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Comparison of household debt relative to income across four Nordic countries

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Comparison of household debt relative to income across four Nordic countries¹

We compare household debt to income ratios across countries, with particular focus on the differences between the Nordic countries. We find systematic differences in levels of debt relative to income across countries over time, but a close correlation between debt cycles across countries, independently of debt levels. There are no signs of catch-up or stable equilibrium levels with respect to debt. Developments in housing markets are normally closely linked to debt growth, but provide little explanation as to differences across countries. Financial reforms also influence debt growth, but occur at around the same time in many countries. The most robust explanatory factors for the relative debt level seem to be linked to household balance sheets. Factors such as the size of household financial assets, relative levels of GDP per capita and other measures of welfare all seem to be closely correlated with differences in debt to income ratios in the cross-country comparison. This may indicate that the differences in debt are to a great extent attributable to scaling effects on household balance sheets, i.e. when households perceive their future as secure and financially sound, their debt exposure increases. Although the level of household financial assets is low in Norway, the high level of household debt is matched by large holdings of public assets.

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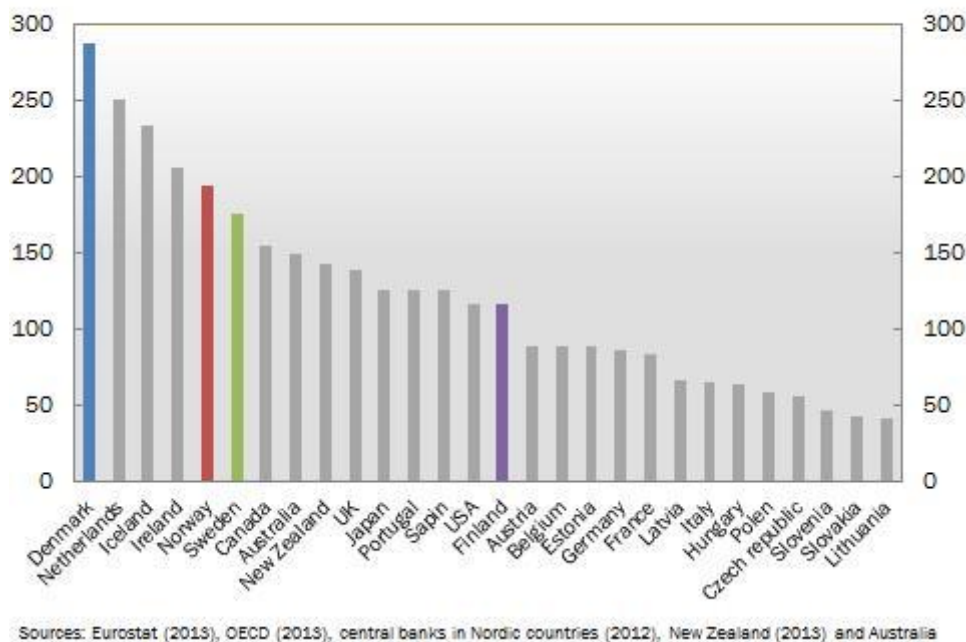
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Introduction

In Norway, the ratio of household debt to disposable income is high by international standards. In 2011, it had reached around 200 percent. Only Denmark, the Netherlands, Iceland and Ireland had higher levels, while household debt relative to income in most English-speaking countries, Japan and Europe, excluding the Nordic countries, was lower (see Chart 1 below).

Figure 1. Household debt as share of disposable income. 2011



In this article, we seek to explain the difference between household debt relative to income in Norway and that of Sweden, Denmark and Finland, with a view to shedding light on why household debt is so high in Norway. We have chosen the other Nordic countries as a basis of comparison owing to the many similarities between these countries and Norway. Except in the case of Iceland, this facilitates data collection for the comparison. Moreover, it makes it easier to identify differences that may explain differences in household debt relative to income.

Section 1 provides a brief theoretical review. Section 2 describes the differences in level and cyclical developments in debt in the four countries. Section 3 discusses structural differences and their contribution to the differences in debt. We look at three factors: the interaction between debt on the one hand and increases in income and house prices, changes in debt-servicing cost and household assets on the other. Section 4 provides a summary of our findings.

1 Credit supply and demand

Debt is a way of bringing forward future consumption. Demand for debt is usually explained based on the life cycle and permanent income hypothesis, where households spread their lifetime income so as to smooth consumption as far as possible over the life span. Within this framework, demand is determined by a range of factors such as expected income flow, level of assets, interest rates, and preferences for consumption today versus consumption in the future (rates of time preference).

Actual debt, however, is also determined by the credit supply, including the structure of the financial sector.

1.1 Life-cycle hypothesis and household balance sheets

The life-cycle and permanent income hypothesis postulates that individuals and households smooth their consumption over the course of their lifetime, saving in periods when income is high, and drawing on savings or borrowing in periods when income is low. Consumption decisions are made based on permanent income, i.e. the annual present value of a household's lifetime resources, including both assets and future income. It is widely agreed that the hypothesis provides a sound starting-point for understanding household behaviour. In practice, however, household behaviour is more complex.

First, saving and consumption-smoothing decisions are not taken by households alone. Saving is largely the result of a tax-financed public welfare system and mandatory pension saving organised by the authorities. Transfers and welfare and pension benefits are part of households' expected lifetime resources, even if they are not directly included in household accounts. In an international comparison of household debt relative to income, these factors can play an important role.

Second, it is not the case that households either save or borrow. Most have a composite portfolio consisting of various types of savings and loans. Most household debt is related to investment in property or cars. Such loans finance current consumption of services, but are at the same time matched by assets held by households. Student loans are an investment that provides a return in the form of higher pay throughout later working life.

Households' decisions in the course of a lifetime can be presented in a lifetime balance sheet (see Table 1 below). The asset side consists of financial wealth, expected income and fixed assets. The liabilities side consists of debt-financed and expected future consumption, and equity. Equity is the difference between the asset side and total lifetime consumption. Positive equity at the end of life can be transferred to future generations as an inheritance. Even households without an inheritance motive may wish to have a positive buffer, not least because the length of a life span is uncertain.

Table 1 Household lifetime balance sheet

<i>Assets</i>		<i>Liabilities</i>	
Financial assets	Deposits/cash	Debt (incl. debt interest)	Past consumption and investment not yet paid for
	Funds/equities		
	Insurance claims	Future consumption	All consumption needs for the remainder of the life span
Lifetime income	Other assets	Equity	«Surplus»: buffer against uncertainty, transfers to future generations
	Expected future income		
	Pension entitlements		
Fixed assets	Welfare schemes		
	Car		
	Home		

The lifetime balance sheet illustrates that the life cycle hypothesis can provide different predictions for household debt, depending on how the asset side is structured in a society. The division of responsibility between households and the public sector and the organisation of the housing market all play a role.

Demand for credit at a specific time is thus determined both by individuals' expected income and wealth and preferences for current and future consumption, and the institutional organisation of a society. The composition of individual households determines total demand in the household sector. Because households change their behaviour in the course of a lifetime, demographic changes will affect total debt even if a given type of household does not change its borrowing behaviour. An increase in the proportion of young people, for example, will raise the level of total debt.

1.2 Household liquidity constraints and the credit supply

The life-cycle hypothesis gives some indication of demand for debt. In practice, there are a number of constraints on borrowing, of which the most important are:

- Debt-servicing capacity – repayment of interest and principal
- Credit supply – which depends both on regulation and on credit suppliers' (banks') processes and product ranges.

Table 2 below provides a summary of the main variables affecting household borrowing decisions. A key point related to developments in debt relative to income is that several of these elements have changed considerably over the past 20-30 years. There has been a marked decrease in the nominal cost of borrowing – measured as the sum of the nominal interest rate plus principal payments. Banks loan approval processes have also been simplified. One concrete example is the introduction of home equity lines of credit, which became available in Norway in the 2000s. This arrangement has made it easier for households to establish a flexible credit line at a low rate of interest because their home is used as collateral.

Table 2 Factors affecting household borrowing costs and access to credit

Factor	Variable	Important changes
Cost of credit	Nominal interest rate	Normal interest rates are assumed to have trended downwards over the past 20 years
	Price and wage inflation	Consumer price inflation has slowed markedly since the beginning of the 1990s
	Tax relief	Interest payments are tax deductible in the Nordic countries. But the size of the deduction was changed under tax reforms in the years around 1990.
Size of loan instalment	Serial vs. annuity loans	Change from serial to annuity loans
	Period of repayment	Has gradually become longer
	Interest-only periods	Increasingly approved since the end of the 1990s
Access to credit	Credit rationing	Government rationing of credit was reduced/discontinued in 1980s

2 Debt relative to income in the Nordic countries since 1970

In order to explain why household debt relative to income in Norway differs from that of Sweden, Denmark and Finland, it is necessary to understand if and how Norway is different. This is described and analysed in Charts 2 and 3.

Chart 2 shows developments in debt to income ratios in Norway, Sweden, Denmark and Finland since the 1970s and up to 2010. Country rankings by debt to income ratio have been the same since the beginning of the 1980s. Denmark has had the highest level of debt relative to income throughout the period, Finland the lowest.

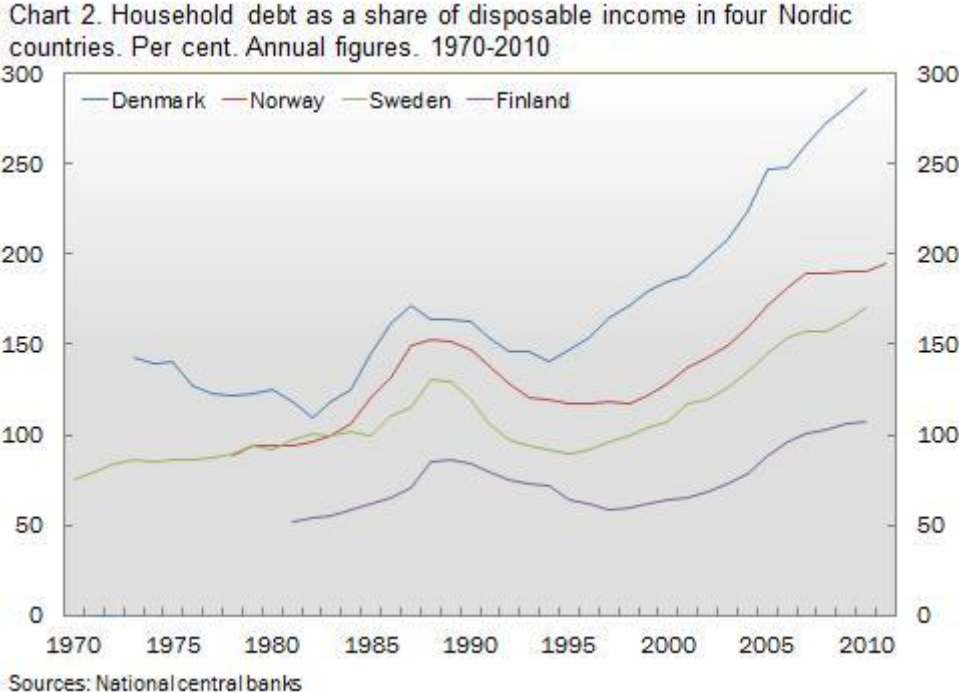
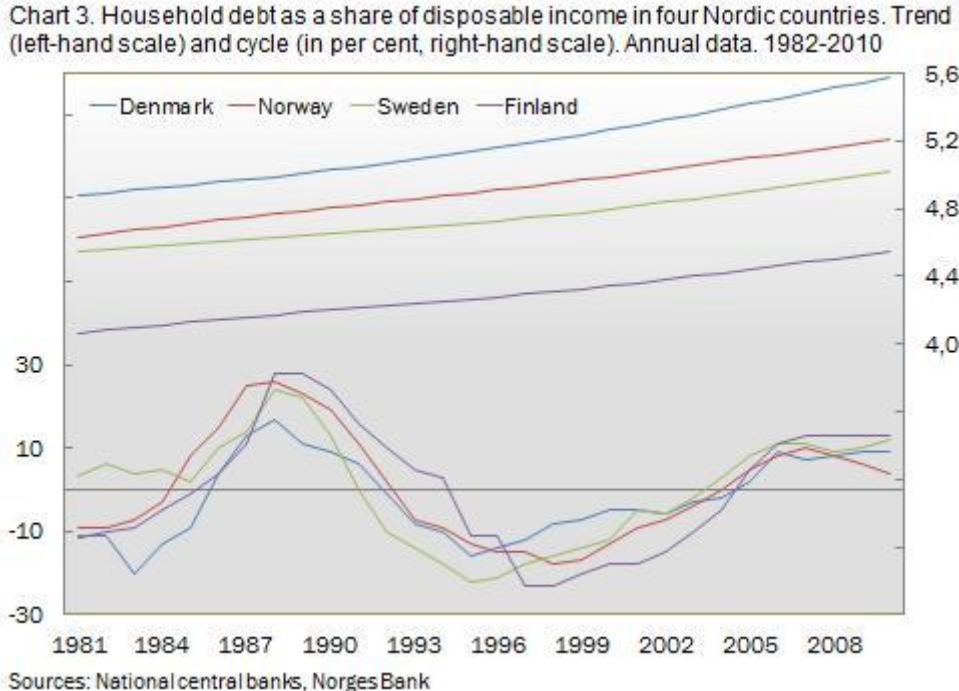


Chart 3 shows debt relative to income decomposed into trend and cycle components.²



The decomposition produces some striking results: The differences in levels of debt across the four countries, in the form of long-term trend lines, are apparently fairly stable over time. The only tendency is that in Denmark, where household debt was already highest to start with, debt growth has been higher than in the other countries. Debt cycles are closely correlated throughout the

² We use a Hodrick-Prescott filter for this decomposition, but with a very stiff filter, with lambda=5000 for annual data in land form, in order to show the long-term effects.

period. The weakest correlation is between Denmark and Finland at 0.64, the strongest between Norway and Finland at 0.89. Finland, with the lowest level of debt, has the widest variation in the debt cycle over the period, while Denmark, with the highest level of debt, has the lowest variation.

We expect many economic variables, such as incomes and prices across countries, to show signs of convergence over time. This does not seem to be the case for household debt. We find no sign of catch-up or stable equilibrium levels across the four Nordic countries. Nor is there any indication that debt cycle volatility increases in pace with the level of debt.

These empirical findings indicate that variables to explain differences in levels of debt across countries must be of a structural and long-term nature, while variables showing a high degree of correlation across countries will to a greater extent explain cyclical elements in debt growth. In the following section, we explore structural factors that may explain the variation in household debt across the four countries.

3 Structural supply and demand side factors

Empirical analysis of international differences poses challenges, not least because it is often difficult to find exactly comparable data across countries. However, we have analysed available data to establish whether the Nordic variations in household debt relative to income can be explained by housing market characteristics, by other private or collective wealth held by households, or by conditions in the credit market.

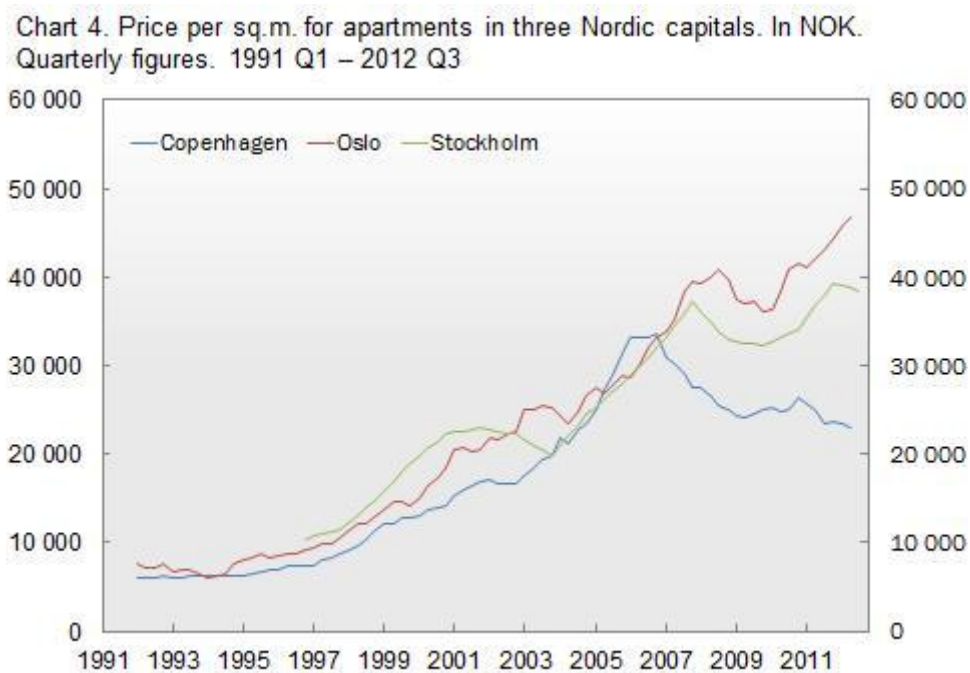
3.1 Housing market characteristics

A large percentage of household debt is housing-related debt. A number of studies have found that there is a reciprocal relationship between house prices and debt (see for example Norges Bank (2012)). Several of the factors affecting house prices will therefore also have an impact on debt. We have focused on two aspects of the housing market – housing wealth, including the share of owner-occupied housing, and housing taxation.

3.1.1 Housing wealth and household debt

In the theoretical review, we argued that there was a relationship between wealth and debt. Housing wealth is households' most important physical asset, and in the average household the value of the dwelling is often far higher than that of their financial assets. One possible explanation for the differences in debt may be related to differences in housing wealth across countries.

Households' housing wealth is a function of the average price per square metre, average number of square metres per housing unit and average share of owner-occupied housing. Chart 4 below shows the estimated change in average price per square metre in Oslo, Stockholm and Copenhagen from 2009 to 2012.



Source: Aftenposten (2012)

Price developments have been closely correlated for long periods with limited price differences. If anything, prices in Copenhagen are estimated to be somewhat lower than in Oslo and Stockholm, in spite of the fact that income levels in Denmark are at least as high as in Sweden. However, Denmark experienced a sharper rise in house prices in the mid-2000s than Norway and Sweden, and a sharper fall in house prices after the financial crisis. The average price per square metre in Copenhagen was the same as in Oslo in 2007, but was only half the Oslo price in 2012. The close correlation in house price developments up to the end of the 2000s may be an explanatory factor for concurrent credit cycles in the Scandinavian countries, but relative house prices do not provide an adequate explanation for a debt level in Denmark in 2012 that is almost twice as high as in Sweden.

Since housing-related debt accounts for the bulk of household debt, it is reasonable to assume that the larger the share of owner-occupier households, the higher total debt will be. However, the share of owner-occupied housing in the Nordic region is higher in Norway (77 percent) and Finland (64 percent) than in Denmark (57 percent) and Sweden (54 percent) (see Lujanen (2004)). The absence of a relationship between the share of owner-occupied housing and debt is also clearly evident in a wider international perspective. In Germany, for example, 39 percent of households are owner-occupiers, while the figure for Italy is 69 percent (see ECB (2003)). In both countries, household debt relative to income is low.

3.1.2 Housing taxation

The design of the tax regime affects both consumption and investment decisions. Because housing is such an important element of the household economy, housing taxation will also have a considerable effect on household behaviour. However, in most countries comparable to Norway, taxation of housing is generally relatively low compared with other assets.

Table 3 below shows that there are in principle many similarities in housing taxation across the Nordic countries – even if all the details of the various tax systems are not shown. The table shows taxation of home ownership, sale and acquisition of dwellings, and the extent of tax relief on

residential mortgage debt financing in 2008. As in Norway, low or no tax on housing investments, mortgage interest tax relief and no tax on the benefit of home ownership also apply to the other Nordic countries.

Table 3 Housing taxation in Nordic countries. 2012.

	DENMARK	NORWAY	SWEDEN	FINLAND
Tax on benefit of home ownership	Abolished 2000	Abolished 2004	Abolished 1991, still applies to shares in housing associations	Abolished 1993
Mortgage interest tax relief	33 % since 2002	28 % since 1992	30 % <100' and 21 % >100' since 1991	29 %, up from 25 % in 1993
Capital gains tax				
Capital gains from housing transactions	Not if seller has lived in the dwelling for some of the period of ownership	Not if seller has lived in the dwelling for one of the previous two years	Not if gain is reinvested in another dwelling	Not if seller has lived in the dwelling for previous two years
Treatment of financial assets and housing differs	Yes	Yes	Yes	Yes
Inheritance and gift tax				
Inheritance tax on own dwelling	Parent-children rate: 15 %, differing thresholds	Two rates and thresholds, several changes over past 20 years	Abolished 2005	Several different tax classes, rates and thresholds
Treatment of financial assets and housing differs	No	No	No	No
Capital tax	Abolished 1997	Two rates and thresholds, several changes over past 20 years	Abolished 2007	Abolished 2006
Property tax	Introduced 2000, 1 % /3 %, nominal ceiling	Municipal tax, municipality decides whether or not to levy tax. Rates: 2 ‰ to 7 ‰	Municipal tax, SEK 1300-7000, higher for some properties	Municipal tax. Rates between 22 and 5 ‰
Turnover tax	DKK 1400 + 0.6 %	2.5 %	1.5/2.5 %	4 %

Source: National tax authorities (see References)

Calculations by Norges Bank show that the user price for owner-occupied dwellings is lower in Norway than in Sweden and Denmark partly as a result of favourable housing taxation in Norway³. Low assessed values for dwellings seem to be an important explanatory factor. However, the same calculations show that housing taxation is least favourable in Denmark and cannot therefore explain Danish households' high level of debt.

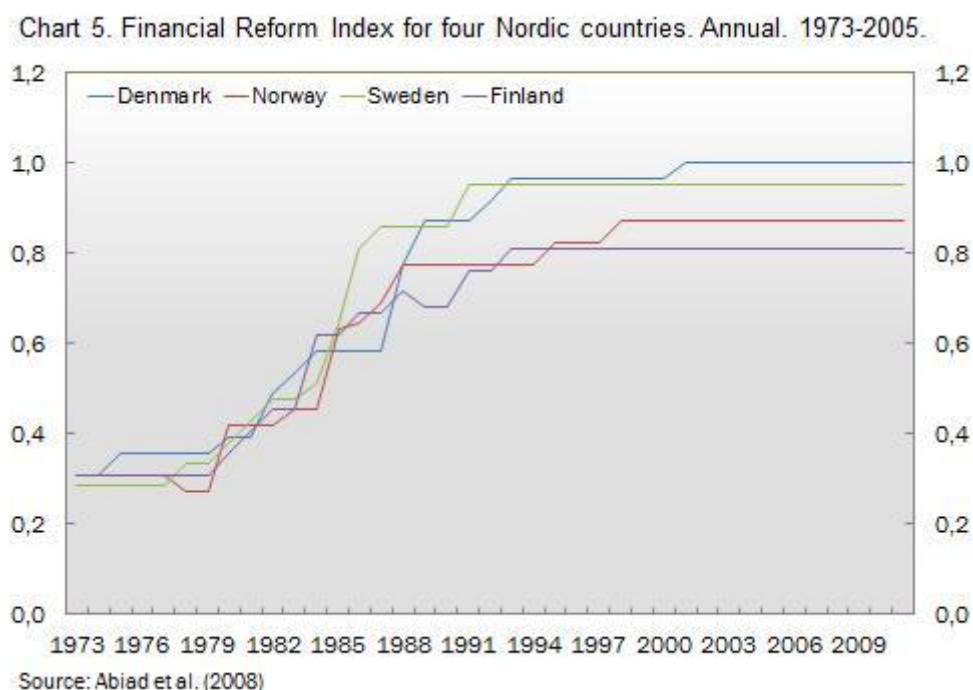
Nor are there wide differences across the Nordic countries with regard to tax relief on debt interest. Andrews and Sánchez (2011) have calculated an indicator for the size of this tax wedge. The tax wedge is assessed as marginally higher in Denmark and Norway than in Sweden and Finland, but the

³ The user price is estimated based on information about tax (on the use of the owner-occupied dwelling, mortgage interest tax relief, capital gains tax, capital tax, property tax) and a number of other factors (utility value of living in own dwelling, assessment value as a share of market value, depreciation due to age + maintenance costs and inflation rate).

differences across the four countries are very small by international standards. The indicator is, for example, set at 1.2 for Denmark, 1.0 for Finland and 0.1 for Italia.

3.2 Relaxation of credit standards

Relaxation of credit standards and financial innovation can increase the number of households that qualify for credit or reduce debt-servicing costs. Over the past decades, credit market liberalisation and innovation have resulted in easier access to credit for low-income groups and first-home buyers in a number of OECD countries. The International Monetary Fund (IMF) has constructed a composite indicator for the degree of financial market liberalisation, the Financial Reform Index. The index shows that market liberalisation has taken place in all the Nordic countries over the past 40 years and largely at the same time in all four countries (see Chart 5 below).



Even though the IMF index ranks Denmark as the most liberal over the past 20 years, this can hardly explain why household debt in Denmark has been the highest in the Nordic region since the beginning of the 1970s.

Nor does the index capture the changes in credit markets that have occurred over the past 20 years. The financial innovation that has taken place and the new loan products that have emerged in recent years have made it easier for a higher number of borrowers to raise larger loans. The new products include interest-only loans, longer repayment periods and home equity lines of credit (see Table 4 below).

Table 4 New residential mortgage loan products in the four Nordic countries.

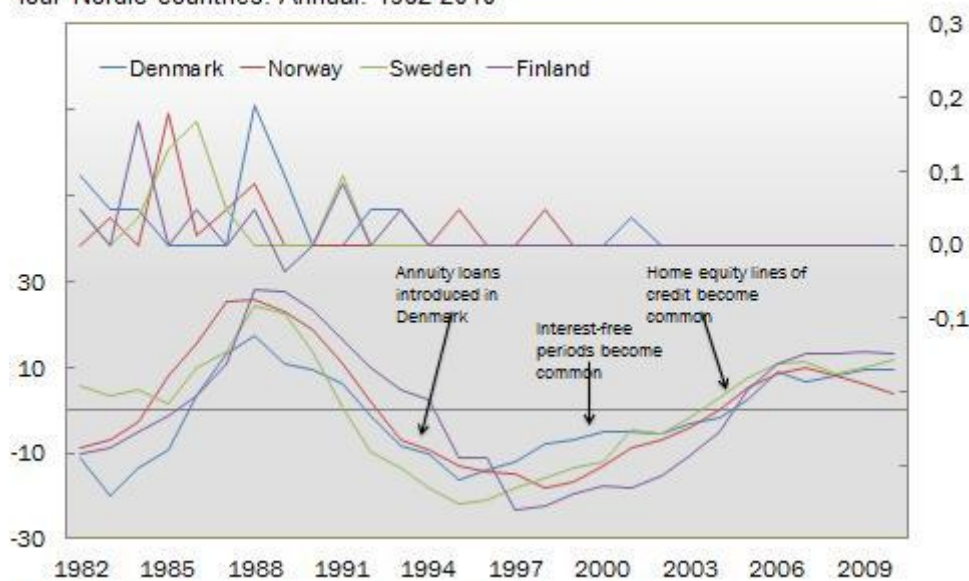
Country	New residential mortgage loan products in recent years
Denmark	<ul style="list-style-type: none"> • "Interest-adjusted" loans; interest rate is set at regular intervals by sale of bonds. • Capped-rate loans. • "BoligXloans" –interest adjusted every 6 months with reference to 10-day average of CIBOR. • Interest-only loans.
Norway	<ul style="list-style-type: none"> • Home equity lines of credit. • Interest-only loans.
Finland	<ul style="list-style-type: none"> • Longer repayment periods. • Introduced government guarantee for residential mortgages.
Sweden	<ul style="list-style-type: none"> • Extensive use of interest-only loans.

Source: Girouard et al. (2006:2)

In the Nordic region, Denmark and Sweden lead the field in interest-only loans. The introduction of these products is nonetheless also closely correlated across the four countries and has offered households greater opportunities to free up home equity, provided more freedom of choice and reduced borrowing costs. This has contributed to higher debt growth. But the changes do not explain the differences in debt relative to income across the Nordic countries.

Thus, market liberalisation and innovations do not explain the differences in debt across Nordic households. However, these changes do contribute to explaining why credit cycles have been concurrent for the Nordic countries. Chart 6 below indicates that there is a close relationship between liberalisation and credit market cycles, which is amplified when financial innovations are taken into account. The chart shows changes in the IMF index and credit cycles, reflecting the liberalisation process that took place before the upturn in the 1980s. The tendency is not as clear for the cycle beginning in the mid-1990s. But then the index does not capture the innovations either (inserted text).

Chart 6. Changes in the Financial Reform Index (right-hand scale) and the cycle of household debt as a share of income (in per cent) (left-hand scale) in four Nordic countries. Annual. 1982-2010



Sources: Abiad et al. (2008) and national central banks, Norges Bank

Another factor influencing access to credit is regulation of loan-to-value ratios (LTV). Strict LTV requirements can limit overall borrowing if the requirements are binding. Table 5 below shows

typical repayment periods for residential mortgage loans and maximum loan amounts for house purchases. Again, there are only marginal differences between the four countries. In addition, the requirements may not be binding. In periods of rapidly rising house prices, borrowers who already own a home will quickly be able to accumulate sufficient equity to move up the housing ladder. In that case, LTV requirements will only be binding on first-home buyers.

Table 5: LTV requirements and typical LTV ratios

Country	Regulation of LTV. Max limit	Typical LTV ratio
Denmark	80 %	80 %
Norway	85 %	70 %
Sweden	85 %	80 %
Finland	Recommended 90 %	75 %

Source: Andrews et al. (2011) and Igang & Kang (2011)

3.3 Income expectations and wealth

High taxes to finance welfare schemes or high mandatory pension saving shifts expected income forward in time. Households can counteract the shift by borrowing today and basing their consumption on expected future income. Strong welfare schemes to cover loss of income due to illness or unemployment also limit the need for private savings. Household behaviour is also affected by the credibility of pension and welfare schemes. Low confidence in the authorities reduces expectations of welfare transfers and increases the need to build a financial buffer against uncertainty. This is in line with the hypothesis of Ricardian equivalence: households understand that government borrowing today will have to be paid for by higher taxes in the future, and they adjust their income expectations and borrowing accordingly.

3.3.1 Saving and pensions

In the Nordic countries, pension saving is largely mandatory. But the design of the pension system varies from country to country. This may have an impact on household debt behaviour.

As in many other countries, the pension system in Denmark, Norway, Sweden and Finland is a three-pillar system consisting of public pensions, occupational pensions and, to some extent, private pension schemes.

- The public pension scheme is regulated through systems and agreements where the pension is usually divided into basic amounts with various supplements. Some supplements are intended to reflect wage earnings prior to retirement; others provide pensions for those with low or no income from employment. Pension payments are mainly financed by current tax revenues.
- Occupational pensions are primarily fund-based. Pension payments are determined by total contributions to the pension fund and the return on the fund's investments, in addition to pension agreements.

The main feature distinguishing the Nordic countries is the *relative importance* of the public, tax-financed pension scheme and fund-based private schemes. See Table 6 below.

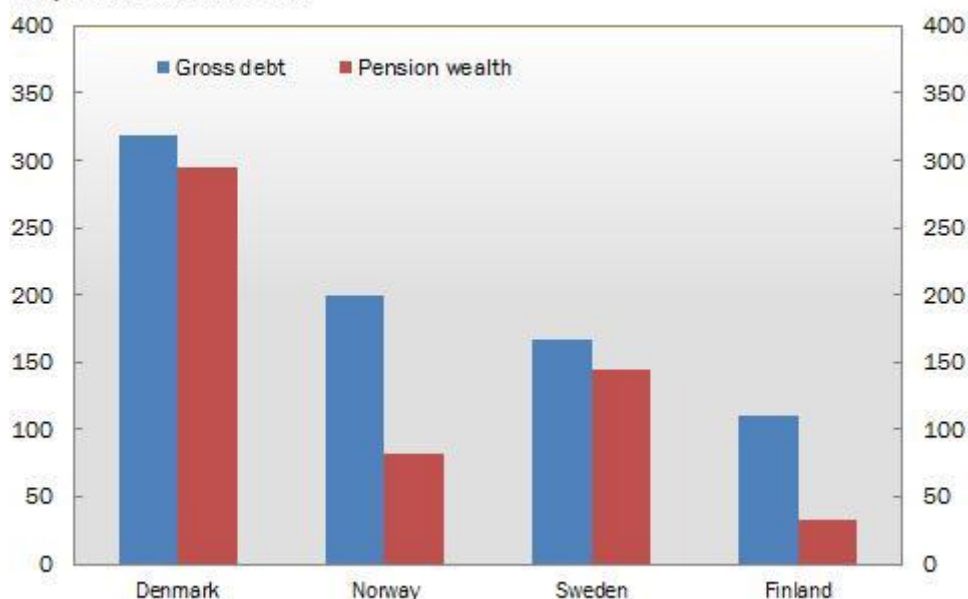
Table 6 Main features of pension systems in Denmark, Norway, Sweden and Finland.

	DENMARK	NORWAY	SWEDEN	FINLAND
Financed by current tax revenues, not adjusted for size and composition of household	Public pension scheme	National Insurance retirement pension	Guarantee and income pension	National pension scheme
	Everyone. Has a fixed and an earnings-related component + supplement for low-income retirees	Everyone. Has a fixed and an earnings-related component	Guaranteed minimum pension for low or no income retirees. Adjusted against other public pensions. Income pension based on contributions	Ensures minimum income for all. Adjusted against other pensions
Fund-based schemes, adjusted for size and composition of household	ATP, SP and agreement-based schemes	Occupational pension (OTP)	Premium pension	Employment pension
	ATP (supplementary earnings-related pension scheme) and SP (special pension savings scheme) are mandatory for wage-earners, unemployed and self-employed. AMP – (occupational pension scheme) covers 90 % of labour force.	Mandatory for wage-earners from 2006	Premium pension, mandatory for all	Mandatory for all wage-earners. Additional voluntary occupational pension, low coverage.
Rates	ATP and SP: 1 % of gross wage. AMP: 9-17 % of gross wage.	Min 2 % of wage.	2.5 % of pensionable earnings.	Age-dependent: 1.5-5.3 %

Source: Pension overview (see References)

Since fund-based pensions are recorded as insurance technical reserves, while pension entitlements related to agreements and paid-in taxes are not visible, assets recorded on Danish household balance sheets include considerable pension wealth. See Chart 7 below.

Chart 7. Gross household debt and pension wealth. As a percentage of disposable income. 2010



Source: Isaksen et al. (2011)

Isaksen et al. (2011) highlight the high levels of pension wealth in Denmark and the Netherlands as an important factor in explaining why they are two of the countries with the highest debt to asset ratios in the world. It is, however, uncertain whether this is because expected pension payments are actually higher in these countries or because households have become more aware of pension wealth.

Expectations regarding public pension payments are based on confidence in public finances (particularly payments based on current tax revenues) and the systems regulating pension payments. As mentioned, systems have been established in all countries. The burden is thus largely on public finances. The stronger public finances are, the more credible the pension schemes will be. In the event of a marked deterioration in public finances, households will need to save more. Conversely, strong public finances reduce the need for private saving. In an international perspective, all the Nordic countries are characterised by strong public finances. It could be argued that expectations regarding occupational pension payments are also to some extent based on confidence. Sound fund management is a criterion for confidence, in particular for the defined-contribution schemes.

It is therefore reasonable to assume that most inhabitants in Denmark, Norway, Sweden and Finland expect to be assured of a minimum income all their lives. This assumption is reinforced by the existence of other public welfare schemes. Most Nordic wage-earners are covered by a national insurance scheme, entitling them to benefits such as disability and unemployment benefits.

Even though it cannot be ruled out that the Danish pension system assures the Danish people a higher pension than the people of Sweden, Norway or Finland can expect from their national systems, there is much to indicate that pension expectations do not vary as much as individuals' private pension wealth. Differences in pension system structure and in levels of household pension wealth do not therefore provide a convincing explanation for the differences in household debt across the Nordic countries.

3.3.2 Can wealth and wellbeing explain differences in debt level?

So far, we have mainly focused on the Nordic countries. In this last section of the analysis, we will assess whether wealth and prosperity can contribute to explaining the high debt level in the Nordic countries when we compare them with a larger sample of European countries. We focus on four variables: household wealth including the share represented by insurance technical reserves – a figure that primarily reflects private pension savings – as a share of GDP, GDP per capita and a more general measure of prosperity as measured by the “Legatum Prosperity Index”, developed by the Legatum Institute⁴. Table 7 shows debt to disposable income and the above four variables for the four Nordic countries we have studied.

⁴ For more information, see <http://www.prosperity.com/>.

Table 7 Debt, wealth and prosperity. 2007, 2011, 2012

	Debt to disposable income	Private wealth as share of GDP (07)	Insurance technical reserves as a share of GDP (07)	GDP per capita relative to EU-27	Ranking in Legatum Index (12)
Denmark	267	237	102	125	2
Norway	181	105	38	186	1
Sweden	149	175	68	127	3
Finland	104	122	23	114	7

Source: Eurostat (2009), Eurostat (2013), Legatum Institute (2012)

Of the four countries, households in Denmark have the highest debt and by far the highest wealth as a share of GDP. Assets in the form of insurance technical reserves as a share of GDP are almost three times as high as in Norway and five times as high as in Finland. Norway, however, is notable for having the highest GDP per capita and the top ranking in the Legatum Index. Norway also ranks highest among the Nordic countries in terms of public wealth.

The Legatum Institute is one of several institutions that endeavour to produce a more fine-meshed ranking of countries by national wellbeing. Wellbeing indices are normally closely correlated with GDP per capita. The correlation between the ranking in the Legatum Index and the GDP per capita ranking for the 21 countries included in the data underlying Table 8 and Table 9 is, for example, 0.89. But the index measures national wealth along eight dimensions which may be of interest in this context:

- Economy; including saving and economic welfare
- Entrepreneurship and opportunity; including regulatory obstacles to innovation
- Governance; including stability, levels of corruption and the quality of the judicial system
- Education; including quality and levels of education
- Health; including the quality of the national health system, life expectancy, etc.
- Safety and security; including measures of crime and the risk of war
- Personal freedom; including freedom of speech and opportunities for personal development
- Social capital; including the degree of social trust

Countries are ranked according to each of these eight factors. Table 8 shows the correlation between household debt and the eight sub-indices for Norway and 20 EU countries. Entrepreneurship, governance, social capital (trust), and safety and security are the four indices that are most closely correlated with debt to income ratios. These are more important than, for example, a sound economy and high levels of education. The results emphasise the importance of safety and predictability for household behaviour. In countries characterised by predictability, investment is more attractive and there is greater willingness to take long-term decisions, contributing to an increase in debt. The scores indicate that high level of debt is not a coincidence, but the result of a country's economic and social level of development.

Table 8 Household debt and the Legatum Index

	Health	Economy	Personal freedom	Safety and security	Social capital	Governance	Education	Entrepreneurship	Total
Correlation	-0.50*	-0.50*	-0.56**	-0.58**	-0.62**	-0.68**	-0.45*	-0.72**	-0.73**

Source: Legatum Institute (2012), * - significant at 5 %, ** - significant at 1 %

Table 9 shows the results of five simple regressions to explain debt levels.⁵ The level of GDP is a significant explanatory factor, and the regression explains 26 percent of the variation in debt across the 26 countries. Household wealth as a share of GDP has lower explanatory power than GDP. If we use wealth in the form of insurance technical reserves, explanatory power improves considerably, to more than 0.6. This is in line with the results in Isaksen et al. (2011). The Legatum Index has somewhat lower explanatory power than the share of household wealth represented by insurance technical reserves, but higher than GDP per capita. Whether we use the main index or the entrepreneurship sub-index makes little difference. The results should not be over-interpreted, but they do indicate that debt is closely related to a positive investment climate and confidence in the authorities. High household debt can be a risk factor, but it can also be closely correlated with indicators of a healthy economy.

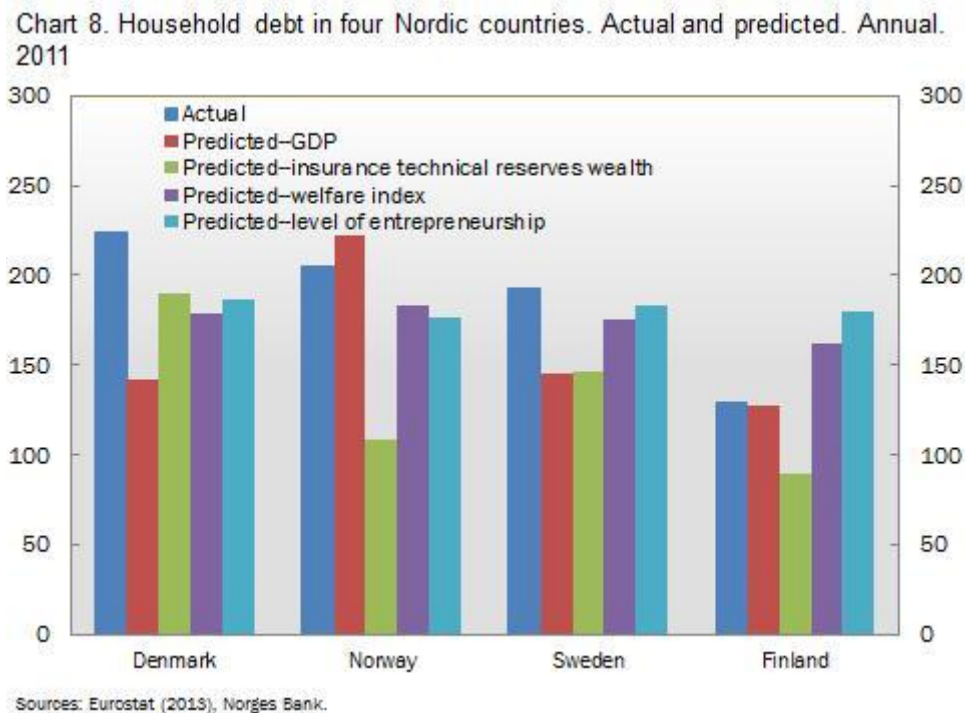
Table 9 Regression – does the level of prosperity explain the level of debt?

Explanatory factor:	GDP	Private wealth	Wealth as insurance technical reserves	Legatum index (1)	Legatum Index (2)
Constant	-21.7	39.3	59.5**	186.1**	190.4**
GDP	1.31**				
Private wealth		0.48**			
Pension wealth			1.28**		
Legatum Index (total)				-3.4**	
Legatum Index (Entrepreneurship)					-3.4**
R2	0.42	0.26	0.62	0.53	0.52
SE-regression	50.66	58.27	41.97	45.62	45.98
No. of observations	21	19	19	21	21

Source: Norges Bank, * - significant at 5 %, ** - significant at 1 %

Chart 8 below shows how predictions from four of the estimations are in line with actual debt levels in the four Nordic countries. GDP per capita predicts the highest debt to income ratio for Norway and the lowest for Finland, while wealth in the form of insurance technical reserves predicts high debt in Denmark and low debt in Norway and Finland. Insurance technical reserves reflect private pension wealth, which is high in Denmark, reinforcing this prediction. For Norway, the public Pension Fund Global is not included, as this fund is not formally linked to pension payments, but can be regarded as a form of insurance for the Norwegian pension system. The Legatum Index predicts fairly similar debt levels across the Nordic countries, which would underline the importance of a high level of confidence and far-sighted economic policies as a reason why borrowers in these countries “dare” to hold such high debt.

⁵ Due to the high degree of correlation between the five explanatory factors, our estimates are one-variable estimates.



4 Financial innovation explains growth – national wealth levels

We have attempted to explain why household debt in Norway differs from that of Sweden, Denmark and Finland. The analysis builds on the fact that the differences in national debt *levels* have been fairly stable over the past 30 years and that *growth* in debt has been closely correlated.

Based on households' lifetime balance sheet and the degree of credit constraints, we have explored whether aspects of the housing market, credit market, pension systems and national welfare can explain the differences in debt. Most of the hypotheses have been rejected:

- Even though there is close correlation between the rise in house prices and debt growth, it is difficult to argue that housing market characteristics alone explain the difference in level across countries.
- The supply of household credit has changed considerably over the past 20 years, but many of the changes have occurred in tandem across countries. The changes have likely been a main driver of debt growth in recent years, but do not explain differences in level.

The analysis does suggest, however, that differences in wealth and national welfare might explain differences in level across countries. Household debt tends to be higher in countries with a well developed welfare system. The income component of the system is important, but confidence in the welfare system is also of relevance.

In Norway, household debt has been high in an international context for a long time and has increased markedly over the past ten years. Our analysis suggests that the high debt level in Norway is related to favourable economic framework conditions for households, combined with predictability, not least with regard to economic policy. If this policy is maintained, it is likely that the

debt level in Norway will remain high by international standards in the years ahead. This does not mean, however, that household debt should not be monitored closely.

High debt levels increases the vulnerability of the household sector. A high level of debt also increases the sensitivity of the household sector to interest rate changes. Significant changes on the asset side, e.g. due to a fall in house prices or lower future income expectations, will have a greater impact the higher the debt level is. Particular vigilance is warranted during periods of rapidly changing debt levels.

The experience of the 1980s showed that rapid shifts in debt can result in imbalances that take many years to correct. Recent history shows that credit cycles have been key factors behind economic developments in Norway and neighbouring countries. The Nordic recession of the early 1990s followed in the wake of the credit boom in the 1980s. The Nordic countries are, in this respect, a good example of the risk factors associated with high debt.

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