A change in the behavior of households, new form of moral hazard

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Abstract
The paper examines the relationship between growing household debts in developed countries as based on statistical data available in the vast majority of rich countries, and some other factors such as the development of household deposits, households' net financial assets, decrease in non-financial household assets etc. The main conclusion is that the net household wealth in rich countries has been on the decline since the beginning of the new millennium (though due to the differences between the countries we are unable to draw a general conclusion valid for all). Excessive household consumption, the economic crises and a drop in asset value will have contributed as well. However, considering the current demographic trends and life expectancy, it would be more appropriate if net household wealth increased in proportion to the future burden that European families ought to expect as a consequence of their ever longer retirement.

Keywords
Household finance, household debt, public debt, deposits, disposable income, net financial assets

1. Main hypothesis
The behavior of households in all developed countries went through a major change in the second half of the 20th and at the beginning of the 21st centuries. Historically, household debt was very small and economically insignificant but over a relatively short period it grew, similarly to public debt, into a major economic issue. While state debt issues have been both studied theoretically and put into every-day economic life with much attention, the topic of household debt is treated in much less detail. Public debt is recognized as a major economic topic, household debt on the other hand is being considered as a social or psychosocial issue. It is quite clear, however, that in a number of countries the level of household debt is similar to, or even higher, than the state debt. Due to the different forms of assets and income of both groups (governments and households), it is fairly difficult to compare the debts. In case of households, their debt is often being compared with their disposable income (i.e. income after taxes and obligatory transfers). If we want to compare the debts of governments and households, then for the government part we should not use the comparison with GDP but rather with the government revenues. In this case it would be clear that the household debt would exceed the government debt in most countries.

The difficulty of such a comparison lies within the assets' structure - the household assets structure is very different from what is described as state assets.

The difficulty of comparison notwithstanding, it is not exaggerated to predict that household default and insolvency can become, within decades, as serious a threat to the financial well-being and to the real economy as the collapse of asset prices or defaulting firms and governments.

A further aggravation of the demography situation in the developed countries will put an additional pressure on household budgets, thus bringing the household wealth down - this trend will be especially remarkable in households where working-age adults start to retire. Longer life expectancy will in turn cause further problems as it will most probably become clear that the amassed asset reserves are not sufficient.

2. Current state of household debt in developed countries

Taking a closer look at the current state of household debt in developed countries, we find that there is a rather big disparity between different states. It is certainly interesting to take a closer look at the differences from the historical point of view of each country (countries with a long history of uninterrupted free economy vs. post-communist countries). Similarly, we could be examining the correlation between the GDP per capita or the prevailing religion of the country and the levels of household debt. Regardless of such specific features, we can see a tendency towards a relatively fast increase of household debt in most of the countries.

It is important to note that the latest statistics available from Eurostat (which should be adequate as a basis for comparison and are expected to be mutually compatible) come from 2007. In other words, these statistical data show a period ending in 2007, i.e. a period of uninterrupted and dynamic growth in most of the countries which had a profoundly positive impact on the income of the households. Despite this fact, however, the households' stock of liabilities grew at that time. The phenomenon would deserve a more detailed analysis because there is no denying that household consumption must have grown faster than income. Last but not least it is important to stress that the level of debt depends on social stratification of households in each country and that in comparison with their income, it is the lower-income households that have the highest debts.

Households' stock of liabilities as a percentage of Household Disposable Income, 2000 and 2007
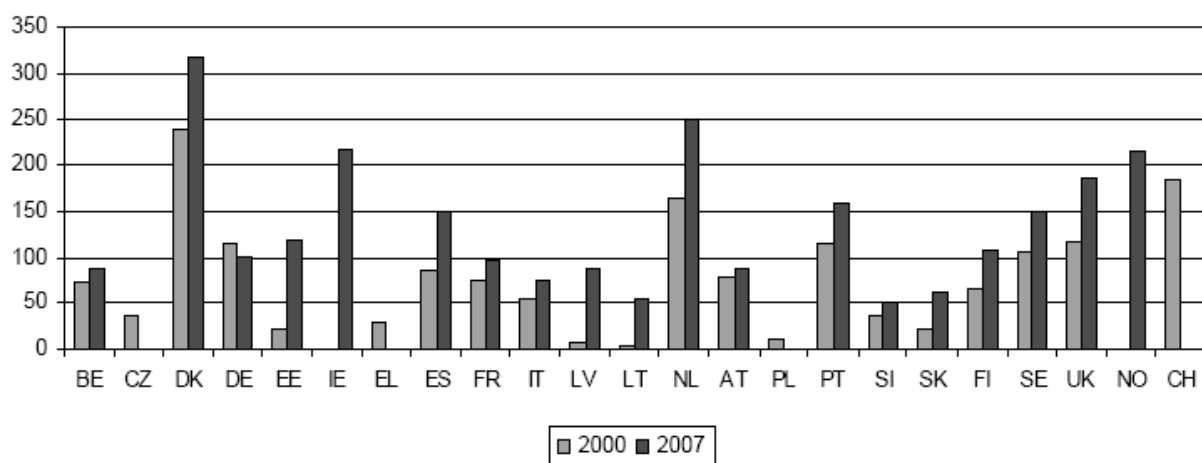
Source: Eurostat, 2010
http://epp.eurostat.ec.europa.eu/statistics_explained/index.php?title=File:Households%E2%80%99_stock_of_liabilities_as_a_percentage_of_Household_Disposable_Income,_2000_and_2007.PNG&filetimestamp=20090608090557

Looking at the above chart, we can draw several conclusions:
- Between 2000 and 20007, the only country that managed to decrease its household debt in comparison to net monthly income (disposable revenue) was Germany (DE);
- Households in four countries, namely Denmark (DK), Ireland (IE), Netherlands (NL) and Norway (NO), are indebted twice or more than their disposable income is. Except for Ireland, these countries belong (in general and within the EU) among the states with the highest GDP per capita;
- In all countries that can be designated as economically important within the EU, the household debt is higher than their yearly net income (disposable revenue);
- In at least six countries the households' stock of liabilities increased by more than 50 percentage points between 2000 and 2007 – for example in Denmark (DK) it rose from around 245 percent of the disposable revenue in 2000 to about 315 percent in 2007 which is more than triple of the disposable income.

To put things into perspective, it is important to say that the problem is not limited to the European Union – the same situation prevails in other developed countries, too. In the USA the household debt grew from 65 percent of the disposable income in 1977 to 135 percent in 2007 (but decreased in 2008). In the same period, the debt of Australian households jumped from some 40 percent to more than 160 percent of the households' disposable income.

The following table also illustrates well our point: we can see a comparison between Japan and Canada. Japan which went through two decades of stagnation or a very slow growth with almost no inflation shows a stable level of household debt. Canada, on the other hand, witnessed a rather significant growth of its economy and of the real income but also of its household debt (not a dynamic increase but an increase worth noting nevertheless).

Households' stock of liabilities as a percentage of household disposable income (1.0 = 100% of disposable income)

	Canada	France	Germany	Italy	Japan	United Kingdom	United States
1995	1.007	0.620	0.909	0.374	n.a.	1.057	0.916
1996	1.038	0.626	0.951	0.387	1.294	1.028	0.934
1997	1.061	0.636	0.982	0.416	1.276	1.027	0.945
1998	1.085	0.684	1.021	0.440	1.282	1.048	0.953
1999	1.109	0.711	1.067	0.473	1.299	1.086	0.993
2000	1.098	0.725	1.070	0.511	1.314	1.117	1.007
2001	1.111	0.736	1.045	0.506	1.320	1.157	1.046
2002	1.139	0.713	1.048	0.524	1.294	1.273	1.096
2003	1.173	0.751	1.038	0.552	1.283	1.380	1.164
2004	1.209	0.789	1.025	0.589	1.262	1.514	1.230
2005	1.261	0.858	1.002	0.630	1.270	1.537	1.298
2006	1.293	0.914	0.979	0.663	1.259	1.675	1.341
2007	1.356	0.933	0.949	0.696	n.a	1.761	1.368
2008	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.307

Source: OECD Factbook, 2010
http://www.oecd-ilibrary.org/sites/factbook-2010-en/12/02/02/index.html?contentType=&itemId=/content/chapter/factbook-2010-101-en&containerItemId=/content/serial/18147364&accessItemIds=&mimeType=text/html

We can thus draw some preliminary conclusions based on household debt development:
- While there are some exceptions, in the vast majority of developed countries the household debt has been rising continuously;
- Households in almost all developed countries are indebted at the level of one yearly disposable income or more.

3. Household assets and their development

With household liabilities (debt) being just one side of the coin, it is also important to look at the development of household assets - both financial and non-financial. Although from this perspective things look considerably better – the assets of households in the developed countries do in general exceed their liabilities – there is also a shift to a higher risk and towards a situation where the households' assets will no longer cover their liabilities with the same ease as in the past.

Net Financial Wealth of Households as a percentage of GDP, 2000 and 2007
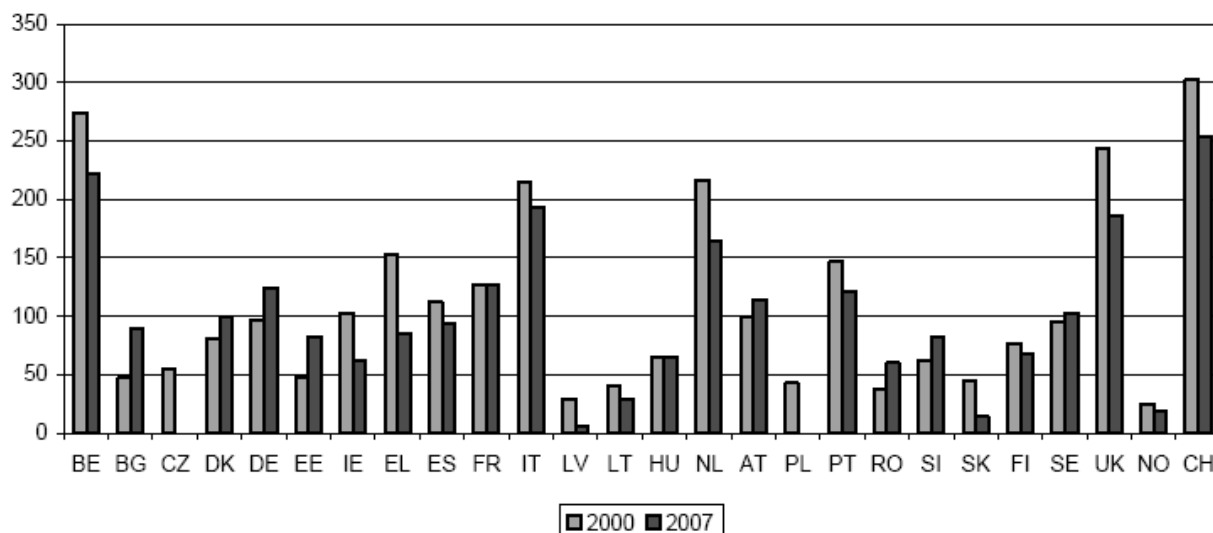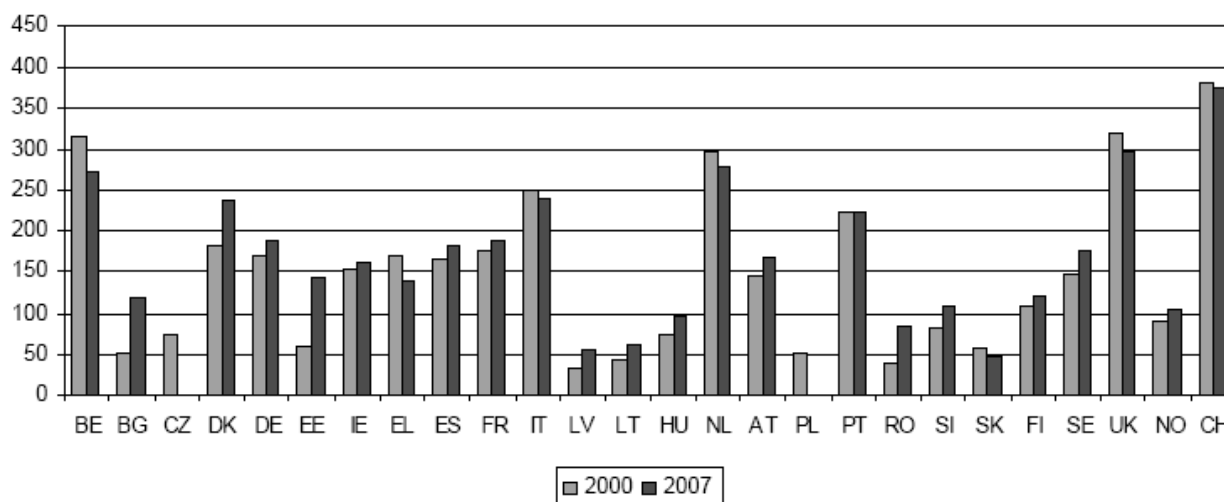

Data for Ireland and Slovenia refer to 2001.

Source: Eurostat, 2010
http://epp.eurostat.ec.europa.eu/statistics_explained/index.php?title=File:Net_Financial_Wealth_of_Households_as_a_p
ercentage_of_GDP,_2000_and_2007.PNG&filetimestamp=20090608093047

If one focuses on the net financial wealth of households (assets, or deposits, less liabilities, or credits) it becomes evident that the countries generally considered as the richest ones witness a gradual decline in net financial wealth. Belgium, Ireland, Spain or Italy belong in this group. While France is in a stand-still, there is a significant setback in the Netherlands, the United Kingdom and of course in the United States of America. However, some other developed countries which are not among the richest states follow a similar trend. Lithuania, Latvia, Portugal or Slovakia saw a major drop in net financial wealth of households even before the economic crisis of 2008-2010. Naturally, a fast increase in credits by which households funded their higher standard of living was to blame in many cases.

Households' stock of financial assets as a percentage of GDP, 2000-2007

Data for Ireland and Slovenia refer to 2001 instead of 2000.

Source: Eurostat, 2010
http://epp.eurostat.ec.europa.eu/statistics_explained/index.php?title=File:Households%E2%80%99_stock_of_financial_a
ssets_as_a_percentage_of_GDP,_2000-2007.PNG&filetimestamp=20090608075256#file

Finally, looking at households' stock of financial assets we are able to trace a similar, but not so marked trend. In a number of countries, households' stock of financial assets, or reserves, decline but in other countries it does not. It should be borne in mind, however, that when both debt and deposits are growing at the same time, which is quite possible especially in the case of mortgage loans, the net financial assets might be decreasing (liabilities grow faster than deposits).

It can be argued that up to a certain degree the household debt in the developed countries is not as worrying as statistics might suggest because a good part of the debt was created through state housing incentives and state subsidies of mortgages or government housing loan schemes. That implies that the debt is guaranteed by real estate, such as a flat or a house. As a result, risks that the household assumes by taking out the loan are mitigated, at least in part. The debt is not consumed directly, i.e. in the form of a short-term consumption, but it is transferred from one form of financial wealth into another form, i.e. into a property. The following table shows, among other things, the ratio of mortgage loans to the overall volume of household loans in selected countries.

Household wealth and indebtedness as a percentage of nominal disposable income								
	2002	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
Canada								
Net wealth	512.7	516.1	518.1	534.5	545.5	548.5	547.4	549.2
Net financial wealth	231.4	224.0	214.6	216.5	217.9	210.6	211.7	211.0
Non-financial assets	281.3	292.1	303.5	318.0	327.7	337.9	335.6	338.2
Financial assets	348.5	344.7	338.9	345.9	349.6	347.9	353.4	359.4
of which: Equities	83.6	81.0	79.4	79.4	85.2	85.2	96.3	92.3
Liabilities	117.1	120.6	124.3	129.4	131.8	137.3	141.7	148.4
of which: Mortgages	71.2	73.2	75.9	79.1	80.7	84.7	87.9	92.3
France								
Net wealth	571.3	621.2	682.1	748.2	792.6	806.3	753.2	746.3
Net financial wealth	183.1	189.6	194.9	200.5	210.4	213.6	185.8	201.7
Non-financial assets	388.2	431.6	487.2	547.7	582.2	592.7	567.4	544.6
Financial assets	258.7	269.3	278.6	291.5	306.9	313.9	288.1	308.3
of which: Equities	63.1	69.7	72.4	77.5	87.1	92.2	66.2	73.6
Liabilities	75.6	79.7	83.7	91.0	96.5	100.3	102.3	106.6
of which: Long-term loans	54.6	57.1	60.2	65.3	69.5	73.2	76.6	..
Germany								
Net wealth	533.7	547.8	561.2	581.4	605.7	627.6	614.6	..
Net financial wealth	145.9	158.2	167.2	180.2	189.4	198.2	184.9	202.0
Non-financial assets	387.8	389.6	394.0	401.2	416.3	429.4	429.7	..

Financial assets	257.9	269.1	276.8	287.3	294.2	299.9	282.4	300.6
of which: Equities	57.4	63.3	63.9	71.3	72.0	72.7	54.2	59.2
Liabilities	112.1	110.9	109.6	107.1	104.8	101.7	97.5	98.6
of which: Mortgages	72.3	72.2	71.8	71.0	70.8	68.9	66.1	67.1
Italy								
Net wealth	746.2	770.0	793.9	823.5	845.8	855.0	820.8	..
Net financial wealth	293.0	290.7	297.6	304.8	304.0	293.1	254.5	..
Non-financial assets	453.2	479.3	496.3	518.7	541.8	561.8	566.3	..
Financial assets	351.3	353.0	364.3	376.7	379.7	372.3	334.3	..
of which: Equities	75.1	70.8	74.3	84.2	86.1	79.6	47.9	..
Liabilities	58.3	62.3	66.7	71.9	75.7	79.2	79.8	..
of which: Medium and long-term loans	33.6	36.3	39.9	43.7	46.2	48.6	48.6	..
Japan								
Net wealth	719.4	728.1	720.1	739.2	744.7	735.3	697.0	..
Net financial wealth	340.7	361.1	369.4	397.1	401.4	386.3	356.5	..
Non-financial assets	378.7	367.0	350.7	342.1	343.3	349.0	340.6	..
Financial assets	474.4	494.7	500.8	529.0	531.8	513.7	483.6	..
of which: Equities	29.8	42.1	48.9	75.5	75.8	50.3	29.7	..
Liabilities	133.6	133.6	131.4	131.8	130.4	127.4	127.2	..
of which: Mortgages	62.8	63.9	63.4	64.1	65.2	64.9	64.7	..
United Kingdom								
Net wealth	715.6	748.0	797.2	827.0	866.7	900.8	752.7	810.5
Net financial wealth	260.8	265.9	270.0	304.3	310.7	307.6	243.3	295.3
Non-financial assets	454.9	482.2	527.2	522.7	556.0	593.2	509.3	515.2
Financial assets	394.7	410.9	430.0	466.6	486.7	491.3	420.9	466.0
of which: Equities	61.4	67.3	71.4	76.0	77.2	72.9	46.6	64.2
Liabilities	134.0	145.0	160.0	162.3	176.0	183.6	177.6	170.6
of which: Mortgages	97.1	106.8	119.0	121.2	130.1	138.2	135.6	132.8
United States								
Net wealth	515.4	563.2	593.8	640.7	646.5	616.3	469.5	486.1
Net financial wealth	267.6	304.0	317.1	335.5	349.4	348.2	248.0	273.6
Non-financial assets	247.8	259.2	276.7	305.2	297.1	268.1	221.5	212.5
Financial assets	377.5	421.8	441.2	466.8	485.0	486.0	378.3	401.1

of which: Equities	92.2	115.8	122.7	126.8	139.5	136.4	83.1	103.5
Liabilities	109.9	117.8	124.1	131.3	135.6	137.8	130.3	127.5
of which: Mortgages	77.2	84.2	90.2	97.7	101.7	103.4	98.1	95.9

Source: OECD Economic Outlook No. 88, OECD Economic Outlook: Statistics and Projections (database)

As the table shows, in the selected developed countries a greater part, usually around two-thirds, of the household debt is linked to real estate, i.e. a debt used to buy a property for the family housing. Considering economic risks, this is of course much better than debts incurred by way of consumer credits. However, considering the liquidity of households and their ability to handle risk (critical) situations, the transfer of wealth from financial assets (usually liquid) to real estate can cause problems.

As the table shows, net wealth is made up of net financial wealth and non-financial assets; net wealth therefore indicates the real household wealth once liabilities (debt) have been subtracted. The subtraction of liabilities from financial assets results in net financial wealth. The comparison provides a very accurate overview of households' economic situation in the above-listed countries. It should be noted that in all the countries except for Canada there was a decrease (quite often a significant one) in the households' net financial assets, especially in 2008. Nevertheless, the total net household wealth exceeds their disposable income by a factor of five to eight; the ratio seems sufficient to prevent a mass destabilization in the economic situation of families in the rich countries. While several general conclusions can be drawn in respect of the statistical data shown above, only rarely will they apply accurately to all the economies concerned:
- On the whole, the economic situation of households in the developed countries deteriorates but this deterioration can be described as mild;
- The drop in asset value (e.g. real-estate or shares) is partly to blame – it had an influence on the results for 2008;
- The households depleted a part of their financial reserves during the economic crisis;
- Their level of debt increased in the past years.

At present, it is impossible to identify within the mentioned group of countries the states where households' deposits in banks, the value of their investment (e.g. into securities) or the value of their assets (e.g. real estate) dropped so significantly that the debt would start to threaten the financial stability of households. Having said that, we can nevertheless conclude that financial stability of households gradually decreases and the probability of household default risk is rising (including households in very rich countries).

All of the statistical data presented so far have one feature in common: they rely on "average", and not "median" values. When assessing financial health of the developed countries, this fact is often overlooked; this can in turn lead to ignoring the scope of problems. Analysts tend to ask whether the debt of households in the rich countries threatens the financial stability of families. Since average values are used, analysts often jump to the conclusion that it is not the case. However, we should not ask whether households in the developed countries are in a default risk or debt-trap but rather what percentage of households in those countries is in danger of default and to what extent this risk grows in time. The answer to this question seems far less optimistic.

4. Moral hazard

The term "moral hazard" has two meanings (although when taking a closer look at these two meanings, we find that the difference between them is negligible). The first one is used when one party on the market has more information than the other, a situation referred to as information asymmetry. For example, a company's manager has more information than its owner and thus behaves in a way more advantageous to him; the manager's interests are not necessarily identical with those of the owner (though they should be, based on the relationship between the owner and his hired manager).

For our purposes, we will be more interested in the second meaning of the term. In this situation, moral hazard occurs when an individual is aware (or has a reason to believe) that he will not have to face the full consequences and responsibilities of his actions (meant as negative consequences in this context). Consequently, he has a tendency to act less carefully (run greater risks) than he otherwise would if he were certain to bear the full consequences of his actions. His fundamental assumption is that certain consequences will follow his actions but he expects someone else to face them at the end of the day. With a bit of terminological laxity, there has recently been a hot discussion about the moral hazard, especially in relation to the financial crisis of 2007 and 2008 and also in relation to the countries that seem unable to fulfill their obligations arising from their debt. Greece, Hungary, possibly Portugal or Spain fall within this category (and we should stress that the problems Ireland or Iceland faced were caused by the same events, however, these two countries are in a totally different relationship to the problem).

With the same terminological laxity the term moral hazard will be used to describe a situation where an individual, an organization or a state behaves irresponsibly in the long-term assuming that they will not have to bear the consequences at all or that they will bear them to a lower extent than would correspond to the degree of their irresponsibility. There is little point in discussing to what extent a certain course of action represents moral hazard depending on the degree of expected "impunity" or to what extent an individual, an organization or a state bank on that assumption. The exact difference is of little or no interest in this context because it does not matter, as far as the outcome is concerned, whether someone (the family or the state) takes on the debt on the basis of a misconceived estimate or on the basis of an assumption that someone else will have to pay up or that the debt will "somehow disappear". We will thus consider as moral hazard "any action which has been taken on the basis of wrong premises, or a belief that the consequences of one's behavior will not be borne by an individual, an organization or a state but that such consequences will be borne by the whole of society, an international community or by, for example, creditors".

Let us imagine a society where contributions to pension fund schemes are based on a purely voluntary basis. Ten percent of people (group A) contribute enough money to the fund to receive sufficient retirement pension. Sixty percent of people (group B) do contribute to the fund but not enough to guarantee a sufficient pension when they retire. In addition, group B does not accumulate any other additional capital reserve as they feel they are already "part of the system". The rest (nearly thirty percent) decides not to pay at all. Some of them may come to the conclusion that it is best to buy shares each month and deposit them on their account (group C1), yet others decide that "what should happen will happen" and do not save any money at all (group C2). Out of the total, 15 percent will amass some assets for their retirement and 15 percent will neither participate in the pension scheme nor put aside any money. Several decades on, C2 will take to the streets as they will have no means of subsistence. Group B will most probably join in because their income will be too low to sustain their standard of living. Considering the numerous "irresponsible" groups, an acute social and consequently political issue will arise, requiring a solution.

It is most likely that the responsible (group A) will have most to lose as their assets will be the most vulnerable (pooled in various funds). Similarly, group C2 may have to foot the bill

for a part of social security for the "irresponsible" by way of property or capital taxes. To draw conclusions from this scenario, where a majority is allowed to behave irresponsibly, i.e. to benefit from the "social hazard", then the "social hazard" is likely to be accepted as a "morally correct" stance.

This broader introduction is required in order to understand the arguments that can, however, be only outlined here as the scope of this paper does not allow developing them in full. During the past forty years, the average life expectancy in the developed countries grew significantly. In 2009, a sixty-year-old man in Belgium would live for another 21.8 years. In 1998, the same man could expect only to live for another 19 years or so on the basis of statistics. As for women in the same country, in 2009 a sixty-year-old woman was likely to live for another 25.4 years as opposed to 23.8 years in 1998. A Portuguese woman of the same age is likely to live for almost 25 years, a Swedish woman for 25.5 years but both of them are left behind by a French who can expect another 27.6 years. The average life expectancy of sixty-year olds went up by two years between 1998 and 2009. In men, the expected age of death is now lower by three to four years. A similar tendency towards higher average life expectancy can be seen in newly born children – for women, it is well above 80 years, for men around 76 years. Historically, this is a significant change – the figures were approximately 10 years lower in the relatively recent past.

Thanks to a change in lifestyle, better healthcare, good quality foodstuffs and possibly less polluted environment, the human body decided to live longer but the mind is not ready yet. Although many governments try to come up with reforms of pension schemes and postpone the retirement age, the populations of advanced countries are not happy about the changes. Neither have they been willing to modify their consumer behaviour and more generally their attitude towards the need to create sufficient reserves for retirement. Their old age will be characterised by several important features:

- It will last longer than before;
- it will require considerably higher costs, especially should one like to keep the same healthcare standard. Considering the growing number of people in the oldest cohort, healthcare standards covered by the general health insurance will need to be reduced and a part of healthcare will have to paid for in cash or from supplementary insurance policies;
- it will be demanding on resources also in respect of life costs – if people live longer, the likelihood substantially increases that they will be unable to live without part-time or full-time assistance. In view of the collapse of the traditional family, an increased demand for paid assistance services can be expected but it is a costly option.

Selected demographic data, Czech Republic

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Population as of 31. 12. (thousands of persons)	10 362	10 364	10 313	10 326	10 334	10 333	10 321	10 309	10 299	10 290	10 278
Men	5 036	5 037	5 006	5 013	5 019	5 020	5 017	5 012	5 009	5 005	5 001
Women	5 326	5 327	5 307	5 312	5 315	5 313	5 305	5 297	5 290	5 284	5 277
out of whom ages (%)											
0 – 14	21.7	21.2	20.6	20.0	19.4	18.9	18.3	17.9	17.4	17.0	16.6
15 – 64	65.8	66.3	66.7	67.1	67.6	68.0	68.4	68.7	69.0	69.3	69.6
65 and older	12.5	12.6	12.8	12.9	13.0	13.1	13.3	13.5	13.6	13.7	13.8
Average age	36.1	36.3	36.5	36.6	36.8	37.0	37.3	37.6	37.9	38.2	38.5
men	34.4	34.5	34.7	34.9	35.1	35.3	35.6	35.9	36.2	36.5	36.8
women	37.8	37.9	38.1	38.3	38.4	38.6	38.9	39.2	39.4	39.7	40.0
Life expectancy at birth (years)											
men	68.1	67.6	68.2	68.4	69.2	69.5	69.7	70.4	70.5	71.1	71.4
women	75.4	75.4	75.7	76.1	76.4	76.6	76.6	77.3	77.5	78.1	78.1

Life expectancy at the age of 60 (years)										
men	14.9	14.7	15.0	15.2	15.6	15.9	15.9	16.3	16.4	16.7	16.8
women	19.2	19.5	19.5	19.8	19.9	20.0	20.0	20.4	20.7	21.0	21.0
Old age index (65+ / 0 -14 in %)	57.4	59.4	62.0	64.3	66.8	69.6	72.5	75.3	78.1	80.6	83.1

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Population as of 31. 12. (thousands of persons)	10 267	10 206	10 203	10 211	10 221	10 251	10 287	10 381	10 468	10 507
Men	4 997	4 968	4 967	4 975	4 981	5 003	5 026	5 083	5 136	5 157
Women	5 270	5 238	5 237	5 237	5 240	5 248	5 261	5 298	5 331	5 350
out of whom ages (%)										
0 – 14	16.2	15.9	15.6	15.2	14.9	14.6	14.4	14.2	14.1	14.2
15 – 64	69.9	70.2	70.5	70.8	71.0	71.1	71.2	71.2	71.0	70.6
65 and older	13.9	13.9	13.9	13.9	14.0	14.2	14.4	14.6	14.9	15.2
Average age	38.8	39.0	39.3	39.5	39.8	40.0	40.2	40.3	40.5	40.6
men	37.1	37.4	37.7	37.9	38.2	38.4	38.6	38.8	38.9	39.1
women	40.3	40.5	40.8	41.0	41.3	41.5	41.7	41.8	42.0	42.1
Life expectancy at birth (years)										
men	71.6	72.1	72.1	72.0	72.5	72.9	73.4	73.7	74.0	74.2
women	78.3	78.4	78.5	78.5	79.0	79.1	79.7	79.9	80.1	80.1
Life expectancy at the age of 60 (years)										
men	17.0	17.3	17.3	17.2	17.6	17.8	18.2	18.4	18.5	18.6
women	21.2	21.2	21.3	21.3	21.6	21.7	22.1	22.3	22.6	22.5
Old age index (65+ / 0 -14 in %)	85.5	87.2	89.2	91.6	94.0	97.0	100.2	102.4	105.1	107.0

Source: Czech Statistical Office, 2011, Czech Republic since 1989 in numbers,
http://www.czso.cz/csu/redakce.nsf/i/cr_od_roku_1989#01

The example of the Czech Republic demonstrates very well the demographic trend that is threatening Europe and developed countries in general. We see an increase in the average life expectancy. While in 1989 a sixty-year-old man had some 15 years ahead of him and a woman of the same age had slightly more than 19 years left, in 2009 these figures grew to 18.6 and 22.5 years respectively. The message for pension scheme planning was unambiguous: the government did not have much time to make the necessary adjustments because pensions are now paid out for 42 months longer than before. It is one of the biggest challenges the system had to face – the method employed at present seems to be a higher retirement age. By making people retire later, the government reduce the number of months it has to pay out retirement pensions, however, another problem remains that cannot be solved by parametric changes to the system. The percentage of people over 64 grew from 12.5 percent to 15.2 percent but what is worse for the decades to come the number of children decreased dramatically. In 1989 there were 21.7 percent of children under 14 years of age while twenty years later this percentage dropped to 14.2 percent (in absolute terms this meant a drop from 2.25 million to 1.49 million).
The Czech Republic can very well serve as a model country for the other developed countries score slightly better in some statistics and slightly worse in others. The point is, though, that the demographic outlook is rather grim. The statistical data presented above make it clear that assets of households in developed countries should be gradually growing, unlike their debts (at least not due to consumer credits). To deplete reserves during one's productive age as it was happening during the crisis of 2008 and 2009 is the worst possible course of action. Without much exaggeration, such a behaviour can be qualified as moral hazard, at least in the sense that households today underestimate the

demographic development and do not modify their behaviour accordingly (whether out of ignorance or excessive reliance on government social schemes). This development is especially fraught with risks, in particular if judged against at the dependability index which shows the number of economically active persons per one retired.

Dependability index development, Czech Republic

	2003			2010			2020			2030			2040			2050			2065		
	nízká	střední	vysoká	nízká	střední	vysoká	nízká	střední	vysoká	nízká	střední	vysoká	nízká	střední	vysoká	nízká	střední	vysoká	nízká	střední	vysoká
65+ / 15-64	19,75	19,75	19,77	22,67	22,80	23,03	32,68	32,87	33,46	38,02	37,84	38,69	46,01	44,99	45,70	55,86	53,33	53,17	58,30	54,72	53,77
65+ / 20-64	21,74	21,75	21,77	24,69	24,83	25,07	35,37	35,66	36,29	41,16	41,31	42,29	49,83	49,02	49,88	60,72	58,31	58,31	63,73	60,17	59,37
0-15; 65+ / 15-64	41,33	41,38	41,40	42,17	43,29	43,56	53,25	56,07	57,04	57,75	59,93	61,59	66,02	67,47	69,44	77,77	78,16	79,58	80,68	79,35	80,64
0-20; 65+ / 20-64	55,62	55,67	55,69	54,85	56,04	56,30	65,87	69,31	70,32	70,81	74,62	76,64	79,79	82,47	84,96	93,24	94,78	96,96	97,52	97,21	99,45

Source: Forecast of the Czech Population Development for 2008–2070, Burcin, Kučera, 2010

Explanation:
Nízká (dolní hranice odhadů) – Low (lower boundary of the estimates)
Střední (střed odhadů) – Mean (estimates mean)
Vysoká (horní hranice odhadů) – High (upper boundary of the estimates)

As the table shows, in 2003 there were 5 people in their working age between 20 and 64 years for one person of 65 years or more. In 2010 it was only 4 people and in 2065 it will only be 1.5 persons in their working age to one person over 65 (or 3:2 ratio). In 2040, a year in which most of today's middle-age generation will still be alive, there will be only 2 persons aged between 20 and 64 per one retired person. Despite the reforms that have been put through or efforts for such reforms, we believe that no system based on the traditional notion of retirement pensions (common in most developed countries, especially in Europe) is able to fund the above-mentioned demographic development without dramatically reducing the retirement pensions or raising the tax burden of its citizens in the working age to unsustainable levels, both socially and politically.

The following chart illustrates the future development.

Development of the number of inhabitants over 65 years in the Czech Republic
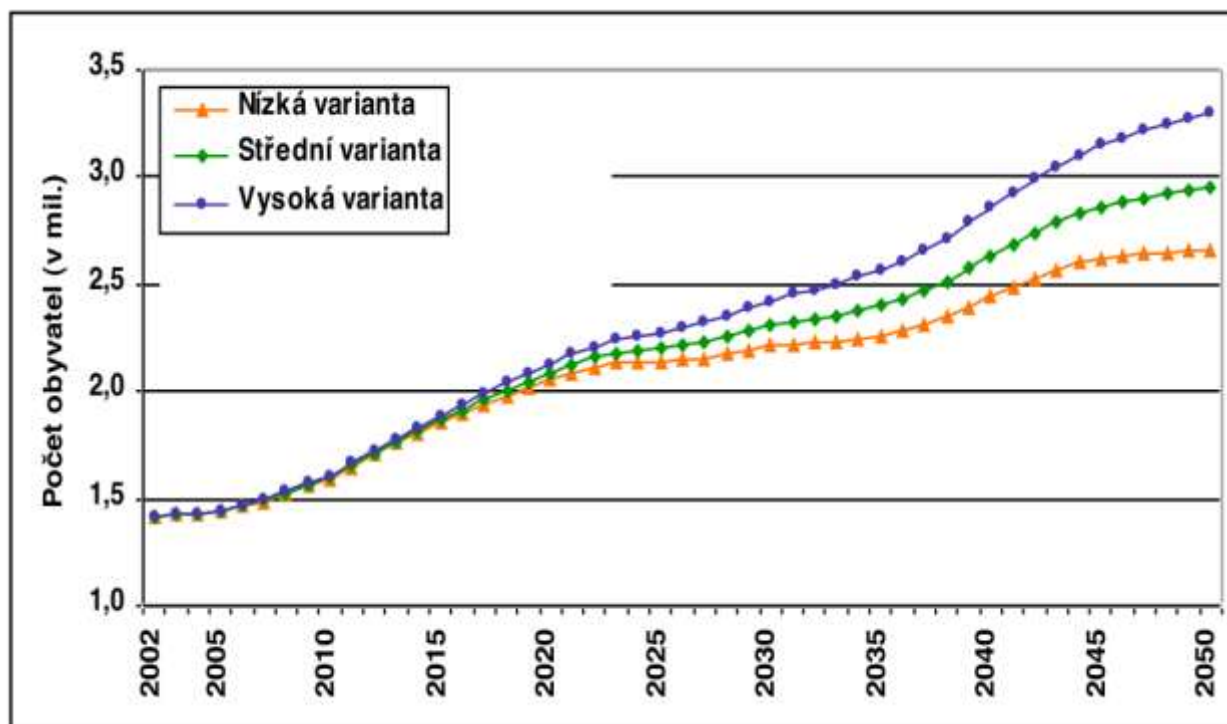
Source: Czech Statistical Office, Forecast of the Population Development for 2003 to 2050; 2003
Explanation:
Počet obyvatel (v mil.) - number of the population (in mil.)
Nízká varianta – Low variety
Střední varianta – Mean variety
Vysoká varianta – High variety

It is interesting to note that this chart draws on the work of another demographic institution and that their fundamental conclusions are fairly similar which adds to the objectivity of both studies. According to what this study labelled as the midway scenario (green curve), the number of inhabitants over 65 years will double between 2002 and 2050. At the same time, the total number of inhabitants in the Czech Republic will not increase in spite of considerable immigration.
Most developed countries will reach the same conclusions as the Czech Republic's statistical data suggest even earlier, most probably already between 2035 and 2040.

5. Conclusions

Having analysed the above-mentioned works and information we can draw the following conclusions:

1) Financial and other household assets in the developed countries stopped increasing at the end of the first decade of the 21st century. When there is a growth, it is almost never consistent, and in most cases it is bound to the movement of prices on the stock markets or real-estate markets.
2) Considering the development of the total household assets, the development in the past few years can be at best called "fluctuation".
3) The crises of 2008-2010 had a significant effect on the drop of prices of assets and thus on the drop of household wealth, however, even at times of previous economic growth there is no clear signal that the households created more wealth than before.
4) During the crises, the households used up part of their financial reserves.
5) There is a trend of higher debt, especially in the form of mortgage loans, while the non-financial wealth on the assets' side grew (in the form of real-estate).
6) While analysing information on the development of households' wealth in the developed countries in connection with the development of demographic structure in these countries, we inevitably come to a conclusion that the creation of financial and non-financial reserves is too slow and does not correspond to the pressure the future development will put on savings during retirement.
7) Although many developed countries are already carrying out reforms (and others are preparing them) of the pension schemes, it will not be sustainable to keep the retirement pensions on the levels now perceived in developed countries as standard. In future, households will be expected to rely on their private reserves created during the working life to a much higher extent than now.
8) Average number of years that will be spent in retirement is increasing and although the developed countries keep raising the retirement age, it will not be possible to do so for much longer – a simple fact given by a limited human ability to work until a very old age.
9) Longer average life expectancy also means longer period of time when people are rather strongly dependent on healthcare system or every-day assistance, and thus lowers the probability of death without a previous dependence on healthcare/assistance.

10) All these facts mean that already now but especially in the future people in retirement age will need to rely on their amassed reserves much more intensely while the transfers from the state pension schemes will tend to decrease.

One of the tasks researchers will have to take up in the near future is an analysis of investment needs to maintain the standard of living in the upcoming years and decades. In that context, the issue of household finances will acquire the same scientific status as for example business economics or general microeconomics. The concept of the household as an economic unit is traditional but it has been little researched or even recognised as part of theoretical economy. As a number of the current state schemes will become impossible to fund (because of demographic outlook), the importance of correct economic decisions at the family level will increase.

If the data showing that European households (and households in the developed world more generally) have gradually assumed an enhanced level of debt (in relation to their overall assets, their disposable income and GDP) are seen in this light, it is hard to shrug off the impression that they are not prepared, for the time being, to face the inability of the state to fulfill the same functions as it has done practically since the beginning of pension schemes in the 19th century almost until the present time.

Comparison of household debt in the European Union

Graf 4.3: Srovnání zadlužení domácností v EU[21]
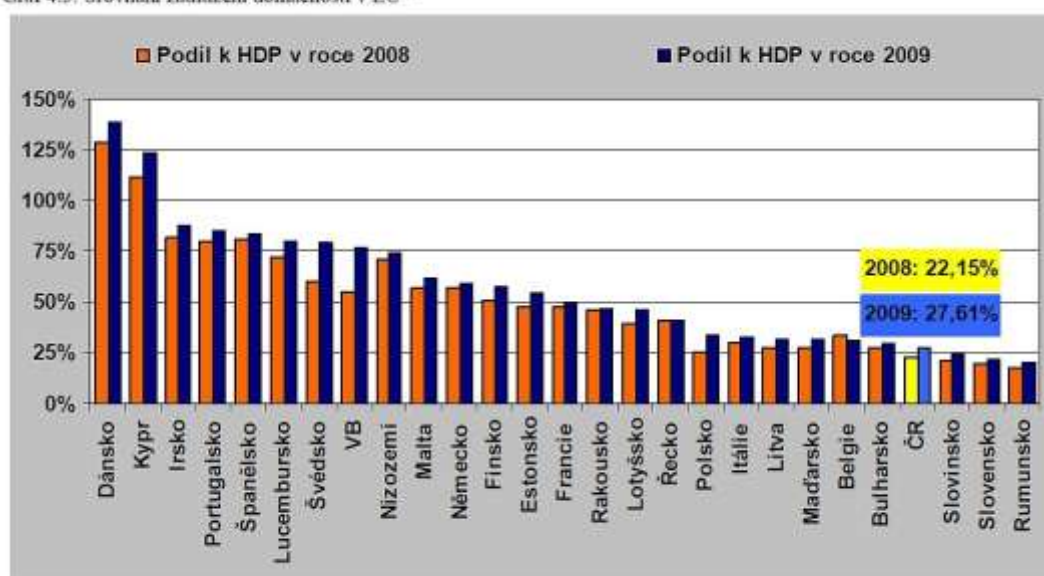
Source: Report on 2009 financial market development, Ministry of Finance of the CR, based on data from European Central Bank, Eurostat and Ministry of Finance own calculations.

Explanation:

Podíl k HDP v roce 2008: As a share of 2008 GDP

Podíl k HDP v roce 2009: As a share of 2009 GDP

As shown by the latest available data, the debt of households in the European Union grew quite considerably during the period of 2008-2009. A slump in gross domestic product in that period was of course responsible in a major way; however, the change in households' behavior in developed countries that began several decades ago and led to a major indebtedness of households in all developed countries still continues. This trend has not changed even in a situation when it became clear that demographic trends would not allow sufficient funding of the pension schemes in the future. Having said that, we can conclude that households in developed countries are shifting their behavior to an area we could call "moral hazard".

The same development as we have described above takes place also in the United States of America – according to a CESI Debt Solution research about forty percent of people in the retirement age increase their debt without thinking how they are going to pay it off. The level of debt in this group age increases the fastest of all groups of citizens which means their assets are held by banks as security and the total value is falling quickly. One of the ways moral hazard is displayed here is that the old generation does not hold up the tradition of leaving some of their wealth to the descendants.

References:
ČSÚ (2004): *Populační prognóza České republiky do roku 2050*, ČSÚ, 2004, http://www.czso.cz/csu/2004edicniplan.nsf/p/4025-04

ČSÚ (2011): *Česká republika od roku 1989 v číslech*, http://www.czso.cz/csu/redakce.nsf/i/cr_od_roku_1989#01

BURCIN Boris, KUČERA Tomáš (2008): *Prognóza populačního vývoje České republiky 2008 – 2070*, MPSV ČR, 2008, http://www.mpsv.cz/cs/8838

Eurostat:
http://epp.eurostat.ec.europa.eu/statistics_explained/index.php?title=File:Households%E2%80%99_stock_of_liabilities_as_a_percentage_of_Household_Disposable_Income,_2000_and_2007.PNG&filetimestamp=20090608090557
http://epp.eurostat.ec.europa.eu/statistics_explained/index.php?title=File:Net_Financial_Wealth_of_Households_as_a_percentage_of_GDP,_2000_and_2007.PNG&filetimestamp=20090608093047
http://epp.eurostat.ec.europa.eu/statistics_explained/index.php?title=File:Households%E2%80%99_stock_of_financial_assets_as_a_percentage_of_GDP,_2000-2007.PNG&filetimestamp=20090608075256#file

OECD – iLibrary:
http://www.oecd-ilibrary.org/sites/factbook-2010-en/12/02/02/index.html?contentType=&itemId=/content/chapter/factbook-2010-101-en&containerItemId=/content/serial/18147364&accessItemIds=&mimeType=text/html

OECD: *Economic Outlook* No. 88, OECD Economic Outlook: Statistics and Projections (database)

MF ČR (2010): *Zpráva o vývoji finančního trhu v roce 2009*, Ministerstvo financí ČR, 2010, Praha, http://www.mfcr.cz/cps/rde/xchg/mfcr/xsl/financni_trh_55972.html