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Economic commentaries

Decomposing debt growth

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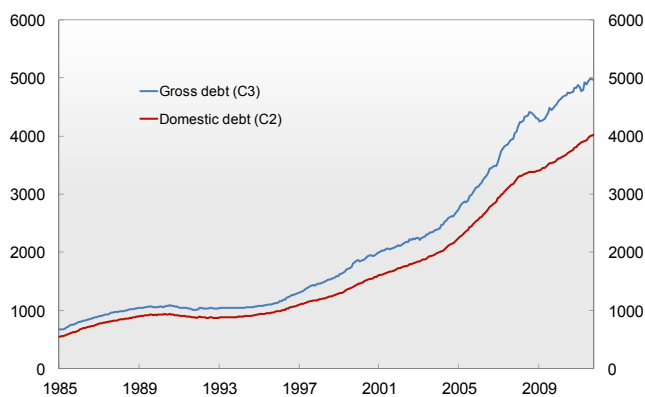
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High debt growth can increase the risk of instability in the financial system. In monitoring financial stability it is therefore important to closely monitor debt accumulation. Norges Bank uses Statistics Norway's credit indicators and various sources of microdata in its analyses of debt growth. Microdata sources comprise financial reporting, household income statistics and enterprises' annual financial reporting. In this commentary, we examine how this information can be used to shed light on risks posed by debt growth.

1. Introduction

Since the mid-1980s, total debt has increased by an average of 8 percent per year. Total debt now stands at nearly NOK 5 000 billion (see Chart 1).

Chart 1 Growth of debt owed by the general public. In billions of NOK. Monthly data. December 1985 – August 2012



Source: Statistics Norway

Experience shows that financial instability builds up during periods of rapid growth in debt. In financial stability analyses it will be important to examine the composition of the total volume of credit. For example, debt burdens may be unevenly distributed among households that differ in their capacity to bear them, or corporate credit may have been extended to sectors with varying degrees of profitability. For that reason, analyses of microdata for banks, households and enterprises are a supplement to a more overarching macroeconomic analysis.

The new rules for bank capital and liquidity (Basel III) include a countercyclical capital buffer requirement.[1] The *credit gap* has been proposed as a basis for assessments of the size of the countercyclical capital buffer. The credit gap shows how credit as a percentage

of GDP develops relative to the trend credit-to-GDP ratio. More detailed knowledge of the growth of the debt owed by the general public¹ may be important additional information.

2. Data sources

The analysis is based on the credit indicators C2 and C3, which are published by Statistics Norway. C2 is a measure of domestic debt, while C3 includes foreign debt in addition. We also use three microdata sources to shed light on credit growth in the retail and corporate markets:

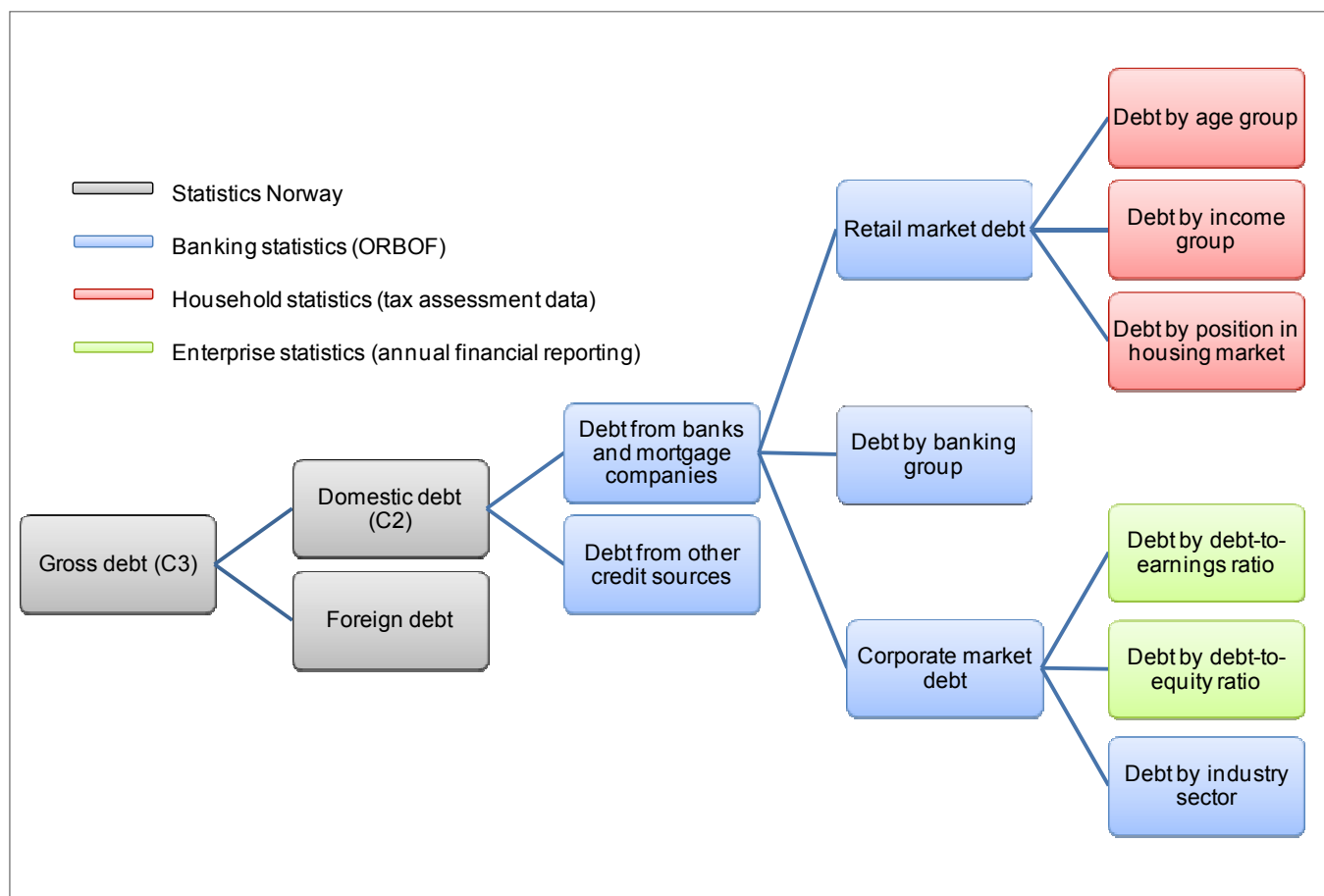
- *Banking statistics*: Banks and financial undertakings' financial reporting to Norwegian authorities ("Offentlig regnskapsrapportering for banker og finansieringsforetak (ORBOF)") [2]
- *Enterprise statistics*: Annual financial reporting of Norwegian limited liability companies
- *Household statistics*: Household income statistics based on tax returns [3]

Corporate debt growth can be analysed by using bank and enterprise statistics, while debt growth in the retail market can be analysed by using bank and household statistics. The way we link various data sources is shown in Chart 2.

An important precondition for being able to use different data sources to shed light on debt growth is that they generally agree and that reasons for discrepancies between different sources are known. Appendix A deals with reconciling and comparing information from the various data sources.

¹ The "general public" as defined by Statistics Norway (see box for sector definitions)

Chart 2 How data sources are linked



Statistics Norway's credit indicators

C2 ("Total domestic debt"): Indicator of general public gross domestic debt in NOK and foreign currency. [4]

C3 ("Total debt"): Indicator of general public gross debt from domestic and foreign sources in NOK and foreign currency. [5]

General public: The institutional sectors local government, private and public non-financial enterprises, households, etc.

Households: Non-profit institutions serving households, unincorporated enterprises within households, housing cooperatives etc., employees, recipients of property income, pensions and social contributions, students, etc. and residual sector/non-distributed entities.

Private and public non-financial enterprises: Public unincorporated enterprises owned by central government, public incorporated enterprises owned by central government, public unincorporated enterprises owned by local government, public incorporated enterprises owned by local government, private non-financial incorporated enterprises, private non-financial unincorporated enterprises and private non-profit institutions.

Source: Statistics Norway

Banking statistics (ORBOF)

Contain monthly financial reports from banks and financial undertakings going back to 1987.[2] Balance sheets contain information on lending and impairment. The compilation is a joint effort of Finanstilsynet, Norges Bank and Statistics Norway. Statistics Norway produces the statistics.

Household statistics

Household income statistics are taken from tax assessment data for all residents of Norway beginning in 2004.[3] Prior to this, statistics were based on a sample survey. The statistics contain information on total debt as it appears in tax assessment data. With the exception of student loans from the Norwegian State Education Loan Fund, income statistics do not contain sources of household borrowing.

Source: Statistics Norway

Enterprise statistics

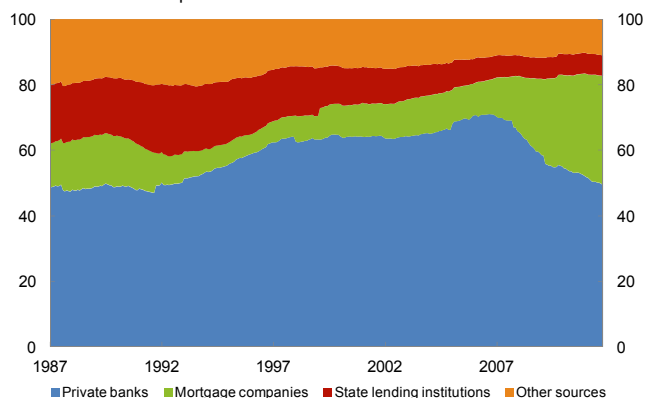
Contain income statement and balance sheet items for all Norwegian non-financial enterprises since 1988 that report to the Brønnøysund Register Centre. Financial statements contain information on non-current and current liabilities to credit institutions, but do not distinguish between Norwegian and foreign credit institutions. Our sample only contains the corporate forms AS (limited liability company) and ASA (public limited company).

3. Sources of credit for the general public

According to Statistics Norway's credit indicator C3, total debt amounts to approximately NOK 5 000 billion (See Chart 1). Total debt comprises domestic and foreign debt. Foreign debt pertains primarily to non-financial enterprises (hereinafter referred to as “enterprises”) and accounts for approximately 20 percent of total debt.

In June 2007, it became possible to issue covered bonds in Norway, and bonds of this type have now become an important source of funding for Norwegian financial conglomerates and bank alliances.² The share of residential mortgages on bank balance sheets has declined sharply as many banks have moved portions of their residential mortgages to mortgage companies that issue such bonds. Mortgage companies’ share of total domestic lending has risen since 2007, while the share of bank funding has fallen slightly (see Chart 3).

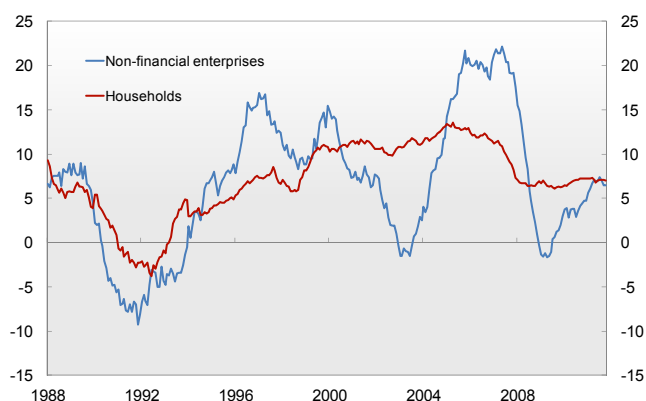
Chart 3 Gross domestic debt by credit source. Percent. Monthly data. December 1987 – September 2012



Source: Statistics Norway

Domestic debt can be broken down on households, enterprises and local government administration. As at September 2012, the breakdown was 58, 34 and 8 percent, respectively. This is in line with the average shares for the period 1988–2012. Growth in corporate debt varies more than growth in household debt (see Chart 4).

Chart 4 12-month change in domestic credit to households and non-financial enterprises (C2). Percent. Monthly data. December 1988 – September 2012

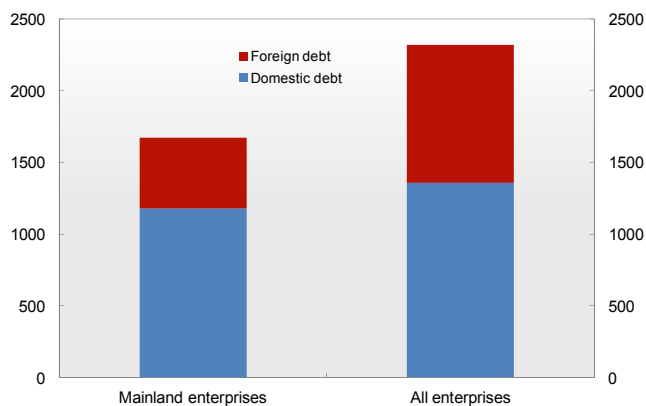


Source: Statistics Norway

Nearly 90 percent of household debt originates from banks and mortgage companies in Norway. Among other credit sources, government lending institutions are the most important.

Enterprises’ debt is more diverse than household debt. Domestic debt accounts for approximately 70 percent of total debt of enterprises in mainland Norway. It is especially enterprises in the petroleum and foreign shipping sector that have a large volume of foreign debt. Including this volume, domestic debt amounts to approximately 60 percent (see Chart 5). Around 30 percent of enterprises' foreign debt has been raised in the bond market or at a credit institution, while other debt is primarily intercompany liabilities. [6]

Chart 5 Non-financial enterprise debt. In billions of NOK. As at August 2012

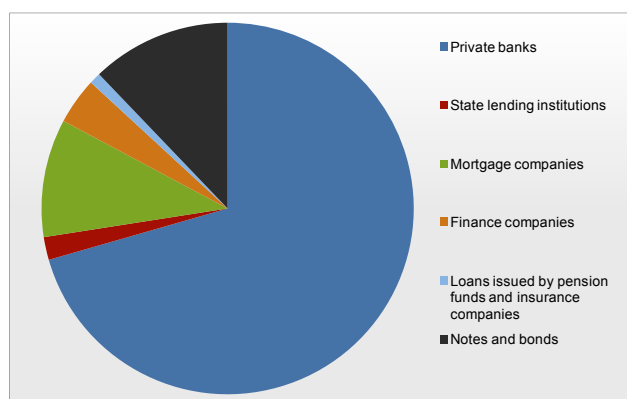


Source: Statistics Norway

Enterprises' debt from banks and mortgage companies combined account for around 80 percent of their domestic debt. Notes and bonds account for approximately 12 percent (see Chart 6). Bank debt in particular contributes to the fluctuations in corporate credit growth (see Chart 7).

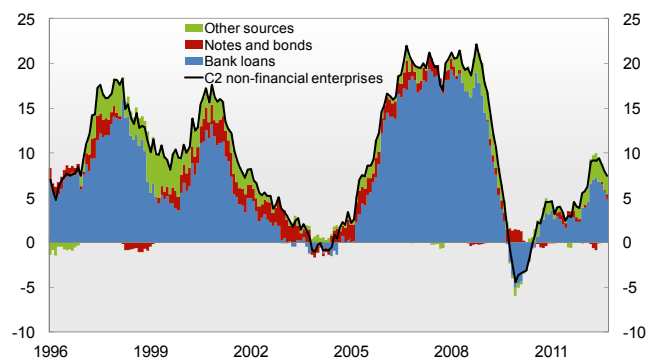
² Covered bonds are a type of financial instrument that banks use to obtain funding in capital markets (see Bakke, Rakkestad and Dahl).[7] This involves a transfer by banks of residential mortgage and commercial property loans to mortgage companies, which issue covered bonds backed by these loans.

Chart 6 Non-financial enterprise domestic debt by credit source. Share of total. As at September 2012



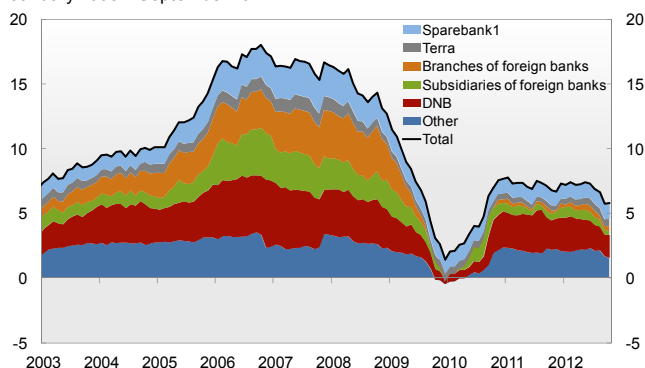
Source: Statistics Norway

Chart 7 Contribution to 12-month change in domestic credit to non-financial enterprises by various credit sources. 1) Percentage points. Monthly data. January 1996 – September 2012



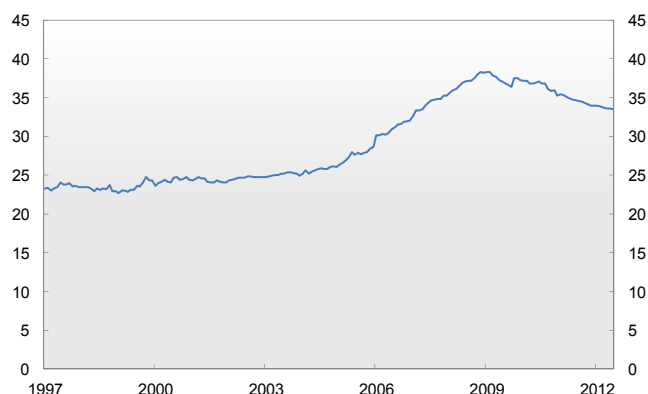
1) Here growth in C2 is calculated on the basis of banks' reported stocks of loans
Source: Statistics Norway and Norges Bank

Chart 8 Contribution to 12-month change in lending to the general public by banks and mortgage companies by banking group¹⁾. Percent. Monthly data. January 2003 – September 2012



1) See Appendix B for a list of banks and mortgage companies belonging to banking groups
Sources: Statistics Norway and Norges Bank (banking statistics)

Chart 9 Foreign-owned banks' share of lending to the general public. Percent. Monthly data. January 2003 – July 2012



Sources: Statistics Norway and Norges Bank (banking statistics)

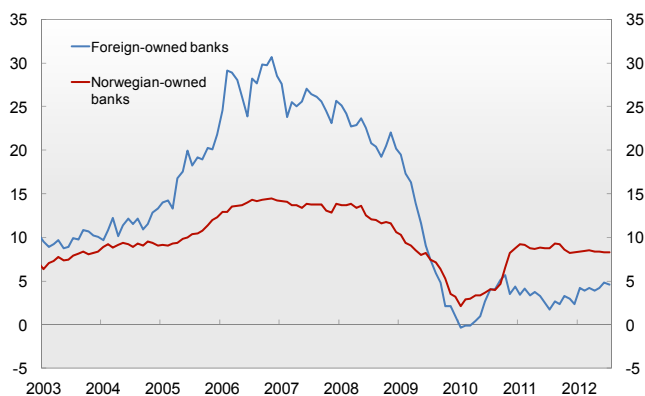
4. Bank and mortgage company lending to the general public

The Norwegian banking sector is diverse. DNB is by far the largest bank in terms of share of lending. In the next tier is Nordea Bank Norge, some foreign-owned branches and some fairly large regional savings banks. There are also a number of smaller banks in Norway, primarily savings banks.[8]

C2 statistics for bank debt are based on information from banking statistics (ORBOF). C2 data are broken down by borrower sector and credit source. We examine more closely credit from the sources commercial and savings banks and mortgage companies. We have chosen to group banks and mortgage companies together, because most Norwegian banks either own or co-own separate mortgage companies that issue covered bonds.

Growth in lending from banks and mortgage companies increased substantially from 2005 onwards (see Chart 8). Growth was at a high level in the period to the financial crisis towards the end of 2008. In the Norwegian banking sector, subsidiaries and branches of foreign banks are important providers of credit. Foreign-owned banks increased their share of lending substantially in the period 2005–2008 (see Chart 9). This share has since fallen somewhat. This may be because some foreign-owned banks were harder hit by the financial crisis than Norwegian-owned banks. Moreover, it is conceivable that foreign-owned banks tend to reduce their credit provision in Norway relative to their home countries during downturns or periods of financial turbulence, and that to some extent this has been the case for foreign-owned banks in recent years. Over the past two years, foreign-owned banks have accounted for a smaller contribution to lending growth than in pre-crisis years (see Chart 8). The annual rate of increase for foreign-owned and Norwegian-owned banks shows the same picture (see Chart 10).

Chart 10 12-month change in lending to the general public. Percent. Monthly data. January 2003 – July 2012



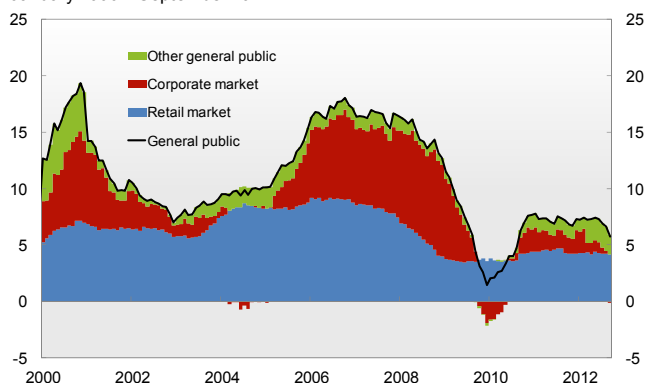
Sources: Statistics Norway and Norges Bank (banking statistics)

Banking statistics also provide aggregated information on which borrowers contribute most to debt growth from banks and mortgage companies. We divide borrowers into the *retail market* and *corporate market*.³ This is in line with the breakdown in banks' annual reporting.

Bank and mortgage company lending to the corporate market

Bank and mortgage company lending to the corporate market made a substantial contribution to the increase in lending growth from 2005 (see Chart 11). The contribution by the corporate market varies more over time than the retail market's contribution, which is more stable over time.

Chart 11 Contribution to 12-month change in lending to the general public by banks and mortgage companies by borrower category. Percent. Monthly data. January 2000 – September 2012



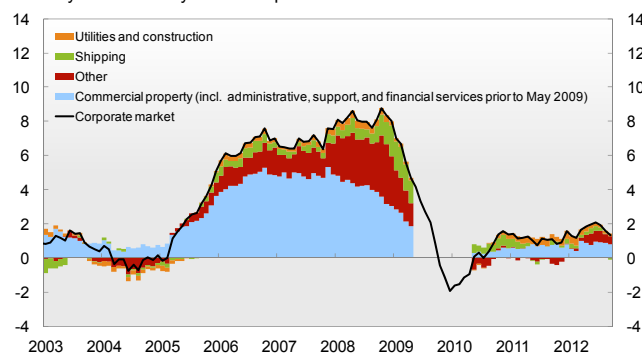
Sources: Statistics Norway and Norges Bank (banking statistics)

Lending to banks and mortgage companies is broken down by sector in the banking statistics. A considerable

³ The retail market comprises wage earners and benefit recipients. The corporate market comprises private non-financial incorporated and unincorporated enterprises, private non-profit institutions serving enterprises, unincorporated enterprises within households and housing cooperatives etc.

portion of the contribution to debt growth after 2005 came from lending to the commercial property sector and commercial and financial services (see Chart 12).

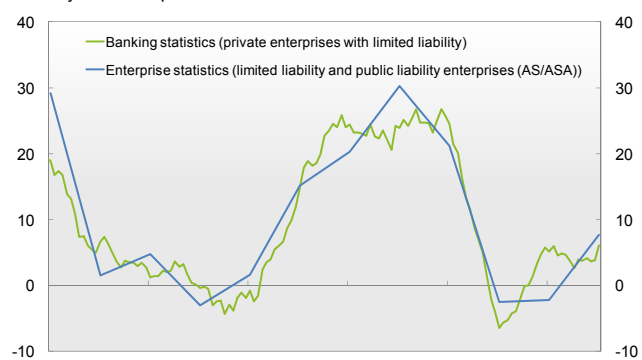
Chart 12 12-month change in bank debt of enterprises by sector.¹⁾ Percent. Monthly data. January 2003 – September 2012



1) Change in sector division from May 2009, resulting in a break in series from this time. Industry sectors not completely comparable prior to and after the break. "Other service activities" have been removed from the sample as from March 2012 (change in type of enterprise in sector)
Sources: Statistics Norway and Norges Bank (banking statistics)

Enterprise statistics provide information on the bank debt of enterprises (limited liability (AS) and public limited companies (ASA)). Growth in bank debt, as reported in annual financial statements, is in line with growth in lending to enterprises as it appears in banking statistics (see Chart 13).

Chart 13 12-month change in bank debt of enterprises calculated on the basis of banking statistics and enterprise statistics. Percent. Monthly and annual data. January 1989 – September 2012



Sources: Statistics Norway and Norges Bank (banking statistics and enterprise statistics)

Enterprise statistics make it possible to monitor debt growth and other key figures that may provide an indication of the debt-servicing capacity of various sectors. However, linking the enterprise statistics to the banking statistics is an approximation, because there is not a one-to-one relationship between them. First, banking statistics contain different forms of organisation from the enterprise statistics, which contain only limited liability and public limited companies. Second, banking statistics provide information on domestic debt, while enterprise statistics do not distinguish between domestic and foreign bank debt. The analyses thus rest on an assumption that the sample of companies is representative of the sample of companies in the banking statistics.

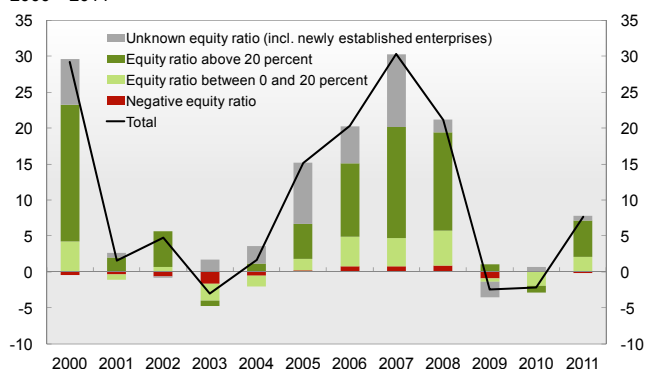
A decomposition of debt growth may provide information on whether corporate lending increases the probability of shocks to the financial system. If enterprises with weak debt-servicing capacity are the primary contributors to debt growth in the economy, systemic risk in the economy may increase.

A number of key figures can provide information about corporate debt-servicing capacity. Examples of key figures of this sort are earnings and equity ratio, which we will examine more closely to illustrate how enterprise statistics can be used to decompose debt growth.⁴ A more complete survey of corporate debt growth and debt-servicing capacity must also include other information.

For an enterprise to remain a going concern, earnings over time must be high enough to cover interest and principal on debt. Without satisfactory earnings, the enterprise will have difficulty raising fresh capital. The equity ratio is the percentage of assets funded with the bank's owner capital. A high equity ratio indicates that the enterprise can survive periods when income is negative, because the enterprise is able to free up funds by selling assets and by providing collateral for new loans. This will supply the enterprise with sufficient funds to service debt to creditors.

Since 2000, the corporate sector contribution to growth in bank debt has largely come from enterprises with an equity ratio above 20 percent at the beginning of each year (see Chart 14). A smaller share of debt growth comes from enterprises with a weaker equity ratio.

Chart 14 Annual change in bank debt of enterprises. Decomposition based on enterprises' equity ratio¹⁾ at the beginning of the year. Percent. Annual data. 2000 – 2011

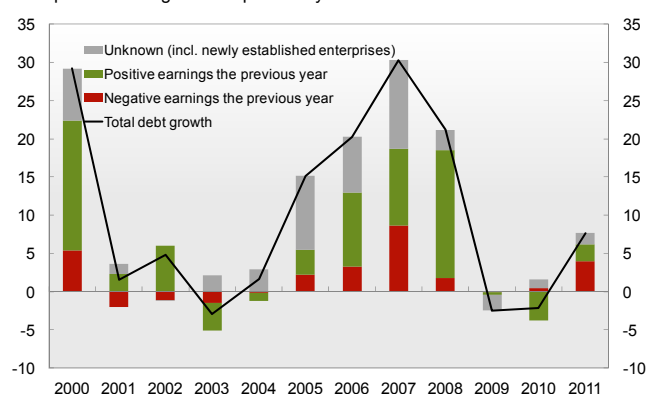


1) Book equity as a percentage of total assets
Source: Norges Bank (enterprise statistics)

Enterprises with positive earnings in the course of a year account for a substantial share of the increase in bank debt the following year (see Chart 15). In the period for which we have data, growth was at its highest in 2007. A considerable share of growth then came from enterprises

with negative earnings the previous year (see Chart 14). A possible explanation is that owing to strong economic growth during this period, their credit risk was regarded as somewhat lower. This may have contributed to some easing of banks' credit standards. Conversely, banks will normally tighten credit standards in bad times, and some enterprises will have more difficulty obtaining loans.

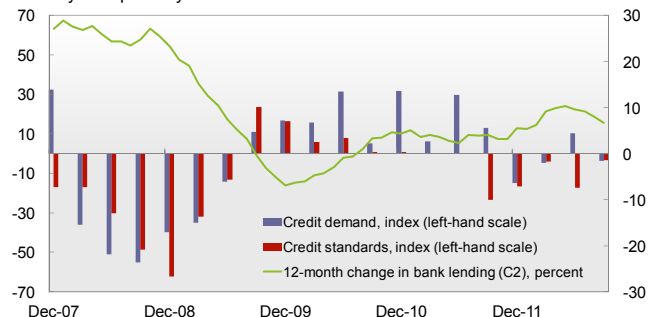
Chart 15 Annual change in bank debt of enterprises. Decomposition based on enterprises' earnings¹⁾ in the previous year. Percent. Annual data. 2000 – 2011



1) Profit before tax, depreciation, amortisation and impairment losses
Source: Norges Bank (enterprise statistics)

The marked fall in corporate debt growth during the financial crisis in 2008 was attributed both to weaker corporate loan demand and tighter credit standards in banks. Norges Bank's lending survey shows that banks tightened credit standards for enterprises for seven consecutive quarters to end-2009 Q2 (see Chart 16). Banks' reporting of their own credit standards and corporate credit demand are reflected in actual lending growth with a lag.

Chart 16 12-month change in bank lending to enterprises¹⁾, corporate credit demand and bank's credit standards for enterprises.²⁾ Percent and index. Monthly and quarterly data. 2007 Q4 – 2012 Q3



1) The Norwegian standard institutional sector classification was changed on 1 January 2012. For the 12-month change, this entails a break in the statistics as from March 2012
2) High values indicate easing of credit standards/higher credit demand, low values indicate tightening of credit standards/weaker credit demand
Sources: Statistics Norway and Norges Bank

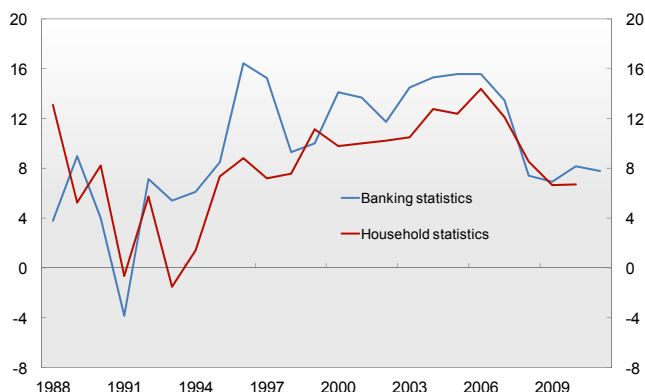
⁴ Equity capital and earnings are included in Norges Bank's risk classification model (see Sæther and Larsen (1999)). [9]

Bank and mortgage company lending to the retail market

Nearly 90 percent of household debt originates from banks and mortgage companies in Norway. We take a closer look at the retail market, which is a subcategory of households as defined by Statistics Norway. The retail market comprises wage earners and benefit recipients. Wage earners and benefit recipients are a useful way to divide the market when assessing indicators such as debt burden (debt as a percentage of disposable income) and debt-to-value ratio (debt as a percentage of the value of the dwelling).

Household income statistics provide detailed information on borrower households. The total annual rate of increase in debt in the retail market shows the same picture provided by household and banking statistics (see Chart 17).

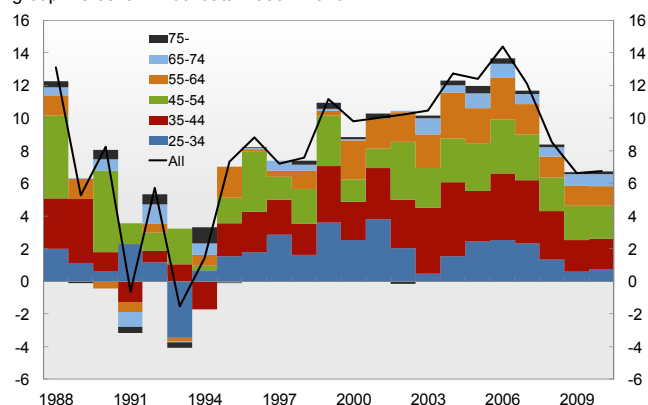
Chart 17 Annual growth of debt in the retail market calculated on the basis of banking statistics and household statistics. Percent. Annual data. 1988 – 2011



Sources: Statistics Norway and Norges Bank (banking statistics and household statistics)

Household debt accumulation can be seen from a life-cycle perspective. An important function of banks and mortgage companies is to enable households to smooth consumption over the life cycle. This involves borrowing at an early life stage, normally for home-buying, and then repaying the debt out of future income. The life-cycle hypothesis might suggest that newly established households account for the largest share of debt growth, given the sharp rise in house prices, but a decomposition of lending growth by age group shows a different picture. The increase in lending growth between 2000 and 2005 is largely attributable to debt accumulation among borrowers aged 45 and above (see Chart 18). Households in this age group often have substantial collateral in the form of home equity.

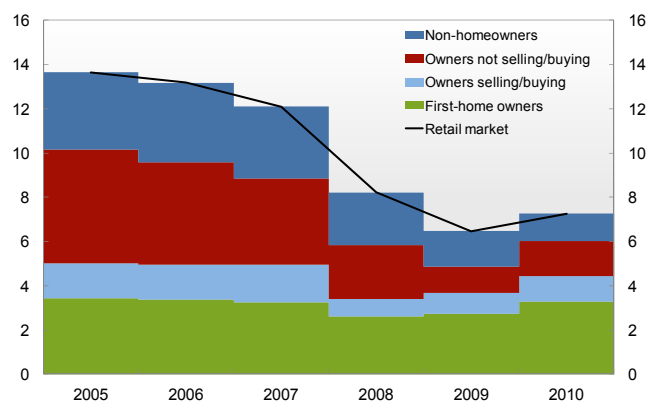
Chart 18 Decomposition of annual debt growth in the retail market by age group. Percent. Annual data. 1988 – 2010



Sources: Statistics Norway and Norges Bank (household statistics)

For the years 2004–2010, we have data for all persons resident in Norway. We are able to follow a person from year to year, enabling us to decompose lending growth by position in the housing market (see Chart 19). The contribution to growth in debt from first-time homebuyers has been relatively stable in the years 2005–2010. In 2005, home-equity loans to households that neither bought nor sold a dwelling made the largest contribution to growth in debt. This is often referred to as a freeing-up of increased home equity owing to the sharp rise in house prices. The contribution from this category fell sharply in the period to 2009.

Chart 19 Decomposition of annual debt growth by position in the housing market. Percent. Annual data. 2005 – 2010



Sources: Statistics Norway and Norges Bank (household statistics)

The household sector will be less vulnerable overall, the greater the share of borrowing by households in the upper income brackets. In Chart 20, households are divided into ten equally sized groups ranked by after-tax income. The largest contributors to lending growth since the early 2000s are households in the upper income groups. A possible explanation is that high income gives borrowers more flexibility in adjusting to the credit market. The contribution from lower and middle income groups has been more stable.

Chart 20 Decomposition of annual debt growth in the retail market by income group. Percent. Annual data. 2005 – 2010

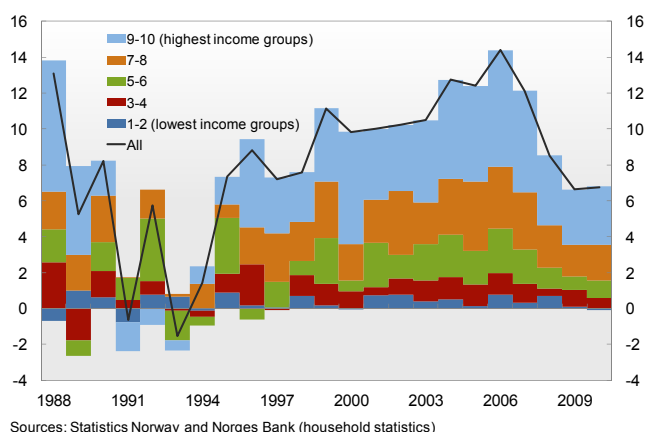
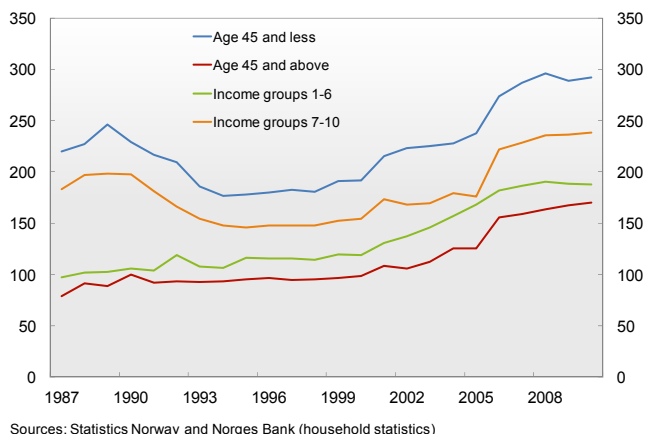


Chart 21 shows debt burdens in various age and income groups. Debt burdens for the age group 45 and above are lower than among those in the age group 45 and less, but debt burdens for both groups rose sharply after 2005. High-income households have heavier debt burdens than households in lower income groups. Since 2005, debt burdens have risen more for high-income households than for middle- or low-income households. However, high-income households are able to service heavier debt burdens than lower-income households.

Chart 21 Ratio of debt to disposable income in selected groups. Percent. Annual data. 1987 – 2010



5. Summary

We have closely examined the debt behaviour of the general public using various data sources. The data show that the growth in bank and mortgage company lending to the general public increased substantially from 2005 and remained at a high level in the period to 2008. Subsidiaries and branches of foreign banks accounted for a large share of debt growth. However, the contribution from foreign-owned banks has been considerably lower in the post-crisis period.

Loans to the corporate market accounted for much of the increase in this debt growth from 2005. In general, lending to the corporate market fluctuates more than lending to the retail market. We have provided an illustration of a decomposition of debt growth based on enterprises' earnings and equity ratio. It is largely enterprises with an equity ratio above 20 percent that account for the growth in bank debt. In the period for which we have data, growth was at its highest in 2007. That year, a not-insignificant share of growth came from enterprises that posted negative earnings the previous year. This may reflect some easing in bank credit standards during this period.

The increase in growth in lending to the retail market in the period 2000–2006 is largely attributable to debt growth for the age groups 45 and above. Households in the upper-income groups have made the largest contribution to debt growth since 2000. The analysis indicates that the increase in growth in lending to the retail market prior to the financial crisis is largely due to borrowing by households with collateral and solid incomes. Debt accumulation among first-time homebuyers has been relatively stable.

Appendix A: Reconciliation of C2 and microdata sources

Statistics Norway publishes figures for gross domestic debt (C2), which is broken down by credit source, including commercial and savings banks and mortgage companies. The figures can be further broken down by borrower sector. Non-financial enterprises and households are the relevant sectors in this context. C2 figures at end-2010 appear in Table A1.

Table A1 Gross domestic debt by borrower sector and credit source. NOK billion. At 31 December 2010

Non-financial enterprises	Commercial and savings banks	858
	Mortgage companies	116
	Total	974
Households	Commercial and savings banks	1107
	Mortgage companies	735
	Total	1842

Source: Statistics Norway, Statbank, Table 06715

Non-financial enterprises comprise the following sectors:

610 Public unincorporated enterprises, owned by central government

630 Central government corporations

638 " associated companies

635 Publicly owned enterprises

660 Municipal business operations

680 Independent municipal enterprises

688 " associated companies

710 Private enterprises with limited liability

718 " associated companies

719 " group companies

740 Private non-profit institutions serving enterprises

Households comprise the following sectors:

760 Private non-financial unincorporated enterprises.

770 Non-profit institutions serving households

790 Unincorporated enterprises within households

810 Employees, recipients of property income, pensions and social contributions, students etc.

890 Residual sector/non-distributed entities

In their annual reports, banks often divide lending activities between lending to the retail market and lending to the corporate market. In this analysis, we define sector 810 as the retail market and sectors 710-790 as the corporate market (see Table A2). As the table shows, gross lending means loans after impairment charges. In the annual financial reporting statistics for enterprises and

household income statistics, it is liabilities before impairment charges that are reported.

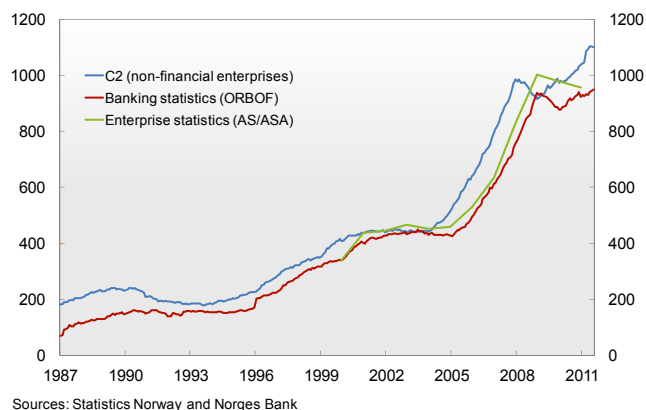
Table A2 Loans from banks and mortgage companies. NOK billion. At 31 December 2010

Retail market	Gross lending	1635
	Lending before impairment charges	1638
	Impairment charges on individual loans	-256
Corporate market	Gross lending	1122
	Lending before impairment charges	1131
	Impairment charges on individual loans	-851

Source: ORBOF (Financial market statistics)

The annual financial reporting statistics comprise the organisational forms AS (limited liability company) and ASA (public limited company). The sector that comes closest to this definition in the banking statistics is sector 710 (Private enterprises with limited liability). According to the annual financial reporting statistics, amounts owed to credit institutions (current and non-current) totalled NOK 957 billion at end-2010. Loans from banks and mortgage companies to sector 710 amounted to NOK 1037 billion.

Chart A1 Enterprises' debt from banks and mortgage companies taken from various sources. In billions of NOK. Monthly and annual data. January 1987 – July 2011



There may be several reasons for the difference between these amounts. First, sector 710 in the banking statistics contains company types other than limited liability or public limited companies, such as limited and general partnerships and housing cooperatives. On the other hand, annual financial reporting statistics include loans from both Norwegian and foreign credit institutions. As described in the section on C3, financing from foreign sources accounts for a substantial part of enterprises' total debt.

Banks and mortgage companies are the most important source of credit to the retail market. At end-2010, loans from banks and mortgage companies to the retail market (taken from the financial market statistics ORBOF) totalled NOK 1 635 billion. Likewise, household debt excluding student loans (taken from tax assessment data) totalled NOK 1 905 billion. That is, loans from banks and mortgage companies, as measured in ORBOF, account for 86 percent of household debt as it appears in tax assessment data. Sources of the remaining loans may be government lending institutions other than the Norwegian State Education Loan Fund, such as the Norwegian State Housing Bank, from other persons or enterprises.

Appendix B: List of banking groups

DNB: DNB Bank, Nordlandsbanken, DNB Boligkreditt and DNB Næringskreditt

Subsidiaries of foreign banks: Nordea Bank Norge, Santander Consumer Bank, SEB Privatbanken and Nordea Eiendomskreditt

Branches of foreign banks: Fokus Bank branch of Danske Bank, Handelsbanken, SEB, Swedbank, Handelsbanken Eiendomskreditt, BNP Paribas, Skandiabanken, and six other branches

Sparebank1: SpareBank 1 SR-Bank, SpareBank 1 SMN, SpareBank 1 Nord-Norge, Sparebanken Hedmark and the 11 other savings banks in SpareBank 1-alliansen, SpareBank 1 Boligkreditt, BN Bank, Bank 1 Oslo Akershus, one commercial mortgage company and one other residential mortgage company

Terra: Terra BoligKreditt, Terra Finans og Kredittbank and 77 savings banks that are owners of Terra-Gruppen AS and one other residential mortgage company

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<http://www.ssb.no/a/innrapportering/orbof/>
- [3] Income statistics for households. Wealth and debt. Statistics Norway.
http://www.ssb.no/english/subjects/05/01/iformue_en/
- [4] The credit indicator C3. Statistics Norway.
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