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## **G-SIBOs( Global Systemically Important But Overlooked): The Collective of U.S. Households**

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**G-SIBOs (Global Systemically Important But Overlooked):**

**The Collective of U.S. Households**

**By**

**Drs Kees De Koning**

**19th December 2016**

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## Introduction

In finance, systemic risk is the risk of collapse of an entire financial system or entire market, as opposed to risk associated with any one individual entity, group or component of a system, which can be contained therein without harming the entire system. It can be defined as "financial system instability, potentially catastrophic, caused or exacerbated by idiosyncratic events or conditions in financial intermediaries". It refers to the risks imposed by interlinkages and interdependencies in a system or market, where the failure of a single entity or cluster of entities can cause a cascading failure, which could potentially bankrupt or bring down the entire system or market.<sup>1</sup>

This definition can clearly be applied to the financial crisis of 2007-2008 and to all its constituting parties, be they the banking sector, the mortgage bondholders or the collective of individual mortgagors in the U.S. The systemic risks to the lenders have been well documented, but for the borrowers the same does not apply. For the latter, the fact that, between 2005 and 2014, more than 45% of homeowner-occupiers with a mortgage were confronted with foreclosure proceedings, implies that the funding structure of the total U.S. mortgage portfolio made mortgagors vulnerable to loan default pressures: a serious systemic risk for mortgagors.

Such pressures do not arise overnight, but rather over a number of years. How this pressure did grow, will be shown with the help of two indices: one which shows the link between mortgage debt to income by comparing the total U.S. mortgage debt with the nominal GDP levels and the second one the link between the annual mortgage lending volumes and the average new house prices during the same years. The second one is split into one index based on actual average house prices and another one on house prices adjusted for CPI inflation. The paper covers the period from 1997-2015.

One cannot solve household' systemic risk factors as if this is an individual household's own problem. It was a collective problem caused by systemic factors. Managing such events should have been organized on a collective basis.

The sooner it is recognized that the collective of mortgagors can experience systemic risk pressures –just like banks and mortgage bondholders-, the quicker solutions can be found to overcome such pressures. If, by 2003, the priority had been given to solving systemic risks to the U.S. mortgagors, the U.S. and quite a few other countries would have been in a much better place at present.

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<sup>1</sup> [https://en.wikipedia.org/wiki/Systemic\\_risk](https://en.wikipedia.org/wiki/Systemic_risk)

## **1. Measuring systemic risks for U.S. mortgagors**

The ability to service outstanding mortgage debt depends on two factors: firstly the income levels of the mortgagor as compared to the outgoing mortgage service payments and secondly on the price development of new homes and the amount of mortgage lending used per time period.

Systemic risks occur for households because granting a mortgage to an individual household is not just a stand-alone action. In any particular year this type of action is multiplied many times over. A comparison can be drawn with a large conglomerate company. If banks lend to such companies, they ensure that there are loan covenants in place in the loan agreements, covering such facts as a minimum equity capital and a gearing ratio measuring the volume of borrowed funds set off against the equity capital. Of course the latter is, in a dynamic setting, based on the earnings capacity of the company. Competing banks cannot, just on their own, decide to lend additional sums of money to this company irrespective of the existing lending levels. If they do, other banks have the right to call their loans for immediate repayment.

For individual households no collective ceiling in their mortgage borrowing levels was ever applied. Therefore the collective gearing ratio of debt to income was stretched to breaking point. Secondly mortgage lending finances the acquisition of homes. It should do so by acquiring (new) homes without driving up house prices faster than the CPI inflation levels. When, like in the U.S. over the period 1997-2007, enough new homes were built to satisfy the growth in population and the change in household composition and tastes, the mortgage lending volumes should have been kept in line with the need for such homes. In the U.S. over the period 1997-2003 the mortgage lending levels not only financed new homes, but also did this in a manner, which drove up house prices faster than the income growth of mortgagors. Tables 1-3 in the next section will demonstrate these effects. In other situations, like in the U.K., where, over many years, too few homes were built, to keep up with population growth levels, house price inflation is the result of the low levels of new house building. Mortgage levels become inflated as a result of such low levels of construction.

In both countries the collective mortgage debt to income level and to asset prices can be stretched to breaking point.

### **1.1 Tools to measure systemic risks for U.S. households**

Basically two tools can identify the built up of systemic risks for households. The first tool compares the total outstanding mortgage debt with the nominal GDP level of the same year and shows how –from a balanced base year- the mortgage debt level compares with the nominal GDP level. This tool is a reflection of the

systemic risks arising from the collective mortgage debt compared to the collective income levels: the CMDI index.

Table 1 shows the result of such comparison

**Table 1: Collective Mortgage Debt to Income level (1997 = 100) in the U.S.**

<b>Year</b>	<b>Total Mortgage Debt as % of Nominal GDP 1997=100</b>	<b>Year</b>	<b>Total Mortgage Debt as % of Nominal GDP</b>	<b>Year</b>	<b>Total Mortgage Debt as % of Nominal GDP</b>
<b>1997</b>	<b>43.6% = 100</b>	<b>2003</b>	<b>139.0</b>	<b>2009</b>	<b>165.8</b>
<b>1998</b>	<b>102.3</b>	<b>2004</b>	<b>146.8</b>	<b>2010</b>	<b>152.1</b>
<b>1999</b>	<b>105.3</b>	<b>2005</b>	<b>156.2</b>	<b>2011</b>	<b>143.3</b>
<b>2000</b>	<b>107.3</b>	<b>2006</b>	<b>164.0</b>	<b>2012</b>	<b>134.6</b>
<b>2001</b>	<b>114.9</b>	<b>2007</b>	<b>168.1</b>	<b>2013</b>	<b>129.1</b>
<b>2002</b>	<b>125.9</b>	<b>2008</b>	<b>164.9</b>	<b>2014</b>	<b>123.9</b>
				<b>2015</b>	<b>120.6</b>

This CMDI tool shows how collectively there was no ceiling in place on mortgage lending between 1997 and 2007. The CMDI lending index as compared to income levels moved from 100 in 1997 to 168.1 in 2007. After 2005 the level of foreclosures rose substantially causing house prices to drop steeply and the level of new housing starts to drop from 1.7 million new housing starts in 2003 to 536 thousand in 2010.

The second tool is aimed to show the pressures on owner-occupiers with a mortgage. This tool measures the money input in the U.S. housing market compared to the average U.S. home sales price: the MIAHS index.

**Table 2: Annual mortgage lending divided by average U.S. home sales price**

Year	Mortgage per new home divided by Avg Sales Price	Year	Mortgage per new home divided by Avg Sales Price	Year	Mortgage per new home divided by Avg Sales Price
1997	1.29	2004	2.41	2011	0.63
1998	1.52	2005	2.20	2012	0.50
1999	1.64	2006	2.50	2013	0.95
2000	1.68	2007	2.53	2014	0.97
2001	2.05	2008	1.18	2015	1.00
2002	2.43	2009	1.27	2016	
2003	2.58	2010	negative		

In table 2 it has been assumed that all annual new mortgage-lending levels were used to finance the annual new housing starts. This amount per new home is subsequently compared with the average U.S. house sales price. Annex 1, table 4, contains all basic data that have been used in table 2.

Table 2 shows that, in 1997, the mortgage lending volume would have meant a mortgage per each newly built home of 1.29 times the average sales price for U.S. homes. In 1997 the lending volume already caused upward pressure on the average home price. This pressure became all the greater over subsequent years. By 2003, the volume of lending per each new home reached double the level of 1997. One may conclude, that in 2003 there was already a systemic crisis in the U.S. mortgage market. From 2002 average house prices accelerated well into 2007. The cumulative effect of all these mortgage loans as compared to income levels shows up well in table 1 as the CMDI index of loans to income increased from a factor 100 in 1997 to 168 by 2007.

In order to eliminate from the equation the pressure element of high mortgage volumes on house prices, table 3 has been developed. Table 3 shows the indices based on the average home sales price from 1997 as base and corrected in line with the CPI index over the following years.

**Table 3: Volume of mortgage lending allocated to new housing starts with average house prices adjusted from 1997 on CPI basis.**

<b>Year</b>	<b>Volume index based on CPI adjusted basis</b>	<b>Year</b>	<b>Volume index based on CPI adjusted basis</b>	<b>Year</b>	<b>Volume index based on CPI adjusted basis</b>
1997	1.29	2004	3.19	2011	0.70
1998	1.54	2005	3.05	2012	0.58
1999	1.75	2006	3.45	2013	1.21
2000	1.84	2007	3.49	2014	1.22
2001	2.25	2008	1.46	2015	1.38
2002	2.81	2009	1.51	2016	
2003	3.15	2010	negative		

The systemic risks to households are clearly demonstrated by tables 1-3. Debt levels, incomes and house prices are interlinked. In 2003 the 3.15 volume index is far above the macro-economic affordability level. This level increased even further in 2006-2007.

Over the period 1997-2007, there was no macro-economic mortgage-lending ceiling in place. Managing such a ceiling cannot be done at the level of a household; all the micro decisions on granting mortgages did not add up to a sustainable macro-economic level. Just like in the case of the large conglomerate, each additional loan per time period weakens the quality of all outstanding loans.

## **2. Managing systemic risks for U.S. households**

### **2.1 System deficiencies**

#### **The collective banking system**

The U.S. banking system was and is incapable of maintaining a lending ceiling on the collective mortgage debt. Each obligor is seen as a separate entity and is therefore subject to an individual credit worthiness assessment. Competition

between banks and the sale of such credit risks to mortgage bondholders induced banks to increase the collective mortgage lending exposure from 100% of nominal GDP in 1997 to 168% by 2007. The reliance on individual rather than on the collective obligor creditworthiness led to the systemic risks experienced not just by the mortgagors, but equally by all home owners. These systemic risks then multiplied into affecting unemployment, household' income, government debt and economic growth levels.

One cannot expect an individual bank, or an individual mortgagor to change their behavior in order to fall in line with a mortgage-lending ceiling. Other measures are needed. Such measures should have come from the Federal Reserve and the Department of the Treasury.

### **The interest rate instrument**

The interest rate instrument is a short-term instrument to help correct a series of economic failings, such as reducing inflation levels when prices are regarded as increasing too rapidly. The instrument is also used to stimulate economic activity when unemployment levels are regarded as being too high. What an upward change in interest rate can also do, is to increase the costs of new mortgage borrowings. When variable interest rates are applied to a mortgage contract, such a change in interest rates affects all existing variable rate mortgages as well as new mortgage obligations.

What an interest adjustment cannot do is to change the existing volume of outstanding mortgage debt. In other words if a ceiling on mortgage lending was not applied in previous years, a change in interest rate, especially of the upward type, does not resolve the systemic risks created by previous lending excesses. If many mortgages are based on a variable interest rate, an increase in interest rates may actually harm obligors' ability to service the outstanding mortgage portfolio obligations. In conclusion the use of the interest rate instrument is of little use for correcting an existing mortgage lending volume, if in previous years a ceiling on lending was not applied.

### **Quantitative easing**

Quantitative easing cannot help in lowering the level of outstanding mortgages when a ceiling on the level of such mortgages was not enforced. It can help in debtor substitution, in that the Federal Reserve buys up mortgage-backed securities, as it has done to the tune of \$1.7 trillion. These bonds are still on the books of the Fed at the time of writing this paper. However debtor substitution offers no help to households, who are forced into foreclosure proceedings as a consequence of the lack of macro-economic management of the mortgage-lending levels.

## **Collecting outstanding mortgage debt**

Systemic risks were also applicable when the U.S. banking system started its recovery process on outstanding mortgage debt. 23.250 million households were affected by foreclosure proceedings in the U.S. over the period 2005-2014. This was more than 45% of all homeowners who had a mortgage in 2007. Ultimately 6,145,000 homes were repossessed over the period 2006-2014. The latter number was equivalent to at least four years of new housing starts during the period of 1998-2006.

Over the period 1997-2007, the U.S. banking system was unable to enforce a collective mortgage-lending ceiling over its mortgage-lending activities. Over the period 2008-2014 the excessive lending levels were counteracted by excessive recovery actions to reclaim the outstanding mortgages; these actions also caused house prices to drop far more than needed if a mortgage ceiling had been applied in previous years.

All these actions are fully understandable from an individual bank's point of view as they strive for profits and are responsible to their shareholders for the actions taken. However on a collective basis these actions greatly increased the systemic risks to individual households in their consumer spending behavior, their employment chances, their future income growth chances and the costs associated with the doubling of U.S. government' debt levels between 2008 and 2015.

## **2.2 Managing systemic risks for individual households**

The main aim of managing systemic risks for individual households is to ensure that a mortgage-lending ceiling is assessed and subsequently adhered to. The second aim is to take countervailing actions in case the ceiling levels have been broken.

It is no solution just to force banks to improve their loan loss shock absorption capacity if simultaneously no steps are taken to manage a mortgage-lending ceiling. Systemic risks on households can be avoided and in doing so, it will improve the banking sector's profitability over existing home mortgages. It will also have a positive spin off for economic growth levels and for improving levels of employment and income for individual households. The extensive use of low interest rates and quantitative easing would not have been needed.

In two previous papers: "The myth of economic growth in the United States" and the "A review of the global financial crisis and its effects on working class households- a tale of vulnerability and neglect", the impact of not managing a mortgage-lending ceiling has been extensively discussed. Also the costs in terms of lost economic growth, unemployment and household income growth, the doubling of U.S. government debt and the drop in homeownership rates were all set out.

Two main solutions were suggested. One was aimed at enforcing a mortgage-lending ceiling system: “A traffic light system for the banking world”, indicating whether the speed of lending was satisfactory (green light), was somewhat too fast (amber warning) or was excessive (red indication). Violating the traffic rules would incur penalties for banks and other lenders, especially when the indication was red.

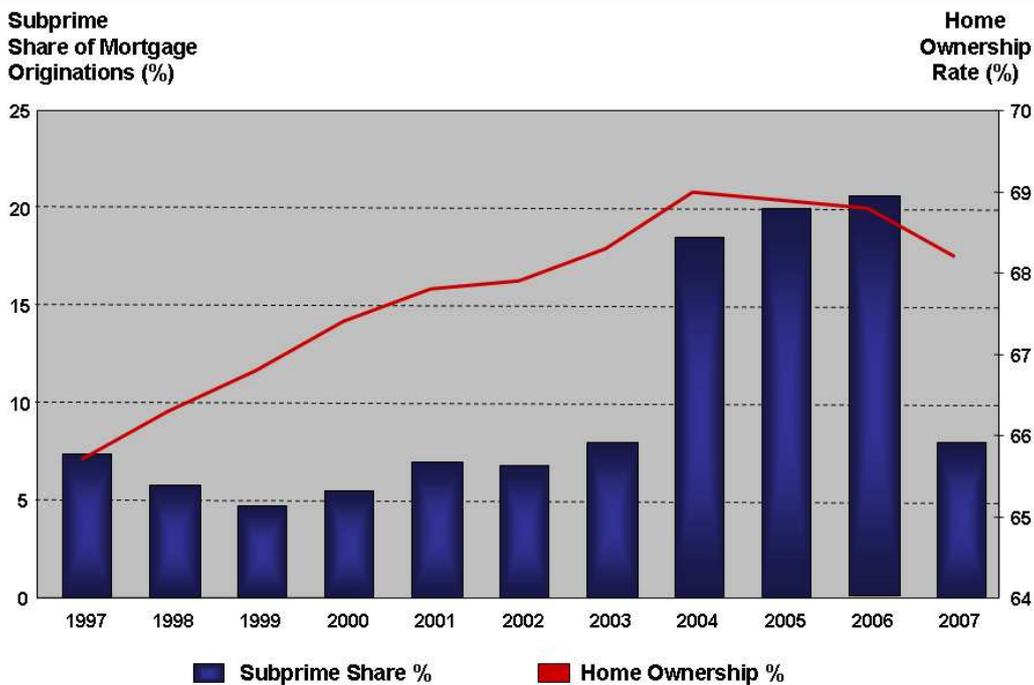
The second solution was for the situation that a mortgage-lending ceiling had not been enforced. In such case the setting up of a National Mortgage Bank was recommended to help households overcome the liquidity squeeze that has made the past decade show such low economic growth rates. Such an NMB could act as a lender of last resort for individual households on basis of sharing part of the asset (the home) with the NMB for its cash-flow help. Such help should be differentiated for each income class that an individual household belongs to. Low-income earners should be helped most.

### 2.3 Priorities for an economic recovery

The subprime lending levels only really took off in 2004 as the next chart shows:

**Chart 1 U.S. Subprime Lending 1997-2007**

U.S. Subprime Lending Expanded Significantly 2004-2006



Sources: U.S. Census Bureau; Harvard University- State of the Nation's Housing Report 2008

Already from 2003, alarm bells should have started ringing as can be seen from Table 1. The systemic risks to households preceded the systemic risks to the banking sector by about four years. The systemic risks to households also preceded the great increase in subprime origination as Chart 1 shows. The substantially increased levels of such origination and the mixing of subprime with prime mortgages in the mortgage bond securitization process over the period 2004 to 2007, led to the mortgage bond crisis of 2007. It was in 2007, that BNP Paribas declared that three of its mortgage bond funds could no longer be traded as liquidity in the market had evaporated.

The reason that the recovery period took so long -from 2007-2008 to well into 2015- was that priority was given to rescuing the banking system and the mortgage bondholders rather than putting the collective of individual households first. If the latter had been done, the crisis would have been much less severe and the costs to U.S. households much less also. As it was, U.S. government debt has doubled over the period 2007-2016 by an amount of \$10.55 trillion. In 1997 total U.S. mortgage debt amounted to only \$3.7 trillion. The debt did rise to \$10.7 trillion by the end of the second quarter 2008.

In conclusion: the absence of a mortgage-lending ceiling led to U.S. government debt doubling, affecting all households. All households paid the price for ignoring the systemic risk to mortgagors, but the lower income households paid the highest price.

Managing systemic risks for individual households is not just an option, but a necessity if the aim of a society is for faster economic growth, higher home ownership rates and a better help for those who need to borrow in order to acquire a home.

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19<sup>th</sup> December 2016

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## Definitions and sources of data

- **Mortgagor:** An individual household having a mortgage as an owner-occupier. This definition excludes the buy-to-let landlords, either as an individual or as a company or institution;
- **Annual mortgage lending volume and total mortgage debt level:** Federal Reserve St. Louis: Balance Sheet of Households and Nonprofit Organizations, B101 <https://fred.stlouisfed.org/categories/32258>
- **U.S. nominal GDP data,** U.S. Bureau of Economic Analysis  
<https://www.thebalance.com/us-gdp-by-year-3305543>
- **Average U.S. Home Sales Prices:** U.S. Census Bureau  
<https://www.census.gov/construction/nrs/pdf/uspricemon.pdf>
- **Annual Housing starts:** Federal Reserve of St Louis,  
<https://fred.stlouisfed.org/series/HOUST>
- **CPI inflation data,** U.S. Department of Labor, Department of Labor Statistics, <https://fred.stlouisfed.org/series/HOUST>

## Annex 1

**Table 4: Annual mortgage lending over the period 1997-2015 compared to funds allocated per new home started and to the average home price for homes sold in the U.S.**

Year	1 Annual new Mortgage Lending volume X U.S. billion	2 Allocated per each New housing Start X U.S. dollars	3 Average U.S. Home Sales Price X U.S. dollars <sup>2</sup>	4 Annual Housing starts X million <sup>3</sup>
1997	125 + 216= 341	227,580	176,200	1.494
1998	135 + 302= 437	276,230	181,900	1.582
1999	148 + 376= 524	320,310	195,600	1.635
2000	161 + 383= 544	348,620	207,000	1.559
2001	177 + 508= 685	437,400	213,200	1.567
2002	201 + 706= 907	555,360	228,700	1.633
2003	230 + 882= 1112	635,300	246,300	1.751
2004	262 + 949= 1211	662,480	274,500	1.828
2005	297 + 1054= 1351	653,290	297,000	2.068
2006	330 + 997 = 1327	763,960	305,900	1.737
2007	354 + 703 = 1057	794,740	313,600	1.330
2008	352 - 33 = 319	345,612	292,600	.923
2009	347 - 161 = 186	344,450	270,900	.540
2010	331 - 498 = -167	negative	272,900	.536
2011	323 - 219 = 104	167,580	263,400	.623
2012	316 - 211 = 105	142,430	285,400	.740
2013	313 - 90 = 223	301,890	319,300	.898
2014	313 - 1 = 312	304,480	312,500	1.026
2015	316 + 91 = 407	350,900	352,500	1.161
2016			361,900 (Jan-June)	1.189 (June annualized)

The \$125 billion mentioned for 1997 in column 1 of table 4 reflects the repayments volume out of the total outstanding U.S. home mortgage portfolio. The figure assumes a straight-line repayment schedule over a thirty-year mortgage period. The same applies for the \$135 billion in 1998, etc. Column 1 reflects the total production volume of new mortgages granted per year. It reflects the net annual volume increase in outstanding mortgage levels plus the repayments made during the year. The latter need to be included in the lending levels in order to get the volume of mortgage lending correct.

In line with the rapid growth of the total outstanding mortgage portfolio as shown in table 1, the replacement factor of mortgage repayments increases annually to 2008 and shows a slight decline thereafter.

<sup>2</sup> <http://www.census.gov/const/uspriceann.pdf>

<sup>3</sup> <https://fred.stlouisfed.org/series/HOUST>