but the funding risks stay with the collective of individual households. The remuneration for households' savings is not based on the maturity structure of the government debt, but on opportunistic price setting in interest rates. Governments do not decide to borrow less or more on basis of the prevailing interest rate, whatever the interest rate of the day is. Quantitative easing does not help as it lowers interest rates and replaces savings with money printing. There is no shortage of savings, but a shortage of disposable income levels for individual households. The unemployed, the low wage earners and the youth suffer most in this fight for survival.

If individual households save more when interests are very low, if companies save more under the same circumstances and if governments' borrowing behaviour does not depend on interest rates, one has to wonder why interest rates are not maintained at a level slightly above the CPI inflation level.

### **3.3 Fiscal policy initiatives**

4. The period since 2008 has witnessed the fastest rise in government debt levels apart from the war periods. This coupled with a government debt to GDP ratio of over 80% in some countries and in other Euro area countries of well over 100%, leaves no room for a fiscal give away to individual households or companies for that matter. Lowering the deficit levels is difficult enough, let alone creating a budget surplus to start reducing the government debt burden. What make economic sense however is to have all government debt based on an index-linked, a “CPI inflation plus” level.

### 3.4 Other initiatives

5. There are other possibilities to shorten the adjustment periods in other ways than through monetary or fiscal policy initiatives. These have been explained in the above mentioned article: “Do savings promote or hamper economic growth? The Euro area example”. The article is available on the web: <http://mpira.ub.uni-muenchen.de/52533/>

The suggestions include economic easing, a traffic light system to manage the volume of lending by households other than the home owner, a review of government debt interest rate structure, a review of bank risk payment structure and a review of mark-to-market practices to assess future liabilities of pension funds.

23<sup>rd</sup> January 2014

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