

# STAFF MEMO

## Unemployment benefits and household credit risk

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# Unemployment benefits and household credit risk

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## Abstract

In Norway the wage replacement rate, i.e. the proportion of wage income that is replaced by unemployment benefit, falls with high income. At the same time, the distribution of debt is skewed towards high-income earners. This paper maps out the wage replacement rate across Norwegian households and discuss credit risk in the event of unemployment.

## 1 Introduction

The social safety net in Norway is generally considered generous and reliable. In the event of unemployment, households are entitled to unemployment benefit or social assistance, depending on specific criteria. However, only wage income up to six times the National Insurance Scheme's basic amount, in 2012 NOK 587 000, is included in the calculation of unemployment benefit. Consequently the replacement rate declines as wage income increases above this amount.

At the same time high income earners tend to have more debt than low income earners. If high income earners do not take the risk of unemployment into account when taking on debt by holding a buffer against income loss, unemployment can increase overall credit risk on loans to the household sector.

In this paper, we explore the extent to which households can service their debt given the decrease in income if the main income earner of the household becomes unemployed. First, we compare the financial situation of households where the main income earner received unemployment benefits in 2012 to the financial situation of employed households. Second, we apply the unemployment benefit rules and calculate income loss given that the main income earner is unemployed across all households. Comparing income loss to financial margins sheds light on the degree of household vulnerability to unemployment.

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We define the debt of households with low debt-servicing capacity and a high loan-to-value ratio as high-risk debt. The analysis shows that the credit risk associated with unemployment in high-income groups is limited. Most high-risk debt is found in low-income groups. Our overall conclusion is that most Norwegian households seem robust to a limited period of unemployment. By cutting consumption or savings, most households should be capable of servicing their debt. However, the effect on consumption of increased unemployment or increased uncertainty about future income can be considerable. This effect is beyond the scope of this analysis.

## 2 The unemployment benefit framework in Norway

In calculating the per household unemployment benefit and replacement rate, we apply the criteria set by the authorities. The unemployment benefit framework in Norway is described in Norwegian Labour and Welfare Administration (NAV) (2014).

- To be entitled to unemployment benefit, a person's wages must, as a minimum, equal 1.5 times the National Insurance Scheme's basic amount (B) in the last calendar year (previous year) or 3 times B over the three previous full calendar years. In 2012 B was NOK 78 024.
- The unemployment benefit received depends on the sum of wage income and any National Insurance benefit received in the last calendar year or the average sum over the three

years prior to the application for unemployment benefit.

- If wage income and benefits exceed 6 times B, the excess amount is not included in the calculation of the unemployment benefits. This introduces a truncation or cap on the unemployment benefit.
- The daily unemployment benefit is 0.24 percent of the sum of wages and benefits for five days in a week. On average, the benefit was 62.4 percent of previous year’s annual wages and benefits.
- Unemployed parents of children below the age of 18 receive an additional NOK 17 per child per day for five days in the week.
- Persons receiving unemployment benefits for more than 8 weeks receive a holiday supplement early in the subsequent year. This is not included in this analysis.
- The right to unemployment benefit ceases at the age of 67. After this age you are entitled to a retirement pension.

### 3 Data

Our primary data source is Statistics Norway (2014a), Households’ Income and Wealth Statistics. A household is defined as the persons living in the same dwelling. (For a more detailed analysis of the data in a financial stability context, see Lindquist et al. (2014)). The data are annual end-of-year observations. Our sample covers 2004-2012. The statistics are based on administrative register data such as tax returns, which cover all Norwegian residents as of 31 December of the fiscal year. In addition to information on each households composition and the age, etc. of household members, the data include registered income, transfers, debt, wealth and tax payments. We restrict our sample to wage earners and benefit recipients, i.e. to households where wages and benefits are the main source of income. For self-employed persons, we are not able to separate debt for business purposes from consumer and mortgage debt. Since our primary focus is on the two latter types of debt, households where the main source of income is self-employment are excluded.

Since we in this analyses calculate the effect of an income loss given unemployment benefits the

**Table 1:** Households and debt sorted according to the unemployment benefit criteria. 2012<sup>1)</sup>

	Households		Debt	
	In 1000s	%	In billions of NOK	%
Not entitled to unemployment benefit				
Age over 67	433	19	135	6
Wage under 1.5 g	445	20	179	8
Entitled to unemployment benefit				
	1385	61	2012	87
<b>All</b>	<b>2263</b>	<b>100</b>	<b>2326</b>	<b>100</b>

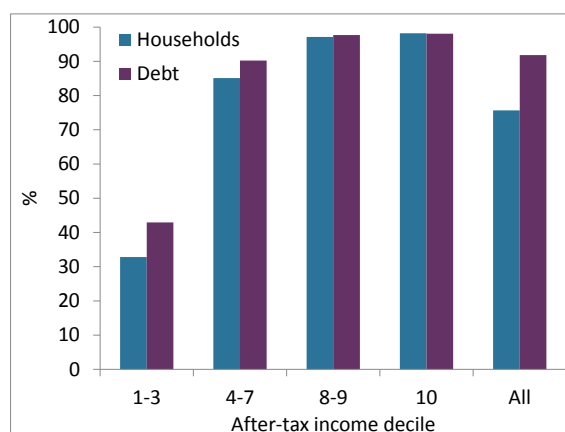
1) Due to rounding-off, sums may deviate from 100.

Sources: Statistics Norway and Norges Bank

sample is restricted to households entitled unemployment benefit, i.e. households with a main income earner below the age of 67 and with wage income exceeding 1.5 times B.

Applying the unemployment benefit criteria presented above, we find that 61 percent of households in 2012 had a main income earner that qualified for unemployment benefit if unemployed. These households held 87 percent of total household debt (see Table 1). Hence, 14 percent of total household debt was held by households with a main income earner that did not qualify for unemployment benefit, either due to age or insufficient income. Among the highest income deciles 8-10, households and debt are to a large extent backed by unemployment benefit if the main income earner becomes unemployed (see Chart 1). Among house-

**Chart 1:** The share of households with a main income earner under the age of 67 entitled to unemployment benefit and their share of debt by income decile. 2012



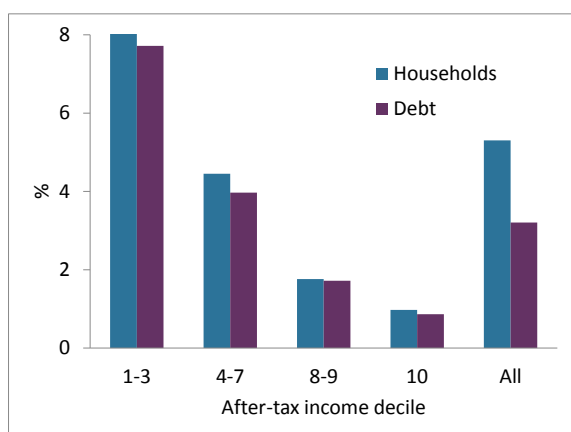
Sources: Statistics Norway and Norges Bank

holds with medium income, i.e. deciles 4-7, the share of main income earners entitled to unemployment benefit is much smaller. However, in these income deciles, the distribution of debt is skewed towards the entitled households. Among the low-income households, i.e. deciles 1-3, approximately one-third of the main income earners and 40 percent of the debt would be backed by unemployment benefit in the event of unemployment.

The value of assets on the balance sheet are tax values that may deviate from market values. As from 2010, Statistics Norway has estimated the market value of both primary and secondary dwellings of all Norwegian households, see Holiløkk and Solheim (2011) and Epland and Kirkeberg (2012) for a more thorough discussion. For holiday homes, cars and unregistered securities, tax values typically underestimate market values. With respect to financial assets, unlisted papers are less liquid and can be difficult to value.

In addition to Households' Income and Wealth Statistics, we use the Standard Budget compiled by the National Institute for Consumer Research to estimate the development in ordinary consumption expenditure, see National Institute for Consumer Research (SIFO) (2014).

**Chart 2:** The share of households with a main income earner receiving unemployment benefit, by income decile. 2012



Sources: Statistics Norway and Norges Bank

## 4 The financial situation in unemployed households in 2012

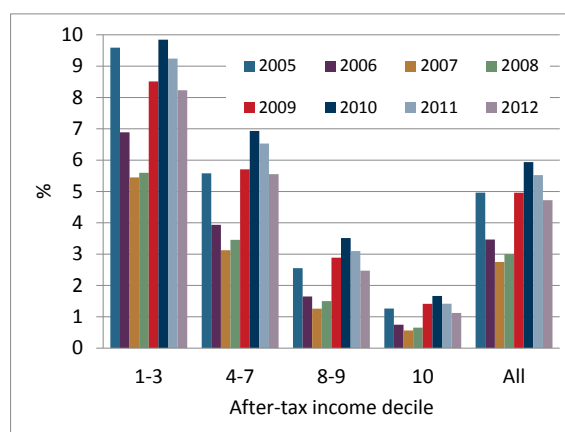
### 4.1 Observed unemployment and unemployment probabilities

The available data set includes information on received unemployment benefit for each household member. In this analysis, a person receiving such benefit is defined as unemployed. This definition is of course a simplification, since a person may be unemployed without receiving unemployment benefit if he or she does not meet the criteria for such benefit. In evaluating the impact of unemployment, we limit our analysis to the case where the main income earner of the household is unemployed, i.e. receives unemployment benefit. Also, we restrict our sample to households with a main income earner that qualifies for unemployment benefit. In about half of the households receiving unemployment benefit in 2012, the main income earner was unemployed.

In our sample, the share of households with an unemployed main income earner was 5.5 percent (see Chart 2). These households hold 3.0 percent of total debt.<sup>1</sup>

<sup>1</sup>According to the Labour Force Survey Statistics Norway (2014b), the unemployment rate in 2012 was 3.5 percent. Note that this rate is based on the number of unemployed persons at a given point in time. Since our definition encompasses the households receiving unemployment benefit in the course of a year, and given that more than half of the unemployed are back at work after 12 weeks, our figure is higher than the official unemployment rate.

**Chart 3:** The share of households with a main income earner under the age of 67 receiving unemployment benefit by income decile. 2005-2012



Sources: Statistics Norway and Norges Bank

This unemployment share declines by income. While close to 8 percent of the households in after-tax income deciles 1-3 had a main income earner receiving unemployment benefit, in decile 10 the share was 1 percent. Note that the probability of being unemployed is highest in the low-income deciles (see Chart 3). Thus, an increase in unemployment is likely to have most impact on low-income groups.

## 4.2 Benefit truncation and compensation rates

Table 2 also shows that the share of households and debt that would have faced the cap on unemployment benefit is below 1 percent across all income deciles. We again apply the unemployment benefit criteria set by the authorities and, for households with a main income earner entitled to unemployment benefit, calculate the entitled amount and compare this to actual wages including benefits in 2012. The replacement rate denotes the ratio of unemployment benefit to wages.

The extent to which unemployment benefit replaces the decrease in income provides some indication of the degree of household vulnerability to unemployment. For the majority of households, income compensation is limited and these households may experience a significant fall in income if the main income earner becomes unemployed. More than one-third of total debt is held by households in the top two income deciles, where the replacement rate is 50 percent or less (see Chart 4). Households in income deciles 1-7 hold about half of total household debt. Their replacement rate is 65 percent or more.

## 4.3 Debt at risk

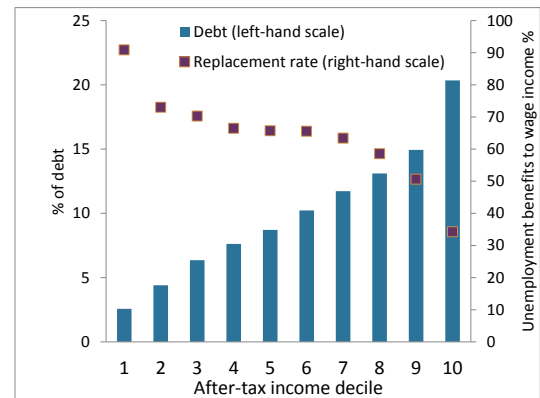
We define three categories to identify vulnerable households and debt at risk, see Solheim and Vatne (2013) for a more thorough discussion. Debt at risk is the debt held by vulnerable households.

1. *High ratio of debt-to-disposable income*
2. *Low margin*
3. *High loan-to-value ratio*

Households falling into these categories have less flexibility and limited scope to renegotiate their loans. This applies particularly to households that fall into all three categories at the same time.

In the following discussion of debt at risk, we make a comparison between all households with a

**Chart 4:** Share of debt and wage replacement rate in households with a main income earner who qualifies for unemployment benefit, by after-tax income decile. 2012



Sources: Statistics Norway and Norges Bank

main income earner qualifying for unemployment benefit and those actually receiving such benefit. This helps us understand the extent to which unemployed differ from non-unemployed.

### Category 1: High ratio of debt-to-disposable income

Measures of household debt-to-income ratios are frequently used to evaluate households debt-servicing capacity and hence credit risk. The motivation is that households with high debt relative to income will more easily run into financial difficulties following an increase in interest rates or a decline in income, for example due to unemployment

Chart 5 compares average debt relative to disposable income for all households with a main income earner that qualifies for unemployment benefit, households with an unemployed main income earner and households with a main income earner that would be facing the capped unemployment benefit. The qualified households include both unemployed and capped households. The two latter groups can also overlap.

In general, unemployed households have less debt relative to income than the mean of our sample. The difference is not large, and this debt-to-income measure therefore implies that the credit risk of households with an unemployed main income earner is not very different from the mean risk. On the other hand, average debt relative to income for households with high income and there-

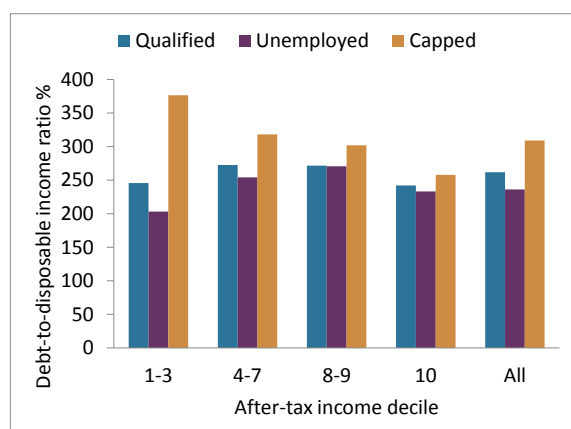
**Table 2:** Households entitled to unemployment benefit. Income range, share of unemployed and capped households and the corresponding shares of debt by income decile. 2012

After-tax income decile	Min income In 1000s of NOK	Max income In 1000s of NOK	Households		Debt	
			Unemp -loyed %	Capped %	Unemp -loyed %	Capped %
1-3	0	403	10.2	0.4	7.7	0.7
4-7	403	726	4.5	0.7	4.0	0.8
8-9	726	984	1.8	0.7	1.7	0.8
10	984	93583	1.0	0.5	0.9	0.5
All	0	93583	5.3	0.6	3.2	0.7

Sources: Statistics Norway and Norges Bank

fore a cap on unemployment benefit if unemployed, is well above the others. This is consistent with the findings in Lindquist et al. (2014) that the distribution of debt is skewed across income, i.e. high-income households hold most of the debt. If these households experience unemployment, they will be supported to a lesser extent by unemployment benefit. This may signal higher credit risk in the event of unemployment. The capped households in income deciles 1-3 probably reflect tax planning by some households.

**Chart 5:** Ratio of debt-to-disposable income in groups of households by income decile. Main income earner *qualifying* for unemployment benefit. *Unemployed* main income earner. Main income earner facing *cap* on unemployment benefit. Mean. 2012



Sources: Statistics Norway and Norges Bank

In our measure of credit risk, which we present later, we define households with debt equal to 5 times disposable income<sup>2</sup> as vulnerable households

<sup>2</sup>A credit limit of three times gross household income is a criterion used by many banks in their credit assessments.

and the debt these households hold as high-risk debt.

### Category 2: Low margin

The margin shows the liquidity of the a household after having paid paying taxes, interest expenses and ordinary living expenses out of their total income<sup>3</sup>. The margin measures households' debt-servicing capacity from a liquidity perspective.

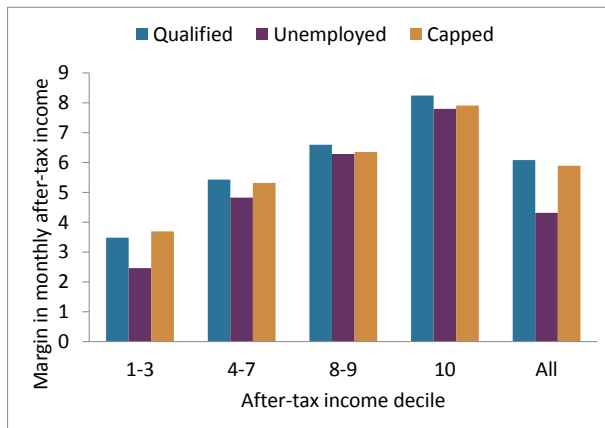
We look at the margin by income decile of the same three groups of households as above. We measure the margin in number of monthly after-tax income. Chart 6 shows that in 2012, the margin was significantly smaller among households that received unemployment benefit than among all households qualifying to for unemployment benefit. The margin among for households overall and for those that would have been capped is basically the same. Within the income deciles, the difference is small among high-income households but larger among low-income households. Unemployed low-income households in particular appear to be more fragile than others when we compare their liquidity.

In our later credit risk measure, vulnerable households are defined as households with a buffer of less than one month's wages on an annual basis, once taxes, interest expenses and standard ordinary living expenses have been paid.

This corresponds to around five times disposable income.

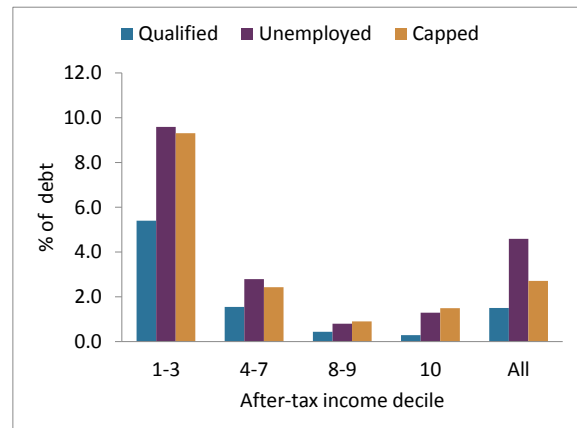
<sup>3</sup>Ordinary consumption expenditure is estimated by the National Institute for Consumer Research (SIFO) and includes ordinary current expenditure on food, clothing, toiletries, etc. and expenses on less frequent purchases of consumer durables such as furniture and electrical appliances.

**Chart 6:** Margins in monthly after-tax income by income decile. Main income earner *qualifying* for unemployment benefit. *Unemployed* main income earner. Main income earner facing *cap* on unemployment benefit. Mean. 2012



Sources: Statistics Norway and Norges Bank

**Chart 7:** Share of debt at high risk in groups of households by income deciles. Main income earner *qualifying* for unemployment benefit. *Unemployed* main income earner. Main income earner facing *cap* on unemployment benefit. 2012



Sources: Statistics Norway and Norges Bank

### Category 3: High loan-to-value ratio

The final category comprises households whose net debt (debt less bank deposits) exceeds the market value of their house. Households' scope to renegotiate their loan terms depends on the size of their debt relative to the value of their home. Because bank deposits can easily be used to repay debt, they have been subtracted.

Since unemployment in itself will not affect the loan-to-value ratio in our later analysis, this factor is not taken into account.

### The combination of the categories

Debt held by households that at the same time have high debt, a low margin and a high debt-to-value ratio is considered to be at high risk. The share of high-risk debt is larger among unemployed households, close to 5 percent, than among households overall in our sample, close to 2 percent, (see Chart 7). The share of debt at high risk is particularly large among households in the lowest income deciles. Among low-income unemployed and capped households the share is close to 10 percent, while among low-income households overall in our sample the share is 5.5 percent. Hence, credit risk is relatively high among unemployed households, most importantly due to low income resulting in a low margin.

## 5 Robustness to unemployment

### 5.1 Unemployment and credit risk

For a majority of households, unemployment reduces income, hence reducing the margin and increasing debt relative to income. Unemployment therefore pushes up credit risk. To evaluate the robustness of households to unemployment, we compare actual credit risk with credit risk if the main income earner had been unemployed in 2012.

The effect on income depends on the duration of unemployment. In our basic simulation, the main income earner is unemployed for one year, but we also present results for shorter periods of unemployment. According to Statistics Norway's 2014 Q2 Labour Force Survey (LFS), a third of those unemployed were long-term unemployed, i.e. unemployed for more than six months. Income is compensated according to the unemployment benefit rules described above.

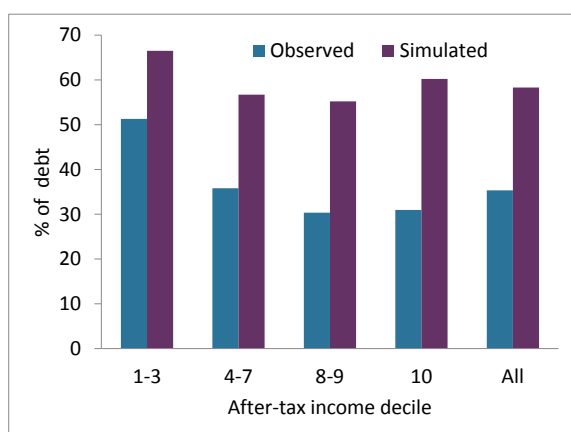
We simulate the effect of unemployment on all households with a main income earner who qualifies for unemployment benefit in 2012. The result identifies the share of debt that meets the credit risk criteria if these households become unemployed.

The first single criterion we look at is the high debt criterion, i.e. households with debt exceeding 5 times disposable income and the percentage of debt held by these households. In 2012, about 35 percent of debt was held by households that



fell into this high-debt category (see Chart 8). As much as 60 percent of debt is held by households that would be high-debt households in the event of unemployment. Of course, even if unemployment should increase, only a share of the households would be affected, but the higher the simulated share in Chart 8 is, the higher is the probability that increased unemployment will result in a significant increase in debt at risk. Among low-income households, more than 50 percent of debt is held by highly indebted households. Furthermore, more than two-thirds of the debt of low-income households is held by households that would be high-debt households in the event of unemployment.

**Chart 8:** Debt of households with debt exceeding 5 times disposable income. Simulated figures show high-debt households in the event of unemployment. 2012

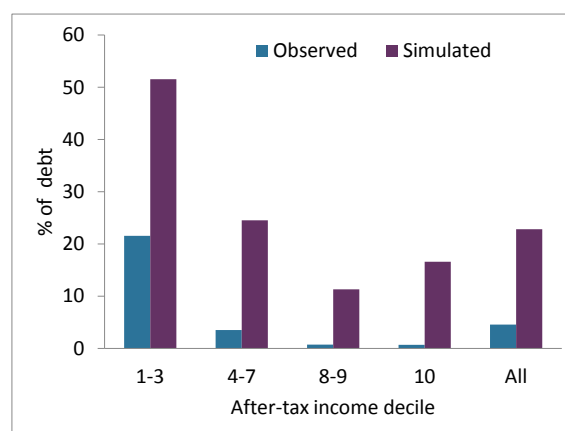


Sources: Statistics Norway and Norges Bank

This section focuses on the impact of unemployment on low-margin households. In 2012, a small share of debt was held by households that fall into this category, but more than 20 percent of debt was held by households that would be low-margin households in the event of unemployment, (see Chart 9). Again the situation is most serious among low-income households. About half of the debt of these households is held by households that would be low-margin households in the event of unemployment. households if hit by unemployment.

When we apply the combined credit risk criterion, we find that 7 percent of the debt is held by households that would be vulnerable in the event of unemployment (see Chart 10). This can be compared with the calculated 2 percent high-risk debt in 2012. Again we find that the impact on credit risk is severe among low-income households. The

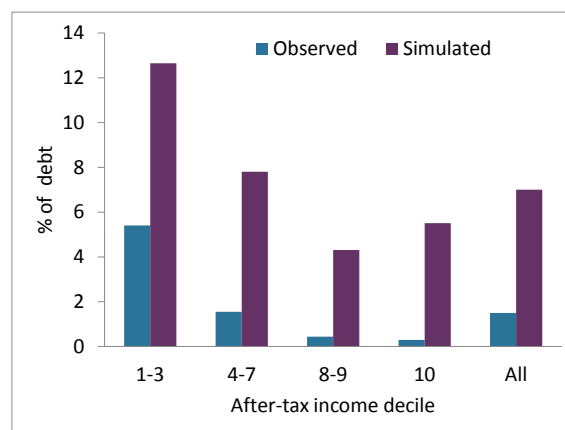
**Chart 9:** Debt of households with a margin of less than one month's after-tax income. Simulated figures show high-debt households in the event of unemployment. 2012



Sources: Statistics Norway and Norges Bank

potential level of debt at high risk is also relatively high among medium-income households, however.

**Chart 10:** Debt of households violating the three criteria. Simulated figures show high-debt households in the event of unemployment. 2012



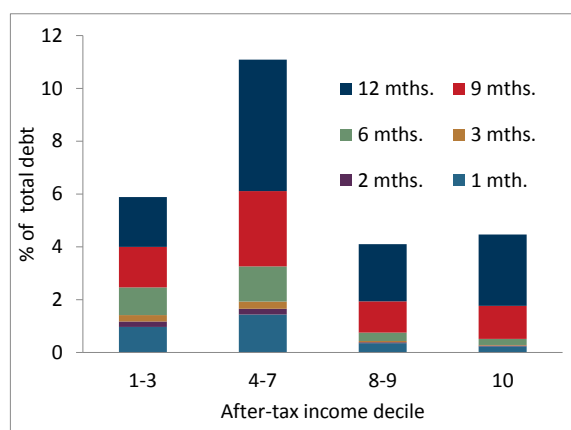
Sources: Statistics Norway and Norges Bank

## 5.2 Unemployment duration

The duration of unemployment is expected to be important, and in the following we look more closely at the duration effect. We concentrate on the liquidity or margin measure. Furthermore, since debt is unequally distributed across income deciles, we now present high-risk debt as a share of total debt by income deciles rather than within income groups.

Particularly if unemployment lasts 9 months or more, we should expect the probability of default to increase (see Chart 11). A large share of debt at risk is found among households with medium income, i.e. income deciles 4-7. The debt held by medium-income households with a low margin in the event of unemployment lasting for one year is, according to our calculations, close to 11 percent of total debt. Medium-income households held approximately one-third of total debt in 2012. Low-income households held about 10 percent of total debt and their debt at risk in the event of unemployment lasting for one year is more than 5 percent of total debt. High-income households held approximately 60 percent of total debt in 2012 and their debt at risk in the event of unemployment lasting for one year is 4 percent of total debt.

**Chart 11:** Debt held by households with a small margin as a share of total debt by income decile and duration of unemployment in months. 2012



Sources: Statistics Norway and Norges Bank

We should remind the reader that these calculations have been carried out to identify the households and debt that are likely to run into difficulties in the event of unemployment. If unemployment were to increase, these vulnerable households could be adversely affected, but not necessarily. In any case, it is not likely that all vulnerable households would be adversely affected.

Our overall conclusion is that Norwegian households to a large extent seem robust to a limited period of unemployment. By cutting consumption or reducing savings, most households should be able to avoid defaulting on their loans. The fall in consumption may be significant, however.

## 6 Conclusion

This paper finds that Norwegian households in general should be capable of withstanding a period of unemployment without defaulting on their loans. The households that are most likely to run into large difficulties are low-income households with a heavily mortgaged house and a small margin. Households with higher incomes may also cause credit risk to increase significantly, however. This seems particularly true for medium-income households. However, should higher income groups experience long spells of unemployment, a substantial share of household debt might be at risk. It will be especially important to monitor the length of unemployment spells among the low-to-middle income groups, i.e. income decile 4-7.

It is important to understand the effect of unemployment when analysing financial stability. This exercise does only give partial answers, but illustrates the advantage of enhancing the macro analysis with micro data. In the future we will try to integrate micro analysis more closely in the macro stress-test model.

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