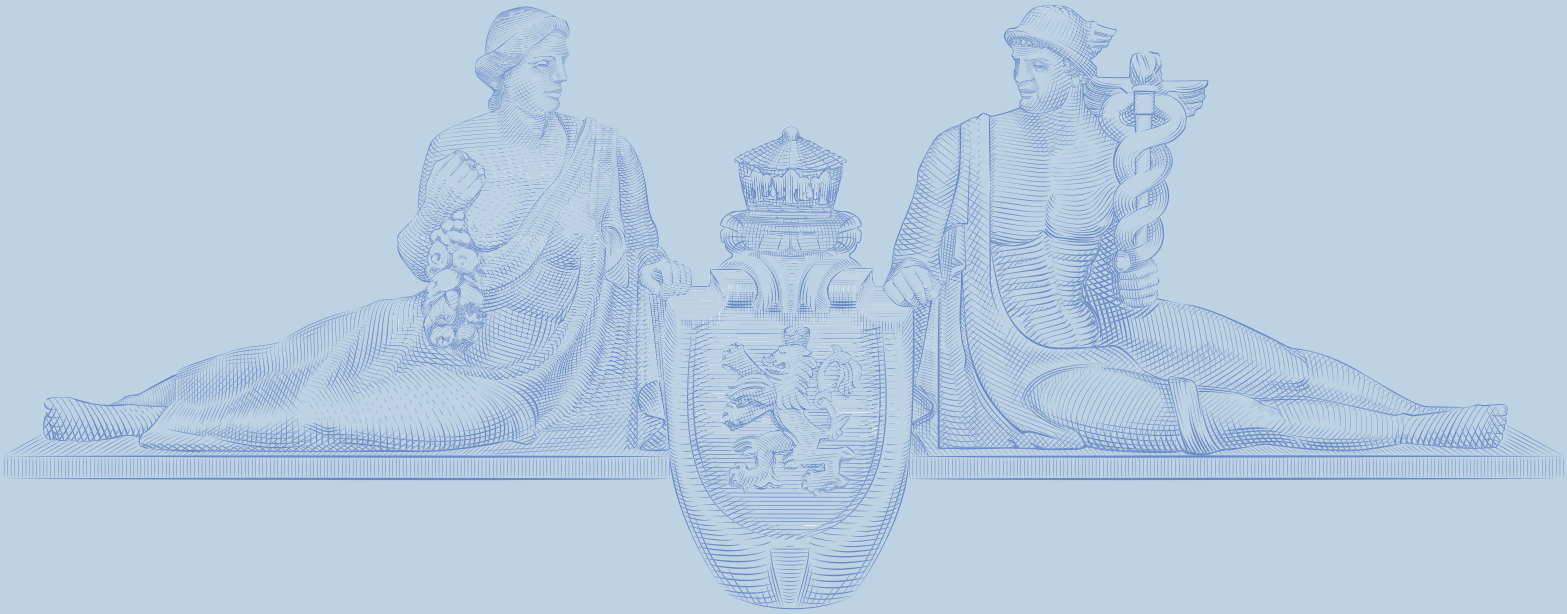

Topical Research and Highlights

Analysis of the Financial Situation of Firms and Households in the 2008–2019 Period

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BULGARIAN NATIONAL BANK

Analysis of the Financial Situation of Firms and Households in the 2008–2019 Period

The level of indebtedness of firms and households affects directly their financial situation and ability to meet unexpected negative economic shocks such as those resulting from the COVID-19 pandemic, and to continue servicing the accumulated debt. The aim of the present analysis is to examine the trends in indebtedness and the overall financial situation of firms and households in the 2008–2019 period. The analysis of firms is carried out at the total economy level by sector of economic activity and based on microdata for individual firms from the Amadeus database. The analysis of households is focused on the level of the economy as a whole.

The level of firms' indebtedness is examined by means of indicators such as debt to GDP, debt to gross value added (GVA) and debt to gross operating surplus (GOS). The ratio of debt to GDP is the most widely used indicator to measure the level of indebtedness in the economy. In order to take account more precisely of the trends at the sectoral level, it is more appropriate to use indicators such as debt to gross value added or debt to gross operating surplus as they provide clearer view of the debt coverage with value added in the economy or with profit of the specific sector. These indicators provide information on resources available to service the debt.

At the aggregate level, the sector of non-financial corporations is characterised by a significantly higher level of indebtedness compared to that of households. However, since 2018 a steady decline in corporate indebtedness has been observed, measured by the debt to GDP ratio, which has approached average EU levels in recent years. The debt to GDP ratio[1] of non-financial corporations stood at 72.0 per cent against 23.0 per cent of households by the end of 2018. At the end of 2008 the values of these indicators were 110.6 per cent and 29.8 per cent, indicating that both sectors improved significantly compared to the period before the global financial and economic crisis of 2008–2009. Non-financial corporations' debt to GDP ratio declined between 2008 and 2018 almost entirely driven by nominal GDP growth, and to a very limited extent by the decrease in firms' debt. Concurrently, households registered higher amount of debt but as a result of nominal GDP growth the indicator improved over the review period.

Other indicators at the aggregate level for non-financial corporations, which are of importance for the assessment of potential risks associated with debt servicing in the context of deteriorated macroeconomic environment and financing conditions, are the maturity structure of the debt and the total interest paid to gross operating surplus to disposable income of firms. It can be inferred from Chart 2 that with respect to these indicators corporations in Bulgaria are in a more favourable position compared to most EU countries. A large share of short-term debt in total debt may result in difficulties in getting new funding in the context of a deteriorated economic environment, and consequently in liquidity shortage. Bulgaria's share of short-term debt in total debt of non-financial corporations is comparatively small, remaining stable in the period 2008–2018, and varying between 15 per cent and 20 per cent. From this perspective, it could be concluded that Bulgarian corporations are relatively less vulnerable to changes in short-term financing conditions.

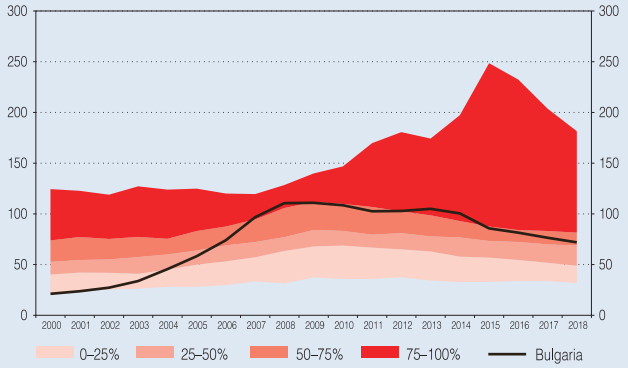
Another important factor for the assessment of debt sustainability is the burden of debt servicing for non-financial corporations showing the proportion of their income, needed to pay debt interest. This indicator tended to improve steadily in the 2008–2018 period with Bulgarian corporations being among EU corporations with the lowest burden of debt servicing.

[1] A consolidated debt to GDP indicator is used. Debt includes loans and debt securities based on annual financial account data of non-financial corporations and households and non-profit institutions serving households (NPISHs) available up to 2018.

Chart 1. Debt-to-GDP Ratio

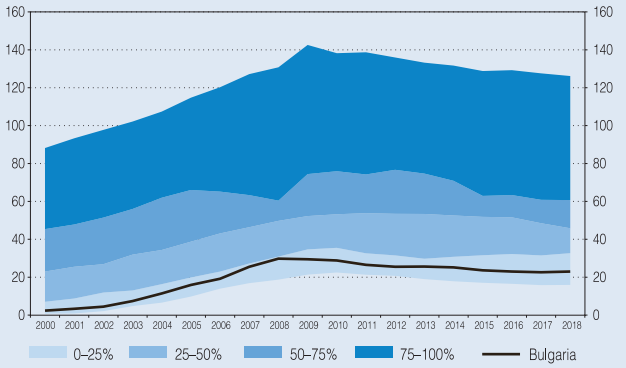
Non-financial Corporations

(per cent)



Households and NPISHs

(per cent)



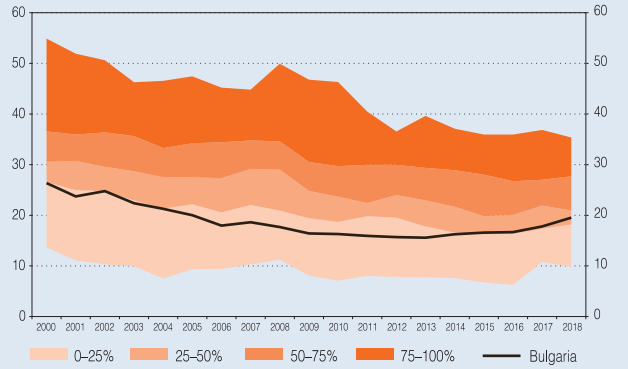
Notes: The chart shows a quartile distribution of the indicator for EU Member States. Each segment contains 25 per cent of the Member States: the one at the lowest end presents the first 25 per cent with the lowest values of the indicator, the second segment presents the next 25 per cent of the countries with higher values of the indicator, and the top 25 segment covers the countries with the highest values of the indicator. The values for Bulgaria are presented with a line.

Sources: Eurostat, BNB calculations..

Chart 2. Other Indicators of Indebtedness of Non-financial Corporations

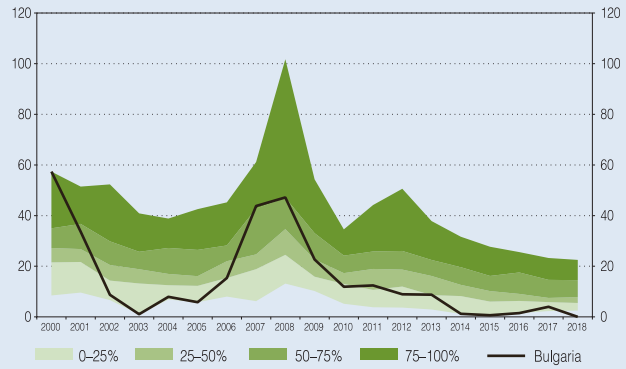
Short-Term Debt to Total Debt

(per cent)



Interest Paid to Disposable Income

(per cent)



Notes: The chart shows a quartile distribution of the indicator for EU Member States. Each segment contains 25 per cent of the Member States: the one at the lowest end presents the first 25 per cent with the lowest values of the indicator, the second segment presents the next 25 per cent of the countries with higher values of the indicator, and the top 25 segment covers the countries with the highest values of the indicator. The values for Bulgaria are presented with a line.

Sources: Eurostat, BNB calculations.

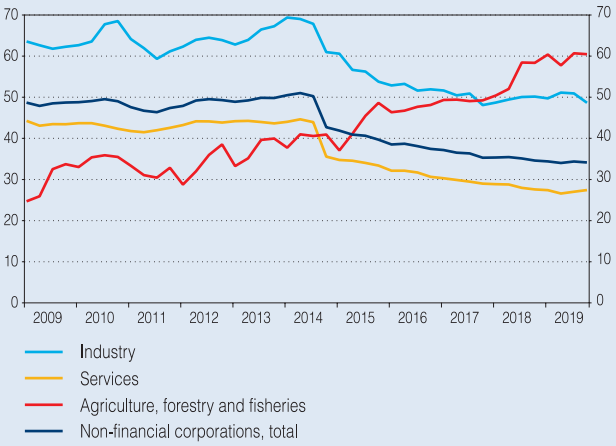
An essential characteristics of firms' indebtedness in Bulgaria is the relatively large share of the external debt in their total debt. Based on BNB monetary statistics, Bulgaria's gross external debt statistics and financial accounts, firms' debt structure may be estimated at the level of the economy as a whole. This estimation shows that the external debt accounts for 50 per cent of firms' total indebtedness, with indebtedness to banks in the country of 36 per cent and inter-company indebtedness of 13.5 per cent[2] as of the end of 2018. The significant share of external debt in firms' total debt is due primarily to the large amount of attracted foreign direct investment, especially in the period before the global financial and economic crisis of 2008–2009 as a result of the process of nominal and real convergence, high capital return and favourable macroeconomic environment.

[2] Inter-company indebtedness has been estimated based on annual financial account data for non-financial corporations on a non-consolidated and consolidated basis.

Chart 3. Indicators of Firms' Indebtedness by Sector of Economic Activity

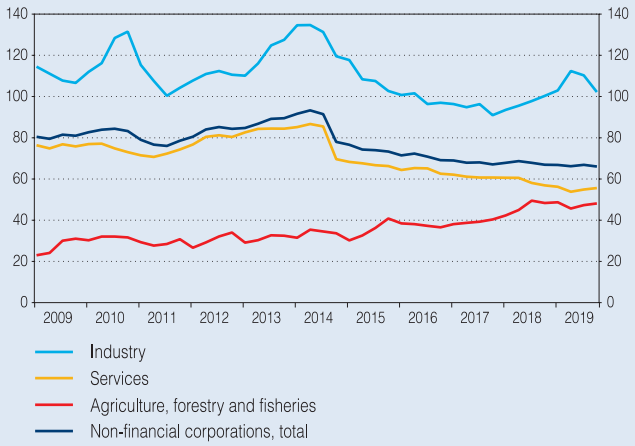
Credit to Gross Value Added Ratio

(per cent)



Credit to Gross Operating Surplus Ratio

(per cent)



Sources: the NSI, the BNB, BNB calculations.

The analysis of the indebtedness of economic sectors presented below, is focused on bank loans due to the availability of loan data by sector.[3] Chart 3 shows indicators of the indebtedness level of non-financial corporations to domestic credit institutions[4]. A higher loan coverage with value added has been registered in the industry and services sector since the beginning of 2015[5], while in agriculture the trends are opposite. Positive developments in industry are mainly driven by the construction sector, and in services sector essentially by wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities, and professional activities and research; administrative and support service activities. By end-2019 loans to the industrial sector accounted for 49 per cent of the gross value added in this sector, loans to the services sector for 27 per cent, respectively, and those to agriculture for 60 per cent. The relatively low loan to GVA ratio in services can be explained by the high value added of this sector in the economy (see Chart 4). The loan coverage ratio with gross value added in agriculture worsened in the period under review (2009–2019). However, due to the small share of loans to this sector in total loans to non-financial corporations and the low gross value added in this sector, a long-term trend to improving total loan to GVA ratio of firms has been observed since the beginning of 2015, accounting for 34.1 per cent by the end of 2019 (against 48.7 per cent at the end of 2009).

The ability of corporations to service their debt by generating profit from production of goods or provision of services can be assessed by the ratio of loans to gross operating surplus. This ability in the overall economy has significantly improved since the start of 2015 with gross operating surplus covering 151 per cent of firms' debt to banks by the end of 2019. However, trends differ among sectors of economic activity. The services sector contributed most to the overall improvement of this indicator with a significant increase in profit, covering 180 per cent of bank debts by the end of 2019. The credit to gross operating surplus ratio in the industry declined between 2014 and 2017, before reversing this trend in the beginning of 2018 with sector's profits covering 98 per cent of debts to the banking sector at the end of 2019. In the agricultural sector the indicator

[3] Data for total gross external debt by sector of economic activity are not available.

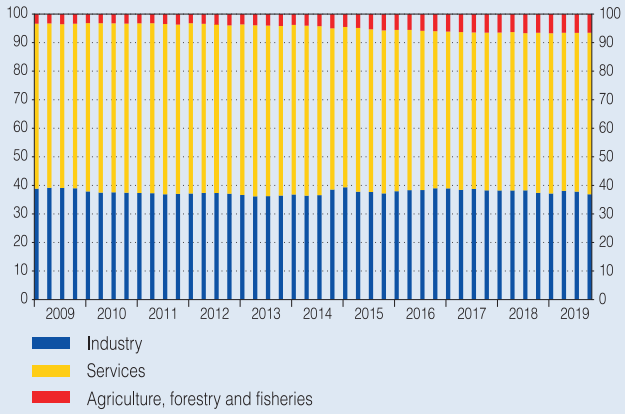
[4] Indicators are based on the Classification of Economic Activities (NACE-2008) with data starting from the first quarter of 2009.

[5] The stronger effect resulting in a decline in indicators at the end of 2014 is due to KTB removal from the monetary statistics in November 2014.

Chart 4. Loans and Gross Value Added of Firms by Sector of Economic Activity

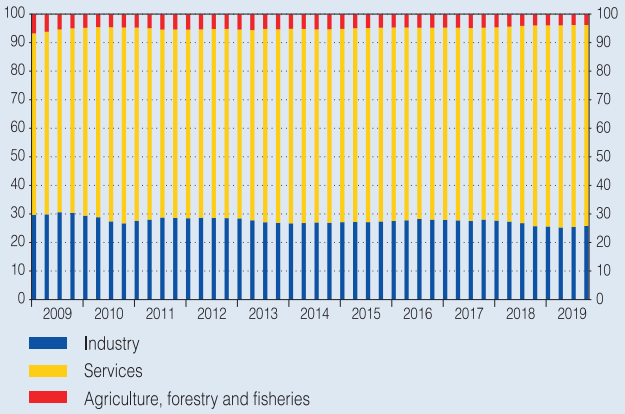
Share of Loans in the Total Amount of Loans to Non-financial Corporations

(per cent)



Share of Value Added in Total Value Added in the Economy

(per cent)



Sources: the NSI, the BNB, BNB calculations.

increased throughout the period under review (2009–2019), but due to the relatively small amount of loans to this sector, the coverage with gross operating surplus was more than two times by the end of the period. The positive trends in the services sector were mainly driven by wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities, and professional activities and research; administrative and support service activities, where the credit to gross operating surplus ratio declined almost twice in the 2014–2019 period. The improvement in wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities sector in particular, is due to the significant growth of profits realised over that period. Despite the positive trends, this sector along with industry (mainly construction) exhibit the highest credit to gross operating surplus ratios at the end of 2019.

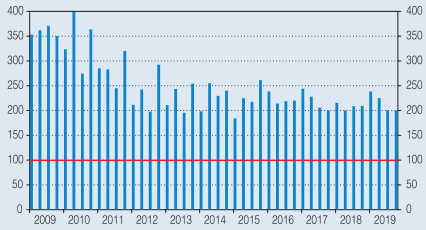
The ratio of loans to deposits can be informative of the availability of liquidity buffers in individual sectors of the economy, even when such sectors do not carry out production activities or provide services (see Chart 5). A value of this ratio, which is lower or equal to one, could be an indication that the respective sector is able to pay its credit obligations in full from savings. While for non-financial corporations this indicator has declined steadily since 2015, the trends differ among sectors of economic activity. Sectors that at the end of 2019 had the lowest liquidity buffers with loans to deposits ratio exceeding 100 per cent, were real estate activities (313 per cent), manufacturing (218 per cent), accommodation and food service activities (210 per cent), agriculture, forestry and fisheries (200 per cent), water supply; sewerage, waste management and remediation activities (160 per cent) and wholesale and retail trade; repair of motor vehicles and motorcycles (138 per cent). Conclusions at the sectoral level only permit to give a rough indication of the level of indebtedness and liquidity position of firms due to the heterogeneity of individual firms within the sectors.

In the light of the containment measures against COVID-19 spread, targeted mainly at the services sector, firms from that sector could be expected to be more severely affected by the pandemic. Considering the high value added generated by the services sector (70.4 per cent of total value added in the economy by 2019-end), significant negative implications for the economic activity in the country could be expected. While the overall financial situation of firms in the services sector tended to improve continuously since the beginning of 2015, several sectors having relatively lower liquidity buffers can be identified, where temporary cessation of activities and/or a significant decline in profits may lead to difficulties in repaying debts. Sectoral level analysis suggests that the ability of real estate activities and accommodation and food services activities sectors to cope with

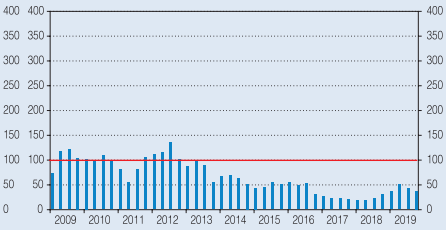
Chart 5. Loans to Deposits Ratio by Sector of Economic Activity

(per cent)

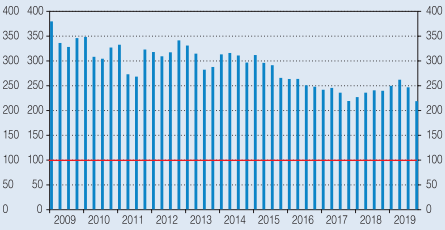
Agriculture, Forestry and Fisheries



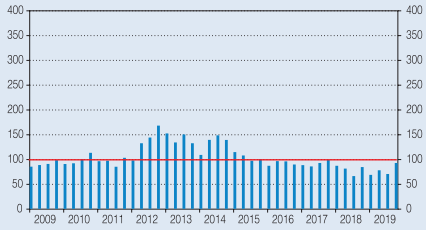
Mining and Quarrying



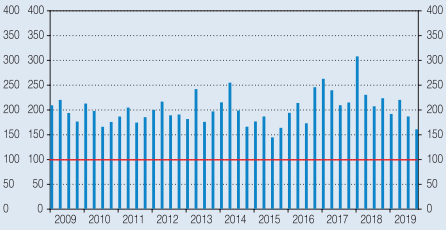
Manufacturing



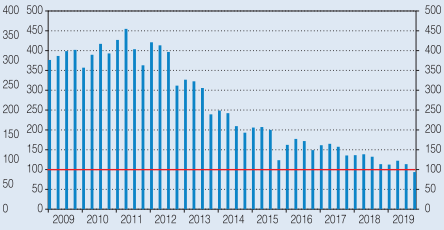
Production and Distribution of Electricity, Heating and Gaseous Fuels



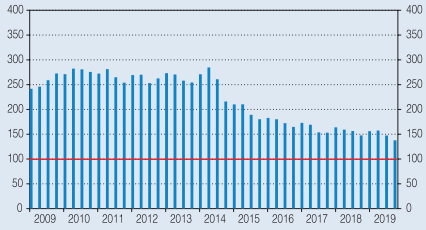
Water Supply, sewerage, Waste Management and Remediation Activities



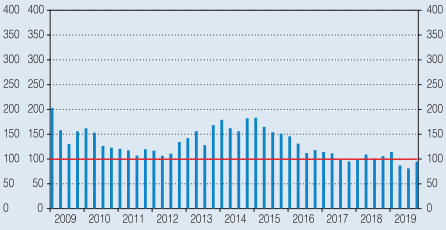
Construction



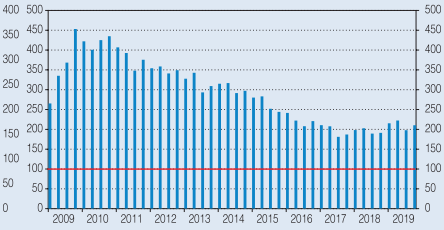
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles



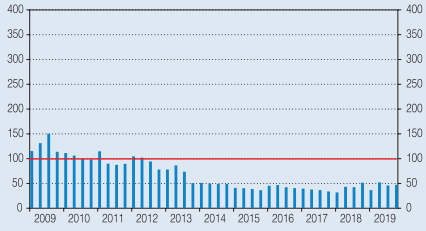
Transportation and Storage



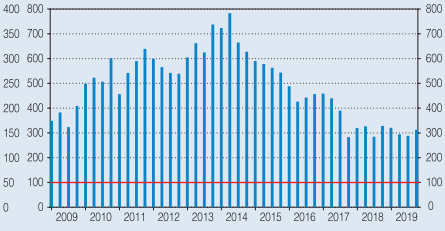
Accommodation and Food Service Activities



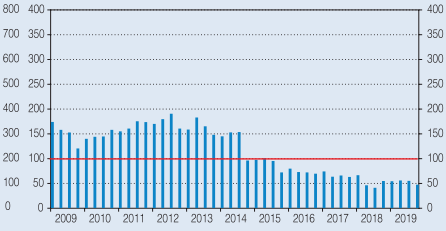
Information and Communication, Telecommunications



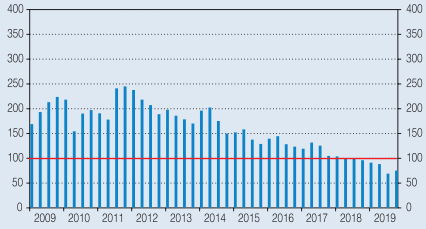
Real Estate Activities



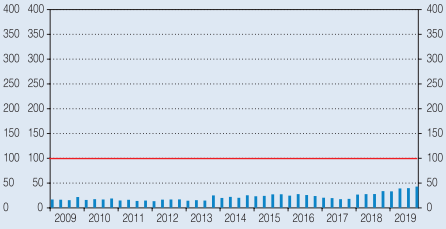
Professional Activities and Research



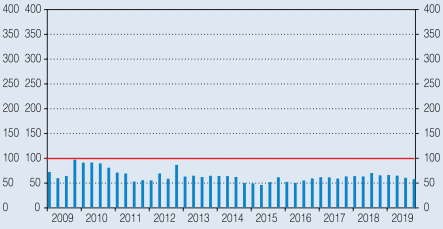
Administrative and Support Service Activities



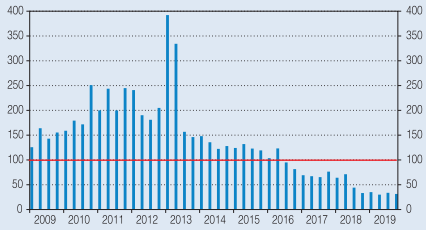
Education

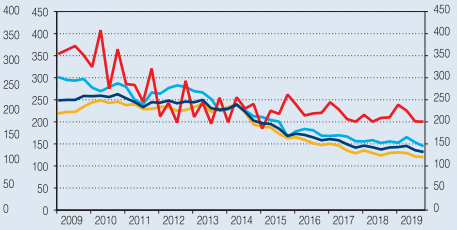


Human Health and Social Work Activities



Arts, Entertainment and Recreation



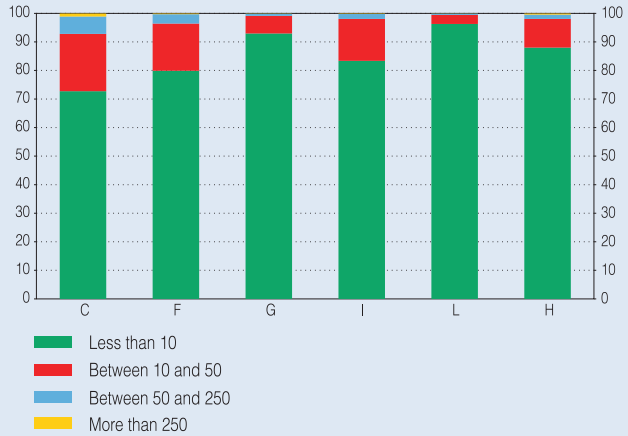


Sources: the BNB, BNB calculations.

Chart 6. Distribution of Firms by Sector of Economic Activity

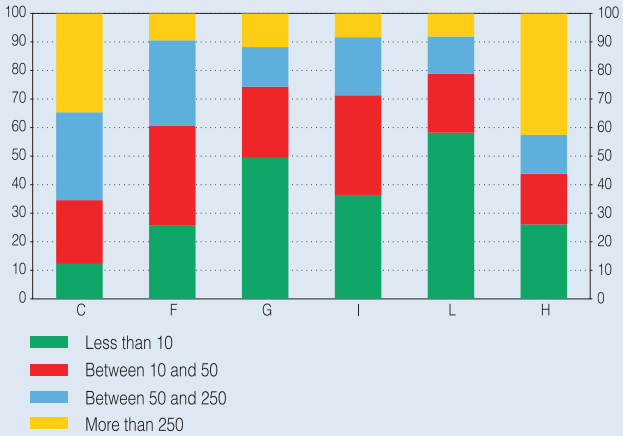
Share of Firms in the Total Number of Firms

(per cent)



Share of Employees in Total Employees in the Sector

(per cent)



Note: Sectors are indicated as follows: Manufacturing (C), Construction (F), Wholesale and retail trade; repair of motor vehicles and motorcycles (G), Accommodation and food service activities (I), Real estate activities (L) and Transportation and storage (H).

Sources: Amadeus database and BNB calculations.

the effects of the COVID-19 crisis is the lowest. These conclusions are valid at the sectoral level, however, the negative effects of the crisis will depend on the number of firms in these sectors with relatively high level of indebtedness and low liquidity buffers, and on the share of value added and employment that these firms form.

A more detailed analysis at the micro level can be informative of the distribution of firms by sector. The analysis below is based on data from the Amadeus database. The data analysed concern 364,797[6] firms operating in the sectors with relatively lower liquidity buffers based on the loans to deposits ratio as shown in Chart 5 (real estate activities, accommodation and food service activities and manufacturing). Several services and manufacturing sub-sectors are additionally examined, which are assumed to be more severely affected by the measures against COVID-19 *i.e.* wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage and construction. For the purposes of the analysis several indicators are calculated, which give an indication of the indebtedness of firms in the sectors under review, their debt coverage with operational profits and the availability of liquidity buffers. In particular, the indicators used in the analysis are as follows:

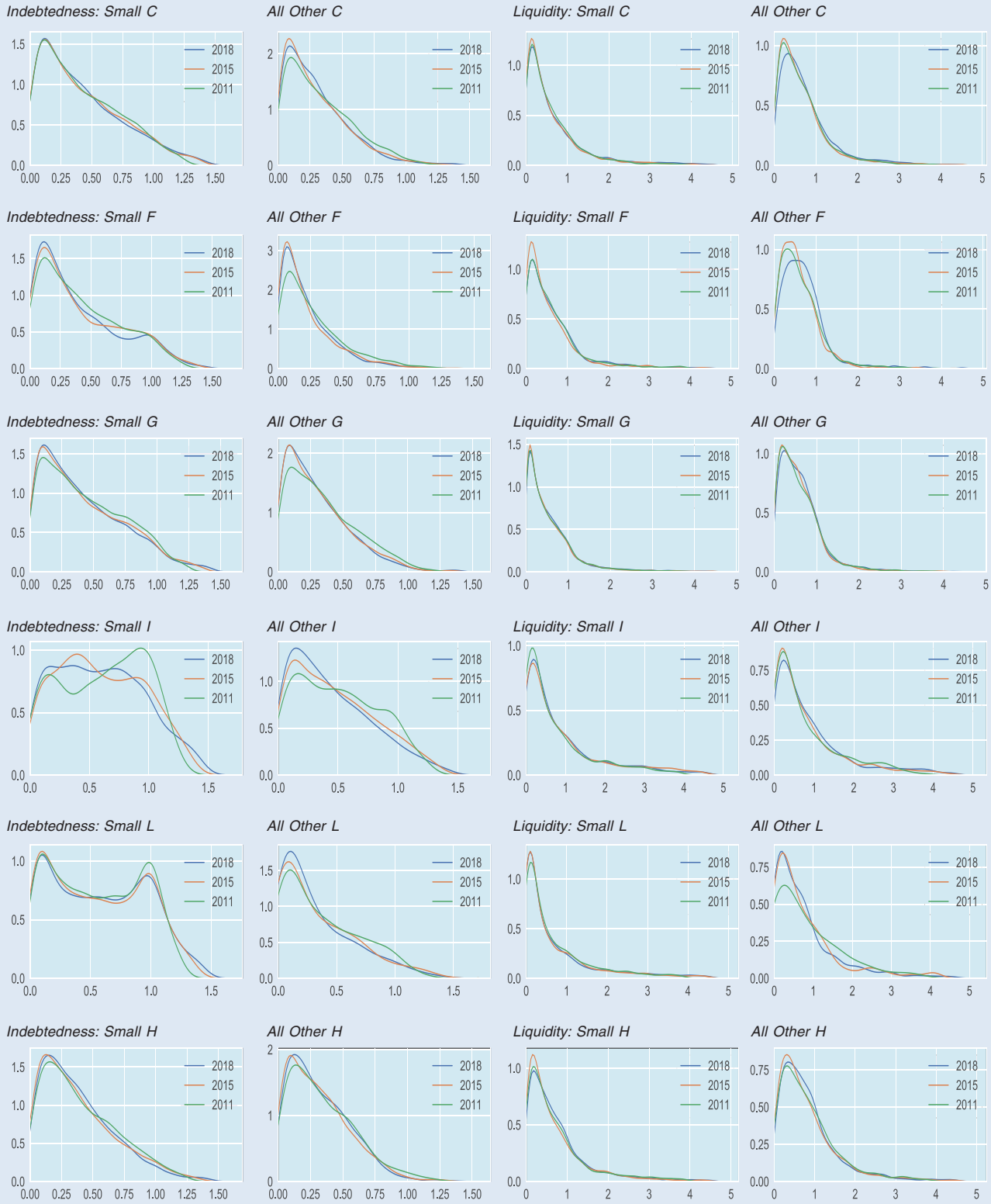
- debt[7] to total assets ratio, which is an indicator of indebtedness
- debt to profits before tax, interest and depreciation ratio, which is an indicator of debt coverage with profit
- short-term liabilities to short-term assets ratio, which is an indicator of total liquidity.

Firms are grouped by sector of activity and by number of employees hired as follows: small firms are those with less than 10 employees, medium firms are those with employees between 11 and 50, large enterprises are those with employees between 51 and 250 and very large enterprises are those with more than 251 employees.

[6] The number of firms varies from year to year depending on both the relevant indicator and data available for it. Firms with negative values of indicators for debt and total assets are excluded from total firms. In addition, firms with outliers are also removed.

[7] The debt is calculated as the sum of long-term liabilities and short-term liabilities to financial corporations.

Chart 7. Density Functions of Distribution of Indicators of Firms' Indebtedness and Liquidity by Sector of Economic Activity



Note: Sectors are indicated as follows: Manufacturing (C), Construction (F), Wholesale and retail trade; repair of motor vehicles and motorcycles (G), Accommodation and food service activities (I), Real estate activities (L) and Transportation and storage (H).

Sources: Amadeus database and BNB calculations.

Chart 7 shows the density distribution functions of the indicators for each of the analysed sectors[8]. In order to better visualise and more clearly distinguish the trends of the development by sector and year, medium, large and very large enterprises are grouped and shown separately from small enterprises which account for about 88 per cent of all firms operating in the six sectors. Three years are represented on each of the charts: 2011, 2015 and 2018[9].

From the analysis of the debt to total assets ratio of individual firms in the sectors under review, it can be concluded that the distributions are concentrated close to zero in the sectors Manufacturing (C), Construction (F), Wholesale and retail trade; repair of motor vehicles and motorcycles (G), Accommodation and food service activities (I), and Transportation and storage (H). This means that a larger number of firms in these sectors have a relatively lower debt to assets ratio, implying that they are in a comparatively better position and, consequently a small share of all firms in the sector are highly indebted. This applies to both small and medium, and large enterprises in these sectors, where the indicator improved somewhat over the years until 2018. The situation is different in Real estate activities (L) and Accommodation and food service activities (I), where the indicator is also improving over the years. However, even in 2018 the number of firms, which are more heavily indebted in these sectors, is higher than in all other sectors under review. This conclusion is particularly valid for the small firms in these two sectors accounting for 96 per cent and 83 per cent of all operating enterprises in these sectors and employing 58 per cent and 36 per cent of total staff hired in both sectors[10]. Similar conclusions can be drawn from the analysis of the debt to profit ratio (not shown on the chart). Both sectors Real estate activities (L) and Accommodation and food service activities (I) are characterised by a larger number of firms whose profits cover their liabilities to a lower extent, this trend being more pronounced in small firms with less than 10 employees.

The analysis of the short-term liabilities to current assets ratio suggests that small firms are in a relatively better position than medium and large enterprises, with most of them being in a position to cover their outstanding obligations with relatively highly liquid assets. This also applies to small firms in Real estate activities (L) and Accommodation and food service activities (I) identified as comparatively more vulnerable, which mitigates for them at least in the short run the potential negative impacts of pandemic measures. As regards medium and large firms, the sectors that are characterised by the lowest liquidity buffers are Construction (F), Wholesale and retail trade; repair of motor vehicles and motorcycles (G), and Transportation and storage (H), where a certain deterioration in this indicator is observed over the review period.

The analysis of the share of companies of different size in individual sectors shows that some of the sectors are characterised by a concentration of the number of employees in one type of firms. For instance, in both manufacturing and construction the share of employed in large and very large enterprises (65.4 per cent and 39.4 per cent) dominates, while in Real estate activities (L), Wholesale and retail trade; repair of motor vehicles and motorcycles (G), Accommodation and food service activities (I) a significant part of employed are in small firms with less than 10 employees (58.2 per cent, 49.4 per cent and 36.4 per cent respectively). The higher concentration of more heavily indebted small firms despite the ability to cover short-term liabilities with liquid assets in Real estate activities (L) and Accommodation and food service activities (I) increases the vulnerability of these sectors to negative shocks resulting from the COVID-19 crisis.

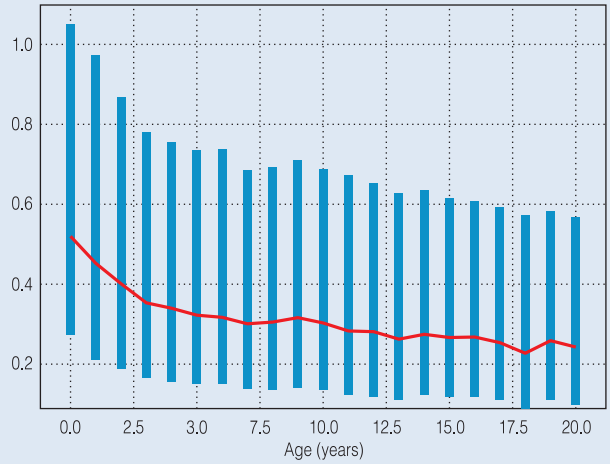
[8] The functions are calculated using a non-parametric econometric approach: Kernel estimators with Gaussian Kernel function and optimal bandwidth based on Scott's rule. The horizontal axis of each chart shows the indicator of indebtedness or liquidity of the sector and the vertical axis shows the density of the distribution, with the area under the curve equal to 1.

[9] There is no 2019 data available for firms in Amadeus database.

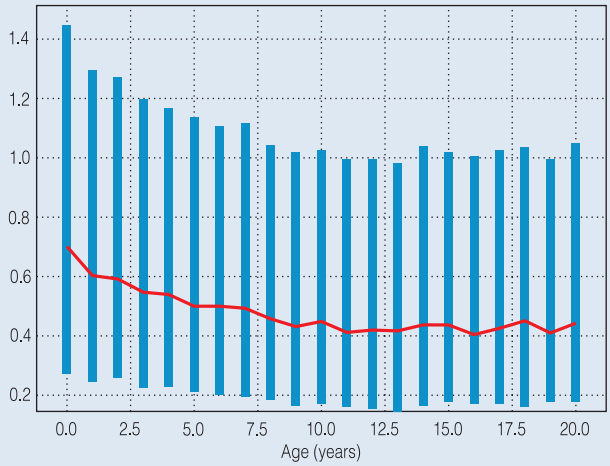
[10] Due to lack of sufficient data the share of value added of small firms in total value added in these sectors cannot be calculated.

Chart 8. Interquartile Range of Firms' Indebtedness and Liquidity Indicators by Age of Corporation

Indebtedness



Liquidity



Note: The indebtedness indicator is measured by the Debt/Total assets ratio, while the liquidity indicator by the Short-Term Liabilities/Current assets ratio. The red line marks the median of firms' age distribution. Data of both charts refer to 2018.

Sources: Amadeus database and BNB calculations.

The level of firms' indebtedness is driven by a large number of factors related both to the financial and institutional environment, in which they operate, and the specific developments at the sectoral and firm level[11]. In sectors for which a significant working capital and fixed assets for the production process are required, a precondition for higher indebtedness of firms operating in these sectors is created. At the firm level, factors behind the higher level of indebtedness are the size and age of the respective enterprise, its profitability, the uncertainty surrounding the access to funding sources *etc*. Chart 8 shows that firms with shorter existence are more heavily indebted and operate with lower liquidity than already-established firms. At the same time, there is a high degree of dispersion among firms displayed in the wide quartiles around the median, which indicates the lack of homogeneity among individual corporations. Higher indebtedness of some firms may indicate that in the context of deteriorated macroeconomic environment they might face difficulties linked to falling profits and more limited ability to service their debt. Concurrently, depending on factors that influence the choice of corporations' financing, it could reflect developments, specific for the sector or the firm (such as the age), and not vulnerability as to the level of indebtedness.

The financial situation of households at the sectoral level is more favourable than that of corporations in the review period. According to the debt to GDP ratio, households in Bulgaria are among the least indebted compared to other EU countries (see Chart 1). In addition, this indicator has tended to improve steadily since 2008, falling from 29.8 per cent in 2008 to 23.0 per cent by end-2018.

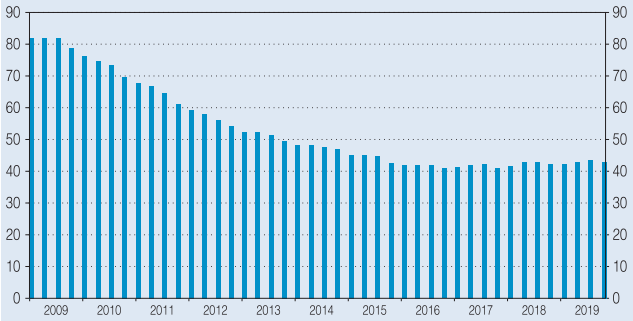
Household debt to banks coverage with available savings also tended to rise in the period under review. To a large extent, this trend reflects the significant rise in bank deposits, growing from BGN 22.0 billion at the end of 2008 to reach BGN 55.7 billion at the end of 2019 (153.4 per cent growth). In the same period loans to households grew by 32.1 per cent. The trend in the loans to disposable income ratio is similar. Between 2008 and 2019 households' disposable income rose by 105.3 per cent[12]. Overall, by end-2019 the households sector is characterised by comparatively low indebtedness and ability to service the debt, mostly in the form of banking loans. These conclusions may be drawn based on the aggregated sector data. It should also be taken into account

[11] European Central Bank, Corporate Finance and Economic Activity in the Euro Area, Occasional Paper Series No 151, 2013.
[12] The level of nominal disposable income is based on BNB estimates.

Chart 9. Households' Indebtedness Indicators and NPISHs

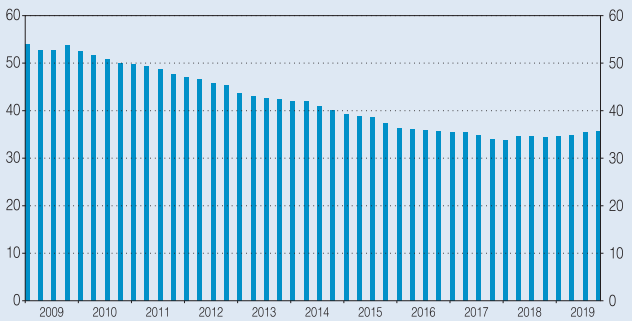
Loans to Deposits Ratio

(per cent)



Loans to Disposable Income Ratio

(per cent)



Sources: the NSI, the BNB, BNB calculations.

that the level of savings and the level of debt differ among individual economic agents. Persons who save might have loans and *vice versa*. Some economic agents may be more severely affected by the COVID-19 crisis, if they lose their jobs or part of their income, having high debts and low savings.

The positive trends related to the reduction in the level of indebtedness both in the household and non-financial corporations sectors over the 2008–2019 period suggest a better initial situation in both sectors before the COVID-19 pandemic compared to their situation before global financial and economic crisis of 2008–2009. The higher liquidity buffers in the form of savings in the banking system contribute to a more stable financial situation and enhance the resilience against the negative economic impacts of the COVID-19 crisis. Another factor, which mitigates the potential risks associated with firms' debt servicing in the context of deteriorated economic environment, is the retention of comparatively low share of short-term debt in firms' total debt. There is a heterogeneity among individual firms and households in the level of indebtedness and the level of savings, hence conclusions for the whole sectors of firms and households only permit to give a rough indication of the level of debt and the availability of savings in the economy. By sector of economic activity, comparatively greater vulnerability of corporations may be identified in the services sector, in particular in Real estate activities, Accommodation and food service activities, which exhibit a higher level of indebtedness and lower liquidity buffers. Micro level analysis shows that small firms in these two sectors are more heavily indebted. These firms employ 58 per cent of total staff hired in Real estate activities and 36 per cent of total staff hired in Accommodation and food service activities. Higher indebtedness may be seen as an indicator of possible difficulties these firms could experience in the context of deteriorated macroeconomic environment and of possible constraint in terms of ability to service their debt.

The sculptural composition by Kiril Shivarov depicting Hermes and Demeter on the southern façade of the Bulgarian National Bank building is used in cover design.