BANK OF ISRAEL

FINANCIAL STABILITY REPORT

Jerusalem, September 2016 • Ellul 5776

Contents

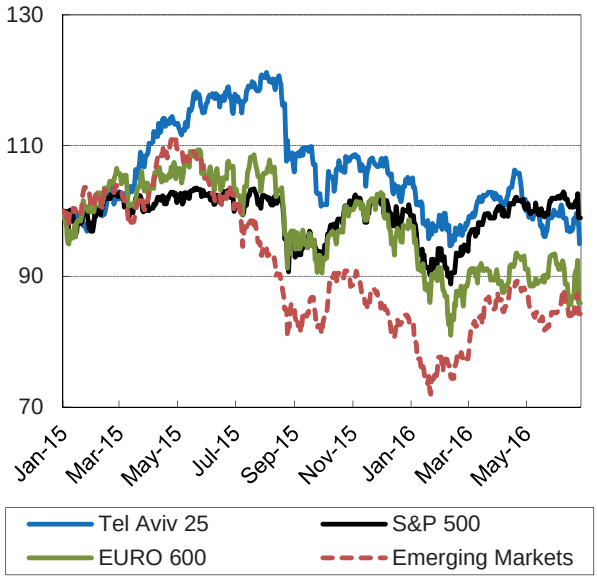
MAIN REMARKS

The banking system maintained stability in recent months, amid accommodative monetary policies in Israel and abroad, and despite volatility in the financial markets and ongoing security incidents. The protracted low interest rate environment—necessitated by macroeconomic developments—and its ongoing impact on asset prices expose the financial institutions to a risk reflected in a steep decrease in financial asset and home prices. Such declines may take place if major markets abroad revert to recession or suffer from financial destabilization and infect the Israeli economy by dampening exports and financial asset prices. They may also happen if Israel's geopolitical situation takes a turn for the worse, causing the country's risk premium to rise.

In the future, the financial system will be affected by the way various financial reforms are implemented. Such reforms are essential for the enhancement of the functioning and efficiency of financial intermediation—an important component of all economic activity. It is no less crucial, however, to proceed cautiously in this context due to the central role of the financial system in the economy and the major economic impact that a crisis in this system may cause.

Recent developments in Israel and abroad have been systemic in nature. At the beginning of the reviewed period, they were reflected in price declines and increased volatility on the domestic and global stock markets.

Figure 1
Selected Stock Indices in Israel and Around the World, in Dollar Values (January 2015 to June 2016, January 1, 2015=100)



SOURCE: Bank of Israel calculations.

1. MAIN DEVELOPMENTS IN THE DOMESTIC FINANCIAL SYSTEM[1]

a. Main developments

Developments in recent months in Israel and abroad were of systemic nature, reflected in falling prices and increased volatility in the domestic and global equity markets. The Israeli share indices lost about 10 percent of their value from the beginning of the year to mid-February, mirroring the trend in leading global equity indices (Figure 1). The declines came against the background of uncertainty about the state of China's economy, fears for the stability of the financial system in Europe, and concern about recession in major markets worldwide. Although commodity prices remained low, the attendant reduction in production costs has not been translated thus far into an improvement in the state of the global economy, evidently indicting demand-side weakness as well. In March, the European Central Bank (ECB) adopted several measures to dispel fears of a financial crisis in Europe and to incentivize banks to lend to nonfinancial firms. Concurrently, the Bank of Japan also took several accommodative monetary steps.

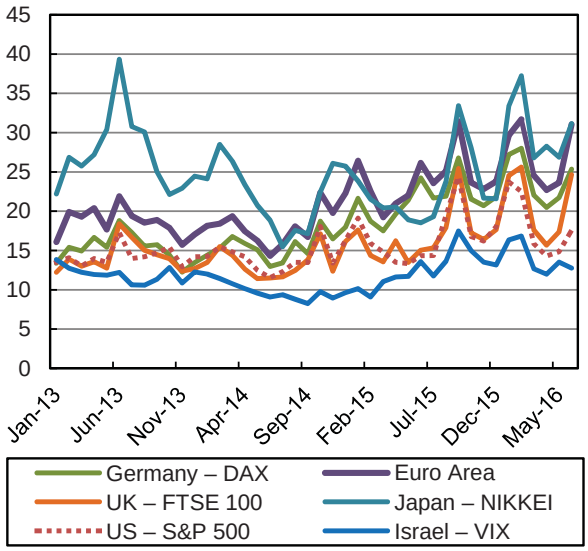
In the middle of February, the trend in the markets changed and the equity indices began to rise. Concurrently, a similar trend was observed in the implied volatility of equity index options abroad and in Israel, indicating the extent of uncertainty in the

[1] This report covers the first half of 2016. The timeliness of its data varies from discussion to discussion depending on the availability of the data as the report was being written.

equity markets. Although the standard deviations have declined recently, they remain high relative to the period before August 2015, when the latest upward trend began (Figure 2).

The level of volatility in the financial markets remained high, particularly in Europe.

Figure 2
The Implied Volatility Derived from Options on the Stock Indices in Various Countries, January 2013 to June 2016
(monthly average, percent)



SOURCE: Bank of Israel calculations.

The ongoing uncertainty about the state of the emerging markets, foremost China, remains the main exogenous risk to the stability of Israel's financial system.[2] Another recent factor is the risk emanating from Europe due to the Brexit vote. On top of both risks, there is a significant global development that will affect the economy in general and the financial system in particular—the divergence of the US interest rate trajectory from that of other major markets, chiefly Europe and Japan. In particular, the Fed began its so-called liftoff in view of relatively strong economic data, although the pace of the process remains in doubt. Europe and Japan, in contrast, have taken several accommodative measures. The ECB made a rate cut, continued to buy assets in the markets, and issued guarantees to commercial banks so that they would lend to nonfinancial firms. In January, the Bank of Japan dropped its rate on banks' deposits into negative territory. In contrast to the expected effect of the interest spreads, the measures were followed by depreciation of the US dollar against the yen and the euro and price declines on European and Japanese equity exchanges. The exchange rate shifts will affect the economy by changing the competitive balance in the markets and revaluing debt denominated in foreign currency. The most substantial risk, however, is the possibility that the policy measures will fail, triggering pessimism about policymakers' ability to affect the economy for the better.

It is hard to determine whether, in addition to the global developments, the domestic markets were affected by domestic security events. The Tel Aviv 25 index has underperformed all corresponding foreign indices since the wave of terrorism began (September 2015). Its implied volatility, however, is behaving no differently from those of the indices abroad. This contrast is consistent with the finding that the Israeli capital market has become more resilient to security-related shocks. (See discussion in the chapter on the business sector and financial asset prices.)

The systemic nature of the recent shocks was reflected in the co-movement of equity prices.[3] Figure 3 presents an index[4] of the co-movement of equities on the Tel Aviv Stock Exchange (TASE), showing that the index began

[2] Possible channels of transmission of shocks in emerging markets are discussed at length in the December 2015 *Financial Stability Report*.

[3] See, for example, Longin, F., and B. Solnick (2001), "Extreme Correlations of International Equity Markets," *Journal of Finance 56*(2), pp. 649–676. This study also shows that co-movements are more predisposed to move in negative directions than in positive ones.

[4] The index equals the sum of the five main factors that explain the covariance of the betas of all shares traded on the Tel Aviv Stock Exchange. (The betas are calculated over a 90-day period.) For elaboration and application, see Kritzman, M., Y. Li, S. Page, and R. Rigobon (2011), "Principal Components as a Measure of Systemic Risk," *Journal of Portfolio Management 37* (4), pp. 112–126.

to rise back in mid-2014 and peaked in recent months. The picture in the United States is much the same[5], providing an indication that the recent developments in Israel and abroad did affect the market at large and were not confined to specific market segments only.

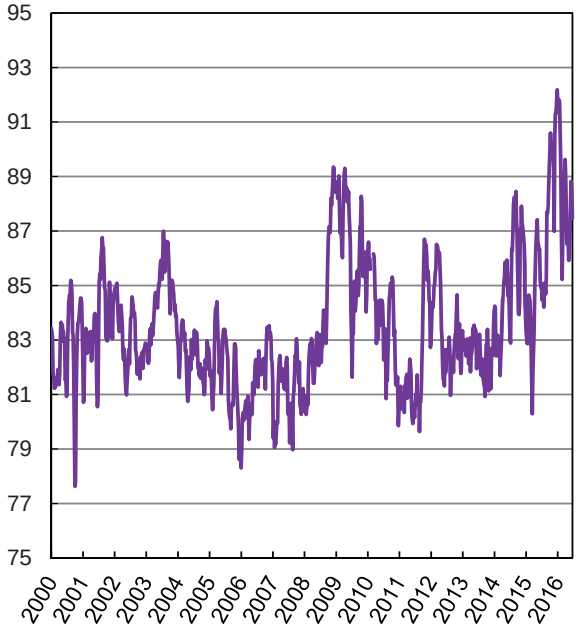
Activity in the housing market remained robust, with prices rising more quickly in 2015 than at any time since 2012. The volume of transactions returned to the 2012–13 level. The ratio of home prices to home rents set a record, as did monthly mortgage lending. In view of expected changes in the composition of homebuyers and the intention to increase the marketing of dwellings, demand for mortgage loans may increase. The banks have recently begun to co-opt financial institutions into the funding of mortgage lending in two ways: by selling mortgage-loan portfolios to these institutions and by funding new mortgage loans jointly. However, if the sources thus freed up are not allocated to lending to other sectors, but are instead allotted to additional mortgage loans, the financial system and the public will be increasingly exposed to the housing market.

In the past year, outstanding credit to the private (nonfinancial) sector increased by 4.7 percent[6] due to rapid growth in credit to households and moderate growth in credit to the business sector. Although housing loans explain most of the change in household credit, nonhousing loans also increased significantly, although at a slowing rate in recent months. The upturn in credit to the business sector is composed of three developments: increased bank credit, a continued rapid increase in direct loans from financial institutions, and an upturn in the proceeds of bond issues.

The debt to GDP ratio of Israel's nonfinancial business sector is low compared to other countries. The debt to GDP ratio of the country's households is even lower, both in terms of level and relative to other countries. However, when the ratio is calculated separately for housing debt and nonhousing debt, the former is found to be low by international comparison and the latter is not. The concurrence of rapid growth in recent years of both household credit—particularly for housing—and housing prices creates risks that may be realized if home prices fall steeply and the economy takes a turn for the worse, particularly impacting employment and wages. If such a scenario is accompanied by an upturn in interest rates—brought on, for example, by an increase in Israel's risk premium—households will find it even more difficult to pay back the credit that they have taken, including nonhousing credit, and those in low income deciles may suffer a greater impact. (For elaboration, see the section on the Household Sector.)

The increase in the comovement of shares began in mid-2014, and for the past few months has been relatively high.

Figure 3
Comovement of Share Prices on the Tel Aviv Stock Exchange, January 2010 to June 2016
(weekly frequency, percent)



SOURCE: Bank of Israel calculations.

[5] Since August 2015, the co-movement of the fifty largest equities in the S&P 500 has been rising, as reflected in the Chicago Stock Exchange's correlation indices. For details, visit http://www.cboe.com/micro/impliedcorrelation.

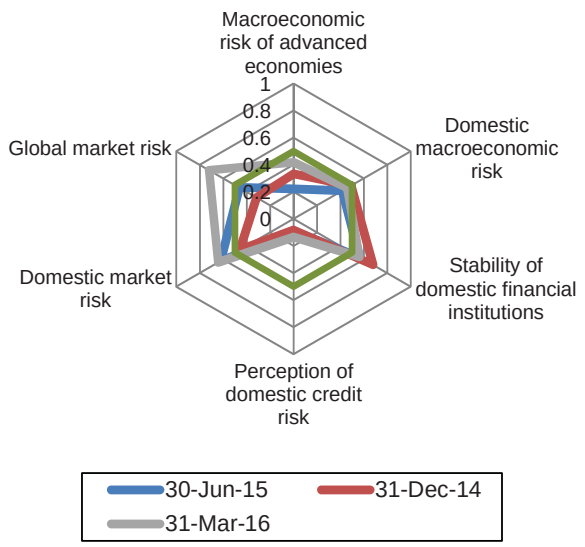
[6] The outstanding credit data are for May 2015–May 2016 unless otherwise noted.

Figure 4[7] presents the current situation—in terms of prices, corporate balance sheets, macroeconomic data, and other parameters—in those segments of the economy from which macroprudential risks may emanate. The long-term average—the bold black line in the chart—is 0.5. Values that drift away from the line in an outward direction represent a worse situation than the long-term average and those positioned within the line signify a better-than-average situation.

The indicators of domestic and global market risk prove to be relatively high, against the background of falling equity indices and rising volatility indices in Israel and abroad. In the financial markets, the risk level of this metric is high due to the shocks that the markets absorbed. In contrast, the macroeconomic situation in the developed countries—including Israel—is around the mean, indicating a situation slightly worse than the long-term average. The perception of credit risk reflects not an objective credit risk but the way the risk is perceived by those who are active in the various credit markets. The low level of perceived credit risk is a result of the near-zero government bond spread between Israel and the US, which is slightly offset by a slight increase in household risk, a development manifested in the spread between new mortgage interest rates and the risk-free interest rate.

Market risks increased, and the perception regarding domestic credit risk remained low.

Figure 4
Radar Chart of the Risks to the Israeli Economy



SOURCE: Bank of Israel calculations.

The Strum Committee, appointed to examine ways of increasing competition in common banking and financial services, continued its discussions during the reviewed period. It reexamined the weighting of competition in the financial system as against macroprudential risks and proposed ways to improve this ratio for the betterment of the entire economy. It is no easy matter to strike an optimum balance between competition and stability, and far-reaching reforms entail great risks. In addition, the questionsof when and how quickly to apply the reforms relative to the business cycle and the existing economic conditions, and whether further demand should be encouraged at a time of growth in consumer credit and household leveraging, need to be examined. These are particularly valid when households are borrowing against their long-term savings because this action of their part may impair their economic capabilities when they reach pension age.

b. Assessment of system stability

All these developments considered, the main financial institutions remained stable. The banking system continued to build up its Tier 1 equity, with the banks expected to surpass the capital targets that were set for them, and the system's stability was also assessed in stress tests. For the first time, two banks issued a unique financial instrument, one that becomes a Tier 2 capital instrument if the issuing bank runs into difficulties—Contingent Convertibles (CoCo bonds—see details in the Box). These notes, heavily subscribed at date of issue, were bought mainly by institutional

[7] See Zalkinder, H. (2012), "Measuring Stress and Risks to the Financial System in Israel on a Radar Chart," Bank of Israel, Discussion Paper 2012.15.

players. The banks' profitability improved this year, but it was evident that the increase in profit reflected not an improvement in the banks' environment or business activity but nonrecurrent spot developments a year earlier. Insurance companies' profitability fell steeply in 2015, largely consequent to a decline in profits from investments but also due to an increase in provisioning for insurance reserves. The companies continued to accumulate capital in order to meet the Solvency II requirements and their ratio of recognized capital to required capital improved considerably.

The mutual exposure of the banking system and the institutional entities may increase due to two of the developments noted above—the purchase by institutional players of the banks' CoCo bonds[8] and their participation in housing credit by means of joint sale transactions or syndication. The risk in buying CoCo bonds is held in check by the investment restrictions that apply to institutional entities and the injunction against overexposure to any individual business. The risk derived from the funding of mortgage loans[9] is countered via tough regulation by the Banking Supervision Department and the Commissioner of the Capital Market, Insurance, and Savings.

The payment and settlement systems remained stable—as shown by the various stability indices—and the Bank of Israel, which supervises them, is continuing to bring them into compliance with the international principles of financial market infrastructures.

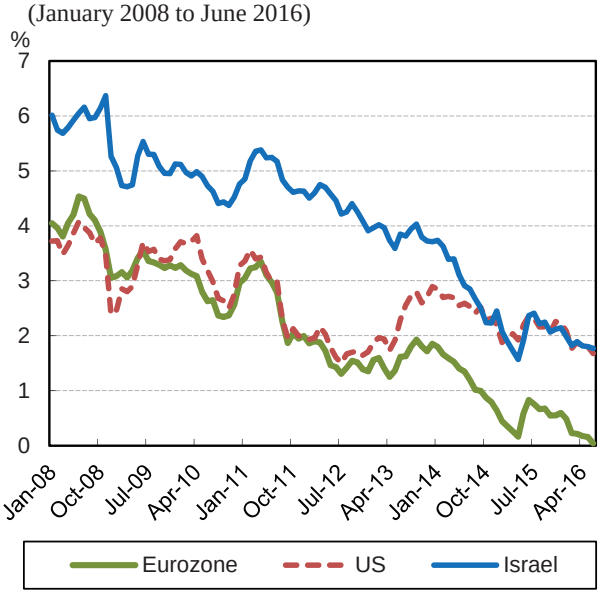
Despite its stability, the financial system is exposed to two focal points of risk that were discussed above—home prices and financial-asset prices, the former more portentous than the latter. If home prices and financial-asset prices continue to climb, the risk of a steep reversal of the trend, for whatever reason, will grow. The housing market posts a macroprudential risk because the system is heavily exposed to it via mortgage lending and credit to the construction and real estate industry. An sharp decline in the prices of financial assets may act to the detriment of those who hold them—mainly institutional investors, through which the public saves to various terms, but also lenders who received financial assets as collateral.[10] Notably, however, in our estimation, this risk has waned somewhat since the previous *Financial Stability Report* was published in December 2015.

2. MAIN DOMESTIC RISKS

The financial system is exposed to a risk originating in high asset prices. Israel, like other developed markets, has seen a steep increase in the prices of financial and real assets due to low interest rates and the falloff in yields of short- and long-term government bonds (Figure 5).

Yields in Israel and abroad continued to decline in the first half of 2016.

Figure 5
Nominal 10-Year Yield: Israel (unindexed), US and Eurozone
(January 2008 to June 2016)



SOURCE: Bank of Israel calculations.

[8] This is only insofar as these purchases are added to their existing holdings of bank equities and bonds.

[9] The sale of mortgage portfolios is similar in nature to securitization. For an extensive discussion of securitization, see the November 2015 report of the committee that was established to promote securitization.

[10] If the shock starts abroad and impairs financial markets there, the damage may spread to the domestic financial system in several ways. See Chapter 2 of the December 2015 *Financial Stability Report.*

In view of the low interest rates that have prevailed in Israel and abroad in recent years—reflecting policies adopted in response to macroeconomic developments around the world—investors in the domestic market have been seeking alternative vehicles that would deliver higher returns even at the price of greater risk. For this reason, and since the relatively good state of the Israeli economy has attracted nonresident investors, recent years have seen a rapid increase in the prices of financial assets and dwellings. The upturn in the prices of financial assets, however, has not been accompanied by an increase in corporate leveraging. Namely, the development of a bubble in asset prices is usually accompanied by an increase in borrowing. However, the upturn in financial asset prices in Israel in recent years—particularly in corporate bonds, attesting to a decline in firms' funding costs—has not been accompanied an increase in lending to the business sector. Furthermore, firms have been exploiting the low interest rates in the markets to recycle debt at lower interest than the rate at date of issue. This lowers the concern over the stability of firms in the event of a rapid increase in yields, which might be brought on, for example, by an increase in Israel's risk premium. It is true that the escalation of home prices has been accompanied by rather swift growth in housing credit. However, a regulatory crackdown by the Supervisor of Banks on mortgage leveraging, borrowers' payment-to-income ratio, and the proportion of housing loans given at variable interest have reduced the share of new high-risk mortgage loans to a very low plateau.

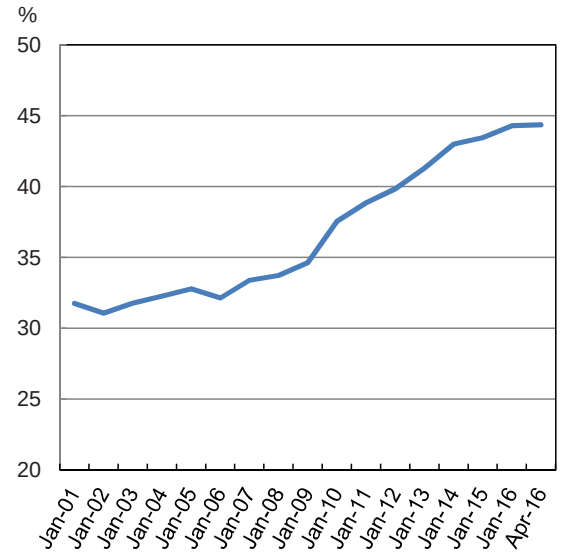
The steady increase in asset prices, and their relatively high level today, expose the financial system to the risk of a reversal of trend and a steep decline in prices, be it due to a rate increase or other shocks. Despite the low leveraging of Israel's household and business sectors and the restrictions on mortgage-lending, a downturn in asset prices may inflict losses on private investors, banks, and ordinary citizens who save via institutional investors. A steep decline in asset prices may also depreciate assets at the macro level and roll over into contraction of activity and consumption—possibly to the detriment of the economy.

a. The housing market

Exposure to the housing market remains the financial system's principal and most significant risk due to the banks' continued acute exposure to mortgage loans and to the construction and real estate industry (Figure 6). This risk is augmented by the system's exposure to nonhousing consumer credit, due to strong correlation

The housing market poses a significant risk to the financial system because the banks are characterized by a high level of exposure to the construction and real estate industry and to mortgages.

Figure 6
Housing Credit and Credit to the Construction and Real Estate Industry as a Share of Banks' Balance Sheet Credit, January 2001 to April 2016



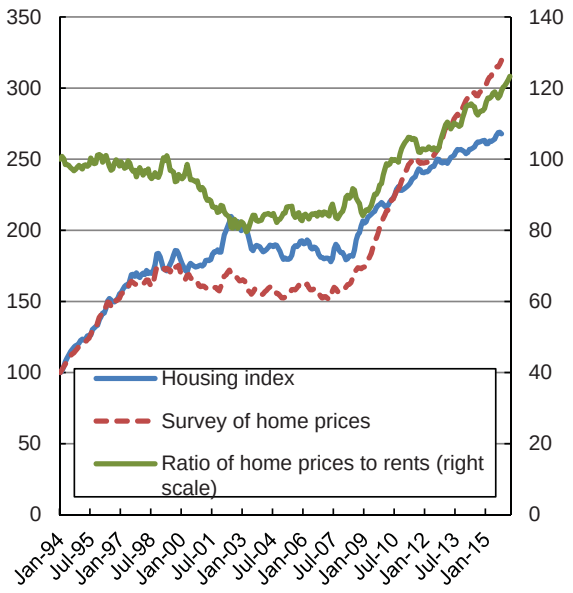
SOURCE: Bank of Israel calculations.

that exists between this credit and the other types of credit discussed. If a shock triggers an increase in the interest rate or impairs borrowers' income, it may deal a blow to banks that are exposed to these borrowers. If such a scenario leads to a sharp decline in home prices, the effect on the banks' stability would be amplified by the impairment of collateral and difficulty in realizing numerous assets quickly.

Home prices in Israel continued to rise (Figure 7)—

Home prices increased more rapidly than rents, and the ratio of home prices to rents reached a record high.

Figure 7
The Housing Index, the Survey of Home Prices, and the Ratio of Home Prices to Rents, January 1994 to March 2016 (January 1994=100)



SOURCE: Bank of Israel calculations.

by 7.8 percent in the twelve months ending in March 2016. Since the end of 2007, the rate of increase has been 110 percent. Only when the market went into a wait-and-see mode due to uncertainty (in the second half of 2011 due to the social protests, and in mid-2014 due to the "zero-VAT" proposal) did prices decline for several months. Pricing in the housing market is conventionally tested by examining prices relative to fundamentals, particularly (1) housing rent, which reflects the potential return on a home investment, and (2) wages or income, which approximate individuals' purchasing power. Both indices are at record levels. Furthermore, an international comparison of home prices relative to housing rent reveals a long-term average spread of 33.8 percent in Israel as against an average of 9.2 percent in the OECD countries (Figure 8).[11] This demonstrates how high the rate of increase in housing prices is. Notably, however, other countries that were affected rather mildly by the crisis that erupted in 2008 had wider spreads.

The increase in home prices in recent years is paralleled by a falloff in long-term yields (Figure 9). If it is assumed that real estate and financial assets are alternative investment vehicles, they should deliver similar returns, taking into account differences between them in risk and liquidity. The return on owning a dwelling (annual rent divided by price) is continuing to decline but, due to the protracted downturn in government bond yields, the spread between the returns has widened to 2.5 percent. According to end data, however, the return on home ownership is continuing to fall while bond yields have gone up slightly.

Housing starts have been steady in recent months at the high level that has persisted since the middle of 2013—more than 45,000 dwellings per year. In contrast, the stock of dwellings not yet sold rose to nearly 27,000 as of March 2016. Since the annual pace of new home sales[12] exceeds 30,000, the existing stock suffices for roughly one year. However, given the brisk pace of housing starts, the existing stock may even grow unless sales accelerate considerably. This is what happened in late 2014, when stock attained a record level (Figure 10), before receding due to increased sales. Since the increase in stock in recent months coincided with a continued upturn in prices, contractors may be expecting activity in the market to remain robust.

The vigorous activity in the housing market has affected the pace of new mortgages taken out. The pace of takeup accelerated, to an average of NIS 5.25 billion per month in the past year.[13] In total, more than NIS 63 billion in new mortgages were issued in the past year, compared with NIS 58.3 billion in the

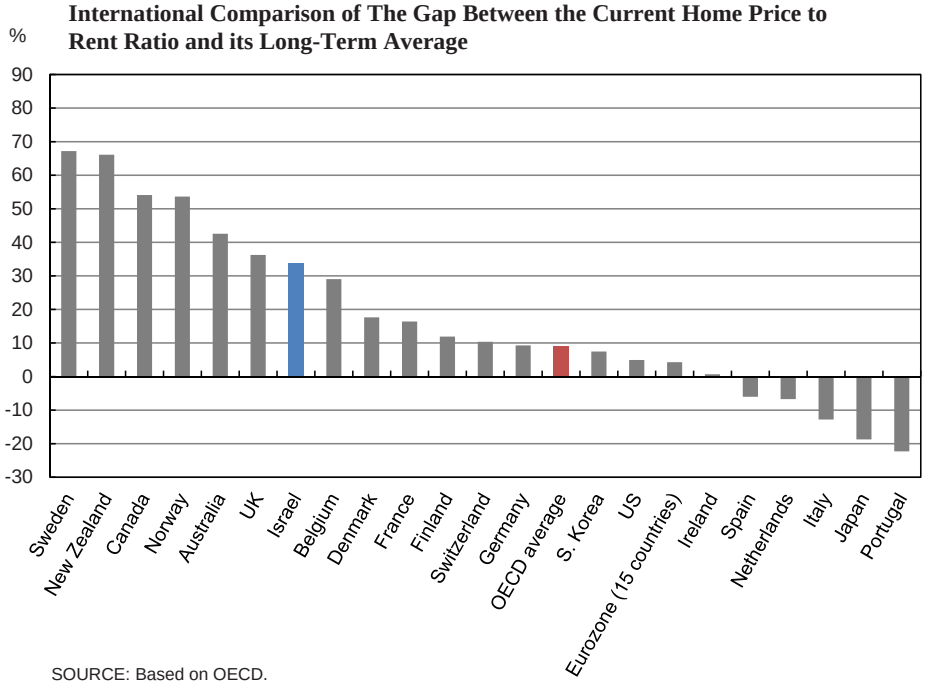
[11] The test was done with the help of an index published by the OECD. Sensitivity tests that use different time ranges to calculate the long-term average in various countries yield similar results, i.e., Israel has one of the widest spreads among the countries examined.

[12] Not including owner-built dwellings.

[13] In the twelve months ending in June 2016.

An examination of the ratio between home prices and rents in Israel shows that the gap between the current ratio and its long-term average is higher than the OECD average, but not higher than the gap in other countries that were moderately impacted by the 2008 crisis.

Figure 8
International Comparison of The Gap Between the Current Home Price to Rent Ratio and its Long-Term Average

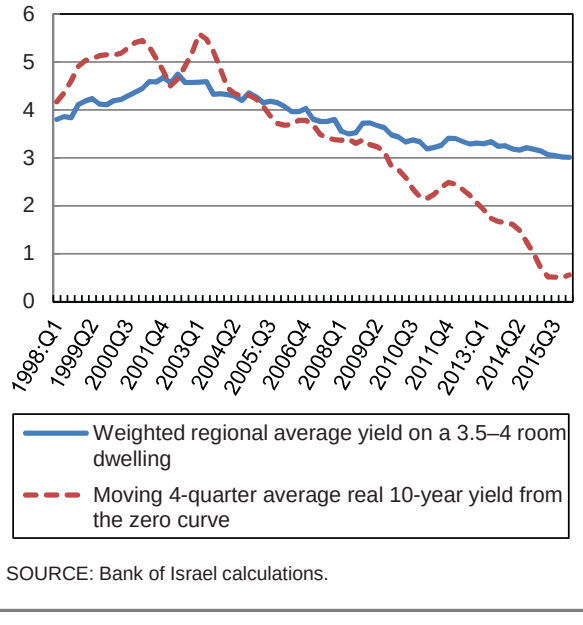


SOURCE: Based on OECD.

previous year (June 2014–June 2015). The risk indices for new mortgage loans remained stable and low but the average interest rate on such loans increased. Abetting the upturn in interest rates were longer terms to repayment, the cost to the banks of raising sources, the increase in risk, and directives from the Banking Supervision Department. (For elaboration, see the section on Households.)

The increase in home prices in recent years took place together with the decline in long-term yields.

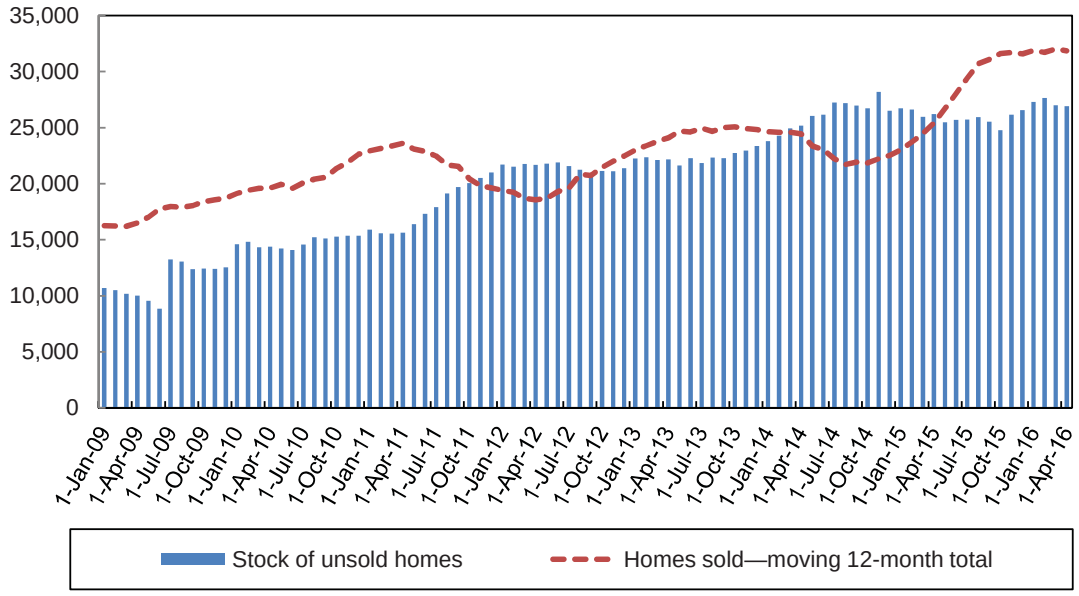
Figure 9
The Yield on Renting Out a Dwelling Compared to the Real 10-Year Yield from the Zero Curve, 1998–2016:Q2 (percent)



SOURCE: Bank of Israel calculations.

The stock of homes still unsold is close to an all-time high, and in view of the pace of sales and the pace of building starts, there is room to hypothesize that contractors' assessments are that prices will continue to increase.

Figure 10
Homes Sold and the Stock of Unsold Homes[a], 2009 to April 2016



[a] Excluding privately built homes.
SOURCE: Based on Central Bureau of Statistics.

b. Financial asset prices[14]

Prices of financial assets—corporate bonds in particular—are sensitive to changes in interest rates, creating an additional risk to the financial system. In May 2016, corporate bonds accounted for 13.5 percent of the total institutional investor portfolio and equities were 7.4 percent. These vehicles expose institutional investors, and the public that saves by their means, to the risk of a decline in asset prices due to an increase in interest rates or other shocks.[15]

The behavior of the holder of a financial asset after a major shock to the market is strongly affected by the holder's identity. Mutual funds are used by households for short- and medium-term savings. Accordingly, they suffer from relatively large withdrawals when crisis strikes. This creates concern that they will engage in a relatively massive selloff of assets, causing prices to fall even more. Israel's mutual funds hold 22.8 percent of outstanding tradable corporate bonds, and even though this proportion declined in the past year, it remains high relative to the 2008–2012 level.[16] If the funds sell enough bonds under stress conditions, their conduct will have an adverse effect on the prices of these instruments, reduce their value in the long-term savings portfolios managed by the institutional investors, and, in turn, erode the entire portfolio.

The average corporate spread remained stable and relatively low in recent months, and after a lengthy period of serious concern about underpricing in this market[17], there is less concern today due to several

[14] For an extensive analysis of the asset–price issue, see Chapter 6.

[15] An additional 3 percent is invested in ETNs that track equities and bonds.

[16] IMF economists noted recently that the same risk exists in the American corporate bond market because one-third of this market is held by retail investors, foremost mutual funds. (See *Global Financial Stability Report*, October 2015.)

[17] See the June 2015 *Financial Stability Report* and IMF *Country Report* No. 15/261, September 2015, which concerns itself with Israel. Notably, the review period of the IMF report ended at the end of June 2016.

factors: corporate leveraging fell as firms use accrued profits to fund their activity[18], corporate profit ratios are below their average in recent years, and the probability of bankruptcy is not high. However, as emphasized above, since the mutual funds hold a large share of corporate bonds, concern about severe price volatility in the event of a shock does exist.

Due to the narrow spreads, net issuance of nonfinancial corporate bonds accelerated and the net proceeds (issues less redemptions) of such issues (not including those by foreign firms) totaled NIS 5.2 billion in the twelve months preceding June 2016. Most corporate bonds are issued by real estate firms, which accounted for 40 percent of total funds raised by the nonfinancial business sector in the past twelve months.

Funding by means of foreign bonds was especially conspicuous at the beginning of the review period. NIS 2 billion was raised in this manner in the first half of 2016, compared with NIS 5.5 billion in 2015. All issues in 2016 took place in the first four months of the year, and accounted for 6 percent of total issues in the first half. Consequently, foreign shares accounted for 6 percent of outstanding bonds in the domestic market, but their share in outstanding real estate bonds was 20 percent and their proportion in issues in the first few months of 2016 was even higher. They also accounted for a large share of the market of unindexed bonds—about 12 percent. As a result, they were highly weighted in certain trading indices, such as the Tel Bond Shekel index, forcing entities that track these indices to invest large sums in foreign bonds whether they wish to invest in a foreign company or not. For this reason, developments in this sector are likely to affect the entire market more acutely than in the past.

Recently, several firms ran into difficulties and announced that they could not meet all of their obligations. This may show market players that there are additional risks to foreign corporate bonds beyond those of domestic firms.[19] As a result of the events, the yield spreads of small and low-rated foreign real estate firms widened and several new foreign-bond issues were suspended. This, however, had no perceptible effect on the spreads of the other firms, which resembled those at date of issue. The developments thus far suggest that market players treat foreign real estate firms as a special group and that adverse events at specific companies have some effect—though not a large one for the time being—on all members of the group.

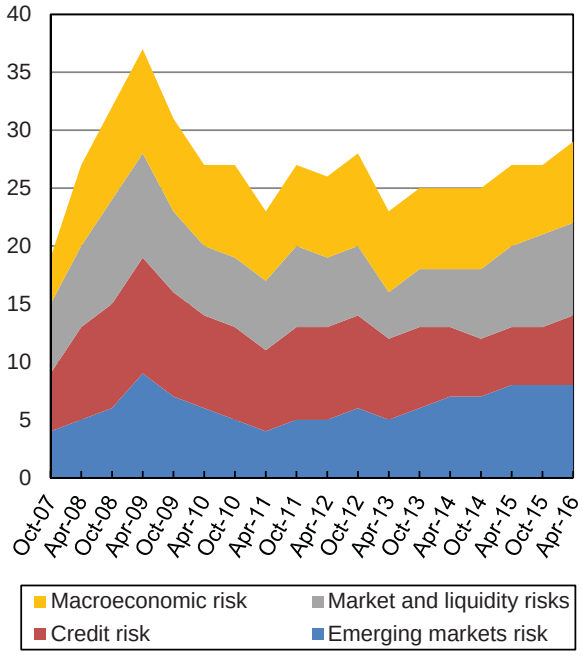
3. MAIN RISKS—THE GLOBAL ENVIRONMENT

a. Main global risks

In its April 2016 *Global Financial Stability Report*[20], the International Monetary Fund claimed that the overall risk to stability increased relative to the level

Total risk is at its highest level since the Global Financial Crisis.

Figure 11
Indicators of Risk to Global Financial Stability, October 2007 to December 2015



SOURCE: International Monetary Fund.

[18] See Chapter 4 of the Bank of Israel *Annual Report* for 2015, particularly Box 4.2.

[19] For a far-reaching discussion of the characteristics of foreign corporate-bond issues and the risks attending to them, see the December 14 *Financial Stability Report*.

[20] *Global Financial Stability Report*, April 2016.

found in its previous report. As Figure 11 shows, the total risk is as high as it has been since the Global Financial Crisis.

Several risks have increased with particular intensity:

- Credit risks in developed markets went up for the first time since 2011, mainly (but not solely) in the European banking system. Thus, the spreads between bank bonds and sovereign bonds widened and the prices of many bank shares fell sharply. The corporate sector also deteriorated, foremost in the United States: Corporate credit terms and ratings fell at the steepest pace observed since 2010 and the insolvency rate climbed visibly. In contrast, household credit risk improved slightly.
- Monetary and financial conditions deteriorated, mainly due to further tightening of credit terms even though central banks continued to lower rates and made much greater use of nonconventional monetary measures including negative interest rates[21], the purchase of financial assets, and very easy loans to the banking system.
- Macroeconomic conditions declined, mainly because global deflation intensified but also because economic activity slowed and the probability of recession grew in many of the major economies.

Other risks remained high but largely unchanged:

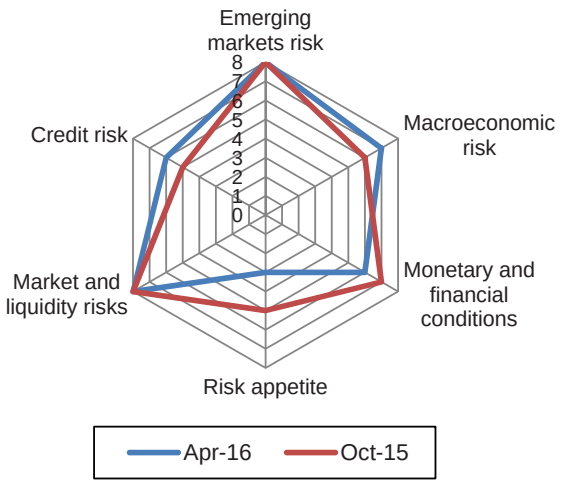
- Market and liquidity risks were essentially stable as the decrease in equity prices (which mitigated the risk somewhat) was offset by an increase in exposures. Notably, global equity prices reached a temporary low in February but then rebounded strongly and are currently less than 10 percent lower than the record set about a year ago—pushing the risk up again. It is also noteworthy that US equity prices rose even though various parties that invest in them—institutional entities, hedge funds, and private investors—have long been net sellers, with only one major exception: companies that bought back their equities and raised additional debt to do so. The exacerbation of risk in the financial markets due to these developments was augmented by yet another increase in correlations among the various asset indices in recent months.
- The risk of emerging markets remained virtually unchanged at the high level that was noted in the previous *Report*, with some decline in volatility offsetting increases in liquidity and corporate debt risks.

This combination of factors led to a decline in risk appetite.

The radar chart below summarizes the risks to global financial security:

Risks increased and the readiness to take risks declined.

Figure 12
Radar Chart of the Risks to Global Financial Stability



The figure is divided into two parts. The upper part shows the risks and the lower part shows the economic conditions that affect the risks. The farther a point is from the center, the larger the risk (in the upper part), the risk appetite (in the lower part), and the monetary accommodation (in the lower part). By way of comparison, in the report for April 2009 (the height of the crisis), all risk points were on the most distant line from the center or the one next to it, while risk appetite was at the center (meaning near-zero).

SOURCE: International Monetary Fund.

[21] Currently, more than $10 trillion in government bonds are trading at negative yields.

Several additional risks that are not adequately reflected in the IMF's radar chart escalated considerably during the review period:

- The risk due to impaired confidence in policymakers' ability to influence the economy and the markets. The tumult that swept the markets in the first two months of the year caused uncertainty and fear that developments in the financial markets would seep into the real economy. As a result, the Fed slashed its forecasts on the pace of interest rate increases in the coming year and the ECB and the Bank of Japan stepped up their use of nonconventional monetary measures. The markets' surprising response to the steps taken by the two latter institutions—appreciation of the euro and the yen and declines in equity prices in Europe and Japan—triggered concern about the possibility that the accommodative monetary measures would cease to affect the economy and the markets. The IMF mentioned this risk.
- The risk due to the results of the referendum concerning Britain's exit from the European Union. (See detailed discussion in the next section.)
- The risk due to the Chinese debt market. Once again the IMF emphasized the significant challenge that China is facing. China wants (and needs) to change its growth structure while avoiding a serious slowdown. The difficulty in managing this complex process is amplified by the high leverage of Chinese firms, together with the wish to make the country's financial markets more open. China's economic performance improved toward the end of the first quarter, but the main reason for this was a sizable upturn in domestic borrowing—a problematic trend in industries that have long been suffering from surplus production capacity and low profitability, as the IMF noted. The upsurge in borrowing may postpone an immediate slowdown but is aggravating the financial risk. In addition, Chinese firms posted declines in profits and increases in credit margins and bankruptcies (including government-owned firms). All these factors indicate that the risk is starting to come to pass.

b. Main exogenous risks to the Israeli economy[22,23]

- The risk to global financial stability from emerging markets remained very high in the reviewed period. Many emerging markets suffer from major structural weaknesses—including large current account deficits and massive foreign currency debt (which has risen even more since the global economic crisis). Therefore, they are expected to be the main path on which focused shocks (particularly those originating in China) will seep into the rest of the world. This claim is reinforced by the fact that banks and investors around the globe are much more exposed to fragile emerging markets than they are to China.
- The decline in energy and commodity prices, a process that crested in the first two months of 2016, dealt a severe blow to emerging market commodity and energy exporters as demand for their exports continued to decline rapidly and export prices fell. Although prices of industrial metals and energy have risen by dozens of percent since then, the current prices are far below those that are needed to balance these countries' budgets. Furthermore, the countries' fundamentals (i.e., surplus production capacity and relatively weak global demand) remain unchanged. Therefore, the risks to these markets (and to energy and industrial metals firms) persist as well.
- The steep decrease in financial risk appetite—a process that bottomed out in February—precipitated a capital flight from the emerging markets and steep depreciation of their currencies, prompting fear that they will find it difficult to service their foreign currency debts. Several emerging markets continued to sell foreign currency from their reserves to stanch the deterioration of their economies and currencies.

[22] All the risks described below are expected to affect Israel chiefly via the financial markets and in a decrease in financial risk appetite. Israel's economy and financial institutions have very small direct exposures to focal points of risk. If the destination markets of Israel's exports experience a major economic downturn, however, demand for these exports would probably suffer, to the detriment of the domestic economy.

[23] The risks are enumerated in what we consider a declining order of severity, with the first two the most important.

- China's weakness also affected countries that export technology and export intensively to China, such as South Korea and Singapore. In the medium term, however, these countries—and Israel as well—may come out ahead in the event of a successful restructuring by China because this outcome would increase Chinese citizens' purchasing power. (Countries that are mainly exporters of goods, in contrast, will not gain in the medium term because the economic battering that they are taking today will almost certainly continue.)
- The risk to the global economy and its stability from China continued to escalate during the reviewed period. Jitters about the state of China's economy slackened recently due to the publication of relatively strong real data. The major risk emanating from China, however—focusing on corporate debt—continued to increase. The strong real data, as stated, were boosted by a large increase in borrowing, and since much of the additional credit was taken by problematic sectors (those that suffer from low productivity and excess production capacity, foremost metals) these data do not send an encouraging signal. They even convinced the chief economist of the IMF to emphasize that the IMF is concerned about the quality of China's growth, not its rate.
- There are several indications that the state of China's corporate sector is steadily worsening. The leverage rate of China's companies is especially high, sectors that took on additional credit since the beginning of the year have zero profitability rates, suppliers are waiting longer than ever to get paid, the insolvency rate is continuing to increase, spreads are widening (even though they are not large relative to the past), and the share of bad debts in the portfolios of Chinese banks' is continuing to move up. According to the prevailing assessment, however, the likelihood of a hard landing in China remains moderate.
- Israeli entities typically have no financial exposure to China. However, since the crisis in China—should it materialize—will be global in nature, and since Israel–China trade is expanding rapidly, a crisis there may affect Israel and its stability in a major way.
- The risk to global financial stability posed by Europe has risen steeply, mainly due to Brexit. In the immediate term, the outcome of the referendum caused the pound to depreciate steeply and triggered abrupt downturns in equity indices around the world (foremost in Europe's financial services sector), although most of them were corrected within a few weeks. The IMF estimates Brexit's cumulative damage to the British economy in the coming years at 1.5–5 percent. The main risk to the global economy, however, is political, manifested in calls for similar referenda in many additional European countries and an increase in the probability of their secession from the European Union to the point of dissolution of the Union and the Eurozone.[24] Be this as it may, Europe now appears to be facing a lengthy period of political and economic uncertainty that will affect the financial markets and firms' willingness to make capital investments.
- The risk to the Eurozone's stability posed by Greece resurfaced after Athens was found once again to be in violation of the accord. It appears, however, that in this case at least, the Troika will continue to uphold the agreement and refrain from expelling Greece from the Eurozone.
- Refugees continue to create flashpoints of social instability in the continent's weak countries and to undermine the sense of European Union partnership. The refugee problem is merely aggravating a situation that is problematic to begin with: ongoing high debt levels, weak and unbalanced domestic growth and demand, high business leveraging, the weak global economy, and economic fragmentation and political polarization on the continent.
- On the macro side, deflation risks appear to have waned but the surprising appreciation of the euro—despite the ECB's accommodative measures—is likely to make it hard to stimulate European growth, which will probably remain very modest. The Brexit

[24] In the Spanish general elections that followed the Brexit vote, the Euro-skeptic Podemos party lost ground, slightly mitigating the risk of contagion.

decision is likely to impede growth even more.

- A new risk surfaced during the reviewed period: fear of failure of the highly accommodative monetary policy. Uneasiness prompted by this risk increased after the surprising response of European and Japanese currency markets to the most recent accommodative measures by their central banks. Even eight years after the eruption of the crisis, repeated monetary accommodations have not contributed much to faster growth. Acknowledging this, the IMF recently noted the existence of this risk and emphasized that future measures must focus on the fiscal level and on areas that promote innovation and growth.
- The growing vagueness surrounding the pace of the Fed's rate increases and foreseen monetary and fiscal measures elsewhere—and, with it, the spread of discussions about taking even more extreme monetary measures, including "helicopter money"—pose a growing risk to investor sentiment. Even though we consider the realizaation of this risk improbable—after all, central banks have many more options in their toolkits—the growing fears are sufficient to lead to an increase in market volatility and risks. The channels of transmission to Israel are spelled out in the section on Main Domestic Risks.
- Geopolitical risk was largely unchanged in the review period. The ongoing war against the Islamic State organization in Syria and Iraq, the growing hostility between Iran and Saudi Arabia, and mainly the wave of Islamic terror in Europe and mass migration of refugees to that continent (particularly from Syria) all pose a risk to global economic stability. The direct threat that enemy countries and Palestinian terrorism present to Israel, however, has eased somewhat and persists at a lower level than in previous years. Also, government bond yields remain low and the shekel continued to appreciate—indicating that investors around the world attribute limited importance to security events in Israel. Although we expect these crises to ease, the risk of more substantial harm from this direction exists.
- The risk associated with low interest rates is rising in tandem with the duration during which interest rates remain near zero. Global yields declined further, to historic lows in almost all markets, and much of the global market for investment-grade sovereign instruments is currently trading at negative yields. Even in the United States, yields fell after the members of the Fed (headed by the Governor) switched to a much more dovish tone due to the commotion that swept the markets for reasons including the Fed's own liftoff. These paltry yields are causing investors to price risks incorrectly, aggravating risk in the financial markets and impairing the expected yield on long-term savings in Israel and abroad. As a result, investors may sink their pension savings into mismatched, risky vehicles and aggregate consumption may contract due to a decline in savers' confidence in their post-retirement future.

4. THE BANKING SYSTEM

In 2015, the Israeli banking system continued to maintain its strength and improve its stability against the background of moderate growth, a low interest rate environment, a continued increase in home prices, and an improvement in the domestic labor market. System stability was supported in the reviewed period by continued capital accumulation; setting capital targets that correspond to the banks' risk profile; continued contraction of exposure to large borrowers; ongoing deconcentration of the credit portfolio; and an increase in liquidity. Stability was also aided by the fact that supervisory activity in recent years has been supportive of the adoption of advanced global regulatory standards and new risk management frameworks in various areas of activity. Although the banking system's profitability improved in the reviewed year, the increase in profits does not, for the most part, reflect an improvement in the banking groups' business environment or activity but is mainly a result of spot and nonrecurrent developments in the reviewed year and in that preceding. The resilience of the banking system is also

reflected in the outcomes of the stress tests that the Banking Supervision Department conducted during the year to verify the system's ability to cope with various kinds of shocks, including those at two main focal points—the construction and real-estate industry and housing credit.

Total activity continued to increase despite mild GDP growth. Developments that typified the credit portfolio in recent years appear to have continued, particularly the substitution of large business credit with household and small business lending. Household credit continued to expand in view of developments in the housing market, brisk demand for household finance, and increasing private consumption. Banks also continued to lend more to the construction and real estate industry, bringing the share of this industry, together with housing credit, to 45 percent of the banks' credit portfolio. Business credit increased mildly, due to more lending to small businesses and a cutback in outstanding credit to large borrowers.

The banking system is preparing for increasing domestic and global cyber risks, and is also continuing to reduce its exposure to compliance risks, including the cross-border risk that is inherent in banking activity with nonresidents. The system's exposure to compliance risks originating in cross-border activity has contracted in recent years, for reasons including less activity abroad and the sale of some foreign offices. These risks pose a challenge to the banking system, particularly in view of increasing supervision of, and enforcement against, financial entities in Israel and abroad.

a. Business results

Total net profit of the five large banking groups was NIS 8.2 billion in 2015. Return on equity was 9.1 percent, slightly above the average in recent years and similar to the OECD average. Profitability improved in the reviewed year but most of the increase reflected not an improvement in the groups' business environment or activity but spot and nonrecurrent developments that affected profits for the better in the reviewed year and for the worse a year earlier. Main developments in the current year were the sale of equities and buildings by the Leumi group.[25] Those in the previous year mainly included the realization of cross-border risk and the implementation of voluntary retirement programs.[26]

In addition to the nonrecurrent developments, the groups' profits were affected by exogenous factors that, as in recent years, had erosive effects on the banks' structural profit channels. The low Bank of Israel interest rate environment continued to narrow the financial margin[27], damping net interest income and lowering its share in total revenue. In contrast, it should be noted that the low interest rate environment also contributes to a low level of loan loss allowances.

In addition, the moderate growth rate and intensive competition from the nonbanking market for business credit led to fewer business opportunities for the banks. These factors, along with developments in the housing market, led to an increase in the housing credit portfolio, which typically yields low revenue rates.

To cope with the degradation of their sources of profit, diversify their interest-earning profit channels, and improve their capital ratios, the banks have been striving in recent years to expand their activity in the small business and consumer credit segments—an effort accompanied by a decrease in margins in these segments. They are also taking steps to boost noninterest financing revenue, foremost by selling assets from their ready-for-sale portfolio.

[25] The Leumi group reported NIS 1,251 million in (pretax) earnings from the sale of the Israel Corporation, Mobileye, Derech Eretz, and the Safra Fund, along with NIS 380 million from the sale of buildings belonging to its American subsidiary.

[26] In 2014, the Leumi group paid a NIS 1 billion fine for tax violations under an agreement with the American authorities. The Discount Froup recorded voluntary retirement expenses totaling NIS 548 million, and Hapoalim Group recorded a NIS 355 million expense for voluntary retirement, due to the implementation of efficiency programs.

[27] The ratio of net interest income to total portfolio assets that yield financing income.

b. Capital adequacy

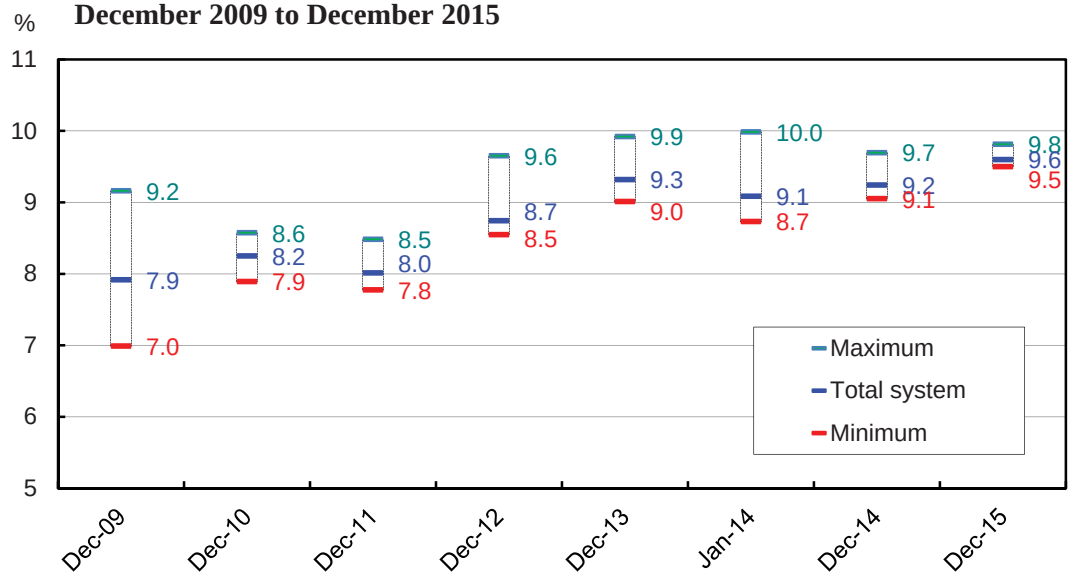
The Banking Supervision Department and the banking system have taken action in recent years to increase capital while applying a standard and conservative approach and adopting the Basel III recommendations and additional directives, leading to a decline in equity. Thus, the Common Tier 1 equity capital ratio has risen in the past six years by 1.7 percentage points, to 9.6 percent. The increase is traceable to accrued profits and moderate growth in risk assets, for reasons including the expansion of household and small business credit at the expense of large business lending, which carries higher risk weighting. The process of capital building and reinforcement is continuing and the banks are expected to attain higher capital targets than those set out in March 2012 (9 percent for all banking corporations and 10 percent for Bank Leumi and Bank Hapoalim).

In the reviewed year, the Banking Supervision Department issued a directive concerning leverage ratios based on the Basel III recommendations, determining that banking corporations must attain a ratio of no smaller than 5 percent by January 1, 2018, and that Bank Leumi and Bank Hapoalim should attain a ratio of at least 6 percent by then. These requirements exceed the threshold requirement established in the Basel III framework for the transitional period (3 percent), and there are some supervisory authorities that set even higher capital requirements. As of now, all the banking groups have met the leverage target and the system-wide leverage ratio is higher than that the average among the OECD countries.

The total capital adequacy ratio of the five banking groups has remained virtually unchanged in recent years, largely because the banks did not issue instruments that, according to the Basel III recommendations, are

In recent years the banks have increased their Common Equity Tier 1 capital ratio.

Figure 13
Common Equity Tier 1 / Core Capital Ratio[a], the Five Banking Groups, December 2009 to December 2015



[a] The data for December 2013 are in Basel II terms (Core Capital ratio), while data from January 2014 onward are in Basel III terms in accordance with the transition directives (Common Equity Tier 1 capital ratio).

SOURCE: Based on published financial statements and reports to the Banking Supervision Department.

eligible to be included in Additional Tier 1 capital or Tier 2 capital. In addition, since January 1, 2014, the banks have been gradually lowering the balance of instruments that are no longer eligible to be included as supervisory capital, in accordance with transition directives. In the past few months, the Banking Supervision Department approved, for the first time, several issues of Contingent Convertible (CoCo) capital instruments, which qualify as Tier 2 capital.[28] (For elaboration, see the Box.)

c. Credit risk[29]

The indicators of credit portfolio quality continued to improve in 2015, and the banks continued to make major reductions in credit concentration by borrower size. The increase in lending to households (for housing and other purposes) and to the construction and real estate industry, however, and the correlations between them, continued to amplify the risk to the banking system. Business credit grew modestly as more was lent to small businesses and less to large ones.

The aggregate balance sheet credit of the five banking groups grew by 5 percent, roughly matching the rate of increase in nominal GDP, to a total of NIS 911 billion. Much as in previous years, the increase in the balance sheet credit portfolio is due mainly to the continued growth of household credit in both of its components—housing and consumer (nonhousing). Credit to the construction and real estate industry increased again as the industry continued to raise sources from nonbank entities. The increase in the volume of housing credit and credit to the construction and real estate industry, and the correlations between them, remained a focus of risk to the banking system, particularly because their aggregate share in the bank credit portfolio climbed to 45 percent by the end of the reviewed period. In addition, the protracted low interest rate environment amplified the credit risk by, *inter alia*, (a) possibly encouraging investors to take greater risks in search of yield and (2) heightening the risk of borrower overleveraging, possibly pushing asset prices up and even causing the risks inherent in those assets to be underpriced—although fears of underpricing actually declined in the reviewed year.[30]

Business credit increased by 2 percent in the reviewed year but its proportion of the banks' credit portfolio contracted for the sixth consecutive year, to only 43 percent. Most of the increase was a result of an increase in lending to the small business segment. The supply of business credit at the banks has increased moderately in recent years due to a deliberate policy by the banks to trim their exposure to large borrowers and large business groups and focus on households and small businesses. This policy led, among other things, to a steady decline in the concentration of the credit portfolio—reflected in an improvement in the concentration indices—and was influenced by regulatory restrictions on the indebtedness of borrowers and borrower groups. A contributing factor in the banks' focus on small business lending, and the growth of this area of activity, is that this segment is more profitable than the other business segments (although less so in recent years) and delivers a higher return on assets. It should be borne in mind that the small business segment is riskier than other segments for two main reasons. First, there is information asymmetry between a banking corporation and a small business owner, due to the lack of high-quality and readily available information about the borrower's situation. Second, small business owners usually lack managerial and financial training. In practice, the credit risk is manifested in a much higher rate of credit

[28] In December 2015, Mizrahi-Tefahot Bank raised NIS 417 million in a private issue of CoCo subordinated debt notes, which include a mechanism for the absorption of losses by writing off principal. In January 2016, the same bank raised another NIS 183 million in this manner. In January 2016, Bank Leumi raised NIS 926 million by issuing CoCo subordinated debt notes, which include a mechanism for the absorption of principal losses through which the subordinated debt notes will be converted to ordinary shares of the bank under certain circumstances.

[29] The analysis in this part of the report is based on aggregate data from the five banking groups.

[30] The concern about underpricing of risks declined this year because government bond yields increased moderately even though Israel's CDS level is low by international standards.

loss provisions for the small business segment than for other segments.

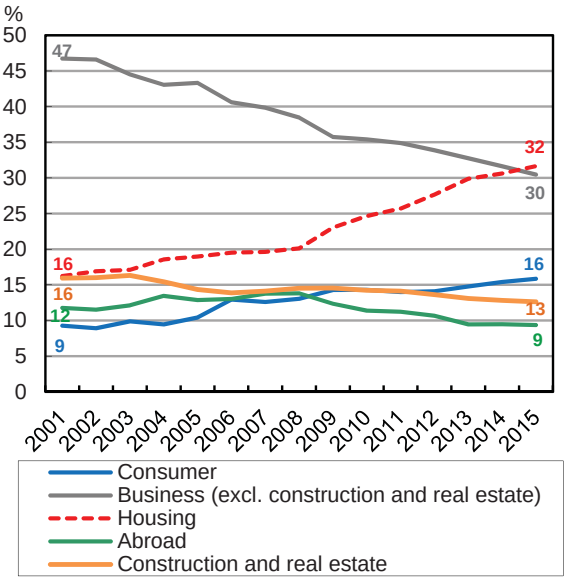
Household credit continued to grow in 2015. Its share in the banks' total credit portfolio has risen considerably in the past decade—from 32 percent to nearly half. This form of credit has expanded rapidly in recent years against the background of the low interest rate environment, the increase in demand for housing, and the increase in private consumption. Banks issue nearly all household credit in Israel (91 percent) and their share in total household debt has been increasing in recent years, although rather slowly. Nonbank household credit has also been increasing, although its share remains low.

Housing credit accounts for around two-thirds of total household credit and in 2015. As in recent years, it expanded rapidly—by 9 percent, to NIS 289 billion. The proportion of this form of credit in the banks' credit portfolio continued to increase, to 32 percent compared with 20 percent at the beginning of the decade. The monthly average of new housing loans taken out increased again in the reviewed year, to NIS 5.4 billion compared with NIS 4.3 billion a year earlier—and set an all-time record of NIS 7 billion in June. However, due to the Banking Supervision Department's regulatory measures in regard to housing credit in recent years, the risk characteristics of new housing loans remained low.

Consumer credit grew by 8 percent and its share in the banks' credit portfolio and in GDP increased as well. The proportion of new loans taken out with long terms to maturity (6–8 years) continued to increase and that of loans with shorter terms (0–5 years) continued to decline. This trend, among others, may be indicative of a gradual increase in risk.

The banks have continued to increase credit to households (consumer and housing credit) and its share of the credit portfolio has increased significantly in the past decade.

Figure 14
Distribution of Outstanding Balance-Sheet Credit, the Five Banking Groups, 2001–15



SOURCE: Published financial statements and reports to the Banking Supervision Department.

d. Market risks

The banking system is exposed to interest rate risk and indexation base risk. Similar to previous years, most banks are exposed to an increase in interest rates in all indexation segments. The potential loss to the net fair value of the banks' capital (those that are vulnerable to an increase in interest rates) as a result of a 1 percentage-point increase in the interest rate ranged from 2.8 percent to 8.4 percent at the end of 2015—basically the same as a year earlier.[31] This is a relatively low level of exposure to credit risk. The system's exposure to indexation base risk eased slightly. The potential loss resulting from maximum changes in inflation and exchange rates was only NIS 384 million at the end

[31] The net fair value of a bank's capital is equal to the difference between the fair value of its financial assets and the fair value of its financial and other liabilities in all indexation segments, plus the effect of derivatives.

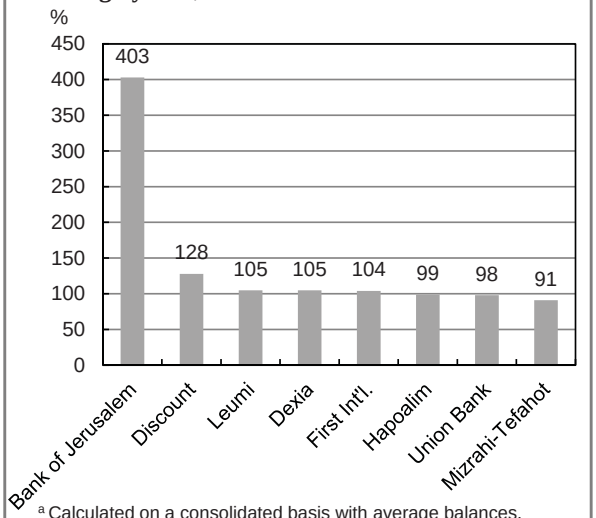
of 2015, 0.5 percent of the five groups' total capital.[32] As in previous years, most banks were exposed to a depreciation of the shekel and an unexpected decline in the Consumer Price Index.

e. Liquidity risks

In April 2015, the banking system began to implement the Basel III recommendations concerning Liquidity Coverage Ratio (LCR)—the ratio that tests the banks' ability to withstand a meaningful stress scenario that lasts thirty days.[33] The acceptance and application of the recommendations mark another significant step toward the full adoption of Basel III in Israel and the improvement of risk management, bank resilience, and banks' ability to absorb shocks of various kinds. In the course of the year, the improvement in the banks' liquidity and ability to meet short-term liabilities translated into an adequate liquidity level in the system as a whole, reflected in an increase in the LCR. It was also manifested in the high quality of liquid assets and the stable composition of sources—greater reliance on retail deposits and less dependency on financial wholesale financing, which tends to dry up at times of crisis. The LCR exceeded the minimum requirement set forth by directive for January 2016 (80 percent)[34], and improved in both domestic-currency and foreign-currency activity. However, the quality of sources deteriorated slightly in the reviewed year because the share of immediate demand deposits went up due to the declines in the capital market in the second half of the year and the low interest rate environment.

The liquidity coverage ratio was higher than the regulatory minimum (80 percent as of January 2016) in all banking groups and independent banks.

Figure 15
Liquidity Coverage Ratio (total activity)[a], Total Banking System, Dec. 2015



[a] Calculated on a consolidated basis with average balances.

SOURCE: Based on published financial statements and reports to the Banking Supervision Department.

f. Macroeconomic stress test of the banking system based on a uniform scenario, 2015–2016

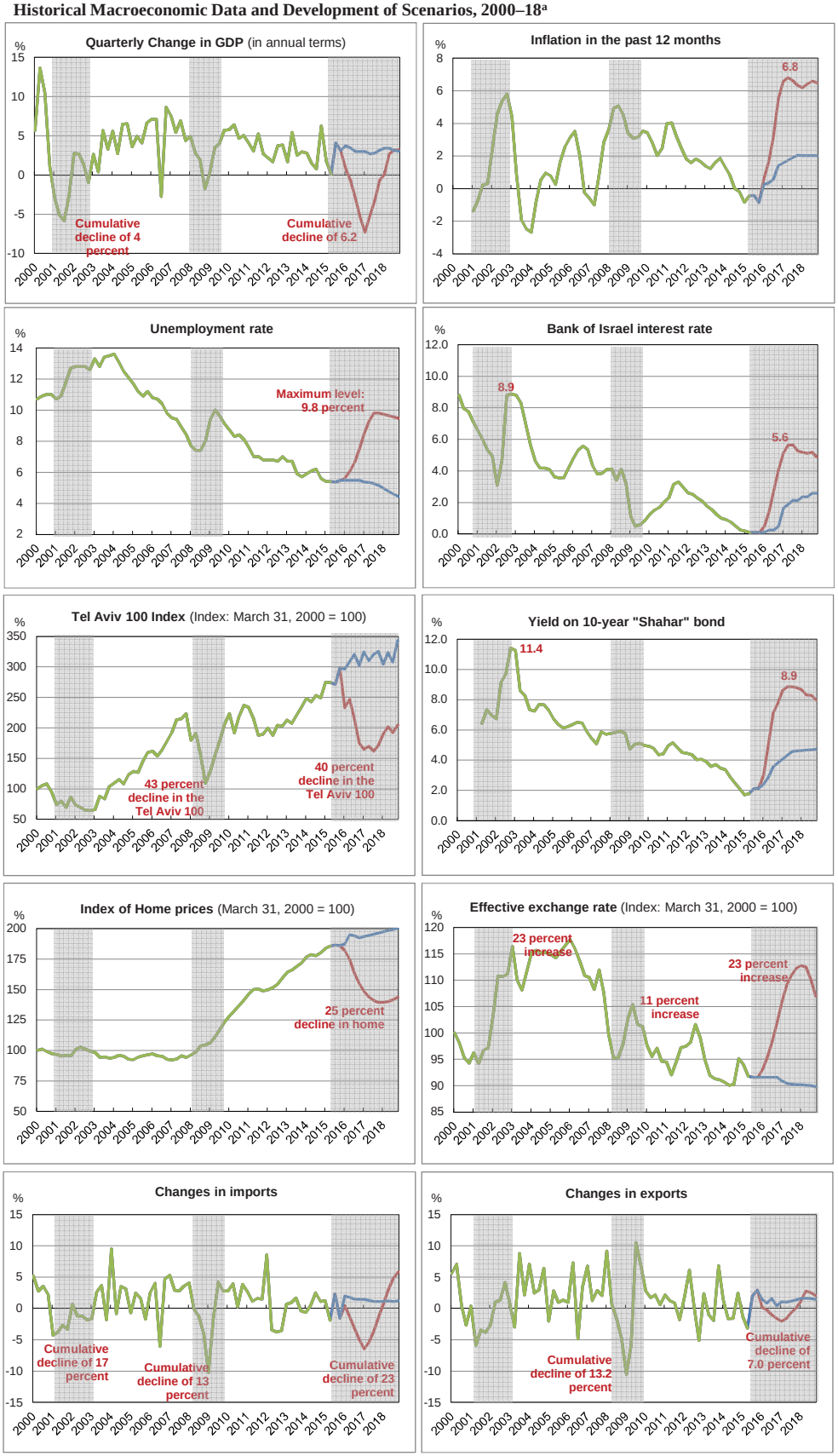
Again this year, the Banking Supervision Department conducted a uniform stress test to examine the resilience of the banks and the banking system to a severe domestic recession brought on by deterioration in Israel's geopolitical situation. The three-year scenario included serious impairment to the economy's production capabilities which, along with the raising of substantial external administrative barriers, negatively impacted demand for Israeli exports and led to difficulties in importing goods. As a result, there was a steep currency depreciation and increases in inflation and interest rates. The blow to the real economy was also reflected in serious damage to the labor, housing, and real estate markets. In addition to the deceleration of real activity, there was also a sharp decline in prices of financial and real assets due to underpricing of risks in the bond market and high housing prices. Figure 16 shows how the main macroeconomic variables developed in each of the scenarios; Table 1 presents an international comparison of main variables in selected countries' stress tests.

[32] The maximum change in inflation and exchange rates is determined on the basis of the respective monthly changes in inflation expectations and the nominal NIS–USD exchange rate over the past seven years, with normal distribution and 99 percent significance being assumed.

[33] The recommendations of the Basel Committee on Banking Supervision were rephrased and localized for Israel under Proper Banking Management Directive 221.

[34] The minimum requirement was 60 percent on April 1, 2015. It was raised to 80 percent on January 1, 2016, and will attain the target level of 100 percent in January 2017.

Figure 16
Historical Macroeconomic Data and Development of Scenarios, 2000–18[a]



[a] The shaded areas denote crisis periods.

SOURCE: Published financial statements and reports to the Banking Supervision Department.

Table 1

Macroeconomic variables of the uniform stress scenario[a], Israel and selected countries

	Israel (2015)		US (2016)			Europe (2016)		UK (2015)	
Main macroeconomic variables	**Starting point**	**Stress scenario**	**Starting point**	**Adverse scenario**	**Severely adverse scenario**	**Starting point**	**Stress scenario**	**Starting point**	**Stress scenario**
GDP - Maximum contraction in the stress scenario		**6.2%**		**1.8%**	**6.1%**		**2.3%**		**1.5%**
Unemployment rate - Maximum level in the stress scenario (percent)	5.4	**9.8**	5.0	**7.5**	**10.0**		**12.4**	5.7	**9.2**
Monetary interest[b] - Maximum/minimum level in the stress scenario (percent)	0.1	**5.6**	0.1	**0.1**	**-0.5**	-	-	0.5	**0.0**
Inflation - Maximum/minimum annual change in the stress scenario	-0.4%	**6.8%**	0.1%	**-0.5%**	**0.6%**		**-0.9%**	-0.1%	**-0.9%**
Change in the exchange rate	Depreciation of the shekel against the basket of currencies[c]	**23%**	Appreciation of the dollar against the euro	**-11%**	**-14%**		-	Depreciation of the pound against the dollar Appreciation of the pound against the euro	**12%** **-16%**
Long-term yields - Maximum/minimum level in the stress scenario (percent)	2.1	**8.9**	2.2	**1.3**	**0.2**	1.2	**2.4**	2.1	**1.0**
Shares index - Maximum change of the leading index in each country		**-40%**		**-26%**	**-51%**		**-54%**		**-36%**
Home prices - Maximum change during the stress scenario		**-25%**		**-12%**	**-25%**		**-9%**		**-20%**

[a] Duration of the scenario: Israel—13 quarters; US and Europe—3 years; UK—5 years.

[b] Data on the ECB monetary interest rate were not published for the stress test conducted in Europe. In the US, —3-month Treasury Bill.

[c] In Israel—the nominal effective exchange rate includes the yen, the pound, the US dollar and the euro—the currencies of Israel's major trading partners.

SOURCE: Data on Israel—Bank of Israel; Data on the US—Federal Reserve; Data on the UK—Bank of England; Data on Europe— EBA.

The realization of the scenario can be expected to have a major effect on the banking system. Although the system will record a hefty loss in Year 2, the worst year in the scenario, the banks' capital ratios will not fall below the required minimum. These results reflect a direct impact to the system due to credit and market risks, and do not take into account other effects such as a negative impact to liquidity, impairment of banks' goodwill, and feedback effects. Conversely, they are oblivious to actions that management may take in response to the crisis. The banking system's Tier 1 capital ratio declines during the scenario from 9.4 percent in September 2015 to a low of 8.3 percent. The bank most affected in the scenario will reach a minimal capital ratio of 6.5 percent. The system will absorb an NIS 3 billion loss in Year 2, the worst year, amounting to a -3.3 percent return on equity.

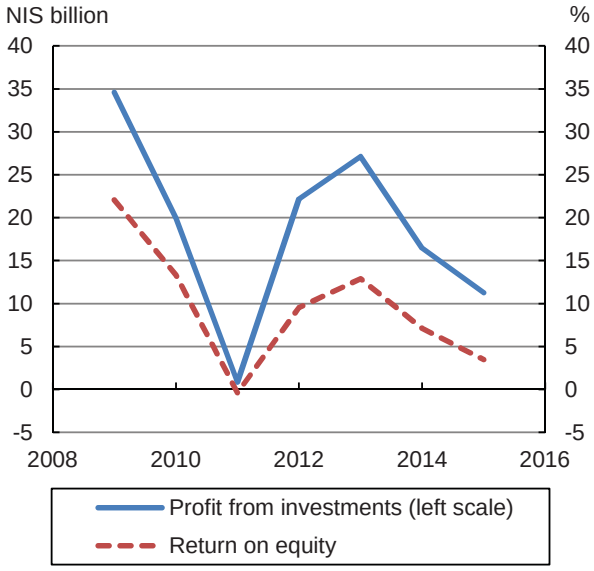
The harshest blow to the banks' profitability will come from credit losses. The recession will make it hard for business and private borrowers to meet their obligations and, during the three years of the scenario, the banks will record steep losses in their credit portfolios: some NIS 40 billion (pre-tax), for an annual loss rate of 1.5 percent on average. The severe impact to imports and exports is reflected in credit losses in the business sector (not including construction and real estate), which account for 40 percent of total losses in the banks' credit portfolio. Another substantial risk relates to the housing market and construction and real estate, in view of a serious blow to the labor market, a steep decline in home prices, and an increase in the prices of raw materials for construction. In addition, the strong correlation between these sectors heightens the risk of industry concentration and may amplify the loss by way of feedback effects. Notably, however, the riskiness of the housing credit portfolio on its own has declined relative to previous years, thanks to an improvement in its risk characteristics due to regulatory measures taken by the Banking Supervision Department in recent years. In addition to the credit losses, the securities portfolio absorbs acute losses due to the steep increases in interest rates and credit margins and falling share prices. Amid the losses in the credit and securities portfolios, higher interest rates give the banks an increase in net interest income, offsetting some of the aforementioned portfolio losses.

For elaboration on the stress test, see the Annual Survey of Israel's Banking System, for 2015.

5. INSURANCE COMPANIES[35]

The insurance companies' aggregate profit in 2015 was NIS 990 million, down steeply—about 45 percent—from the previous year (NIS 1.8 billion). Return on equity[36] slumped to 6 percent, compared with 11 percent in 2014 and 19 percent in 2013 (Figure 17). The decrease in profitability was reflects a decline in profit on investments and an increase in provisioning for insurance reserves, against the background of both the low domestic interest rates[37] and the adjustment of

Figure 17
The Return on Equity and the Profits from Investments of the Insurance Companies, 2009–15 (annual data)



SOURCE: Based on the financial statements of the insurance companies.

[35] The data and analyses in this section pertain to the country's five largest insurance companies and are correct as of December 2015 unless stated otherwise.

[36] The ratio of the companies' total earnings to their equity.

[37] The increase in insurance reserves in view of the low domestic interest rate is discussed in the June 2015Financial Stability Report. Here it is noted that provisioning for low interest rates contributed rather little to the decline in profitability in 2015 because most of the provisioning took place in the financial statements for 2014.

various assumptions in the life insurance and health insurance segments.[38] The decline took place despite the recognition of NIS 160 million as profit even though it originated only in a change in the accounting method. This allowed two companies to revalue assets for their own use that they had been recording at amortized cost.

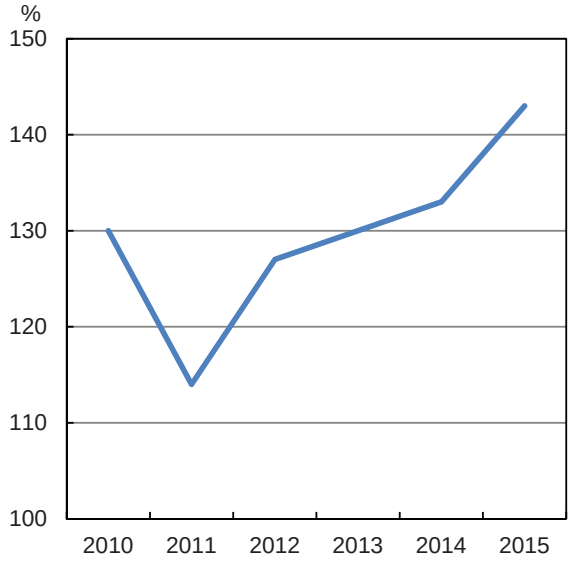
Investment earnings fell sharply, by about 28 percent, in 2015. The decline, following a downturn in 2014, occurred against the background of weakness in the domestic and global financial markets (except the fourth quarter) and the low domestic interest rate, which dampened the returns on the companies' investments. In addition, at the current interest rate level, it is not likely that capital gains will be generated by revaluing existing financial assets and real estate in the investment portfolio, as happened in previous years.

Amid the continuing decline in profitability, the companies' recognized capital increased substantially, by about 13 percent over the previous year (Figure 18) to NIS 29 billion in December 2015, mainly because several companies raised secondary and tertiary capital in order to attain the Solvency II targets[39] and due to the positive total aggregate profit in 2015.

Another contributing factor to the increase in recognized capital was the decline in dividend distribution by the five major companies in 2015 relative to previous years (Figure 19). However, dividends as a share of total profit has been trending upward in recent years.

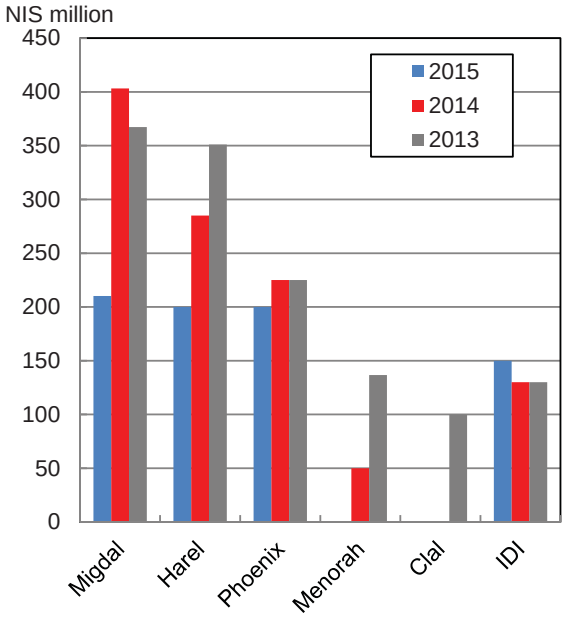
The upturn in recognized capital reflects an increase in the aggregate ratio between recognized capital and required capital: from 133 percent in December 2014 to 143 percent a year later (Figure 18). As of December 2015, however, only some of the companies had attained the capital targets of Solvency II, which will go into effect starting with the December 2016

Figure 18
The Ratio of Recognized Capital to Required Capital of the Insurance Companies, 2009–15 (annual data)



SOURCE: Based on the financial statements of the insurance companies.

Figure 19
Volume of Dividends Distributed by the Insurance Companies, 2013–15 (annual data)



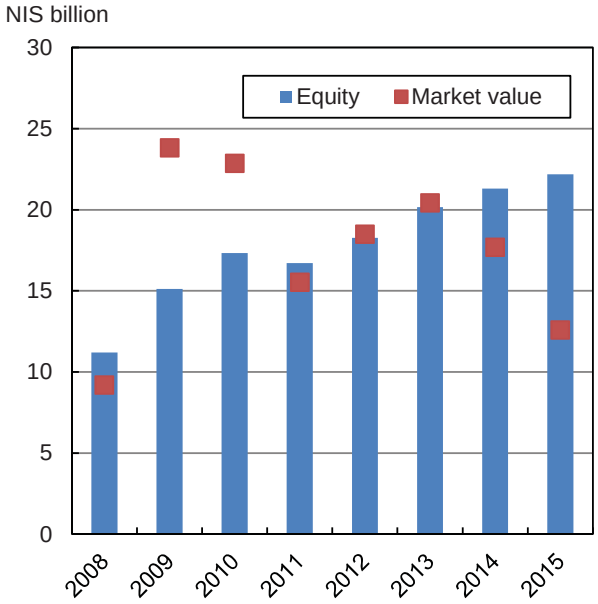
SOURCE: Based on the financial statements of the insurance companies.

[39] Solvency II is discussed at length in the June and December 2015 *Financial Stability Reports*.

financial statements. Migdal reported a NIS 2.5 billion shortfall.

The average market capitalization of the public insurance companies has been trending downward in recent years and hit a historical low in 2015—about 57 percent of equity (Figure 20). The decline in market

Figure 20
Aggregate Equity and Market Value of the Insurance Companies, 2008–15 (annual data)

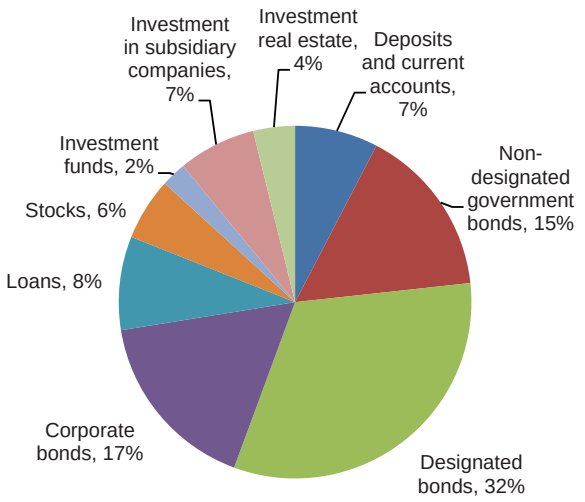


SOURCE: Based on the financial statements of the insurance companies.

value and the spread between it and the companies' equity originate, among other factors, in the market's belief that, given the low interest rate environment, the companies' investment earnings are unlikely to grow much in the next few years. They also trace to investors' concern that changes in the regulation of this industry (details below) will dampen the companies' profits from policy underwriting.

In their investment activity, insurance companies are exposed to market risk that stems from the specific characteristics of their assets. Figure 21, showing the distribution of the companies' proprietary investments, indicates that most investments—about 53 percent—

Figure 21
Distribution of Insurance Companies' Investments in the Nostro Portfolio, February 2016



SOURCE: Based on the financial statements of the insurance companies.

are in relatively low-risk assets: sovereign bonds, deposits, and current accounts. Notably, the share of risk assets in the proprietary portfolio has been increasing in recent years.[40]

Changes in the regulatory environment

Insurance companies' profitability is also likely to change due to changes in their regulatory environment. During the reviewed year, several consumer reforms initiated by the Commissioner of Insurance to stimulate competition among the companies and boost consumers' bargaining power went into effect. The main measures include the following:

- **March 2016:** A directive establishing that a tender must be issued once every three years to choose one of the comprehensive pension funds as the default fund. This fund is intended to serve all workers, but particularly those who did not

[40] The share of risk assets in the insurance companies' proprietary portfolio is discussed in the June 2015 *Financial Stability Report*.

choose a pension product when they were hired. The fund will be chosen by competitive bidding—the winner being the one that charges the lowest management fee—and the selection process will give preference to pension funds that do not belong to any of the five large insurance companies. The reform will probably induce savers to switch from large insurance companies' funds to those of small companies and/or prompt the large companies to lower their management fees.

- **January 2016:** As a precursor to the directive concerning the default pension fund, a reform determining that when a customer elects to move to any particular pension fund, all balances accrued with other funds—in both active and dormant accounts—shall be transferred to it. This will pressure the large funds to offer customers a sizable reduction in management fees. The default fund will enhance the attractiveness of this measure because it is expected to make switching pension funds more prevalent.
- **December 2015:** A directive allowing consumers to migrate life insurance policies that have assured benefit coefficients against life expectancy risk to another insurance company.[41] This will probably induce the insurance companies to lower the management fees that they charge on account of these policies.
- **March 2016:** An instruction to lower pool rates.[42] Since the market uses these rates as benchmarks, the instruction will probably touch off an across-the-board decrease in rates, as well as a decline in companies' profits.
- **August 2015:** An instruction to market health insurance policies by their components and not as a package deal. Also, insurance companies will be allowed to sell only standard insurance policies for surgeries and customers will be able to purchase only some of the levels of coverage that they offer. The reform is likely to improve customers' ability to shop around and lead to lower prices in this area of activity.

These reforms may improve consumers' ability to bargain with insurance companies and enhance the status of small companies. They may also induce the companies to take streamlining and savings measures in order to alleviate possible negative impacts on their income. In this context, it is notable that the five large insurance companies' expense ratio (net of life insurance) went up from 24.8 percent in 2013 to 25.9 percent in 2015[43], reflecting a decrease in their operating efficiency.

First quarter of 2016

In the first quarter of 2016, the five large insurance companies posted a total aggregate loss of about NIS 720 million. The loss traces to three factors: (1) the companies boosted their insurance reserves by about NIS 1.3 billion in view of the low domestic interest rates; (2) they made supplemental provision of about NIS 800 million following the recommendations of the Winograd Committee. This committee recommended lowering to 2 percent the discount interest rate by which lump-sum payouts to casualties of workplace accidents are calculated, leading to an increase in insurance liabilities in both workplace-accident and compulsory auto insurance; (3) some firms recorded losses on investment activity in their members' portfolios and are not allowed to charge members floating management fees until the losses are covered in full.

[41] This benefit coefficient is based on the mortality tables at the time the policy is taken out. The assured coefficient does not change even if the mortality tables change during the life of the policy. In accordance with the Supervisor's directive, new life insurance policies with life expectancy assured benefit coefficients have been disallowed for sale since January 2013.

[42] Pool insurance is intended for customers who apply for compulsory insurance with one of the firms in the market and are turned down.

[43] An insurance company's expense ratio is the ratio of administrative and general expenses and marketing commissions and expenses to gross premium revenues. Notably, insurance companies' payouts (net of life insurance) to insured have been declining in recent years. Accordingly, the loss ratio—payouts divided by gross premium revenues—declined from 77 percent in 2013 to 71 percent in 2015.

6. THE BUSINESS SECTOR AND PRICES OF FINANCIAL ASSETS

a. The business sector

(1) Strength of the business sector

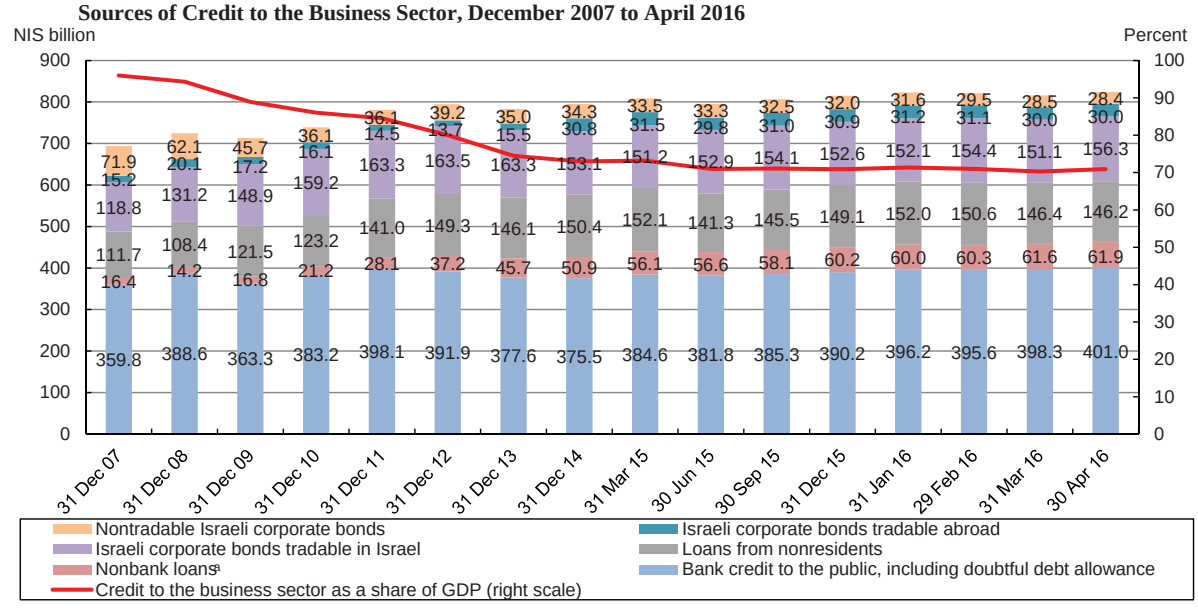
In the first half of 2016 there were no changes indicating a meaningful change in the state of the business sector.

In terms of with the real economy, the Bank of Israel Research Department predicts GDP growth rates of 2.4 percent in 2016 and and 2.9 percent in 2017—below the 2015 growth rate. The Q1 Companies Survey also points to slowing of expansion, predominantly in business activity with some variance among industries.[44]

As for the financial aspect, the picture that arises from public corporations indicates that the state of the business sector improved or remained stable. The leverage rate—the ratio of liabilities to assets—in the principal industries was below the past four years' average, at an average of 61 percent among all companies. The real estate industry accounted for about one-third of the total debt and posted a 68 percent leverage rate. Among the large nonfinancial industries, manufacturing was characterized by the lowest leverage rate—about 56 percent. Credit to the business sector as a share of GDP has been in a downward trend since 2007 and came to 71 percent in April 2016. (In contrast, credit to households has been trending upward moderately; for elaboration, see the section on Households.) The leverage rate of Israel's business sector is low by international comparison, but resembles corresponding rates in the US and the UK (Figure 22). The share of financing through share capital resembles that abroad. These facts are explained, among other things, by an increase in undistributed profits.[45]

Credit to the business sector as a share of GDP is in a downward trend. The banks are the dominant providers of credit to this sector.

Figure 22
Sources of Credit to the Business Sector, December 2007 to April 2016



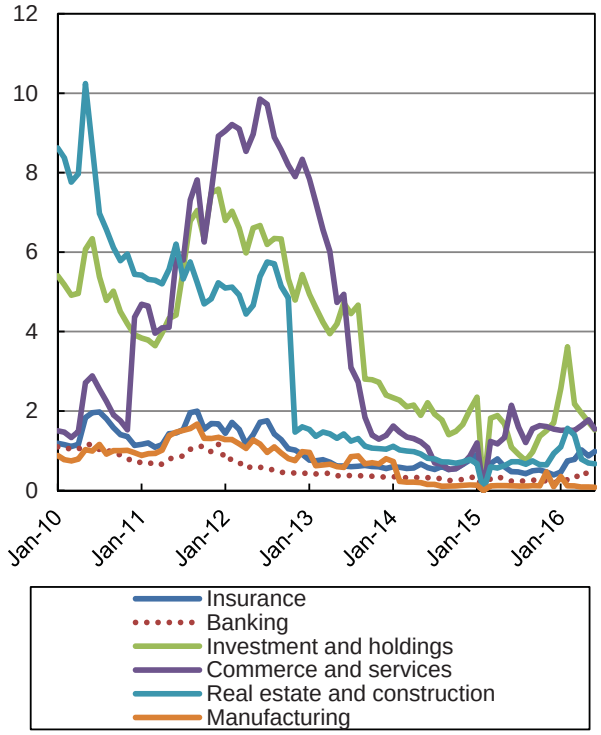
[a] Loans from institutional investors, loans from government sources, and nonbank loans from the credit card companies.
SOURCE: Bank of Israel.

[44] For elaboration, see the Research Department staff forecast of June 27, 2016, and the Bank of Israel Companies Survey for the first quarter (April 19, 2016).

[45] For elaboration, see Chapter 4 of the Bank of Israel *Annual Report* for 2015.

The estimated default frequency in the principal industries is low, and in the past three years there have been no significant changes.

Figure 23
Estimated Default Frequency (EDF) in Selected Industries, 2010–16



SOURCE: Bank of Israel.

Expected Default Frequency—EDF[46]—rose at the beginning of the year due to volatility and declines in share prices at that time, but subsequently receded to 0.68 percent, slightly higher than the end-of-2015 level but below the average of the past four years (1.51 percent). Generally speaking, Israel's EDF is low and has not changed substantially in the past three years. In real estate, which accounts for roughly one-third of all debt in the corporate bond market, the EDF in March 2016 was 1.4 percent (Figure 23).

The profit ratios of firms included in the Tel Aviv 100 and Tel Aviv 25 indices edged upward since the beginning of the year, to 16.8 and 15.5, respectively, but remained below their average of the past four years (17.6 and 16.1, respectively). These ratios are higher than those of firms in the MSCI indices, but lower than those in the S&P 500 and the EURO 600.

(2) Credit to the business sector and its quality

Business sector debt was NIS 824 billion in April 2016, up NIS 9 billion from the end of the previous half-year. This increase was mainly a result of an increase in borrowing from banks (Figure 22), which also hold the largest share of the business sector's debt.

The second-largest portion of the debt originates in tradable and nontradable bonds (including foreign instruments), at NIS 283 billion in March 2016. The composition of this debt is continuing to improve: The proportion of bonds rated AA- and up increased from 43.2 percent in December 2011 to 58 percent in March 2016 (Figure 24). The construction and real estate industry continues to be the largest borrower in the bond market at 33 percent of the total, a fraction that has not changed much in recent years.

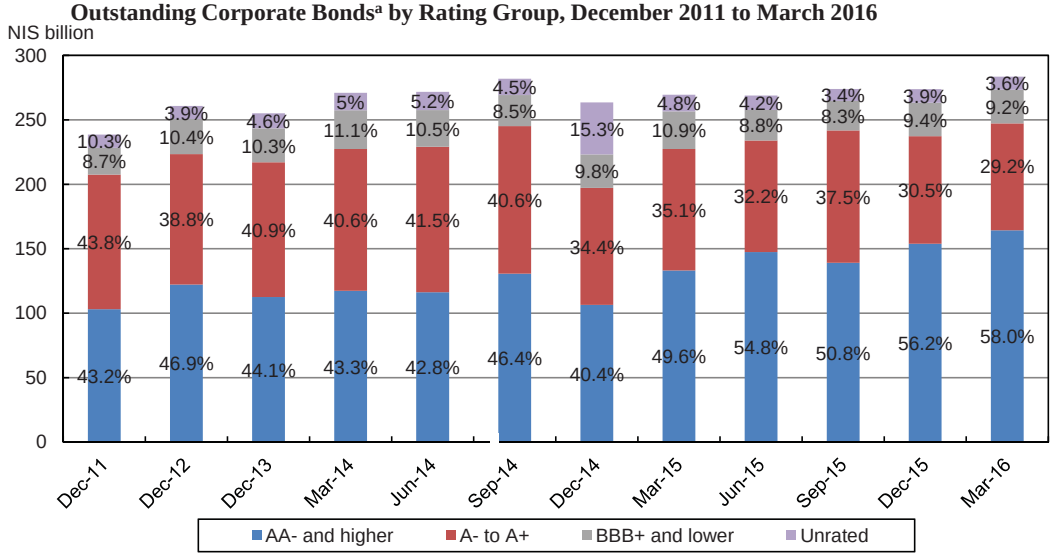
Debt settlements became less frequent in 2015, as in 2014. Only two companies began debt settlement proceedings and their debt was 0.1 percent of the total value of the bond market at the beginning of the year. Looking ahead, NIS 40 billion in redemptions is foreseen between July 2016 and May 2017 (including the financial services sector). Of the total, NIS 31 billion is trading at yields below 8 percent, about NIS 2 billion is trading at higher yields, and about NIS 7.5 billion cannot be classified into yield groups (Figure 25).

The real estate industry remained dominant in net issuance (excluding the financial services sector). In 2013–2015, cumulative net issuance (excluding the financial services sector) was negative NIS 2.1 billion, whereas that of the real estate industry alone was positive at NIS 13.6 billion. Nevertheless, the real estate industry's share of corporate bonds (including the financial services sector) remained relatively stable in recent years—at one-third, as noted—due to the financial services sector's growing share of bonds.

[46] Moody's-KMV calculates EDF using a structural model for bond pricing. The main elements of the model include the company's medium-term leveraging, its past profits, and investors' confidence in its future profits, which are reflected in the volatility of the share.

The mix of debt continues to improve, with the share of debt rated AA- or higher increasing.

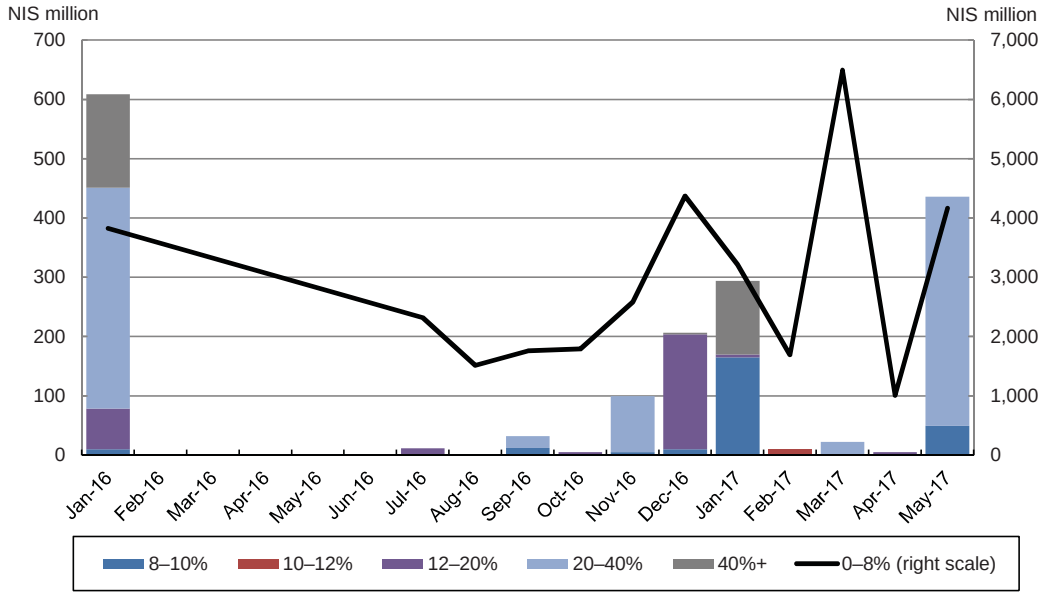
Figure 24
Outstanding Corporate Bonds[a] by Rating Group, December 2011 to March 2016



[a] Tradable and nontradable corporate bonds, excluding structured and convertible bonds, and including bonds of foreign companies.
SOURCE: Bank of Israel.

Between July 2016 and May 2017, repayments totaling NIS 40 billion are expected, NID 31 billion of which are traded at a yield of lower than 8 percent.

Figure 25
Expected Repayments of Corporate Bonds (Interest and Principal), by Yield Group, May 13, 2016[a]



[a] Tradable bonds at fixed interest with a term to maturity of more than 0.5, excluding structured and convertible bonds and excluding bonds of foreign companies. The yields are on unindexed bonds and are estimated after deduction of expected inflation.
SOURCE: Bank of Israel.

(3) Foreign bonds[47]

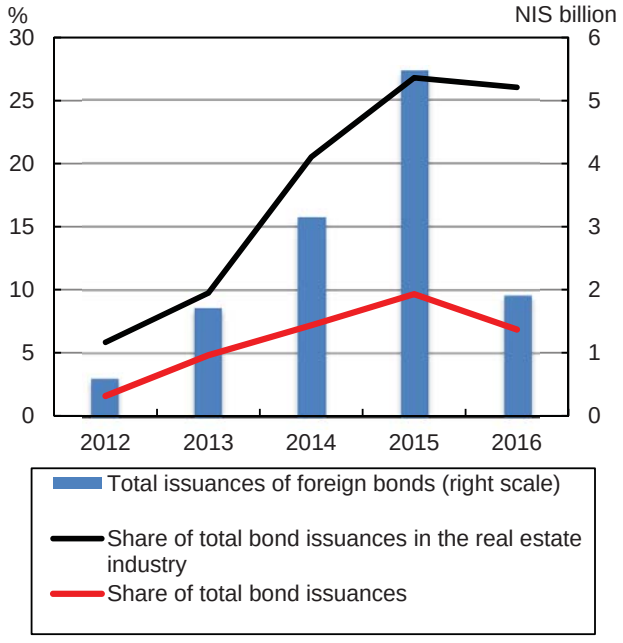
Foreign firms' bond issues on the Tel Aviv Stock Exchange slipped from NIS 5.5 billion in 2015 to about NIS 2 billion in the first half of 2016, continuing NIS 13 billion in issuance from the beginning of 2012 to the middle of 2016 (Figure 26). The decline was a result of a temporary halt of issues in May and June due to several adverse events among foreign firms that issued bonds in Tel Aviv.

In the first half of 2016, foreign bond issues accounted for 6 percent of total issuance by nonfinancial firms on the Tel Aviv Stock Exchange, and 23 percent of issuance by real estate and construction companies (Figure 26). All foreign issuers in Tel Aviv since 2012 belong to the construction and real estate industry and most engage in investments in American income-generating real estate. Despite the upturn in foreign issuance, the foreign real estate firms' outstanding debt is small relative to the total domestic bond market (including financial service companies)—about 6 percent as of the end of March 2016.[48] Their share in the real estate industry, however, is substantial at nearly 20 percent, and their weight in the unindexed bond market is considerable at about 12 percent. Consequently, they are heavily weighted in certain trading indices—the Tel Bond Shekel index, for instance—and this forces the entities that track these indices to make sizable investments in foreign bonds whether they are interested in investing in a foreign firm or not. Therefore, the impact on the market of developments in this sector is likely to grow.

The foreign firms that elect to issue in Tel Aviv—a small market far from their center of activity—are motivated by a set of considerations that is explained in detail in the December 2014 *Financial Stability Report.* One of the main motives is that they can evidently issue bonds at lower interest in Israel than elsewhere. It is possible that some cannot even issue in the United States, the main destination of activity for most of them. Another factor is that the domestic market allows real estate holding companies to issue. Importantly in this context, there is concern that this possibility, along with other conditions in the Israeli market, is powering the upturn in issuance. Although a holding company for real estate properties can diversify its investment across a range of assets by issuing, it also assumes risks: the issuance is harder to price, it makes collateral on the debt (if any) harder for investors to reach, and it allows the issuance of assets that cannot be issued separately due to their size and/or business situation.

The increase in the issuance of foreign bonds as a share of bond issuances increased, with foreign real estate companies nearing 20 percent of real estate industry issuances.

Figure 26
Total Foreign Bond Issuances in Israel, and as a Share of Total Bond Issuances in the Real Estate Industry and in the Business Sector as a Whole[a], January 2009 to May 2016



[a] Tradable and nontradable bonds.
SOURCE: Bank of Israel.

[47] Importantly, the analysis of the business sector relates not to foreign firms but to foreign bonds issued in Israel and their share of the market.

[48] Tradable bonds on the Tel Aviv Stock Exchange and bonds traded via the Institutional Retzef trading system, including financial service companies.

An examination of the trend in foreign real estate firms' spreads from date of issue to the present time shows that most are trading at spreads similar to those around the date of issuance and only a few have seen their spreads widen severely due to the discovery of failures. These failures had no effect on the foreign firms as a class but, as a result, the spreads of several small and lower-rated foreign firms widened. The failures also led to the suspension of several issues and in May and June 2016, as stated, no foreign firms issued at all. By implication, market players examine the foreign real estate firms as a unique group and adverse events at specific companies have some effect—not large for the time being—on all firms in the class.

It should be borne in mind that in the event of bankruptcy or a debt settlement, the situation is murkier when investments in foreign firms are involved and even murkier if the real estate companies are registered as tax shelters or if the investment is made via a holding company—as is the case with several real estate firms that issued in Israel. The lack of clarity may impair the firms' payback rate in the event of a failure. The payback rate may also be lowered by two additional factors. First, Israeli creditors are far from the firms' center of activity and from the assets that were pledged to secure the debt, and the distance may create special difficulty in seizing assets if the companies default. Second, in some issues a certain proportion of the proceeds is used as equity for the acquisition of assets along with additional credit that the companies take abroad.

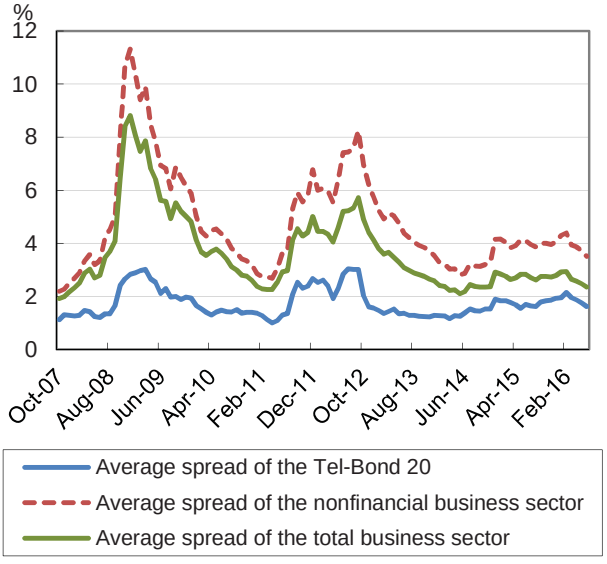
(4) Pricing of credit to the business sector

The foregoing tableau, along with many other variables, forms the basis for the pricing of credit to the business sector. Investors process and judge all the information, and the results are reflected in spreads and yields that mirror expectations of the potential and risks of these assets and the companies that underlie them.

The weighted corporate spread (not including the financial services sector) narrowed to 3.5 percent in March[49]—around the middle of its range of the past three years (Figure 27). Notably, ten-year Israel–U.S. sovereign spreads have been around zero for some time. Some 93 percent of outstanding bonds (including those of the financial services sector) are trading at yields of less than 8 percent (Figure 28). The share of bonds in this yield class has been trending up in the past year and a half. Therefore, the complement—the proportion of bonds trading at high yields—has been slanting down.

The average corporate bond spreads are naer the center of their range over the past three years.

Figure 27
The Spreads Between the Tel-Bond 20 Index and the "Galil"[a] Bond, October 2007 to January 2016



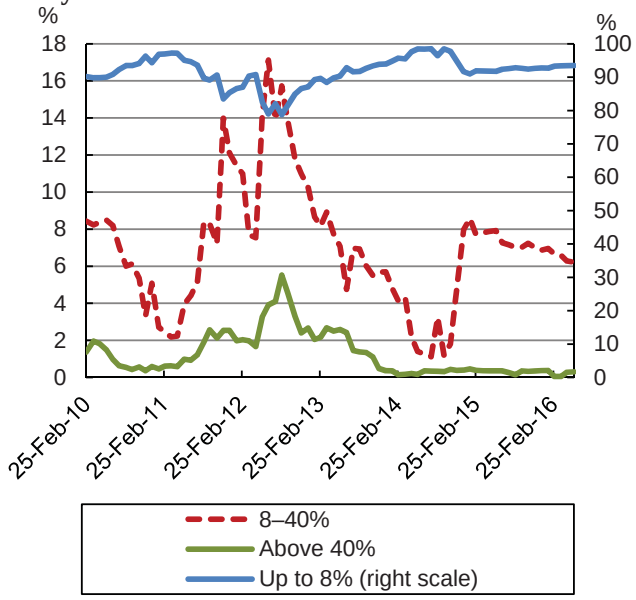
[a] Excluding structured and convertible bonds, monthly averages. Weights taken from the Tel Aviv Stock Exchange.

SOURCE: Bank of Israel.

[49] Most corporate bonds that are indexed to the CPI have a floor index that cancels indexation when the CPI falls below it. In this case, payments of principal and interest on the bonds are not indexed and are, de facto, nominal—at least in part—until the index rises off the floor. Indexed government bonds, in contrast, have no floor index, meaning that the yield spreads may include not only the credit risk of firms that make nonindexed payments on their bonds but also the skews that trace to the different indexation characteristics.

An increasing share of bonds are traded at a yield of less than 8%. The share has reached 93 percent.

Figure 28
Distribution of the Value of Outstanding Bonds (Par Value) by Yield Group[a], February 2010 to May 2016



[a] Tradable CPI-indexed corporate bonds at fixed interest with a term-to-maturity of more than 0.5, excluding foreign companies and structured and convertible bonds.

SOURCE: Bank of Israel.

The low yields and narrow spreads may be a result of low risk, underpricing of risks, or changes in investors' preferences that are prompted, for example, by the lengthy persistence of low interest rates. Although it is hard to identify the reason unequivocally, the reality described above—a level of economic activity that is less vigorous than in the past (but is neither recessionary nor contractionary), the low probability of default (EDF), low profit ratios, the correlation between yield level and rating, and the growing use of accrued profits as a source of funding—is consistent with the possibility that the low yields and narrow margins originate in a slight decline in risks.

b. Financial asset prices

(1) Developments in asset prices

The beginning of 2016 saw steep declines in equity indices around the world and a substantial upturn in risk indices, precipitated mainly by the continued downward movement of commodity prices—oil in particular—and concern about the financial strength of Europe's banks. (For elaboration, see section on the global situation.)

These developments left their imprints on the Israeli capital market. From the beginning of the year to the middle of February, the Tel Aviv 100 index declined by about 10 percent, roughly matching the decline in the S&P 500 index during the same period. The indices of bank shares and of oil and gas in Tel Aviv, however, fell by about as much as the general indices did—much less than the corresponding industry indices in Europe and the United States. By implication, while events abroad influence the domestic markets, they do so selectively. Thus, the effect did not spread to the industry indices that were central in events abroad—a phenomenon that underscores the strength of Israel's markets. Two factors may explain the weaker effect on these industry indices: (1) Banks in Israel are basically unexposed to the factors that overshadowed bank shares in Europe and the United States, and (2) energy prices in Israel are set under long-term agreements that reduce the extent to which international price developments influence domestic energy companies. This method, however, exposes domestic energy prices to domestic events (e.g., the cancellation of the natural gas outline program in March by order of the High Court of Justice). The episode at issue here ended with a rapid rebound of prices. Cycles of this kind occur in the markets now and then, and the chances of their development rise in tandem with increases in the share indices.

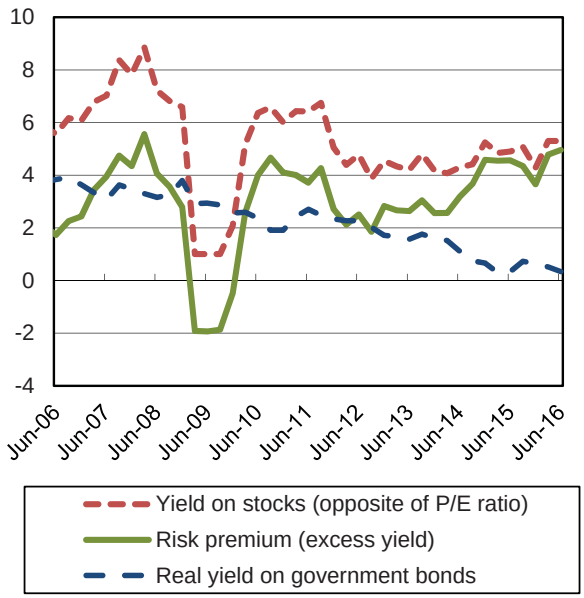
An overall look at the first half of 2016 shows that the Tel Aviv 100 index lost 8 percent, matching the performance of markets abroad. The TASE's VIX index was 20 percent higher at the end of the first half

of 2016 than at the beginning of the year (Figure 2). The standard deviation of the daily change in the Tel Aviv 100 was 0.9 percent in the first half, compared with 1.6 percent for the EURO 600 and 1.2 percent for the S&P 500.

The return on holding equities increased in the first quarter of 2016, while at the same time, the ten-year bond yield dropped. As a result, the surplus return[50] on holding equities moved up in the first quarter of 2016 and attained its highest level since mid-2008 (Figure 29). The pricing of equities appears to give evidence of an increase in the risk premium that investors demand for their investments in the equity market.

In the first quarter of 2016, the gap between the real yield on stock holdings and the real yield on 10-year government bonds incrased, reaching the highest level since 2008.

Figure 29
Excess Yield on Stocks Compared to 10-Year Government Bonds, June 2006 to June 2016



SOURCE: Based on Tel Aviv Stock Exchange and financial statements.

The correlation among asset prices is strong and, as Figure 3 in the Introduction shows, it began to increase in the middle of 2014 and attained record levels in recent months. Such a correlation is likely to occur due to a shock that affects all assets similarly, lack of diversity among assets, a series of shocks, and other events. A strong correlation under ordinary conditions may give evidence of the market's sensitivity and vulnerability.

In recent years, the Israeli capital market appears to have been relatively restrained in its response to **security-related events** and other occurrences.[51] What is more, its response has been more and more moderate over time. Operation Protective Edge, for example, hardly affected the Israeli capital markets.[52] The same is true of more recent security-related developments. As evidence of this, the important indices, viewed cumulatively, revealed no unusual behavior that could be significantly attributed to these events. If so, the financial markets and the business sector react rather mildly to security-related and geopolitical events in Israel (with the exception of short-term effects on the business sector, as were seen in previous events of this kind[53]). One possible reason for this is that market players and decision-makers in the business sector have learned from experience that price declines and uncertainty at the beginning of a geopolitical episode are canceled out later on. If some geopolitical risks come to pass, however, and if they prove more harmful than previous events, they would probably have a considerable effect on the financial markets and the economic system at large.

[50] The return on holding equities is the ratio of net profit to market capitalization (the inverse of the profit ratio). This ratio gives an indication of the return that investors demand for holding an equity because in a steady state—a situation in which the firm's earnings are constant—this ratio represents the real long-term return on holding the equity. The surplus return is equal to the spread between the real return on holding an equity and the real return on holding ten-year government bonds. The difference between the return on equities and the return on a risk-free asset represents the risk premium that investors require for holding the equity. At times when equity prices are not disengaged from the economic fundamentals, the surplus return in this market should be positive and should reflect the riskiness of the investment.

[51] See Saadon, Y., and M. Graham (2013), "A Composite Index for Tracking Financial Markets in Israel," Bank of Israel, Discussion Paper 2013.01.

[52] See the December 2014 *Financial Stability Report*, p. 18.

[53] See notes 7 and 8 above.

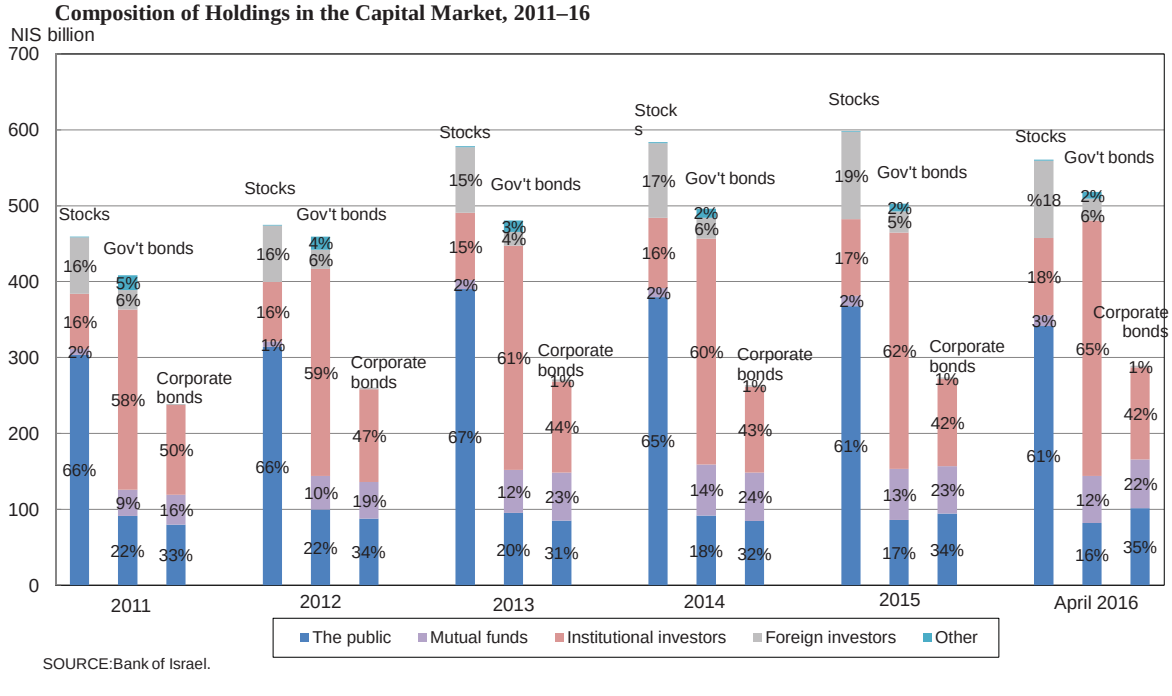
(2) Exposures to asset prices

Low interest abroad and in Israel have been damping corporate yields steadily and have lowered short- and medium-duration sovereign yields to near or below zero, encouraging investors to switch to riskier assets. Even though interest rates have long been low, however, the distribution of holdings among institutional entities, the public[54], mutual funds, and other players has been relatively stable (Figure 30). In other words, the low interest rates and yields have not induced a perceptible change in the overall distribution among the various players (although the share of investments abroad has gone up and, from an aggregate perspective, some institutional investors have increased their share of risk assets).

The distribution of money management affects the stability of the markets when crisis strikes. Experience shows that money managed by institutional investors and the public tends to be stable in its composition even during crises. Contrastingly, mutual funds—which are more liquid and from which money can be withdrawn without the loss of a tax benefit—are more exposed to the risk of withdrawals due to a crisis event. When Lehman Brothers collapsed, the mutual funds were quicker than other players to abandon their risk assets (shares and corporate bonds). Thus, their share of corporate bonds dropped from 14.2 percent in March 2008 to 8.5 percent in December of that year. The mutual funds' response to a crisis event may affect the entire market. Their share in money managed remains stable and is low in equities (2.3 percent in January 2016) but high in corporate bonds (22.8 percent in January 2016).

The distribution of holdings among institutional investors, the public, mutual funds and others remained relatively stable.

Figure 30
Composition of Holdings in the Capital Market, 2011–16



SOURCE:Bank of Israel.

[54] Households (directly and/or via portfolio managers) and firms.

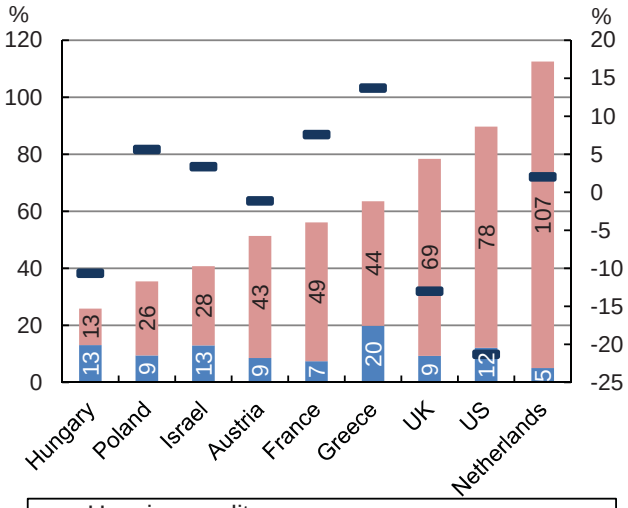
7. THE HOUSEHOLD SECTOR

a. Development of household debt

Outstanding household debt rose by 6 percent in the past twelve months, to NIS 481.7 billion in April 2016—about 37 percent of the outstanding debt of the nonfinancial private sector. The ratio of household debt to GDP climbed to about 41 percent in 2015, continuing the moderate increase that began in 2006, but remains below the average among other developed economies (Figure 31). When this ratio is divided into two parts—the ratio of housing credit to GDP and that of nonhousing credit to GDP—the former proves to be lower than in other developed countries, for reasons including restrictions that the Bank of Israel has imposed on housing loan leveraging in recent years. The latter, however, is not low in relative terms, at 13 percent of GDP in 2014.[55] As for the long-term development of Israel's household debt to GDP ratio, there has been no meaningful increase in either the ratio of housing debt to GDP (Figure 32) or the ratio of nonhousing debt to GDP in recent years.[56]

Even though the household debt to GDP ratio in Israel is relatively low by global comparison, the ratio between nonhouing debt and GDP is not low.

Figure 31
The Household Debt[a] to GDP ratio, 2014

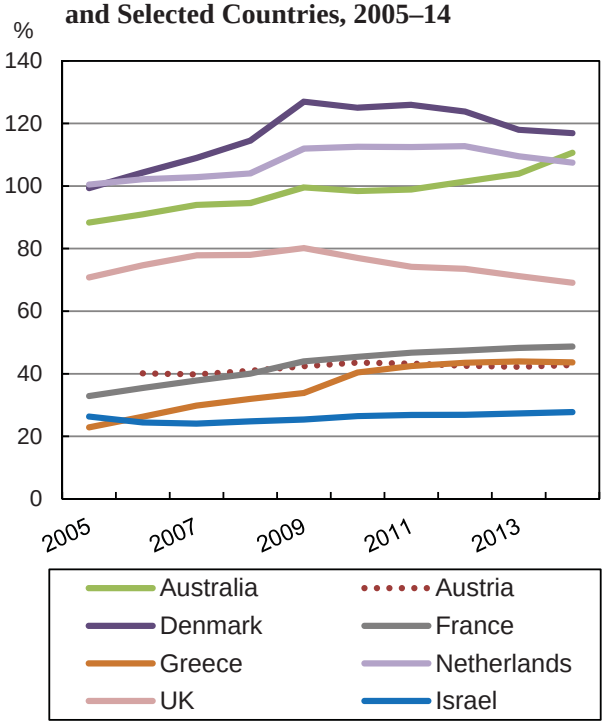


[a] Debt in the US does not include student loans, which total 7 percent of GDP, because they are not considered consumer credit. Debt in the UK also does not included student loans.

SOURCE: Israel—Bank of Israel; Netherlands, Greece, France, Austria, Poland and Hungary—OECD; US GDP—BEA; US debt—Federal Reserve; UK GDP—OECD; UK debt—Bank of England.

In recent years, there has been no significant increase in the housing debt to GDP ratio, which has remained low compared to other countries.

Figure 32
The Housing Debt to GDP Ratio in Israel and Selected Countries, 2005–14



SOURCE: Based on OECD.

[55] In Israel, data on private nonprofit organizations' indebtedness are included in the business sector, whereas some other countries include them in household debt. This is of no consequence because the amount at issue is small. Similarly, in the European Union data on household debt include unincorporated businesses and the self-employed, following the System of National Accounts (SNA) and European System of Accounts (ESA) definitions. The American data, in contrast, omit this sector. In Israel, the sector was included in household debt until March 2014. Since then, due to a change in the rules of reporting to the Banking Supervision Department, it is included in the nonfinancial business sector.

[56] This is an interesting and important development due to the strong correlation that exists between overleveraging and financial crises.

Nonhousing credit accounted for about 32 percent of total household debt at the end of 2015 and has continued to grow rapidly—at a 7.4 percent pace, compared with 7.5 percent in 2014 and 6.8 percent in 2013.[57] Although institutional players and credit card companies have been issuing more nonhousing credit in the past few years, their share in this market remains low—14 percent in 2015—as does their absolute size (Table 2).

Analysis of the financial statements of the country's three credit card companies shows that their issuance of credit has been growing very quickly—by 60 percent in the past two years[58]—but came to only NIS 7.9 billion at the end of 2015, five percent of total nonhousing credit. Most credit of this kind is unsecured and is issued at an 8.3 percent average annual interest rate[59] (compared with 8.7 percent in 2014 and after a steady decline from around 11 percent in 2010). About one-fourth of credit from credit card companies to private individuals consists of auto loans (an increase of 14 percent from 2014) and is at a lower interest rate because these loans are secured. In 2015, the credit card companies' interest income from lending to private individuals increased by 16 percent compared with 2014.[60]

Table 2
Outstanding household debt, 2011 to April 2016
(NIS billion, current prices, month-ends)

	2011	2012	2013
Total household debt[a]	**370.7**	**391.9**	**419.6**
By sources:			
Banks	**325.0**	**348.7**	**377.6**
of which : Housing[b]	221.5	243.0	264.7
Nonhousing	103.5	105.6	112.9
Institutional investors	**5.9**	**6.5**	**7.3**
of which : Housing	2.1	2.5	2.8
Nonhousing	3.8	4.1	4.5
Credit card companies[c]	**9.0**	**8.7**	**9.5**
Government - Directed credit[d]	**30.8**	**27.9**	**25.1**
By uses:			
Total housing debt	**251.2**	**268.9**	**288.1**
Total nonhousing debt	**119.4**	**122.9**	**131.5**

[a] Excluding credit from nonresidents, due to lack of data.

[b] Including loans not intended for the purchase of a dwelling but issued against a dwelling as collateral. As

[c] Credit for which the credit card companies are responsible. Including debts in respect of credit cards, excl

[d] Directed credit to those eligible for mortgage assistance constitutes the majority of this amount, with credi

SOURCE: Bank of Israel.

[57] In January 2015, due to the rapid increase in nonhousing credit, a directive was issued to the effect that, from the public financial statements for 2014 onward, the rate of quality adjustments included in the group credit loss allowance for nonhousing credit must be no smaller than 0.75 percent.

[58] According to data from the long-term survey by the Central Bureau of Statistics, only about 6 percent of Israeli households took a direct loan from a credit card company in 2013.

[59] Interest on this credit is much higher abroad, even though the American and European credit card industries are thought to be competitive. (See Chapter 4 of the Bank of Israel *Annual Report* for 2015.)

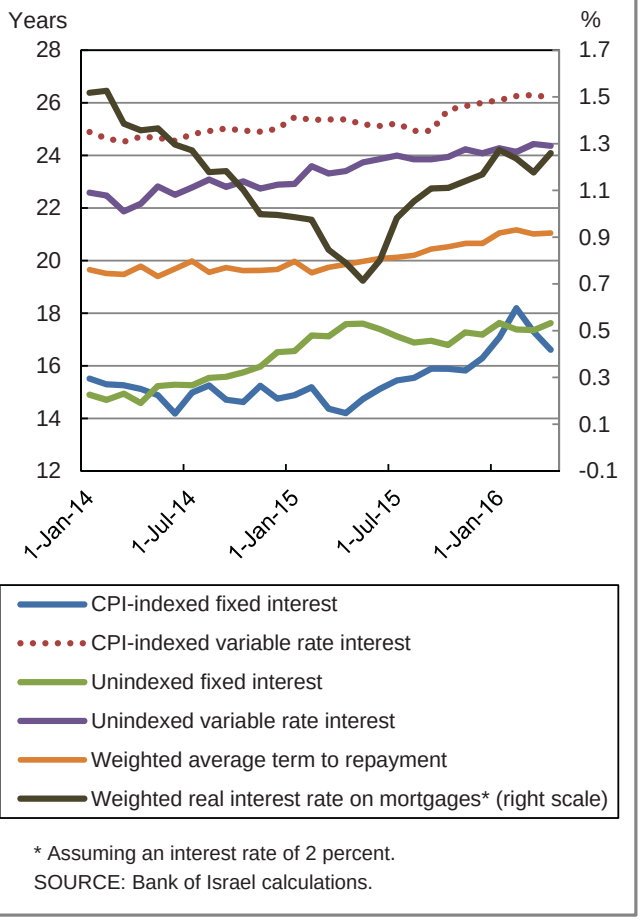
[60] Notably, this analysis does not include "grey market" credit, since this market is currently unsupervised and the Bank of Israel has no data on it. At this stage, it is thought to be insignificant relative to the other sources.

Housing credit also continued to grow swiftly, by 6.4 percent in 2015 compared with 5.2 percent in 2014 and 7.1 percent in 2013. The average monthly volume of new mortgage loans was strong in 2015 at NIS 5.4 billion.[61] The estimated weighted real interest rate on new mortgage loans has risen in the past few months, evidently due to the increase in the capital adequacy requirement and a change in the way the banks perceive the risk that they face from the mortgage loan market. The rate in April 2016 was 1.26 percent. Concurrently, the term to maturity in all interest tracks became longer due to the increase in the weighted real interest rate and the continued escalation of home prices (Figure 33). Rising home prices also contributed to the 8.3 percent increase in the size of the average mortgage loan in the past year, to a record NIS 639,000 in February 2016. The risk indicators of new mortgage loans, however, remained stable in the past year after the marked decline of risk in previous years (Figure 34).

The term to repayment of nonhousing credit has also gone up in recent years (see discussion in section on the banks), possibly because the burden of housing

In recent months there has been an increase in the term to repayment in the mortgage market, following an increase in mortgage interest rates and continued increases in home prices.

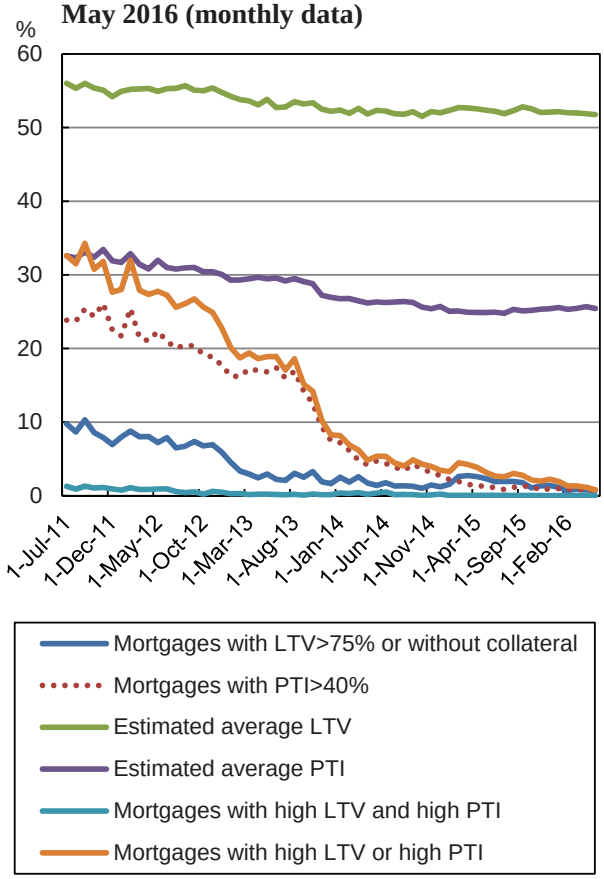
Figure 33
Term to Repayment By Mortgage Track and Real Mortgage Interest Rate, 2014 to February 2016



* Assuming an interest rate of 2 percent.
SOURCE: Bank of Israel calculations.

The risk indices of new mortgages remained stable at a low level during the past year.

Figure 34
The Risks in New Mortgages, July 2011 to May 2016 (monthly data)



SOURCE: Bank of Israel calculations.

[61] Including a record NIS 7 billion in June 2015.

debt is causing households to spread nonhousing debt over more years. An increase in the term to repayment brings with it a risk to borrowers, mainly due to the risk of a future increase in the interest rate that will markedly increase debt repayments, and the possibility of changes for the worse in the economic environment, such as a worsening of the labor market. If both risks materialize, borrowers' solvency will be more seriously affected and the risk of repayment difficulties will rise.

b. Balance of household assets and liabilities

Developments in the credit and housing markets in recent years, mainly due to the increase in home prices and the low interest rate environment, present challenges to the maintenance of households' financial resilience and the monitoring of systemic risks that emanate from this sector. One monitoring tool is based on the balance of household assets and liabilities[62] because it allows one to examine the totality of assets that are likely to be used to cover households' debts and to estimate households' financial resilience by calculating different leverage ratios and comparing them with corresponding ratios in other developed markets.

This analysis shows that Israel's households are less leveraged than their counterparts abroad.[63] The value of their real assets grew by 6 percent in 2014, their portfolio assets by 12 percent, and their liabilities by 6 percent (Table 2). Their liability/asset ratio was basically unchanged in 2014 relative to 2013 and 2012—around 8 percent (compared with 14.4 percent in the US[64],16 percent in the UK, 14 percent in the Eurozone, 13 percent in New Zealand, and 16 percent in Singapore). Israel's ratio of debt to financial assets was about 16 percent in 2014 (compared with 17 percent in 2013, and compared with 20.4 percent in the US, 32 percent in the UK, 32 percent in the Eurozone, 25 percent in New Zealand, and 33 percent in Singapore). The ratio of mortgage loan debt to real estate value in Israel was about 10 percent in 2014 (unchanged from 2013) compared with 45 percent in the US, 22 percent in the UK, 18 percent in the Eurozone, 21 percent in New Zealand, and 24 percent in Singapore.

About half of households' total assets are in real estate. This item contains an inherent risk stemming from the significant increase in home prices in recent years, which exposes households—particularly those that bought dwellings during these years—to a decline in the value of their properties. Furthermore, since mortgage loan debt accounts for the major part of household debt, if household income declines and/or mortgage lending rates rise, households may reduce their consumption to continue paying down their debt, with possible macroeconomic implications[65] (See Box 4.1 in the Bank of Israel *Annual Report* for 2015.)

An examination of the change in the distribution of household debts and assets between 2010 and 2014 shows that debts increased but assets did so at the same pace, leaving the liability/asset ratio unchanged (Figure 35).

As stated, the value of households' assets is significantly higher than the value of their liabilities,

[62] The data on households' liabilities and the value of their real estate and motor vehicles are based on processing by the Bank of Israel. The data on financial assets are harvested from the national balance sheet that the Central Bureau of Statistics produces. Since the national balance sheet includes data only up to 2014, the balance for households is current to that year.

[63] This is consistent with the finding that Israeli households have a high savings-to-GDP ratio, ranking in the middle of the distribution among the OECD countries. (See Chapters 2 and 4 of the Bank of Israel *Annual Report* for 2015.)

[64] Source: data for the UK—the Bank of England's *Financial Stability Report*; for the US—the Federal Reserve website; for New Zealand and Singapore—websites of the respective central banks; for the Eurozone—the ECB website.

[65] Chapter 3 of the IMF's *World Economic Outlook* (2012) demonstrates the existence of a strong connection between a rapid and widespread increase in household debt and financial crises, foremost in countries that experience major upturns in real-estate prices. In the UK, for example, leveraged households tend to consume a larger proportion of their income before the crisis, whereas after the crisis ensues they tend to reduce their consumption much more than do less-leveraged households (Bank of England *Financial Stability Report* for 2015). Similarly, it was found in a survey by the NMG consulting firm that when interest rises by 3 percentage points and income is unchanged, almost 20 percent of households that took mortgage loans will have to reduce their consumption considerably or increase their income. Among households that have mortgage loans that are 4.5 times greater than their income, 50 percent will have to trim their spending.

Table 3

Balance of Household Assets and Liabilities, Israel, 2014

(NIS billion, current prices, month end)

Real assets	NIS billion (share of total assets in parentheses)		Annual rate of change	**Liabilities and net value of households**	NIS billion (share of total liability and net value in parentheses)		Annual rate of change
Real estate	3,002	(51%)	6%	Mortgages	303	(5%)	5%
Vehicles	100	(2%)	10%	Consumer credit	141	(2%)	8%
Total real assets	3,102	(53%)	6%	**Total liabilities**	445	(8%)	6%
Financial assets	NIS billion (share of total assets in parentheses)		Annual rate of change				
Cash and deposits	504	(9%)	2%				
Securities other than stocks	244	(4%)	1%				
Stocks	489	(8%)	40%				
Mutual funds	256	(4%)	15%				
Insurance reserves[a]	1,157	(20%)	10%				
Various receivables/ payables	135	(2%)	9%				
Total financial assets	2,785	(47%)	12%	**Equity[b]**	5,442	(92%)	9%
Total assets	**5,887**	(100%)	9%	**Liabilities and equity**	**5,887**	(100%)	9%

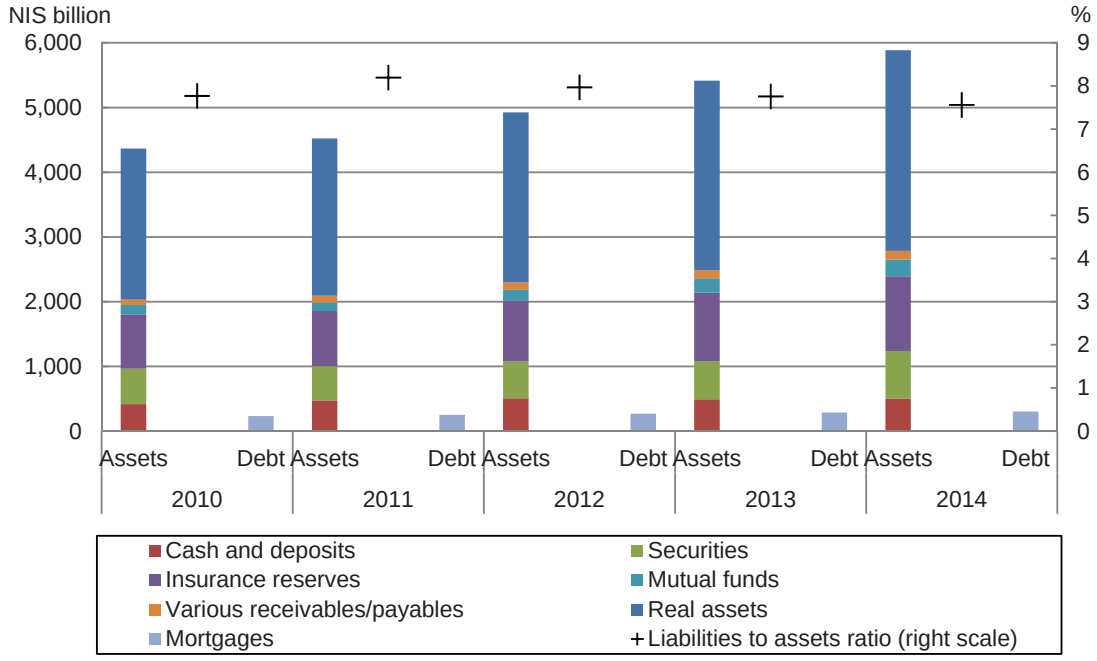
[a] Including life insurance, provident funds and pension funds.

[b] Equity = total assets minus total liabilities.

SOURCE: Based on Central Bureau of Statistics.

The household liabilities to asset ratio has not changed significantly in recent years.

Figure 35
Households' Assets and Liabilities, 2010–14



SOURCE: Based on Central Bureau of Statistics.

leading to lower leverage ratios. Moreover, Figure 35 shows that total household debt is lower than the value of their cash and deposits—their more liquid assets. However, it is important to remember that these are just averages, and it is possible that in the lower deciles there are households with higher leverage ratios that may become insolvent. We therefore now examine the financial robustness of households by income decile.

c. Distribution of nonhousing credit by income deciles and its risk

(1) The financial chapter in the Israel long-term household survey

The long-term household survey, the first project of its kind in Israel, has been conducted since 2012 by the Central Bureau of Statistics in conjunction with the Bank of Israel, the National Insurance Institute, the Ministry of Finance, and the Ministry of Education. Conducted each year for about half a year, it tracks 4,621 households that are representative of the entire national population. Some of the subjects of the survey are studied each year and constitute the "core" of the survey. These include subjects such as household composition, state of health, education, employment, and income. Other matters are investigated once every two years on a cyclical basis, including households' financial behavior, an area that includes their assets and liabilities.

Among the households investigated[66], average housing debt was NIS 88,000 in 2013 and average

[66] Observations in which gross monthly income (including benefits) was near-zero (smaller than NIS 10) were deleted. Altogether, 131 observations were subtracted, leaving 4,490 in place.

nonhousing debt was NIS 25,200.[67] Some 21.3 percent of households had housing debt, 27.2 percent had nonhousing debt, and 40 percent of households had some form of debt. The average housing debt (among households that had such debt) was NIS 412,000 and the median housing debt was NIS 300,000. The average nonhousing debt was NIS 94,000, and the median nonhousing debt was NIS 40,000. The average total debt was NIS 284,000, and the median total debt was NIS 100,000.[68]

We divided the investigated households into income deciles on the basis of gross household monetary income (from labor and other sources, including social benefits)[69] to obtain an initial estimate of the decile distribution of nonhousing credit and the total leveraging of Israel's households[70] (housing and nonhousing debt relative to income).

The survey results show that the proportion of housing debtors rises in tandem with income deciles, from 7 percent in the lowest decile to 41 percent in the highest. The share of those who have nonhousing debt, in contrast, escalates together with income deciles only up to a certain stage: from 18 percent in the lowest decile to 34 percent in the sixth decile. From there it begins to fall, evidently because people in high deciles do not need to take consumer credit for their current activity.

Figure 36, however, shows that the median value of nonhousing debt rises steadily with the increase in income decile: Borrowers in high deciles tend to take larger loans. As for the distribution of housing credit (Figure 37), the median also rises together with income deciles.[71]

The survey results also show that 41 percent of households that have mortgage debt also have consumer debt (at NIS 103,000 on average). Their average consumer debt is 55 percent higher than the average consumer debt among households that do not have mortgage loans.[72]

The median LTI ratio (loan-to-income ratio—total debt/annual income) is 0.6 on average but there is high variance among income deciles. The ratio is about 3 in the lowest decile and 1 or less in higher deciles (Figure 38). About 3.5 percent of total credit is issued to households in the lowest decile, and since this population, as stated, is typified by a very high LTI ratio, much higher than the other deciles, this portion of credit is at risk of borrower default. When LTIs are high, the household sector—particularly those in the lower deciles—is vulnerable to exogenous shocks.

Mortgage data from the UK, for example, demonstrate this. Some 24 percent of all new mortgage loans in the UK are issued at LTIs exceeding 4. The households that take these loans are more likely than other households to amass consumer debt. By way of illustration, when housing loans are given at LTIs greater than 4, the recipient households have more than £7,000 in consumer debt on average, compared with an average of £4,500 in consumer debt among all British households.[73,74]

[67] The data relate to outstanding debt. Total housing debt in 2013 was NIS 202 billion according to the survey (and NIS 288 billion according to Bank of Israel data). Total nonhousing debt was NIS 58 billion according to the survey. (According to Bank of Israel data, consumer credit in 2013 was NIS 90 billion, net of overdrafts and credit from credit card companies that do not reflect household loans).

[68] Ten percent of those with housing debt owed more than NIS 900,000 and 10 percent of those who had nonhousing debt owed more than NIS 150,000.

[69] Decile 1: up to NIS 4,037; Decile 2: NIS 4,037–NIS 5,793; Decile 3: NIS 5,793–NIS 7,500; Decile 4: NIS 7,500–NIS 9,517; Decile 5: NIS 9,517–NIS 11,773; Decile 6: NIS 11,773–NIS 14,233; Decile 7: NIS 14,233–NIS 17,922; Decile 8: NIS 17,922–NIS 23,153; Decile 9: NIS 23,153–NIS 33,136; Decile 10: more than NIS 33,136.

[70] Currently, the Bank of Israel has itemized data only on housing credit given between 2010 and 2014. A directive from the Banking Supervision Department will require the banks, starting in mid-2016, to report the apportionment of nonhousing credit by income and financial wealth.

[71] is of mortgage loan flow in 2010–2014.

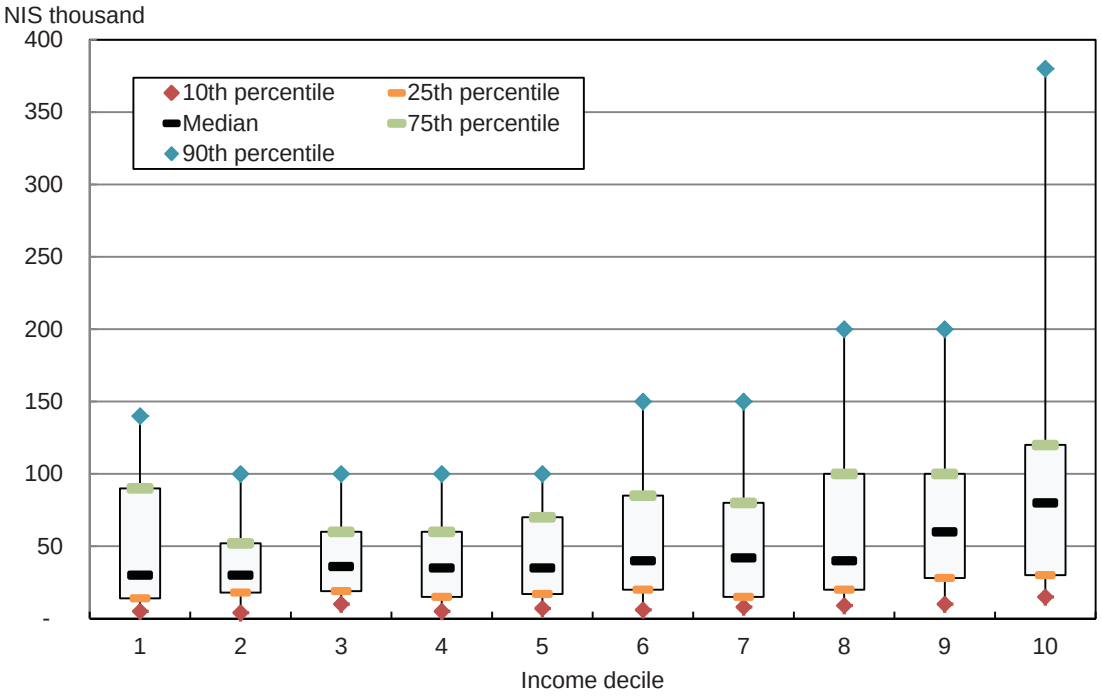
[72] In the next few months, the Bank of Israel expects to receive data from the banks on the distribution of consumer credit by income deciles.

[73] See the British *Financial Stability Report*: http:/www.bankofengland.co.uk/publications/Pages/fsr/default.aspx. These results resemble those of the long-term household survey for Israel.

[74] At the end of 2014, the Bank of England adopted a macroprudential policy that allows each financial institution to issue mortgage loans at LTI ratios exceeding 4.5 in only 15 percent of cases.

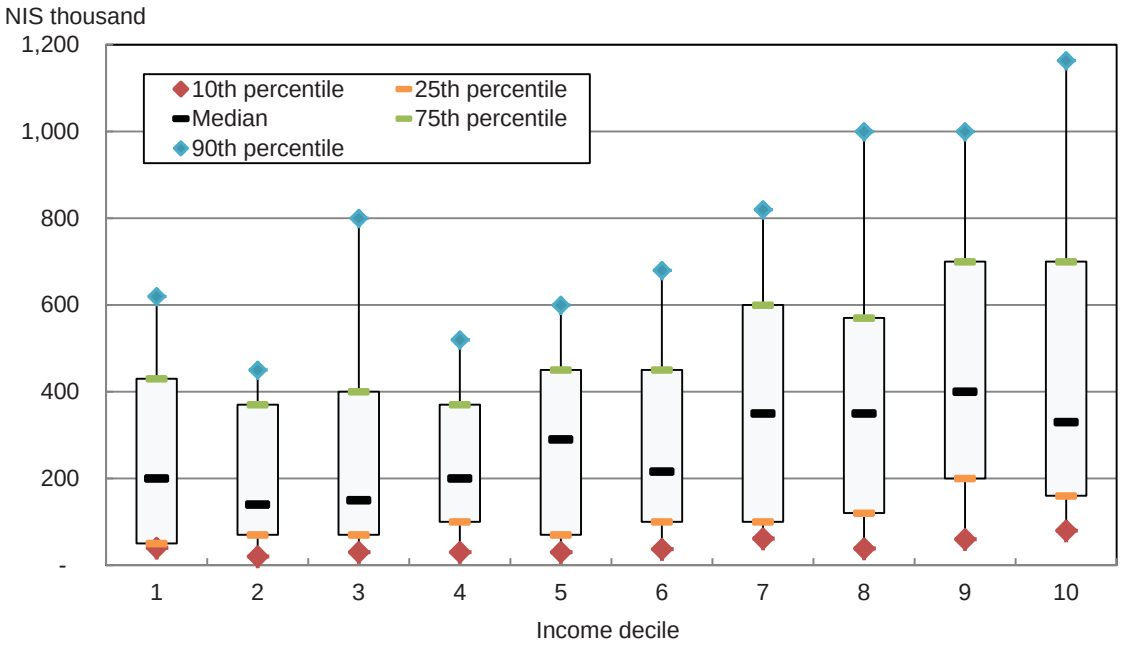
The median values of housing and nonhousing credit increase in tandem with income decile.

Figure 36
Distribution of Nonhousing Credit by Income Decile, 2013



SOURCE: Based on Central Bureau of Statistics.

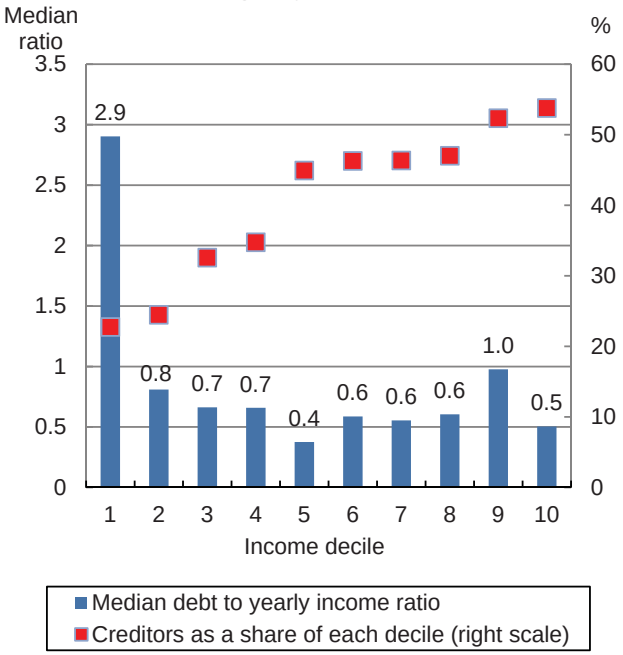
Figure 37
Distribution of Housing Credit by Income Decile, 2013



SOURCE: Based on Central Bureau of Statistics.

The lowest income decile is characterized by relatively high leverage, while there are fewer creditors in this decile than in the higher deciles.

Figure 38
Household Leverage, by Income Decile[a], 2013

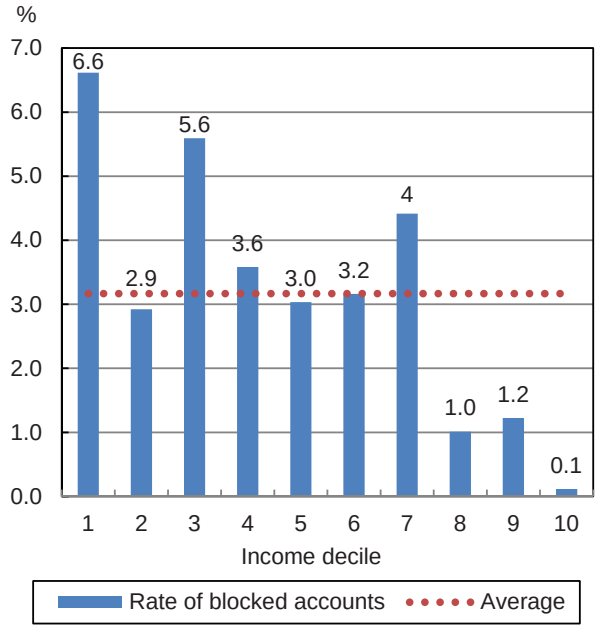


[a] Gross monetary household income decile, according to the financial survey.

SOURCE: Based on Central Bureau of Statistics.

The rate of blocked accounts is particularly high in the lower deciles.

Figure 39
Rate of Blocked Accounts, by Income Decile[a], 2013



[a] Gross monetary household income decile, according to the financial survey.

SOURCE: Based on Central Bureau of Statistics.

Three percent of household bank accounts[75] were blocked in 2013 due to delinquency in repayment of loans.[76] This rate was highest in the lower deciles and dropped steadily with the increase in income decile (Figure 39).

When the borrower population is divided by age groups[77], similar median levels of nonhousing credit are found among all groups (Figure 40). The share of nonhousing debtors is similar in most age groups: 32 percent on average, with the exception of those aged 60+, where it is much smaller, at 14 percent. The distribution of housing credit by borrower's age (Figure 41) is different from that in nonhousing credit: it is higher in the first three age groups and then falls by some 40 percent, possibly because older households took their housing loans many years ago and therefore have smaller outstanding balances than younger households have. The share of housing debtors is large in the 30–60 age range, and half as large among those below 30 and over 60, evidently because some young households have not yet entered the housing market and some elder households have paid off their housing debts.[78]

[75] This is measured by asking the question, "Have one or more of the household's private current accounts been blocked by the bank in the past twelve months?"

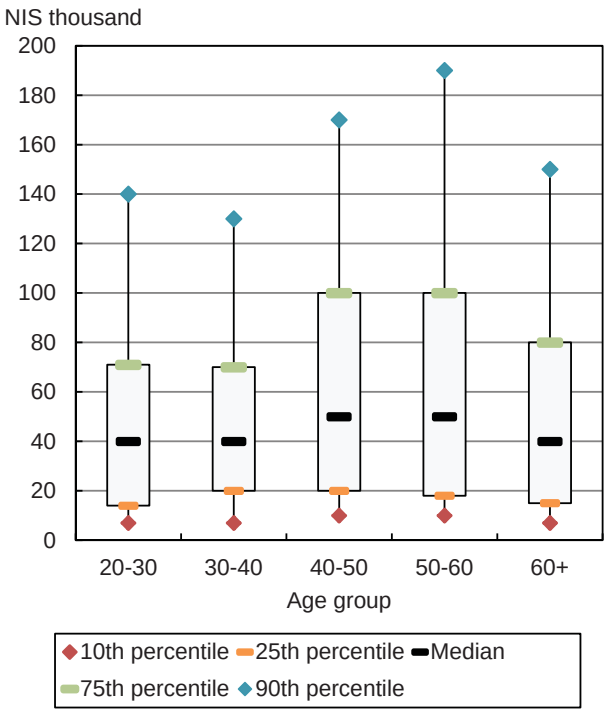
[76] The total delinquency rate in the banking system is 1.2 percent.

[77] 17 percent of borrower households belong to the 20–30 age cohort, 27 percent to the 30–40 bracket, 25 percent to the 40–50 group, 16 percent to the 50–60 age range, and 14 percent to the 60+ collective.

[78] Some 70 percent of nonhousing credit and 80 percent of housing credit are issued to members of the three youngest age groups.

Nonhousing credit has a similar median value in the various age groups.

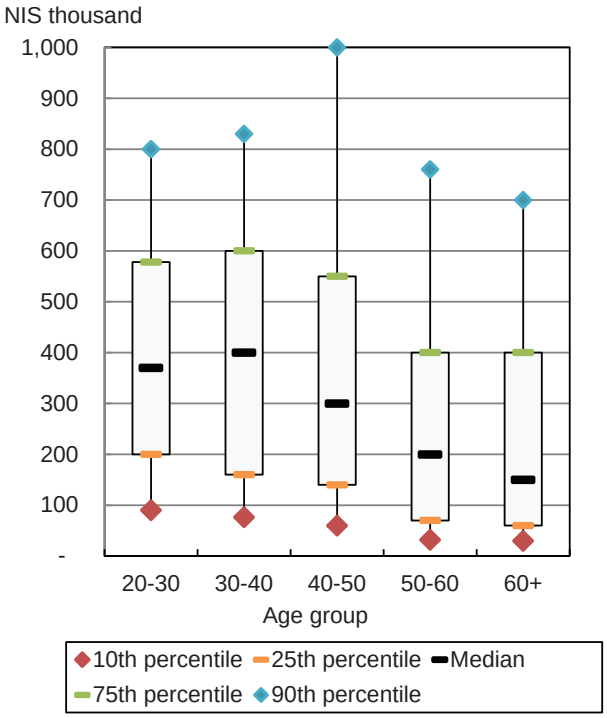
Figure 40
Distribution of Nonhousing Credit by Age Group, 2013



SOURCE: Based on Central Bureau of Statistics.

The median value of housing credit is particularly high among those aged 20–50.

Figure 41
Distribution of Housing Credit by Age Group, 2013



SOURCE: Based on Central Bureau of Statistics.

(2) The increase in nonhousing credit and its macroprudential risk

To reduce concentration in the banking system and encourage nonbanking credit, a committee to increase competition in common banking and financial services (the Strum Committee) was established. The panel was asked to propose ways of making household credit more competitive by bringing additional players into this area of activity. In recent years, as stated, nonbank credit to households in Israel has increased considerably and its cost has fallen, possibly indicating an increase in competition among various institutions for this market segment. The results of the long-term household survey show that already today 30 percent of households have amassed NIS 94,000 in consumer debt on average. Nonhousing credit is considered riskier than housing credit because only some of it (predominantly auto loans) is secured. Therefore, if the increase in competition leads to an upturn in nonhousing credit and borrowers' leveraging, it should be advanced cautiously in order to maintain households' financial stability. This is especially valid in respect to the lowest income decile because its LTI is high to begin with. Policy measures relating to consumer credit should be taken carefully in consideration of the undesired macroprudential implications of an increase in household leveraging.

d. Distribution of housing credit by income deciles

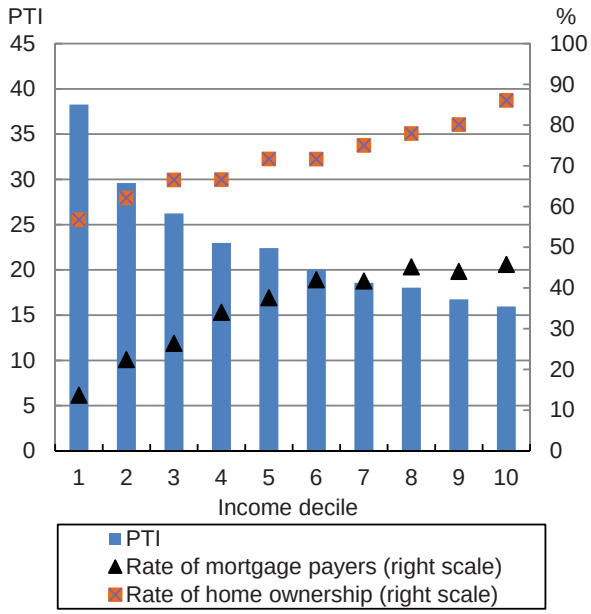
Between 2012 and 2015, housing credit grew at a rapid annual pace of about 7 percent. It is very important to determine how this credit is distributed across the income deciles because households in different deciles have different levels of solvency. The Bank of Israel has received itemized data on the total flow of housing loans taken out between 2010 and 2014 from all banks in Israel.[79] Analysis of this database shows that the low income deciles[80] account for only a small share of loan volume and number of loans taken out. In 2014, the three lowest deciles received 10 percent of loan volume and 5.6 percent of loans taken out—slightly below the 2010–2013 average.[81] Even though the three lowest deciles account for a relatively small slice of the credit pie, their payment-to-income (PTI) ratio is relatively steep—30 percent—and exceeds the corresponding ratio for the three highest deciles (25.5 percent on average).[82] The LTV ratio—the loan as a share of property value—is basically the same among the deciles even though the lower deciles take smaller loans, because they also buy less expensive dwellings.[83] In 2014, the average LTV was 52.6 percent (compared with 53.6 percent on average between 2010 and 2013).

An examination of the inventory of loans (and not only the flow of new loans) in 2010–2014[84] reveals relatively high PTI ratios in the two lowest deciles[85] (Figure 42). Borrowers in these deciles are more likely than others to lose their jobs and become unable to repay their mortgage loans in the event of an increase in interest rates. However, these deciles account for only a miniscule share of households, only about 4 percent.

In recent years, households have been exposed to the risk of an interest rate increase. Low-decile households

The PTI is relatively high among households from the lower income deciles.

Figure 42
Home Ownership, PTI, and Rate of Mortgage Payers, by Income Decile[a], 2010–14 Average



[a] Net household income, according to the Centreal Bureau of Statistics Income Survey.

SOURCE: Based on Central Bureau of Statistics.

[79] The data pertain to loans on their date of execution. There is no information about their subsequent behavior.

[80] The sample is sorted into income deciles on the basis of net monthly income of employee-headed households, in accordance with the Central Bureau of Statistics *Household Income Survey* for 2011: Decile 1: up to NIS 5,174; Decile 2: NIS 5,174–NIS 6,811; Decile 3: NIS 6,811–NIS 8,466; Decile 4: NIS 8,466–NIS 10,253; Decile 5: NIS 10,253–NIS 12,209; Decile 6: NIS 12,209–NIS 14,258; Decile 7: NIS 14,258–NIS 16,924; Decile 8: NIS 16,924–NIS 20,287; Decile 9: NIS 20,287–NIS 25,408; Decile 10: more than NIS 25,408.

[81] The low deciles' small share of loans contributes to stability, of course, but has adverse social and economic implications that are not discussed in this Report.

[82] The total average PTI in 2014 was 26.6 percent, down from 31.4 percent on average in 2010–2013. The decline followed a directive from the Supervisor of Banks in August 2013, instructing the banks to cap their borrowers' PTIs.

[83] For elaboration, see the Banking Supervision Department's *Annual Survey* for 2015.

[84] The Central Bureau of Statistics conducts a survey of household income and expenditure. The survey yields an estimate of the periodic repayment of mortgage debt (principal and interest) by households in the various deciles, as well as information about the share of mortgage debtors and homeowners in each income decile.

[85] These ratios are, however, lower than the 2010–2013 average.

are especially prone due to the large share of unindexed variable rate interest in their loans.[86] Since these households have high PTI ratios to begin with, it is feared that they will have difficulty in repaying their debts. If the interest rate increase is accompanied by unemployment and a recession in real activity, the risk of default among these borrowers will increase considerably. This is all the more valid for loans given to lower-decile households, because they are more susceptible to unemployment and because an increase in the unemployment rate is one of the main risk factors for default, particularly among high-PTI borrowers.[87,88] As stated, however, the lower deciles account for a relatively small share of household credit.

8. PAYMENT AND SETTLEMENT SYSTEMS

a. Background

Israel's payment array is comprised of several payment and settlement systems: (a) Zahav (an RTGS[89] system), run by the Bank of Israel, which serves as the final settlement for the entire payment and settlement system in Israel; (b) the Paper-based Clearing House (for checks and manual vouchers), also run by the Bank of Israel; (c) The "Credits, Debits and Payment Transfers" system run by Masav (Hebrew acronym for Banks Clearing Center, Ltd.); (d) a payment card services system run by Shva (Automatic Banking Services, Ltd.); (e) an ATM system, also run by Shva; (f) two clearinghouses run by the Tel Aviv Stock Exchange (one for Securities, one for "Maof"—"Futures and Financial Instruments"—a segment that includes futures and options derivatives); and (g) CLS[90], the international clearinghouse for conversion transactions, which provides multi-currency settlement services through a mechanism that ensures payment in one currency against payment in another. The shekel joined CLS in 2008, and is able to settle transactions against 18 major currencies.

b. Risks to the financial infrastructure

Tthe main actions that the Bank of Israel took, in its capacities as a central bank and as the supervisor of the payment and settlement systems, to mitigate the risks to the payment system, are described below:

- Adoption of the Principles for Financial Market Infrastructures
- Standards for the operations of financial infrastructures are set forth in the PFMI[91] in a manner that will assure proper treatment of the risks that threaten such infrastructures, including legal risk, operational risk, liquidity risk, business risk, and participation risks, to name only a few. The PFMI principles broaden supervisory authorities' discretion in applying tenets pertaining to the regulation, supervision, and control of financial infrastructures. The Bank of Israel—as the supervisor of Israel's payment systems—adopted the principles in November 2014 and will apply them gradually to the payment systems that are controlled today and those that are designated for control in the future.[92] The Securities Authority has

[86] For a discussion of this topic, see the section on Households in the June 2015 *Financial Stability Report.*

[87] The Banking Supervision Department conducted a stress test that included steep increases in unemployment, home prices, and the Bank of Israel interest rate. Such a scenario was found to have a major negative impact on borrowers. The failure rate among mortgage borrowers was 5 percent at the peak of the scenario, equivalent to 38,000 borrowers. (For further details, see *Israel's Banking System*, annual survey for 2015.)

[88] See Naor, Z., and G. Benita (2013), "Borrower Risk in the Mortgage Market: Historical Development and Evaluation in a Number of Scenarios," Bank of Israel Research Department, Periodic Papers 2013.08.

[89] Real Time Gross Settlement.

[90] Continuous Linked Settlement.

[91] Principles for Financial Infrastructures. The document was published in 2012, and can be found at http://www.bis.org/publ/cpss101a.pdf

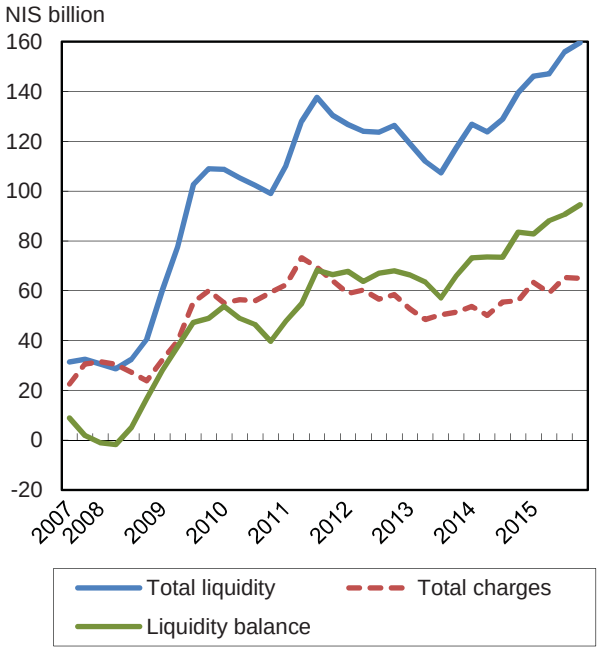
[92] Under the Payment Systems Law, a system may be declared controlled if its activity is crucial to the entire domestic payment apparatus and if there is reason for concern that the apparatus will sustain damage due to deficiencies in the system's soundness, efficiency, or credibility.
Under the same law, a system may be declared as designated for control when its activity is material to Israel's monetary and financial stability and there is concern that deficiencies in its soundness, efficiency, or credibility will be harmful to said stability.

also adopted the principles and applied them to the Stock Exchange's clearinghouses.

- Treatment of risks derived from direct and indirect participation in payment systems
- The manner in which a financial entity participates in a payment system exposes the entity and the system to various risks, including credit risk, liquidity risk, and operational risk. Principles 18 and 19 of the PFMI regulate the way these risks are dealt with, and determine that objective and risk-based criteria for participation must be set forth for each payment system in order to make access to the system fair and open. The Bank of Israel has been acting at several levels to deal with the aforementioned risks, including specification of terms of access to the payment systems. It has also been making progress toward a draft memorandum to the Payment Services Law[93] that will, *inter alia*, set standard requirements for the activities of entities that are allowed to provide payment services.
- Treatment of cyber risks
- Cyber threats are different from other risks in terms of detection, deployment, and recovery. Given the potentially dire implications of a cyber event for a payment system, those who run such systems must be prepared for such events and do what is needed to assure the systems' business continuity. Cyber threats are typified, among other things, by the increasing sophistication of attacks, the damage that they can cause, and the difficulty that exists in detecting them. The realization of such threats may disrupt the sound and secure activity of a payment system and, among other things, lead to the exposure, deletion, and disruption of information, impair the public's confidence, and negatively impact the system's stability.
- Monitoring the stability of the Zahav (RTGS) system
- Zahav, run and supervised by the Bank of Israel, is of systemic importance to the Israeli economy. Therefore, its stability must be assured by monitoring risks that it may face, including liquidity, credit, legal, systemic, and operational risks. The Bank of Israel assesses the stability of the Zahav system by means of various metrics including the system's balances of liquidity, availability, and concentration.
- Liquidity balances in Zahav[94] reflect a situation in which there is a surplus of liquidity in the current account and in the line of credit that the Bank of Israel makes available to participants against collateral. Since this surplus allows participants to make payments irrespective of the transfer of credits to their account, large liquidity balances mitigate the liquidity risk in the system. In recent years, Zahav's liquidity balances have been large and growing. The upward trend began in the middle of 2008, when a transition from monetary loans to monetary deposits was made (Figure 43).

There are high liquidity balances in the Zahav system, which are characterized by an upward trend.

Figure 43
Liquidity Balances[a] in the Zahav System, 2007–15
(quarterly average based on daily data)



[a] Liquidity balances are equal to total liquidity in the Zahav system minus total interbank charges.
SOURCE: Bank of Israel.

[93] "Providing payment services" includes the issuance of means of payment, settlement, payment account management, and payment transfers.

[94] Liquidity balances—total liquidity in the Zahav system less interbank charges—are calculated on the basis of daily averages.

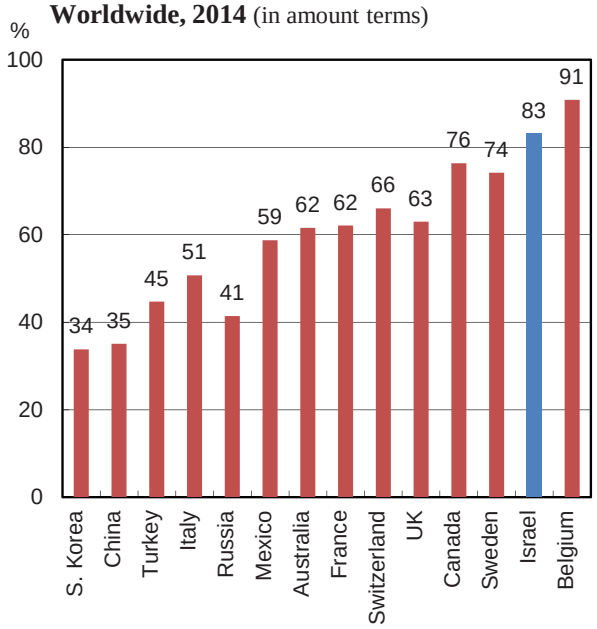
Table 4
Concentration ratio in the Zahav system in amount terms, 2008–15

	Concentration ratio (percent)	Annual change (percent)
2008	79.2	-
2009	76.6	-3.3
2010	77.6	1.2
2011	80.8	4.1
2012	81.6	1.0
2013	82.7	1.4
2014	83.1	0.4
2015	0.0	-3.5

- The Zahav system has had high availability rates[95] ever since it became operative, attesting to its stability and the ability to maintain routine activity and business continuity. Availability in 2015 was 99.98 percent, a 0.07 percentage point improvement over 2014 (99.91 percent). The accepted availability rates of RTGS systems in other developed economies usually fall into the 99.7–99.99 percent range.
- The concentration rate of participants in Zahav reflects the level of interbank activity of the five most active participants.[96] The higher the rate is, the stronger the system risk inherent in Zahav. Zahav's concentration ratio, in terms of amounts, was 80.2 percent in 2015, 3.5 percentage points lower than in 2014 (Table 4). Concentration in Israel is high by international comparison (Figure 44).

The RTGS system in Israel is characterized by high concentration relative to other systems worldwide.

Figure 44
Concentration Ratio in the RTGS Systems Worldwide, 2014 (in amount terms)



In 2015, concentration in the RTGS system in Israel was 80 percent.
SOURCE: Bank for International Settlements (BIS).

- **Reinforcing the stability of Shva**
- The payment card service system operated by Shva is crucial to the entire national payment array and is subject to supervision by the Bank of Israel. To promote its safety and stability and to respond to information security and customer fraud risks, Shva complied with directives from the Bank of Israel and the Antitrust Authority in 2015 and developed a system that would enable the safe settlement of payment card transactions throughout the economy—Ashrait EMV.[97] The new system responds to various risks, including forging, copying, loss, or theft of card, and credit fraud.
- Improving efficiency at the Paper-Based Clearinghouse
- There have been strenuous efforts in recent years to pass an electronic settlement law in order to switch from physical to digital settlement of checks. The Knesset passed the bill on its first reading on June 6, 2015, and on February 10, 2016, the law was published in *Reshumot*. The statute streamlines the process of check settlement and will save on costs in three ways. First, it obviates the need for the physical transport of checks from collecting bank to paying

[95] Zahav's availability is estimated on the basis of the number of hours in which the system can be accessed relative to its total hours of activity in the year reviewed.

[96] It should be emphasized that CLS is not included in the calculation and that there is not necessarily any correlation between the size of the banks that use Zahav and the extent of their activity in it.

[97] Europay, MasterCard, and Visa—a uniform secure standard for card-present transactions.

bank; second, it obviates the need to store checks in appropriate places; and third, it reduces the time between the presentation of a check for payment and the debiting of the customer's account, thus making it possible to assure transaction certainty more quickly.

- Monitoring the stability of the Stock Exchange clearinghouses
- The Stock Exchange clearinghouses (Securities and "Maof") are parts of the critical infrastructure of the financial services market, and failures in them may send financial shock waves through the economy. The need to complete transactions that are performed during a trading day in a manner that will permit continuous trade, and the role of the Stock Exchange clearinghouses as important counterparties in transactions, expose the clearinghouses to various risks—legal, operational, business, etc.—that require appropriate management and arrangements to assure the clearinghouses' stability and efficiency. In July 2015, the Securities Authority promulgated draft rules to ensure the sound activity of the Stock Exchange clearinghouses as part of compliance with EMIR.[98]

Committee on promoting the use of advanced means of payment[1]

The Joint Committee for Promoting Advanced Electronic Means of Payment was established in March 2014 to regulate the information security, money laundering and terrorism financing, business continuity, competition, stability, and efficiency aspects of such means of payment in a manner that will encourage the public to use them more widely. The use of advanced means of payment is advantageous in many ways: It cuts back on the use of paper-based payment vehicles and therefore helps to downsize the black market economy, and encourages new players to participate in payment systems that are typified by low business costs and high availability (allowing transactions to be documented) and by ease of use for both payer and payee.

Notably, alongside their advantages, these methods also pose risks, foremost cyber and legal risks and money laundering and terrorism financing risks. The characteristic flexibility of advanced means of payment and the operations of advanced digital platforms may expose users of these payment devices to impersonation, misuse or fraud by various players, or to a situation where the product or service that was paid for was not received. Furthermore, competition for customers and a profusion of payment transfer methods may impair the security of transactions that are carried out by means of these payment methods. Finally, there is a risk that settlement through the payment system will not take place as planned. The Bank of Israel and the other relevant authorities are mindful of these risks, are monitoring their development, and to cope with them.

[1] In November 2015, the committee released an interim report for the public's comments. Visit http://www.boi.org.il/en/NewsAndPublications/PressReleases/Pages/291115-ElectronicMeans.aspx

[98] European Market Infrastructure Regulation—a body of European regulations reinforcing the stability of the derivatives market.

Box 1: Contingent Convertible (CoCo) Bonds

In view of the substantial worldwide growth in the volume of CoCo issues and their introduction into Israel, we present this security, its purpose, and its use around the world, and in particular in Israel. We will begin with a general background, then list the issues that have already been held in Israel, and conclude with a description of the CoCo securities issued worldwide that are similar to those issued in Israel.

General Background

A CoCo (contingent convertible) security is a hybrid bond issued by a bank that combines features of capital and debt. Its primary purpose is to strengthen the bank's capital structure if an exceptional event occurs. The bank's capital structure becomes stronger as a result of a mechanism for absorbing the losses from the bond and the trigger for setting this mechanism into motion when an unusual event liable to destabilize the bank takes place. The trigger can be quantitative—when the issuing bank's ratio of capital to risk assets falls below a certain threshold—or be subject to the regulator's discretion. The two main methods for absorbing losses are writing off all or part of the principal of the issued bonds, and a compulsory conversion of the bonds into share capital at a predetermined conversion price. Writing off all or part of the debt, or converting it into shares, causes the bondholders to share the risk, and contributes to strengthening the bank's capital structure by means of the bondholders' money, if an exceptional event occurs.[1] The risk of the holders of CoCo bonds is greater than that of the holders of ordinary bonds—a risk that the investors should price in when purchasing the bond and demanding higher interest on it.

The background to the CoCo issue is the 2008 Global Financial Crisis, in which taxpayers' money was used to rescue banks, while the banks' shareholders and bondholders were unaffected. Beyond the immense cost of a government rescue of the banking system in a crisis, there is another cost to government support for the banking system: it distorts the banks' incentives, and motivates them to take greater risks. For this reason, the regulators took action following the crisis to create a special debt structure to serve as a reserve absorption fund from the bondholders that will put the banks' capital on a sound footing if their stability is jeopardized. As a result, the investors will have a greater incentive to monitor the bank's stability and respond to developments.

The banks also issued hybrid instruments in the past, which were recognized by the regulators as part of the Tier 1 capital. The 2008 crisis, however, showed that in an emergency, these debt instruments did not fulfill their purpose. The new rules established in the Basel III guidelines for CoCo issues were designed to address these failures, and in particular to establish a qualitative trigger for activating a mechanism for absorbing losses, alongside the quantitative trigger. The qualitative trigger includes authorizing the regulator to require conversion or writing off of the debt from these bonds, at its discretion, in order to prevent the banks from reaching the point of non-viability, as well as a requirement that in the event of a decision to inject government funds to rescue the bank, the debt in respect of the CoCo bonds will be automatically converted or written off.

The issuing of CoCo bonds has become much more prevalent throughout the world since 2013. The banks' motivation for issuing these bonds is their need to increase their capital in order to meet the regulatory capital

[1] Writing the debt off reduces the bank's obligations and increases its profits, while converting the debt into shares reduces the bank's obligations and increases its share capital.

requirements according to Basel III. The investors' motivation for investing in CoCo bonds is the high interest they bear, compared with the banks' ordinary bonds—compensation for the added risk. In the currently prevailing low interest rate environment, investors are willing to assume the greater risk incurred by investing in these bonds in exchange for a higher interest rate. A CoCo issue improves the situation of the banks' shareholders, because it provides the bank with an additional reserve fund. They will prefer a loss absorption mechanism that includes writing off debt, rather than conversion to shares, because conversion of debt to shares will dilute their share of the ownership. As for the holders of other debt, a CoCo issue will improve their situation, because new capital will flow into the bank at a lower level of creditor preference[2] than the bonds they hold. It is natural that the uncertainty involved in a CoCo investment will be greater than for an investment in ordinary bonds. To a large extent, this involves a lack of clarity concerning the conditions that will lead the regulator to activate the loss absorption mechanism at its discretion. This uncertainty also makes it difficult to price an investment in the instrument.

There are two types of CoCos: those sold according to Basel as part of the issuing bank's additional Tier 1 capital, and those sold as part of Tier 2 capital.[3] In order for the issued bonds to be recognized as part of additional Tier 1 capital, its characteristics must be close to those of capital. For example, it must be without a repayment date, and the issuer must have the right to cancel the coupon at any time, at its discretion, without this causing the bank to be recognized as insolvent. Bonds recognized as additional Tier 1 capital are inferior in creditor preference to bonds recognized as Tier 2 capital, and the loss absorption mechanism for Tier 1 capital is set in motion at an earlier stage.

2014 was a peak year worldwide for CoCo issues, with total volume issued amounting to $175 billion.[4] In 2015, the volume of CoCos issued dropped 40 percent to $101 billion, mostly by Chinese and European banks. The main reason for the decline in total issues was the fall in the volume of Chinese issues resulting from poor market conditions and slow growth in the balance sheet totals of banks in China, which apparently reduced the need to increase capital in the short term. In 2015, Asian banks accounted for 48 percent of the issues, and European banks for 40 percent of them—a development reflecting progress made by the regulators in these two regions in implementing the Basel III requirements.

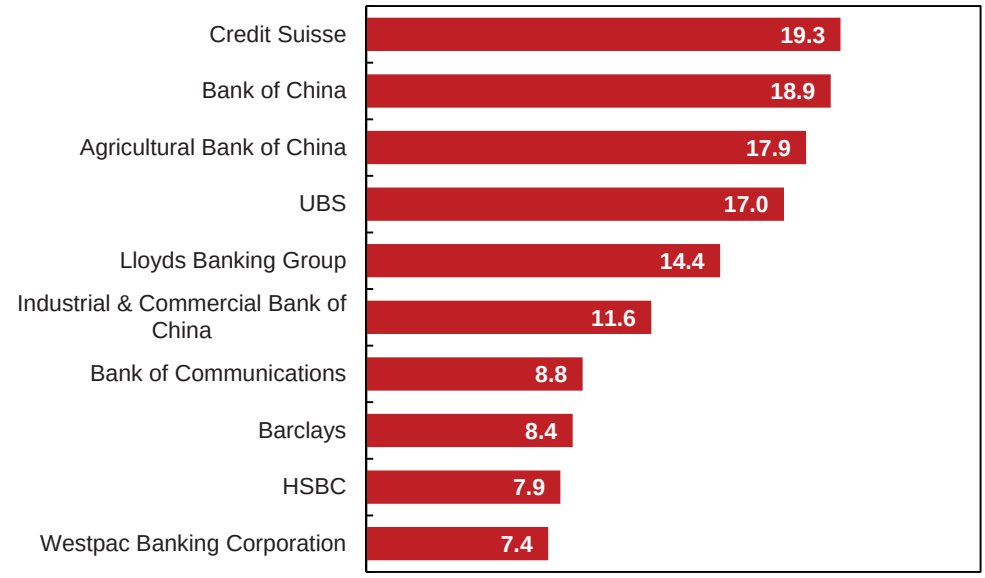
CoCo issues are concentrated among a group of large banks, with the 10 leading issuers (five European, four Chinese, and one Australian) responsible for 37 percent of all the issues since May 2009 (Figure 1). American banks have thus far refrained from CoCo issues for tax reasons. Most of the securities issued include a mechanism for decreasing the value of the debt, and combine automatic conversion elements and the regulator's discretion. Although the number of issuers has grown in recent months, the concentration among the 10 leading issuers is projected to continue, because the Basel III capital requirements for them are significantly greater than for other banks.

[2] The order of preference among creditors in the event of the insolvency or liquidation of a company.

[3] A bank's regulatory capital is composed of two tiers: Tier 1 (including Common Equity Tier 1 capital and additional Tier 1 capital) and Tier 2 capital. The Basel Committee recommended that rules be set stipulating which elements are fit for inclusion in each of these capital tiers. Common Equity Tier 1 capital is a bank's highest-quality capital.

[4] According to an announcement published by Moody's in early February 2016.

Figure 1
The 10 Largest CoCo Bond Issuers in the World, 2009–15 ($ billion)

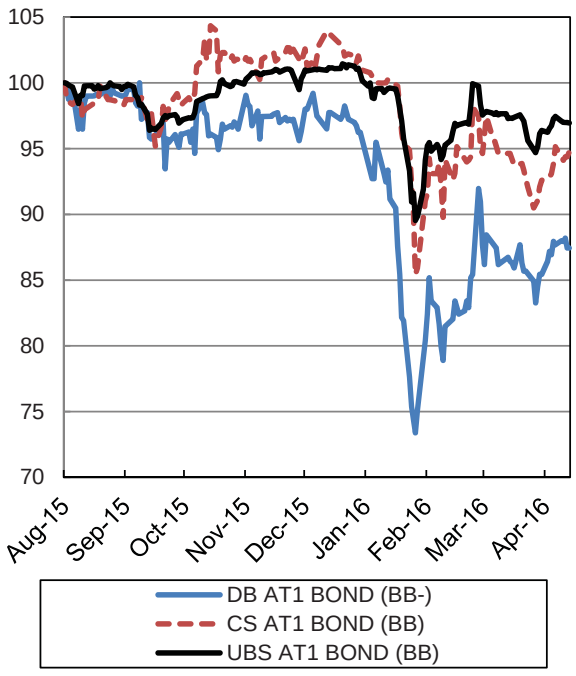


SOURCE: Moody's.

Global Developments in CoCo Bonds in Early 2016

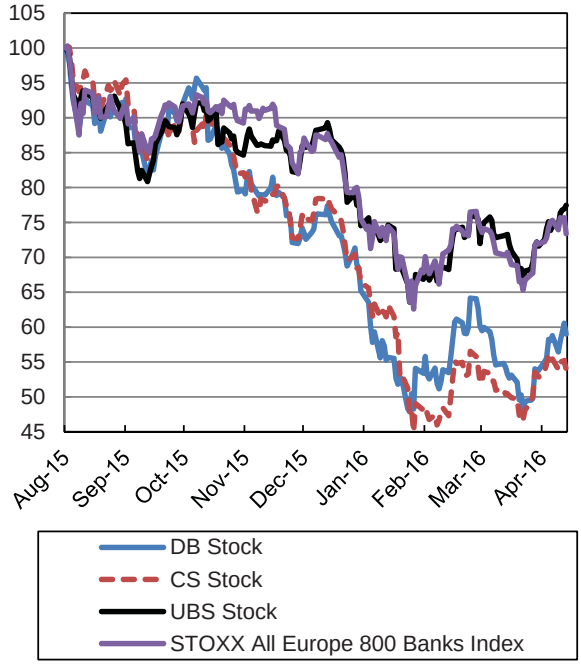
The prices of CoCo bonds issued by Deutsche Bank fell sharply in February 2016, following a prolonged downward trend in the prices of the bank's shares and the shares of other banks in Europe, as a result of the debt crisis there (Figures 2 and 3). The decline in the prices of CoCo bonds also affected the prices of the bank's ordinary bonds, but with less force (Figure 4). The background to the decline was concern about non-payment of the bank's additional Tier 1 CoCo coupons, but even when this concern was alleviated and the bond prices again rose, they did not return to their original level. The force of the decline of Tier 1 bond prices was stronger than that of Tier 2 bonds, because the Tier 1 bonds enable their issuer to stop paying coupons. In contrast to the bonds of Deutsche Bank itself, the prices of ordinary bonds issued by other European banks did not noticeably change,

Figure 2
Indices of Additional Tier 1 CoCo Bonds Issued by Banks Abroad, August 2015 to April 2016



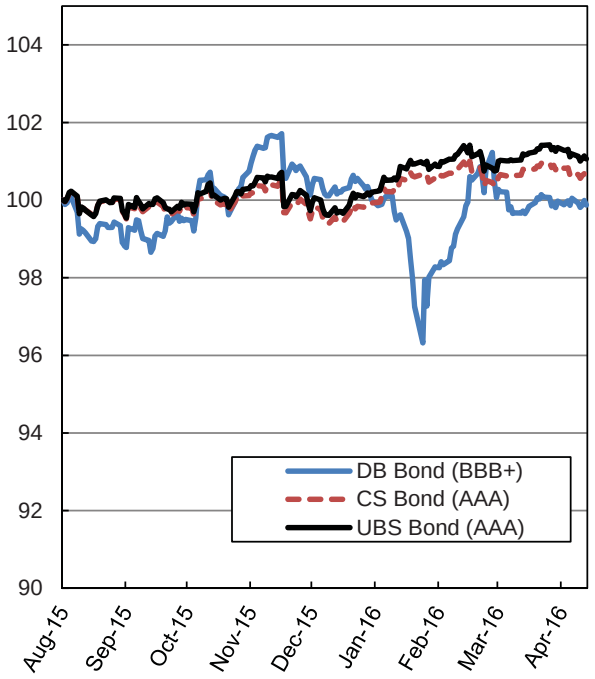
SOURCE: Bloomberg.

Figure 3
Bank Shares Indices in Europe, August 2015 to April 2016



SOURCE: Bloomberg.

Figure 4
Indices of Ordinary Bonds of Banks Abroad, August 2015 to April 2016



SOURCE: Bloomberg.

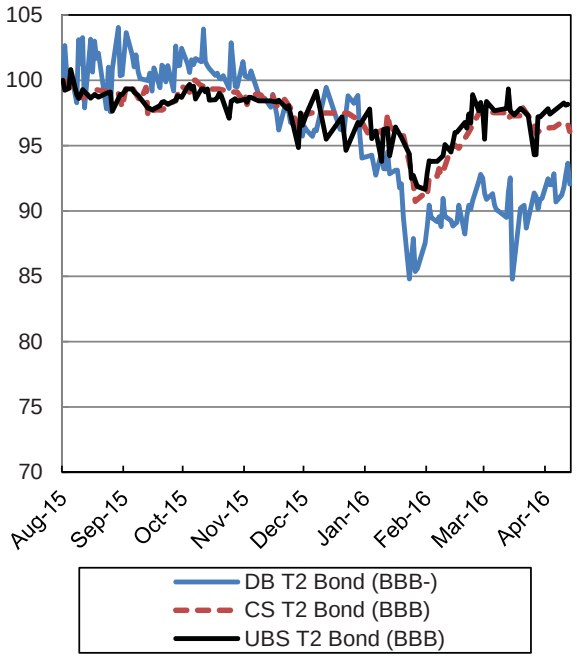
while the prices of those banks' CoCo bonds declined, but to a lesser extent. Here, too, the force of the Tier 2 CoCo bonds' response was less than that of the additional Tier 1 CoCo bonds (Figure 5).

The prices of other banks' additional Tier 1 CoCo bonds also did not return to their level from before the Deutsche Bank incident. If the level of risk premium demanded by the market for an investment in Tier 1 CoCo bonds persists, it will make any issues of such bonds in the future more expensive, which will in turn affect the cost of the bank's sources.

The event that occurred apparently reflects the problem of under-pricing the risks incurred in the CoCo bonds—a relatively new instrument that market traders were unable to price correctly, and which therefore responded in an extreme way to any unexpected development in the risk assessment. Another possible explanation is that while activating the trigger is likely to contribute to strengthening the capital structure of the banks through the bondholders' money, thereby reducing the need for government intervention, it is possible that the relatively extreme response also involves the fact that there is not yet a sufficient quantity of such bonds in the banks' balance sheets, and their quantity is therefore inadequate to provide a reserve for absorbing losses.

On the other hand, it should be kept in mind that activating the trigger in itself is liable to aggravate a crisis event, because it indicates that a specific bank is in trouble, and due to the close connections between the banks, it is liable to arouse concern about the stability of other banks. Furthermore, as a result of the banks' high level of

Figure 5
Indices of Tier 2 CoCo Bonds Issued by Banks Abroad, August 2015 to April 2016



SOURCE: Bloomberg.

leverage and their large liquidity risk, the additional reserve fund provided by CoCo bonds many not be adequate to soothe the depositors and prevent a crisis in the event of concern about the banks' stability. It can, however, ensure that the holders of CoCo bonds participate in the strengthening of the bank's capital structure, thereby reducing the need for an injection of government funds. The identity of the investors in CoCo bonds has major implications for the extent to which activating the trigger can contribute to calm: A lower proportion of investors in the bonds coming from within the banking system or from financial institutions closely linked to the banking system means that setting the trigger in motion will do a better job of calming the situation down.

CoCo Issues by Banks in Israel

Under the current Tel Aviv Stock Exchange Rules and Regulations, only banks and insurance companies are allowed to issue CoCo bonds. Due to the complexity of the instrument, the Israel Securities Authority, in coordination with the Bank of Israel Banking Supervision Department, has restricted investment in hybrid bonds, allowing it only for investors with a good grasp of the complexity and the risks incurred in them. Trading in hybrid bonds therefore takes place in trading units of NIS 50,000 par value each, and the minimum size of a trading order is one trading unit. As of the end of the period under review, only Bank Leumi and Mizrahi-Tefahot Bank had issued CoCo bonds classed as Tier 2 capital (Table 1).[5]

The following are particulars of the CoCo issues by Mizrahi-Tefahot Bank and Bank Leumi:

It should be noted that according to stress testing to date for the banking system by the Bank of Israel, even under the extreme events tested, the capital ratio did not fall enough to constitute a trigger event for activating the loss absorption mechanism for any of the banks according to the bonds issued (a core capital ratio of 5 percent).

[5] After the period under review, three other banks issued CoCo bonds: First International Bank of Israel issued NIS 580 million in tradable bonds, the Bank of Jerusalem issued NIS 180 million in tradable bonds, and Bank Yahav issued CoCo bonds in a private placement for institutional investors.

Table 1
Details of the Mizrahi-Tefahot and Leumi CoCo Issuances

	Mizrahi-Tefahot	Leumi
Total raised (NIS million)	417	925.8
Date of issuance	Dec-15	Jun-16
Tradability	Nontradable (private issuance to institutional investors)	Tradable
Interest rate	5%	3.25%
Spread at time of issuance (relative to government bonds)	**3-3.25%**	**2.18%**
"Maalot" rating	AA-	AA
Term to maturity (years)	7,8,10	10
Type of interest	Fixed and variable	Fixed
Trigger	Tier 1 capital ratio declines to 5 percent or Supervisor's decision	Tier 1 capital ratio declines to 5 percent or Supervisor's decision
Loss-absorption mechanism	Write-off of principle	Conversion to shares
Lifespan		4.6
Indexation		Unindexed

Development of Yields and Spread of the Bonds Issued

Mizrahi-Tefahot Bank – Since the bonds issued by the bank are not tradable, there is no information about the development of the yield and spread after the issue.

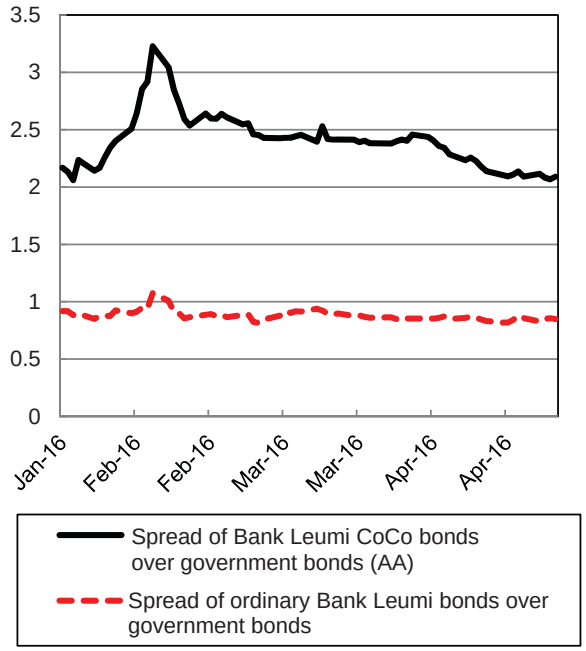
Bank Leumi – The CoCo bonds issued by the bank are similar in their characteristics to Tier 2 bonds issued around the world. They are traded at differences in yield of 1.5 percent higher than the bank's ordinary bonds with similar duration, due to the added risk incurred in these bonds (Figure 6). If they do indeed fulfill the purpose and contribute to the bank's stability, it can be expected that when their volume increases (at the expense of the bank's ordinary bonds), the spread for the bank's ordinary bonds will narrow.

Comparing the difference in spreads between Bank Leumi's CoCo bonds and Israel government bonds with the difference in spreads between comparable CoCo bonds worldwide and the relevant government bonds[6] shows that Bank Leumi's bonds are traded at a significantly narrower spread (Figure 7). On the other hand, when Bank Leumi's ordinary bonds are compared with those of similar banks, it is found that the difference in spreads between these bonds and the relevant government bonds are similar. This finding indicates that the wide gap between the CoCo spreads is not related to a different assessment of the bank's risk. It is apparently attributable mainly to the CoCo bonds' different characteristics, and to the likelihood assigned by the investors to the event of the automatic loss absorption mechanism being activated at the discretion of the regulator (a likelihood also affected by the characteristics of the local regulatory system). The difference in the conditions for activating the mechanism and the fact that the CoCo bonds issued by Bank Leumi are converted into shares

[6] Tier 2 CoCo bonds issued by Swiss banks Credit Suisse and UBS are rated two levels below the rating for Bank Leumi's bonds.

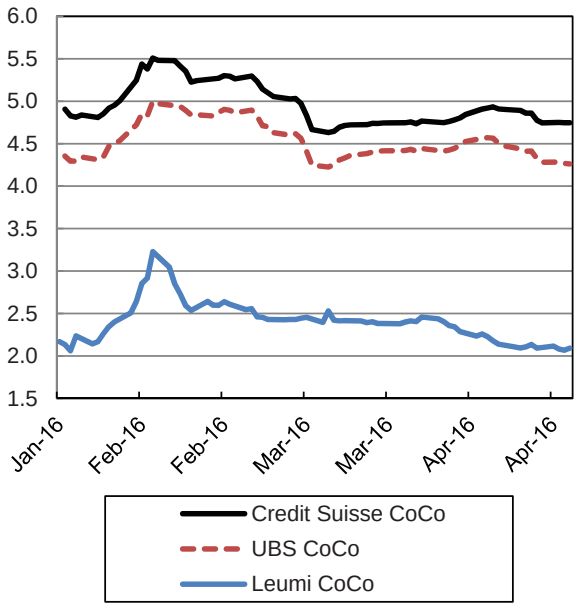
if the trigger is activated, compared with the writing off of the debt in this situation for the bonds of overseas banks, also has an effect. The fact that the instrument involved is completely new in Israel and has been traded for only a short period may also have an effect.

Figure 6
Spreads on CoCo Bonds and on Ordinary Bonds of the Same Duration Issued by Bank Leumi Relative to Government Bonds, January–April 2016 (percentage points)



SOURCE: Bank of Israel.

Figure 7
Spreads of Tier 2 CoCo Bonds Over Government Bonds of Similar Duration, January–April 2016
(percentage points)



SOURCE: Bank of Israel and Bloomberg.

Main indicators of the stability of the financial system in Israel, 2012 to May 2016

(percent)

		2012	2013	2014	2015	2016	Updated to	Precise end-date
	A. The global environment							
1	Global real GDP growth rate	3.5	3.3	3.4	3.1		31/12/2015	31/12/2015
2	World trade growth rate	2.8	3.4	3.5	2.8		31/12/2015	31/12/2015
3	Emerging Markets Bond Index (EMBI) spread[a] (periodic average)	3.4	3.2	3.3	4.2	4.5	31/05/2016	29/04/2016
4	Chicago Board Options Exchange VIX index (periodic average)	17.8	14.2	14.2	16.7	18.1	31/05/2016	29/04/2016
	B. The domestic environment							
5	Government debt to GDP ratio (end of period)	66.5	65.9	65.5	63.3	63.1	31/03/2016	31/03/2016
6	Net external debt to GDP ratio (end of period)	-25.4	-27.1	-35.6	-40.0		31/12/2015	31/12/2015
7	Total private credit to GDP ratio (end of period)	118.6	113.9	113.4	112.1	111.4	31/03/2016	31/03/2016
8	Business sector credit to business sector product ratio (end of period)	106.8	99.8	98.3	95.7	94.7	31/03/2016	31/03/2016
9	income (end of period)	58.0	58.7	59.9	61.1		31/12/2015	31/12/2015
10	Israel's sovereign risk premium (5-year CDS spread—periodic average)	1.69	1.20	0.88	0.73		31/12/2015	31/12/2015
11	The differential between yields on 10-year shekel-denominated government bonds and 10-year US Treasury Notes (periodic average)	2.6	1.5	0.4	-0.1	0.0	31/05/2016	31/05/2016
12	The corporate bond market spread—total bonds excluding financial corporate bonds (periodic average)	6.6	4.4	3.2	4.0	4.0	31/05/2016	31/05/2016
	C. Financial Assets							
	Risk indices (periodic average)							
	Implied volatility:							
13	of the exchange rate	10.8	11.5	10.8	11.0	9.8	31/05/2016	31/05/2016
14	of the Tel Aviv 25 index	25.3	17.5	15.7	20.0	23.3	31/05/2016	31/05/2016
	Actual volatility:							
15	of the exchange rate	6.6	6.2	5.3	8.1	5.8	31/05/2016	31/05/2016
16	of the General Shares Index	11.7	8.9	9.1	13.1	16.1	31/05/2016	31/05/2016
	Prices and yields (annual terms)							
17	Rate of change of the shekel vis-à-vis the dollar (during the period)	-2.3	-7.0	12.0	0.3	-1.3	31/05/2016	31/05/2016
18	Rate of change in the effective exchange rate (during the period)	-0.7	-7.6	3.3	-7.3	-0.3	31/05/2016	31/05/2016
19	Rate of change in the General Shares Index (during the period)	4.6	15.3	11.5	6.8	-8.7	31/05/2016	31/05/2016
20	Yield to maturity on unindexed 5-year government bonds (periodic average)	3.2	2.5	1.7	1.0	0.9	31/05/2016	31/05/2016
	D. Resilience of the financial system							
	The banking system[b] (end of period)							
21	Total core capital to risk components ratio[c]	14.9	14.7	14.2	13.9		31/12/2015	31/12/2015
22	Core Tier 1 capital to risk components ratio[c]	9.1	9.7	9.6	9.9		31/12/2015	31/12/2015
23	by 100)	0.41	0.25	0.15	0.12		31/12/2015	31/12/2015
	Insurance companies (end of period)							
24	Initial capital as a share of total assets	5.6	5.7	5.6	5.4		31/12/2015	
25	Risk assets as a share of nostro assets	41.5	42.6	44.0	45.4	45.4	29/02/2016	
	Provident funds[d] (end of period)							
26	Liquid accounts as a share of total liabilities	66.9	68.6	70.0	69.6	71.4	31/03/2016	31/03/2016
27	Ratio of liquid assets to liquid liabilities	30.6	33.8	38.1	38.2	34.1	31/03/2016	31/03/2016
	E. Market liquidity							
28	Total trading volume in the markets[e] (periodic average, NIS billion)	4.4	4.7	4.7	4.7	4.4	31/05/2016	27/04/2016
29	Spread between highest and lowest NIS/$ exchange rate quote (periodic average)	0.34	0.32	0.36	0.66	0.50	31/05/2016	28/04/2016

a. The spread between the yield on emerging market government bonds and the yield on US Treasury bills.

b. The five major banking groups.

c. Until 2009, according to Basel I definitions; Between 2009 and 2013, according to Basel II definitions; From 2014, according to Basel III definitions.

d. Including main provident funds for severance and advanced study funds.

e. Including trading volume of *makam* , government bonds, corporate bonds and shares.

SOURCE: Based on data from the International Monetary Fund, the Capital Markets, Insurance and Savings Division of the Ministry of Finance, and the Tel Aviv Stock Exchange.