Composition of Debt Balance of the Nonfinancial Business Sector by industry

Yael Dahari and Maayan Kellerman*

Abstract

The Bank of Israel's Information and Statistics Department maintains a database of activity in the credit market and calculates aggregates of total debt in the Israeli economy. Such data is used by the Bank of Israel in fulfilling its functions, for supporting the stability of the financial system, monitoring risk in the market, and supporting economic growth. These aggregate values incorporate many data points and various compositions, primarily the lender sectors, borrower sectors, and financial instruments used to extend such credit. The nonfinancial business sector, consisting of Israeli business companies, is the major borrower in the economy. Expanding the aggregate information about debt owed by this sector, through composition of the debt balance by industry, allows for in-depth review of the developments in this sector.

This document describes the composition of the debt balance of the nonfinancial business sector by industry, as categorized by the Central Bureau of Statistics. This document presents the data framework and data sources, explains the key methods used in said composition, with reference to issues and challenges, and illustrates the primary uses of such data through diverse outputs.

* Information and Statistics Division of the Bank of Israel.

1. Background, motivation and objective of this document

A perfect credit market contributes to growth, by allowing for allocation of financial resources to appropriate places for the economy, efficiently and continuously, with correct pricing of risk. For the Bank of Israel to fulfill its functions, primarily in supporting the stability of the financial system, risk monitoring in the market and support for economic growth, the Bank's Information and Statistics Department manages a database and calculates aggregate values for debt in the market.

The three major dimensions of the credit market are as follows: **Lender sectors** – entities and institutions that extend credit in the market; **borrower sectors** – entities that borrow in the market; and the **financial instruments** used to extend credit. The nonfinancial business sector (hereinafter: "the **Business Sector**") consisting of Israeli business companies, is the major borrower in the economy. Expanding the aggregate information about debt owed by this sector, through composition of the debt balance by industry, allows for in-depth review of the developments in this sector. From the financial stability aspect, this composition allows us to: Track and monitor lender exposure to various industries; Review connectivity resulting from exposure of different lenders to the same industry; Identify and monitor leveraged industries; Map financing channels for different industries and better understand credit allocation in the market.

This document describes how the Bank of Israel's Information and Statistics Department calculates the composition of the debt balance of the nonfinancial business sector by industry, as categorized by the Central Bureau of Statistics (hereinafter: "**CBS**"). This document presents the data framework and data sources, explains the key methods used in said composition, with reference to issues and challenges, and illustrates the primary uses of such data through diverse outputs.

2. Methodology framework

A. Data framework

Debt aggregates of the Israeli economy incorporate a large amount of data by various compositions.[1] Table 1 shows debt by lender sectors and borrower sectors. Debt consists of balances of bonds and loans.

[1] For more information about the calculation method of credit aggregates in the economy, see "Credit data system in Israel" in Part II of the publication Statistical Bulletin 2015. For data series, see the statistics page on the Bank of Israel website.

Table 1: Debt balances by lender sector and borrower sector

Balances NIS billion Sept. 30, 2019		Borrower sectors			
		Business sector	Government and local authorities	Households	Total Debt
Lender sectors	Banks	458	89	515	**1,062**
	Institutional investors	196	515	31	**742**
	Credit card companies	3		23	**26**
	Foreign residents	164	115		**279**
	Government			12	**12**
	Households and others*	123	118		**242**
	Total Debt	**944**	**838**	**581**	**2,363**

* Households, mutual funds and business companies.

The table shows that total debt in the economy, at the end of the third quarter of 2019, was NIS 2.4 trillion. The business sector is the major borrower, with a debt balance at the end of this quarter of NIS 944 billion. This sector includes Israeli business companies that are not part of the lender financial sector, i.e., other than banks, credit card companies and institutional investors. This document focuses on the composition by industry of the companies that constitute the debt of the business sector.

B. Industry classification

The industry classification provides a summary of all companies by the industry in which they are engaged, providing a uniform framework for data collection and reporting. This classification also allows for data comparison and analysis over an extended period.

The CBS classified companies engaged in economic activity based on the System of National Accounts (SNA) and based on UN recommendations. The uniform classification defines diverse economic activities based on principles specified for similar economic activities. However, application of these classification principles depends on information available to the classification creator.

Detail levels of the uniform classification are listed hierarchically as follows: The first level, **Section**, consists of 21 sections denoted by letters (A-U); the second level is **Divisions**; the third level is **Groups**; the fourth, most detailed level, is **Classes.** Two to four digits represent these levels, respectively. Thus, for example, in Class 0121

Growing of grapes – the first three digits represent Group 012 Growing of perennial crops; of these, the first two digits represent Division 01 *Crop Production*; and Division 01 is included under Section A *Agriculture, forestry, and fishing*[2].

The industry classification of companies by the CBS is confidential information and is not made public nor disclosed to the actual companies.

Another industry classification is compiled by the Tel Aviv Stock Exchange, with companies listed on the Stock Exchange assigned to one of the industries listed in the Stock Exchange industry table. Each company is classified upon its IPO, and this classification may change in case of material change in the company's business.[3]

For the composition of debt balances of the business sector by industry, we relied on the Uniform Classification by the CBS of 2011[4] for the following reasons: The CBS classification is the official national classification and is comparable to international data; The CBS classifies both public and private companies; Changes to these classification industries are infrequent[5], allowing for comparison of data over an extended period; and restrictions regarding data sources do not allow for any other industry classification of the data.

2 For a full listing of classification levels, industry list, how they are classified and classification principles, see "Standard Industrial Classification of all Economic Activities 2011" on the Central Bureau of Statistics website.

3 For a complete list of industries, sub-industries, principles for industry classification of multi-disciplinary companies and detailed information about revision dates of the industry classification, see "Industry Classification Procedure for Companies Traded on the Stock Exchange" on the Stock Exchange website.

4 This classification superseded the previous uniform classification – Industries 1993 – and reflects the relevant changes in economic activity.

5 The CBS attempts to only revise the classification as infrequently as possible, when the need arises to reflect significant structural changes to economic activity.

The composition of the debt balance of the business sector is provided in conformity with restrictions associated with the data sources, and typically by the first level – Section.
Table 2 lists the industries used for debt balance composition:

Table 2: Composition of debt balance of the business sector by industry, according to the "CBS Uniform Classification, 2011"

Industry	September 30, 2019	
	Balances NIS in billions	Percentage of total debt
Agriculture, forestry, and fishing (A)	6	1%
Mining and quarrying (B)	25	3%
Manufacturing (C)	135	14%
Electricity, gas, steam and air conditioning supply (D)	44	5%
Water supply; sewerage, waste management and remediation activities (E)	13	1%
Construction (F)	101	11%
Trade (G)	121	13%
Transportation and storage (H)	39	4%
Hotels, accommodation and food (I)	18	2%
Information and communication (J)	35	4%
Financial and insurance activities (K)	131	14%
Real estate activities (L)	130	14%
Other business activities (M, N, T, 95, 96 of S)	41	4%
Public and community services, excluding local authorities (O, P, Q, R, U, 94 of S)	15	2%
Unclassified (-9)	89	9%
Total debt balance of the business sector	**944**	**100%**

This table shows composition of the business sector debt balance by 15 industries. About two thirds of the total debt is in five industries: Manufacturing (C); Financial and insurance activities (K) – companies engaged in financial services, insurance services, re-insurance services, pension funds, support services for financial services, holding operations, such as holding companies, as well as operations of mutual funds and similar financial entities; Real estate activities (L) – companies engaged in brokerage and agency activities for buying and selling real estate, leasing real estate and provision of other real estate services, such as appraisal and providing third-party services for real estate transactions; Trade (G) and Construction (F) – companies engaged in general and special construction activities for construction of structures, buildings and civil engineering work: construction of new structures and buildings, construction of additions to existing buildings, refurbishment and repair of existing buildings, construction of structures and pre-fabricated buildings on building sites and construction of temporary structures.

C. Data sources

Calculation of estimates for industry composition of the business sector debt balance is based on multiple, diverse sources. As noted above, the composition by industry is additional information for the credit aggregates calculated by the Information and Statistics Department; hence, the sources listed in this section are not all of the sources used for calculation of credit aggregates in Israel – but rather only those used for the industry classification.

1. Reports by the banking system to the Banking Supervision Department of the Bank of Israel – "Consolidated quarterly report of composition of the total credit risk to the public by industry" (Directive 831).[6] This report includes aggregate data based on the industry classification of the CBS. The data used for composition of debt to banks is obtained from the table providing a summary of borrower activity in Israel—on-balance sheet credit risk—debt and bonds.
2. Reports by credit card companies to the Banking Supervision Department of the Bank of Israel – Public financial report (Directives 670, 680) "Note on receivables with respect to credit card activity".
3. Publications by institutional investors—quarterly report of investments of institutional investors at individual asset level, pursuant to circular "Institutional investors 14-9-2015, List of institutional investors' assets at individual asset level". The data used for debt composition are holdings by institutional investors in bonds of companies traded in Israel. At this time, the industry classification of direct loans extended by such entities is not reported to the Bank of Israel, hence they are included under "Unclassified".
4. Tel Aviv Stock Exchange—the source for data about bonds of Israeli companies traded on the Tel Aviv Stock Exchange.
5. Report of assets and liabilities in the economy vis-à-vis abroad—based on direct reports by Israeli business companies to the Bank of Israel of their activity vis-à-vis nonresidents[7] and on indirect reports through the local banking system.
6. Reports by banks and other financial intermediaries to the Bank of Israel, about holdings of nonresidents in Israeli tradable securities and Israeli residents' holdings of foreign tradable securities.
7. Industry classification of the CBS—the source used to identify Israeli companies as borrowers and their industrial classification.
8. Data from credit aggregates system—data calculated by the Information and Statistics Department, including diverse compositions of credit aggregates in the economy. The data used for compositions are business sector debt data by lender and instrument.

[6] The Directive refers to data about on- and off-balance sheet credit risk.

[7] Mandatory reporting applies to companies with annual sales in excess of $50 million and/or balance of financial assets deposited overseas in excess of $20 million. Mandatory reporting also applies to Israeli companies that have issued securities overseas amounting to $5 million or higher.

D. Key methods used for composition

In order to generate the estimated composition of debt balance of the business sector by industry, the Information and Statistics Department prepares calculations in processing information obtained from sources listed above. As these information sources are diverse—some describing the lender or borrower sector aspect and some describing the financial instrument aspect—combining them allows us to calculate the lender connections map using the various instruments, and to estimate compositions for which there is no direct or indirect information.

For the purpose of this integration, we created a structured methodology, with the following guidelines: Preference is given to use of individual data available to the Information and Statistics Department; use of aggregate data when no individual information is available; use of residuals and estimates where no direct or indirect reports are available.

Composition is by financial instrument and lender sector to the business sector, calculated based on bond balances at adjusted par value ("accrual value", debt revaluation) and on loan balances before deduction of provision for credit loss on lender accounts.
Table 3 summarizes the data sources used to estimate the industry composition and describes the integration thereof.

Table 3: Data sources used to calculate the estimated composition of debt balance of the business sector by industry and debt balances, NIS billion, September 30, 2019

Instruments / Lenders	Tradable bonds in Israel NIS 205 million	Tradable bonds abroad NIS 25 million	Loans NIS 687 million	Nontradable bonds NIS 27 million
Institutional investors NIS 196 million	Publications by institutional investors (Source 3) NIS 80 million	Reports by banks and other financial brokers (Source 6) NIS 4 million	Unclassified NIS 85 million	Tel Aviv Stock Exchange Ltd. (Source 4) NIS 27 million
Banks NIS 458 million	Reports by the banking system (Source 1) NIS 2 million	Reports by banks and other financial brokers (Source 6) NIS 0.1 million	Reports by the banking system (Source 1) NIS 456 million	
Credit card companies NIS 3 million			Reports by credit card companies (Source 2) NIS 3 million	
Nonresidents NIS 164 million	Reports by banks and other financial brokers (Source 6) NIS 2 million	Calculated as residual NIS 19 million	Report of assets and liabilities in the economy vis-à-vis abroad (Source 5) NIS 143 million	
Households and others NIS 123 million	Calculated as residual NIS 121 million	Reports by banks and other financial brokers (Source 6) NIS 2 million		
Government (targeted) NIS 0.3 million			Unclassified NIS 0.3 million	
Total NIS 944 million	Tel Aviv Stock Exchange Ltd. (Source 4) **NIS 205 million**	Report of assets and liabilities in the economy vis-à-vis abroad (Source 5) **NIS 25 million**		Credit aggregate system (Source 8) **NIS 27 million**

* An empty cell indicates that there is no debt balance for the applicable instrument and lender, due to market structure or due to missing information.

Below are details of major calculations and estimates:

1. <u>Composition of bank loans to the business sector by industry:</u>

About half of the total business sector debt is owed to banks, nearly all of it through loans.

The source for this data is reports by the banking system (Source 1), used to calculate the estimates of bank loans to the business sector by industry.

These estimates are applied to aggregate data (Source 8), to align the data with the methodology framework of the system.

2. <u>Industry composition of bonds traded in Israel and issued by the business sector, by lender (holders) sector:</u>

- Holdings of institutional investors—data is obtained from publications by institutional investors (Source 3) about their holdings of bonds of companies traded in Israel, at bond level. From these data, by crossing them with the industry classification of the CBS (Source 7), we calculate the composition of bonds by industry.
  These compositions are then applied to aggregate data of institutional entities' holdings in business sector bonds (Source 8).
- Holdings by foreign residents – we identify the industries for bonds held by foreign residents, as reported by banks and other financial brokers (Source 6) and apply a similar calculation to that of institutional investors' holdings, as shown above.
- Bank holdings—the composition is calculated in the same way as described under loans (section 1).
- Holdings of households and others—since we have no direct data about holdings of households and others in bonds issued by the business sector, we apply a residual calculation as follows: We use stock exchange data (Source 4) to generate the composition of total bonds issued by the business sector in Israel by industry, and then deduct from each industry's balance the holdings of the other lenders.

E. Key challenges for composition by industry

When calculating estimated composition of the business sector's debt balance by industry, we face various challenges including the following major ones:

- Challenges due to data received from the banking system – "Consolidated quarterly report of composition of the total credit risk to the public by industry" (Directive 831):
- The report layout includes some industries that are grouped together, in conformity with the Reporting Directive, and therefore their individual composition cannot be calculated. Thus, for example, the industry "Other business activities" in reporting by the banks includes the CBS's sections M, N, T and divisions 95, 96 of section S.
- Each bank classifies borrowers by CBS industry based on their primary operating segment and as recorded in their database.
- The report is on consolidated basis, hence in order to align data with the current methodology framework used in credit aggregates calculated on solo basis, we used proportions and estimates.
- Since the credit card companies were separated from the banks in 2019, the consolidated industry report by the banking system excludes data for loans extended by these separated companies. Therefore, the industry composition of loans extended by credit card companies to the business sector is calculated using estimates.
- Data is obtained from diverse information sources and is sometimes reported using different terminology. We made adjustments in order to achieve uniformity and consistency in terminology.

- The composition start date is December 2015, due to limitations of the source systems.

3. Sample use of data through selected outputs

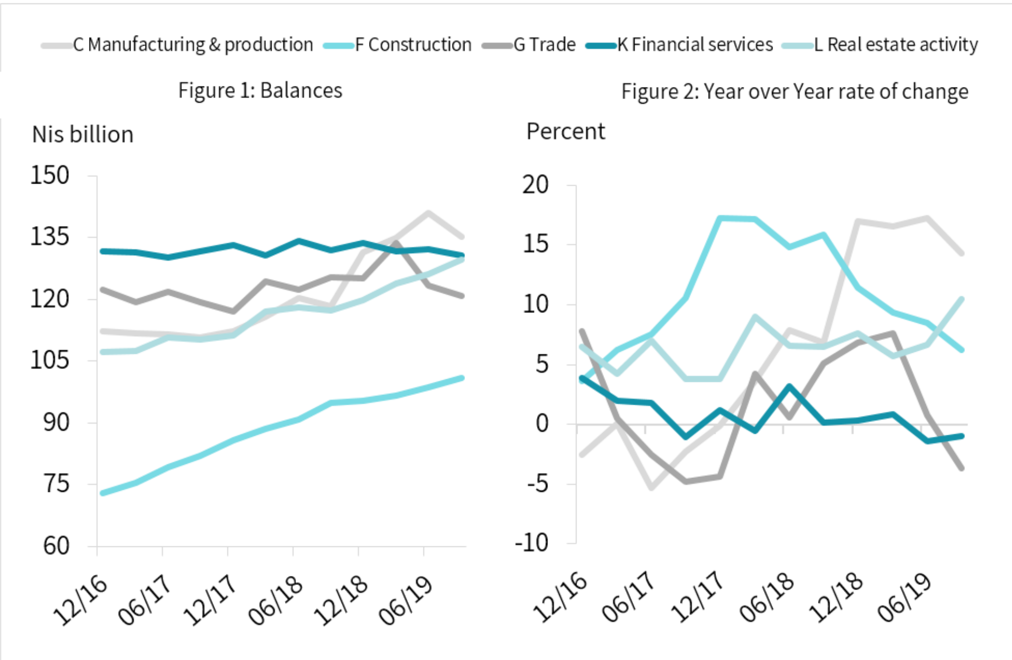
In this chapter we demonstrate some uses for composition data through potential outputs. First, we should note as follows:

- "Unclassified" industry—the major unclassified component is direct loans from institutional investors to the business sector, accounting for 9 percent of total debt. Therefore, debt for some industries is under-estimated.
- Other industries—combination of industries each with individual share of total debt of the business sector lower than 5 percent.

On the Bank website, the quarterly series are accessible, both in the series database and in the summary data table.

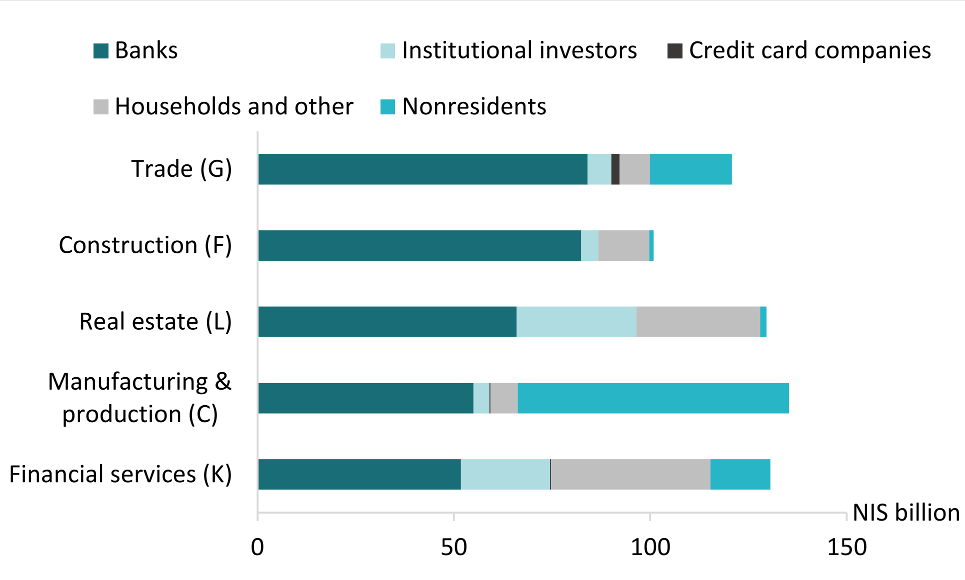
a. Composition of debt balance of the business sector by industry

Figures 1 and 2: Debt of Five Top Borrower Industries, December 2016 to September 2019



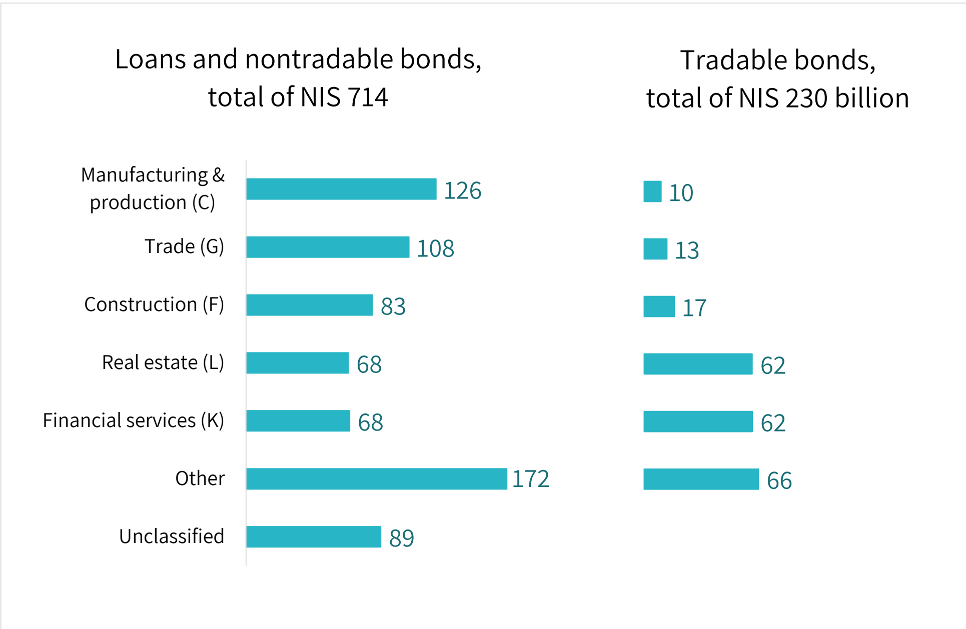
Figures 1 and 2 shows an increase over time in the debt balance of companies in the following industries: manufacturing, financial services, real estate and construction activities. The debt balance of companies in the financial services industry was high throughout most of the period, but remained practically unchanged (average annual growth rate of 0.8 percent). Companies in the construction industry have the lowest debt balance of these five industries; however, it was growing at an average rate of 11 percent per year. Note that the debt balance of companies in the real estate activities and construction industries, typically regarded as a single industry, amounted at the end of the third quarter of 2019 to NIS 231 billion (or 24 percent of total business sector debt). For more information about these industries, see Part C of this chapter.

Figure 3: Debt Balance of the Five Major Borrower Industries, by Lender Sector September 30, 2019



Debt composition for these industries by lender (Figure 3) shows that companies in the trade and construction industries mostly borrow from banks, which are major lenders for all industries. Conversely, companies in the manufacturing industry mostly borrow from nonresidents (51 percent of total debt for this industry).

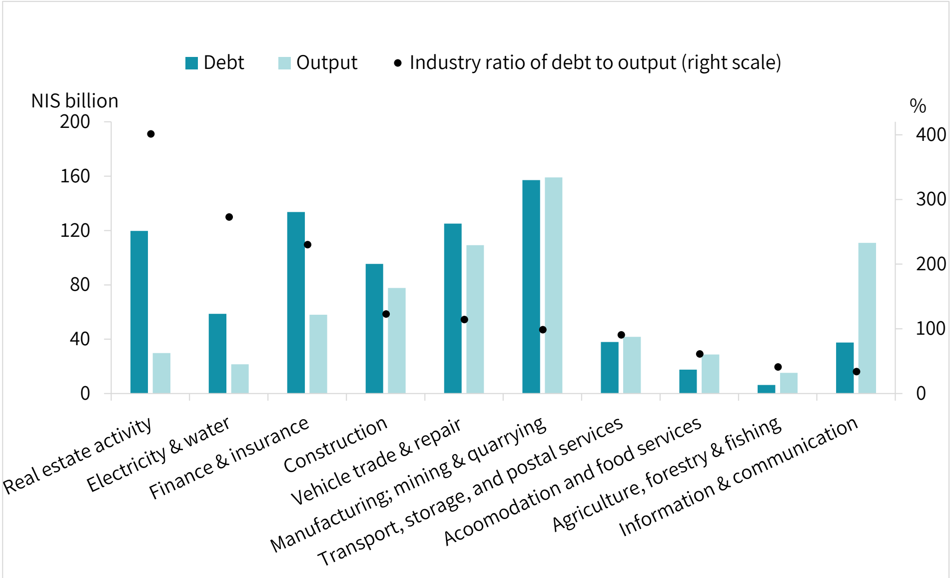
Figure 4: Debt Balance of Business Sector, by Instrument and Industry, NIS billion, September 30, 2019



Approximately 73 percent of total business sector debt was borrowed through loans.
Figure 4, listing debt composition by instrument and industry, shows that companies borrowing through loans and nontaxable bonds are found across all industries. However, companies borrowing through tradable bonds are mostly found in the financial services and real estate industries (27 percent of all tradable bonds for each).

b. Ratio of industry debt to industry output

Figure 5: Industry Debt, Industry Output and Ratio Thereof, Selected Industries December 31, 2018[8]



The ratio of debt to output is a key benchmark for financial stability in the economy. This ratio is affected by multiple factors—market structure, credit supply, regulatory restrictions and so forth. Of the select industries shown in Figure 5, the real estate activities industry has the highest ratio of debt to industry output, with the information and communication industry having the lowest ratio.

c. Real estate and construction industries

Typically, the real estate and construction industries are considered together, due to their economic activities being correlated.
These industries are significant, both in their share of economic output and in their share of total business sector debt.

[8] Most recent data available for industry output.

Figure 6: Debt Balance of Real Estate and Construction Industries, by Lender Sector 2015–19

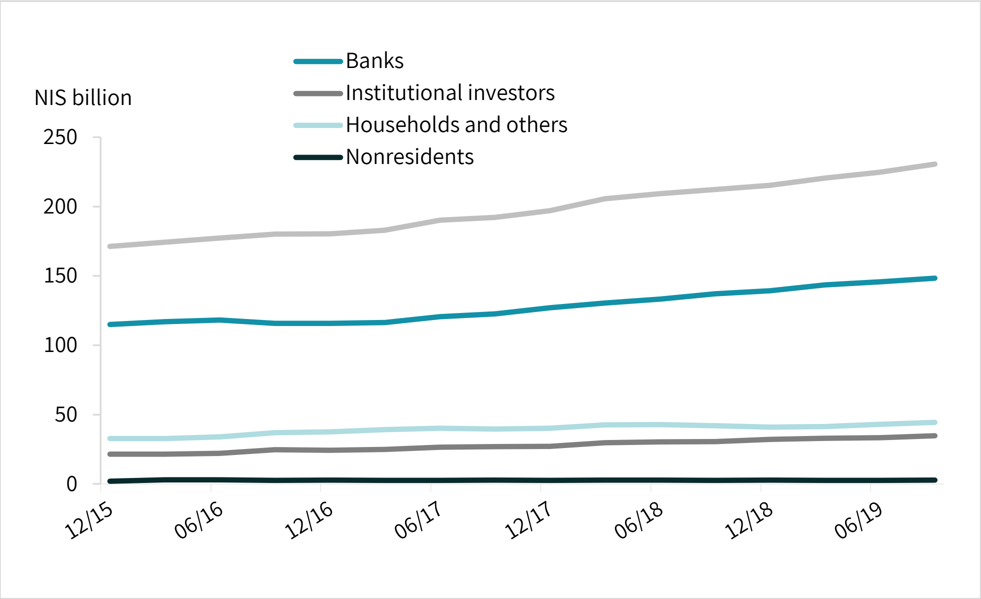


Figure 6 shows that total debt for companies in the real estate and construction industries has increased in recent years. Two thirds of these companies' debt is owed to banks, a share that has remained stable in the years under review.

Figure 7: Composition of Debt Balance of Real Estate and Construction Industries, by Financial Instrument, September 30, 2019

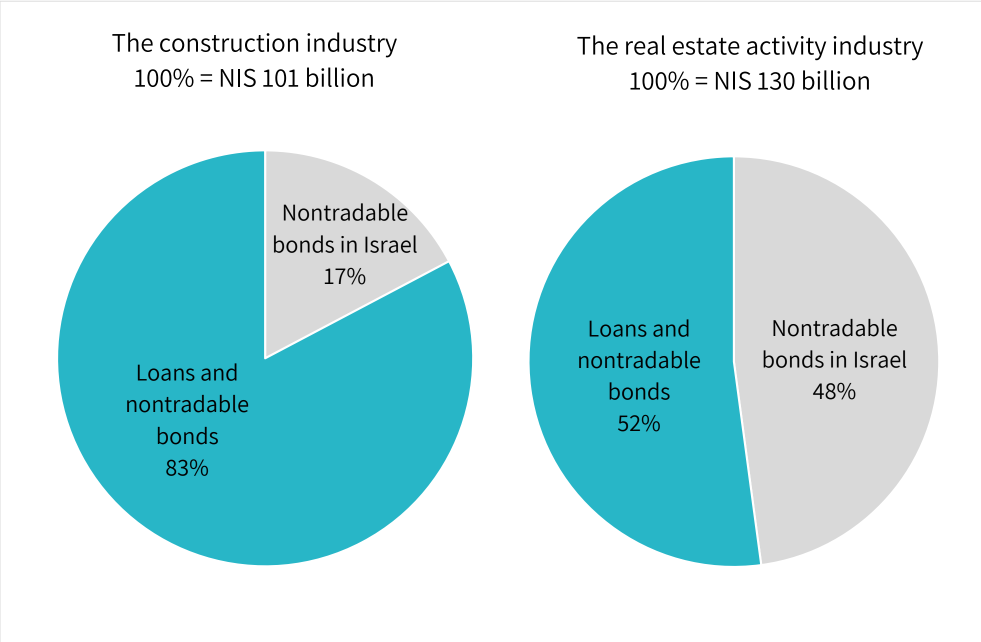


Figure 7 shows the difference in financing for these industries: Companies in the construction industry mostly borrow through loans (83% of total debt for this industry), whereas companies in the real estate activities industry also borrowing through tradable bonds.

4. Summary

This document describes the composition of the debt balance of the nonfinancial business sector by industry, as categorized by the CBS. A key benefit from these data lies in allowing the Bank of Israel to conduct a more in-depth review of the development of debt for this sector, primarily with regard to supporting stability of the financial system, monitoring risk in the market and supporting economic growth.

These calculations require integration of many information sources and putting in place a uniform methodology for the data framework and calculations.

Publishing these data regularly on the Bank of Israel website also allows the public, researchers, and analysts to gain easy access to these data, allowing for review of the development of business sector debt and of its component industries.