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Should We Be Concerned by High Household Debt?†

Swedish household debt has increase from 90 percent of disposable income in 1995 to over 170 percent today. A rapid credit expansion and high debt are often seen as factors that can generate or aggravate economic crisis. The relation between debt and crises is supported by both theoretical and empirical research.[1] It is therefore consequential that the Riksbank and other agencies worry if debts are high or rapidly increasing.

But in blog posts on Ekonomistas (here and here), Lars EO Svensson has argued that in the data he looks at there is no support for high household debt having generated larger consumption losses or unemployment increases during the recent crisis.[2] Lars has for example plotted the development of consumption and unemployment after the crisis against the household debt ratio prior to the crisis. No clear pattern is visible in such scatterplot, an observation also mentioned recently by Harry Flam in the radio program *Ekonomiekot lördag*.[3]

In this post, I want to focus on the data and scatterplots that Lars has used. A somewhat deeper analysis of approximately the same data indicates that there is a relatively clear relation between debt prior to the crisis and the subsequent economic development.

There is thus no correlation between household debt ratios and outcome variables in Lars' scatterplots. But such a correlation can be difficult to interpret, for example because household debt obviously is not the only factor that affects if crisis arise or how deep crisis become.[4] A simple correlation can give a biased picture of how variables are related if other important explanatory variables are ignored in the analysis.

The table below shows the results of a linear regression that allows for multiple explanatory variables being relevant.[5,6] According to these regression results, there is a clear relation between the level of the household debt ratio in 2007 and economic outcomes after 2008. In countries that had a high debt ratio in 2007, the unemployment rate increased more after the crisis. House prices and private consumption also fell more, or increased more slowly, in such countries.

Table: Development of consumption, unemployment, and house prices 2007-2012

	Consumption	Unemployment	House prices
Debt ratio 2007	-0.04**	0.02*	-0.11**
	(0.00)	(0.02)	(0.00)
Growth in debt before 2007	-0.97**	0.28	-2.00**
	(0.00)	(0.16)	(0.01)
CA before 2007	0.38**	-0.35**	1.43**
	(0.00)	(0.01)	(0.00)
Consumption growth before 2007	2.10**	-0.75	2.64
	(0.00)	(0.21)	(0.19)
Constant	5.66**	-0.61	15.00*
	(0.00)	(0.71)	(0.01)
R2 (adjusted)	0.74	0.38	0.66
Observations	26	26	26

Note: Regression results. Dependent variable specified in column head. "Consumption" is percent increase in private consumption per capita 2007-2012. The debt ratio is household debt in percent of disposable income. Debt growth is average percentage growth in the debt ratio 2003-2007. p-values in parenthesis. * and ** denote 5% and 1% significance.

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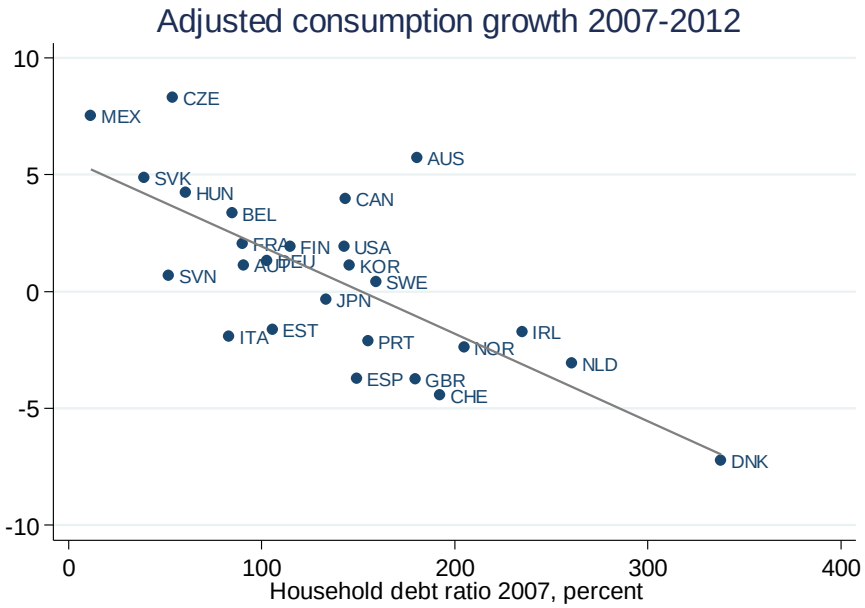
The graph below presents the relation between the household debt ratio and the subsequent development of consumption and corresponds to the scatterplots reported in Lars' blog posts. The difference is that I have adjusted the data by deducting from consumption the developments contributed by growth in the debt ratio, the current account balance, and prior consumption growth according to the regression results.[7] The graph now displays a clear relation between the debt ratio and consumption. And the relation is clear also when I construct the corresponding graphs for unemployment and house prices (see here).



Consumption growth is adjusted from the regression results. See the text and note 7.

The graph also indicates that the relation can be quantitatively important. As an example, consumption fell – all else equal – by almost four percent more from 2007 to 2012 in a country where the household debt ratio in 2007 was 200 percent, compared to a country where the debt ratio was 100 percent.[8] But the quantitative importance must still be interpreted with caution because it is to a large extent driven by large differences in debt ratios across countries. According to these estimates, a few percentage points change in the debt ratio has a tiny effect on how the outcome variables change during a crisis.

To conclude, my interpretation of the research on economic crises is that there are good reasons to see a high and rising debt ratio as a risk factor. A quick analysis of the economic developments during and after the financial crisis – based on approximately the same data and methods as in Lars' blog posts – does not give me reason to revise that interpretation. That analysis rather gives support for a clear relation between household debt ratios and the subsequent economic development.

To me, it is therefore evident that Finansinpektionen, the Riksbank, and the government continuously analyze if household debt is alarmingly high or growing too rapidly. A more interesting discussion concerns the outcome of that analysis. Is household debt alarmingly high in Sweden today? And if the answer is affirmative, what measures are most effective to stop or mitigate such an accumulation of debt? Is monetary policy a measure that should then be used? Lars has, for example here on ekonomistas.se, made important contributions to the discussion and analysis of these questions.[9]

[1] For example, Fisher (1933) and Minsky (1986) viewed high debt and rapid credit expansion, respectively, as important in their analyses of financial crises. Two examples of more recent empirical studies are IMF (2012) and Jorda et al. (2013). The IMF study uses data from 24 countries during the most recent decades to examine how episodes with falling house prices have affect the development of consumption and other variables depending on how rapidly the household debt ratio grew before the downturn. Jorda et al. analyze similar questions for a smaller group of countries over a longer time period. Both studies find that downturns have been more problematic if they were preceded by rapid credit expansion. There are also a number of studies that, based on American household data, show that consumption was more negatively affected during the financial crisis for highly indebted households. Results in Dynan (2012) and Mian et al. (2013) indicate that the consumption loss was larger than what can be explained by wealth effects from falling house prices. One interpretation of their results (but see Cooper 2012 for opposing results) is that households aim for a particular level of debt relative to house values. A fall in house prices can then induce highly indebted households to reduce consumption substantially.

[2] There are English translations of these blog posts here and here.

[3] "There is no clear international relation between how high household debt has been and how much GDP has fallen and how much unemployment has increased" (my translation), Harry Flam, Ekonomiekot lördag (February 8).

[4] Another reason is that the level of the debt ratio is difficult to compare across countries, both because definitions and measures of debt vary across countries and because differences in how financial markets are designed and how efficiently they function can imply that what is a problematically high debt ratio in one country need not be so in another country. To mitigate such problems, it can be useful to use the growth rate of the debt ratio instead of or as a complement to the level of the debt ratio.

[5] The debt ratio is calculated as household gross debt in percent of disposable income. Growth in debt before 2007 is calculated as the average growth rate (in percent) of the debt ratio 2003-2007. CA before 2007 is the average current account balance in percent of GDP, 2003-2007. Consumption growth before 2007 is the average growth rate (percent) in private consumption per capita 2003-2007. The analysis is based on data from the 26 OECD countries where I have access to data on all variables used in the analysis. Of the 34 OECD countries, Poland is excluded because of missing data on house prices, Greece, Iceland, Israel, Luxembourg, and New Zealand are excluded because of missing data on household debt ratios, while data on both these variables are missing for Chile and Turkey. See here for a more thorough description and analysis of the data.

[6] The current account balance is often considered relevant in these settings (see for example the European Commission's risk indicators). It measures of how a country's total debt changes over time. In contrast to the household debt ratio, the current account balance includes all sectors in the economy, i.e. the government as well as businesses and households. Moreover, it is a measure of how *net* debt evolves, in contrast to household (gross) debt which is more related to measures of credit in the economy.

[7] The adjusted consumption growth is thus calculated as actual consumption growth minus what the regression results imply is contributed by debt growth, the current account balance, and previous consumption growth, i.e.
$\Delta C(\text{adjusted}) = \Delta C - (-0{,}97*\text{growth in debt} + 0{,}38*CA + 2{,}10*\text{previous consumption growth})$.

[8] This calculation assumes that countries had the same growth in household debt ratios in the five years up to 2007. The regressions indicate that differences in consumption outcomes can be more substantial if countries with a high level of household the debt ratio in addition have had higher growth in the debt ratios.

[9] One of several arguments that Lars has presented is that the growth in the Swedish household debt ratio has slowed down after the loan-to-value cap was introduced in 2010, and that risks related to a high debt ratio therefore have diminished. The analysis above supports that argument. The regression results displayed in the first column in the table indicate that Sweden was less vulnerable to risks than most other countries in 2007. And in 2008 to 2012, the risks have diminished further precisely because the growth in the debt ratio has slowed down. According to these regression results, the Swedish economy has become more resilient in recent years because the lower growth in debt more than offsets the effects from a slightly higher debt ratio and lower current account balance. The underlying calculations are reported here (in section 3).