Chapter 7:
Structural Issues in Israel's Economy

Construction and the Housing Market

- This year, home prices increased by 8.1 percent, similar to their increase in the previous year. Since the beginning of the current wave of price increases in 2008, home prices have risen by 82 percent.
- Rents increased by 2.9 percent in 2013, a rate similar to last year and to the increase in other nontradable products. This moderate growth does not indicate an increase in demand pressure for housing services. Since the current wave of increases began, rents rose by 39 percent, approximately half of the increase in home prices.
- The fact that home prices increased by twice the rate of rents shows that the yield on home rentals declined. This was due to the decrease in alternative yields in Israel, a development that also occurred in other countries. The decline in yields led to an increase in demand for residential investment properties, and along with inelastic supply and the basic demand for housing services, resulted in an increase in home prices.
- In the past two years, the number of housing transactions and the volume of mortgages increased. The proportion of first-time home buyers increased, while the proportion of investors decreased.
- The number of building starts increased this year, reaching 44,000 housing units, compared with 43,000 in the previous year, while the growth in building completions continued, reaching 42,000 units. These numbers are higher than the annual average in the previous decade and, if they persist, will provide a response to demand caused by the need for housing services.
- This year, the Israel Land Authority (ILA) expanded the marketing of land, following very limited marketing activity in the previous year. However, the increase in relation to 2010–11 occurred mainly in the northern and Haifa districts, rather than areas with high demand—Tel Aviv, the Center and Jerusalem.

Export Issues

- The growth of China's imports will make it possible for China's share of Israeli exports to double from 5 percent today to 10 percent in 2035.
- The productivity of the non-high-technology industries in Israel is low relative to the productivity of corresponding industries in other advanced economies. Increasing the productivity in these industries is likely be cheaper and more simple than increasing it at the world forefront of technology (high technology industries), and will contribute to increasing productivity in the overall economy, to strengthening the periphery, to increasing the wages of less highly educated workers, and to the diversification of Israel's exports composition.

The Effect of Worldwide Monetary Policy

- In the past decade, the correlation between countries—both in terms of indicators of real economic activity and in terms of inflation and other nominal variables—has increased. This phenomenon most probably reflects the opening of the developing markets to capital flows, the shift in these economies to reducing inflation, and a tendency toward a floating exchange rate.
- In recent years the long-term real interest rate in Israel declined by a greater rate than that of advanced economies, so that there was a reduction in real interest differentials (which nonetheless remained significant). This reflects a decrease in the pricing (by the market) of the relative risk of the Israeli economy.
- The liberalization of foreign trade and capital flows in Israel, as in many other countries, contributed greatly to expanding Israel's volume of trade with the world, and thus to the growth of the economy. However, this was also reflected in greater exposure of the domestic economy to external shocks.
- From 1997 through the crisis at the end of 2007, Israel adopted a floating exchange rate policy, which helped to absorb the internal and external shocks and increased the effectiveness of the interest rate tool as the only means for stabilizing inflation.
- In light of the crisis that erupted at the end of 2007 in several large advanced economies, these countries adopted unprecedented monetary accommodation, and countries that were not directly affected by the crisis, including Israel, suffered as a result from a large volume of capital inflows. In order to moderate the capital flows, many central banks chose to intervene in the foreign exchange market by purchasing foreign currency and/or by other steps. The Bank of Israel chose to purchase foreign currency in order to strengthen the financial resilience of the domestic economy (by increasing foreign exchange reserves) and to moderate the appreciation of the exchange rate.

7A: CONSTRUCTION AND THE HOUSING MARKET

1. DEMAND

Demand for housing services is met by rental homes or owned homes (through purchase or self-construction). This demand is affected, first and foremost, by the rate of population growth, along with income growth and the degree of job certainty, which

Table 7A.1
Construction industry data, 2001–13

		Average annual change[a]						
	Level in 2013	2001–06	2007–13	2009	2010	2011	2012	2013
		(percent)						
Population (thousands)	8049.5	1.9	1.8	1.8	1.8	1.9	1.8	1.8
Real wage per employee post (2004 prices)[b]	8713.6	-0.3	0.1	-2.6	0.7	0.4	0.5	0.9
GDP per capita (NIS thousand, 2010 prices)	120.0	0.8	2.2	-0.5	3.7	2.7	1.5	1.4
Unemployment rate (level, percentage points)	6.5	12.1	7.9	9.5	8.4	7.1	6.9	6.5
Total construction output (NIS billion, 2010 prices)	97.9	-1.6	6.5	3.1	9.8	10.0	5.6	1.9
of which: Residential (including renovations)	57.1	-1.5	7.0	8.1	13.0	11.6	5.4	-0.3
Nonresidential construction (buildings)	18.6	-5.5	3.5	-1.5	7.9	5.0	-3.1	6.9
Other construction work (earthworks and security)	19.1	2.9	3.9	-4.6	4.8	9.9	14.4	3.7
Stock of homes under construction (thousands, year-end)	91.6	-4.7	5.1	3.7	11.3	17.4	6.4	2.5
Home building starts (thousands, year-end)	44.3	-6.2	5.1	6.4	15.1	15.5	-8.3	3.4
Home building completions (thousands, year-end)	42.0	-5.5	4.5	7.4	1.9	2.9	9.5	11.8
Stock of new homes available for sale initiated by the private sector (thousands, year-end)	16.4	-4.8	2.8	-23.8	36.0	35.4	6.9	-2.2
Total stock of new homes available for sale (thousands, year-end)					21.4	38.3	0.6	2.6
Construction product (NIS billion, 2010 prices)	47.0	-1.2	5.7	2.4	11.1	11.0	4.8	2.1
Workers[c] (thousands)	247.5	-4.0	4.3	-1.5	7.9	0.4	-1.4	10.9
Home prices relative to the CPI excluding housing	--	-2.5	6.2	12.6	15.3	7.6	1.5	8.2
Rental prices relative to the CPI excluding housing	--	-0.6	2.4	11.5	2.9	3.1	2.6	1.9
Input prices relative to the CPI	--	2.5	0.3	-3.3	-0.1	0.6	1.7	0.6
		Level, percentage points						
Average interest rate on CPI-indexed mortgages (for all terms)	--	5.4	3.0	3.0	2.4	2.9	2.6	2.3
Bank of Israel interest rate	--	5.9	2.4	0.8	1.6	2.9	2.4	1.4

[a] Periodic averages, unless noted otherwise.

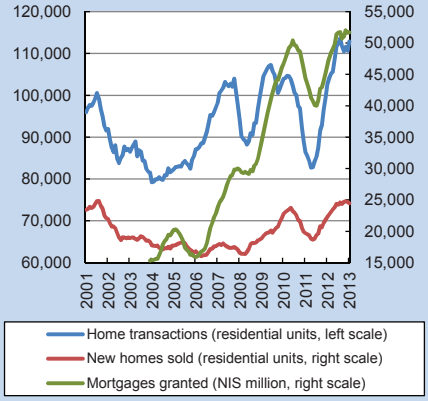
[b] Until 2002 derived from the wages of Israelis and non-Israelis. Since 2002 of Israelis only.

[c] Including an estimate for unreported foreign workers.

SOURCE: Central Bureau of Statistics, Ministry of Construction and Housing, and Bank of Israel.

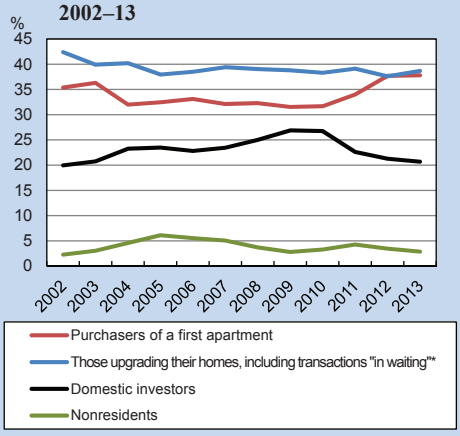
is reflected by the employment rate (or the unemployment rate). These factors affect not only the number of homes needed, but also their size and quality. Volatility in these variables is usually quite moderate and foreseeable and, in the absence of restrictions on the housing supply, they are unlikely to cause major fluctuations in prices.[1] The number of households[2] is also influenced by the price (movement along the demand curve): an increase in home prices and rent will reduce the number of households and increase their density, and vice versa.

Figure 7A.1
Home Transactions, New Homes Sold, and New Mortgages Granted, Yearly Amounts, 2002–13



SOURCE: Israel Tax Authority (Register of Real Estate Prices), Central Bureau of Statistics, and Bank of Israel.

Figure 7A.2
Distribution of Home Transactions Among Types of Purchasers, 2002–13



* In waiting: Buyers bought new home but have not yet sold current home.
SOURCE: Based on Israel Tax Authority (Register of Real Estate Prices).

The decision of a household to rent rather than live in an owned home is partly influenced by rental prices relative to the cost of buying a home, and in particular by the ratio of the cost of a mortgage—which is linked to the interest rate—to the cost of renting a home. Demand for buying a home also reflects investment calculations (the return). The demand for buying a home is affected by the interest rate and alternative yields in the capital market, expectations about price developments (for example, due to changes in the size of the population or in the supply of land and homes), the availability of housing credit, and tax policy. This year, as in the previous one, interest rates and yields in the economy declined across all terms (Table 7A.1), but at the same time, steps were taken to reduce the financial risks—requirements from mortgage borrowers to demonstrate a greater ability to repay, and to put in a higher down payment, and an increase in capital adequacy ratios in the banking system. In addition, fiscal measures were taken, including the levying of betterment tax on second homes, as shown in Table 7A.2.

[1] For more information, please see the Bank of Israel report for 2012, Chapter 2, Section 4.II.c (Construction and the Housing Market).

[2] A "household" refers to an individual or group of people (not necessarily members of a family) who live together in a home and jointly pay for food. Households include strangers while the population does not include strangers. The precise definition appears in the Statistical Yearbook published by the Central Bureau of Statistics.

Table 7A.2: Macroprudential and fiscal policy measures taken this year

A. The macroprudential area (Banking Supervision Department)

October 2012 (effective date: November 1, 2012).
The loan-to-value (LTV) ratio was limited to 70 percent, except for first-time home buyers (75 percent) and investors, including nonresidents (50 percent).

February 2013
A change was made in capital allocation and the provision for doubtful debts in respect of housing loans.
1. For the calculation of capital adequacy ratios, housing loans where the LTV ratio is up to 45 percent will be weighted at 35 percent (unchanged from previous weighting); housing loans with an LTV ratio of between 45 percent and 60 percent will be weighted at 50 percent; housing loans with an LTV ratio of 60–75 percent will be weighted at 75 percent. At the same time, the measure from October 2010 was cancelled: this measure required a 100 percent weighting for loans in which the LTV ratio is greater than 60 percent with a principal value of over NIS 800,000, and in which the variable interest rate component is 25 percent or greater. (The effective date for these measures: January 1, 2013).
2. A minimum of 0.35 percent of outstanding housing loans was set for the group allowance (just before this decision, the actual rate had stood at 0.22 percent).
3. The capital allocation required in respect of Sale Law Guarantees was reduced in cases where the residential property has already been transferred to the buyer: these guarantees will be weighted with a credit conversion coefficient factor of 10 percent, instead of the previous 20 percent.

August 2013 (Effective date: September 1, 2013)
1. The PTI ratio was limited to 50 percent of income. Housing loans where the monthly repayment is over 40 percent shall be weighted at 100 percent for the purpose of calculating the capital adequacy ratio.
2. The portion of the loan at variable-rate interest was limited to two-thirds of the loan for all loan periods. This limitation is in addition to a requirement established in April 2011, according to which only up to one-third of the total loan can bear variable-rate interest that is adjusted in periods of up to 5 years.
3. The loan period was limited to 30 years (inclusive).

B. The fiscal area

1. Purchase tax: The tax rate on apartments priced at over NIS 4 million was raised from 7 percent to 8 percent.
2. Land betterment tax: shall be imposed on the sale of a second (or more) home from the beginning of 2014. In addition, the tax will apply to the sale of an only home if held for 18 months or less.

Demand for homes continued to grow in the past two years, after it moderated in 2011. This was reflected in growth in the number of transactions and mortgages, and in the rate of price increases.

The substantial increase in the number of transactions (Figure 7A.1), which from mid-2012 was accompanied by the faster rise in home prices, shows that the dominant factor in the market's development was the growth in demand. Figure 7A.2 shows the share of home transactions by type of buyer, and indicates that in 2008–10, investors led the growth in demand, apparently because individuals diverted financial savings to investing in homes, after the yields on alternative investments fell, and the risks embodied in financial investments in the capital market rose, as a result of the global crisis. In contrast, in 2011–13, demand grew mainly among buyers of first homes, while demand by investors declined. The increase in the number of first-time home buyers that began in early 2011 occurred after home prices had already risen by about 50 percent in 2008–10 (see Table 7A.5), and after rents rose by a mere half this rate and became more worthwhile as a means of obtaining housing services than buying a home. A decline in demand for homes by first-time home buyers would therefore have been expected, especially given the reduced availability of credit to these borrowers (see Table 7A.2).

The increase in demand occurred primarily among those purchasing their first home, while the share of investors in total transactions declined.

2. SUPPLY

The supply of housing consists of inventory of existing homes and new homes under construction. Given the contractor's marginal cost (reflected in the supply curve), the higher the price of homes, the greater the incentive to build them. The availability of land with building permits is a necessary condition for increasing the supply, and along with the time needed to build, it is the main reason for the considerable rigidity of the supply.[3] Although there is also a need for production factors (labor and capital) and financing, the elasticity of their supply is much greater than that of the supply of planned land. The following sections describe the production function and the development of production factors.

a. Availability of land

Most of the land in Israel (93 percent) is owned by the state[4], and the state is also the main party in zoning land for construction. However, in areas with high demand, there is a high concentration of privately owned land. The majority of the land—82 percent—is in the northern and southern regions, but these areas include less than one-third of the population (Table 7A.3). In contrast, the Center, Tel Aviv and Jerusalem regions account for a mere 13.5 percent of the country's land, but contain almost 60 percent of the population. This means that the state has quite a limited ability to increase available land for residences in these areas, a fact that is heightened when the

[3] Increasing the supply by adding homes in existing buildings, as was done through National Outline Plan (TAMA) 38, also requires building permits. In addition, it requires the tenants' consent, vacating them during the construction, and an economic incentive for the contractor. This process is therefore also characterized by strong rigidity on the supply side, and only adds a few new homes.

[4] Including land owned by the State, the Jewish National Fund, and the Development Authority, all of which is managed by the Israel Land Authority (ILA).

Table 7A.3
Land[a], population, density and District Committee approvals: regional distribution

	Total	North	Haifa	Center	Tel Aviv	Jerusalem	South
1. Land, by ownership							
State owned	93.0	87.2	69.1	79.1	48.8	90.0	99.2
Privately owned	7.0	12.8	30.9	20.9	51.2	10.0	0.8
2. Land, population and households							
Land	100	21.3	4.7	6.2	0.8	6.5	60.5
Population	100	17.3	12.3	25.2	17.3	12.9	15.0
Households	100	14.6	13.4	25.5	22.1	11.0	13.4
3. Density[b]							
Population	0.4	0.3	0.9	1.5	7.6	0.7	0.1
Households	0.1	0.1	0.3	0.4	2.8	0.2	0.0
4. District Committee approvals, 2012–13							
	100	23.1	18.1	24.5	8.4	9.1	16.8

[a] Regulated land, meaning land for which ownership is recognized and recorded.

[b] Persons and households per dunam of land.

SOURCE: Based on Israel Land Authority and Central Bureau of Statistics.

relatively high proportion (18 percent) of privately owned land and the relatively large scale of business and commercial space[5] are taken into account. This is why increasing the supply in the central regions through urban renewal projects is so important.

The planning process for state-owned land, carried out by the Israel Land Authority (ILA) and the Ministry of Construction and Housing, includes a number of stages (the estimated duration for each stage appears in parentheses): a feasibility study and preparation of plans for submitting to the District Committee (one year); approval by the District Committee (five years); preparation of development plans and their costs (eighteen months); and marketing (publishing a tender, deciding on a winner and payment by the winner) (six months). After the marketing, the winning developer/contractor submits a plan for a building permit to the local committees (three years), and construction starts a few months after obtaining the building permit, taking up to two years to complete. Thirteen years elapse from the first stages of the initiative until construction is completed, 11 of which are devoted to approval process for a building plan.[6] In 2010, the government decided on approval targets—60,000 housing units

[5] It is of course possible to increase density, promote outline plans that include private land, and offer tax incentives for the use of private land. However, these processes are also characterized by strong rigidity.

[6] An elaboration also appears in the Bank of Israel Annual Report for 2011, Chapter 2, Section 5.II.b (Construction) and the Bank of Israel Annual Report for 2012, Chapter 2, Section 4.II.c (Construction and the housing market).

The District Committees greatly increased the volume of building plan approvals in the past two years, but most of the approvals relate to the periphery. The advancement of many of the plans depends on the removal of barriers.

a year in 2011–20[7]—and in 2011, it established the National Housing Committees[8] (NHC), which shorten from five years to one year the time needed to approve plans at the District Committees. According to reports of the Planning Administration (Ministry of the Interior), in 2012 it increased the number of permits to 65,000 housing units, and this year it approved 79,000 housing units.[9] The number of permits a year has therefore tripled as compared with 2007–11 (25,000 housing units per year). In addition, it seems that the NHCs also helped expedite the approval process through the normal channel. In view of their success, the Knesset approved a government bill to extend by two years the directive relating to the NHCs, granting them additional power. (For more information, see below). Even though there has been impressive success in terms of District Committees' approval of plans in the past two years, the distribution of approvals by region (Table 7A.3) shows that most of them (56 percent of the housing units) are in the periphery, especially in Haifa and the north, at a time when the distribution of the population and households is different. This is especially true regarding the Tel Aviv area: its share of the population is double its share of building permits. This highlights the limited land in the Tel Aviv and Jerusalem areas, showing that the limitation exists even in the case of long-term planning, and it means that to succeed in marketing the plans in the periphery, it is also necessary to develop transportation and/or employment infrastructures. Furthermore, the approval of a substantial part of the plans is subject to the removal of barriers—such as the lack of sewage and road infrastructures. Increasing the certainty over the removal of the barriers will help market the plans, and by that to create public expectations that the housing supply will increase in the future.

The Israel Land Authority issued fewer permits in the past two years than the 2010–11 average, in all areas of the country other than Haifa and the north.

The limited supply of land in the central regions is also reflected by the amount of land for residences that has been marketed by the ILA. Although this increased to 30,200 housing units this year, compared with 15,200 housing units last year (an especially low figure), and 24,400 housing units a year in 2010–11, here too, there was substantial growth in Haifa and the north[10] while in the other regions, the average fell in the past two years compared with the average in 2010–11 (Figure 7A.3). In other words, on the basis of the permits and marketing to date, available land for housing will increase in the coming years, but mostly in the periphery.

The most severe constraints on growth in the number of building starts are building permits and available land.

After the ILA markets the land, the winner prepares a plan and submits it to the Local Committee to obtain a building permit. It takes about three years to produce a permit. Building permits are necessary in order to begin construction and they are the last stage in the approval process for a building plan. Figure 7A.4 shows the permits granted for the private sector compared with building starts, and its indicates that both

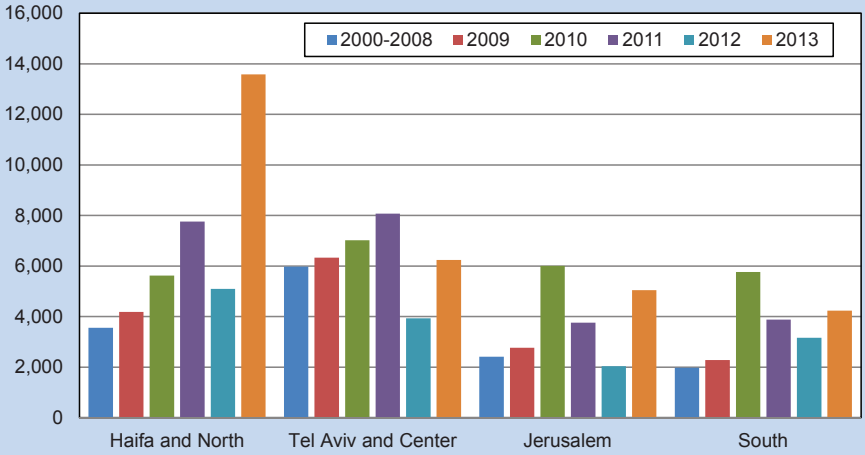
[7] Decision Number 2019 of 15 July 2010. This quantity is also intended to increase the planning inventory.

[8] The government decided to establish the National Housing Committees in March 2011, the Knesset approved the decision on August 3, 2011, and it was published in *Reshumot* on August 11, 2011. Elaboration appears in the Bank of Israel Report 2011, Chapter 2, Section 5.II.b (Construction).

[9] 7,500 of which are subject to unification and redistribution plans.

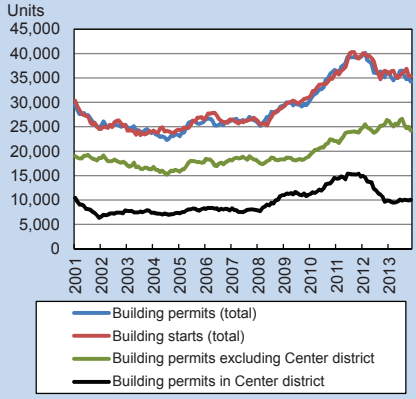
[10] 4,500 housing units are located in Harish.

Figure 7A.3
Land Marketed for Residences by the Israel Land Authority, Yearly Amount by Region, 2000–13



SOURCE: Israel Land Authority.

Figure 7A.4
Private Sector: Building Starts and Permits, Building Permits Excluding Center District, and Building Permits in Center District (Yearly Amounts), 2001–13



SOURCE: Based on Central Bureau of Statistics.

behave in the same way. The number of building permits was stable this year, after having declined last year. An examination by regions shows that the drop last year was mainly in the Center region while in the rest of the country, the number of permits increased last year too, and stabilized at a high level this year. This is also reflected by the need to sign blanket agreements with local authorities. These agreements are intended to increase the pace of granting permits and they have been signed with, among others, municipalities in central Israel, including Rosh Ha'Ayin and Modiin (details are listed below). The Business Tendency Survey of the Central Bureau of Statistics for the fourth quarter of 2013 also shows that the most severe constraints on supply in the construction industry are due to the shortage of building permits and available land.[11]

In February, the International Monetary Fund published a report on the Israeli economy, in which it presented an econometric model, according to which the housing

[11] The survey indicates the severity of the constraint, according to responses to the relevant questions: a shortage of building permits (39 percent of the respondents); shortage of available land (34 percent); shortage of skilled labor (29 percent); shortage of unskilled labor (25 percent); non-bank financing (20 percent); bank financing (18 percent).

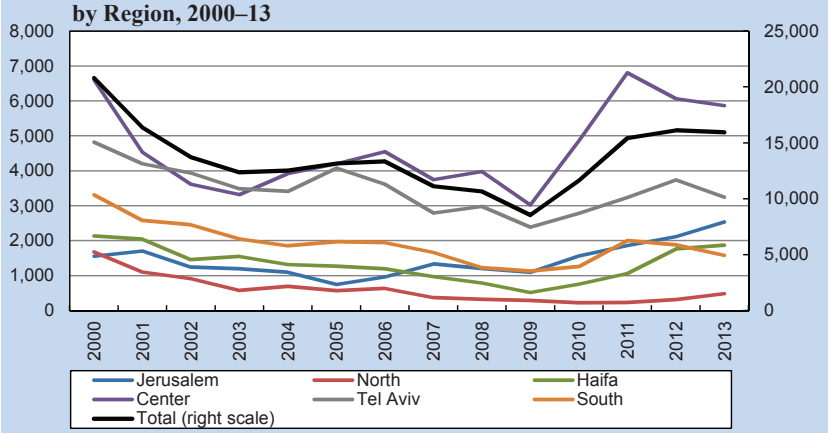
shortage caused half the increase in the housing prices in the current cycle.[12] This report examines the construction industry in Israel from an international perspective, and finds that Israel belongs to a group of countries in which the supply of homes is relatively rigid, and hence an increase in demand for homes is translated into a greater increase in prices, as well as to slower construction growth, than in other countries.

Since the end of 2010, the number of building starts has not fallen below 40,000 housing units, which is the average annual increase in the number of households in the past decade. The number of building completions continues to increase.

The number of building starts grew slightly this year, to 44,300 housing units, compared with 42,800 housing units in 2012, after the record in 2011 (approximately 47,000 housing units). Since the end of 2010, the number of building starts has not fallen below 40,000 housing units, which is the average annual increase in the number of households in the past decade.[13] To summarize the past three years, the number of building starts has exceeded the growth in the number of households by approximately 14,500 housing units. Maintaining building starts at these levels will offer a response to the demand derived from the need for housing services. The number of building completions also continues to rise, with 42,000 housing completions this year, as compared with 38,000 last year and 34,000 in 2011 (Table 7A.1). It can be assumed that the growth in building completions increases the current supply of housing services, while growth in building starts increases its future supply, even though it constitutes current growth in the supply of homes.

The supply of new homes available for sale—including building starts—has been at a ten-year high in the past two years (Figure 7A.5), despite the growth in the number of new homes sold (Figure 7A.1). The large stock of homes available for sale exists in all regions, except for the north, which is not an area in high demand, as mentioned above. The high supply of homes available for sale can also be explained by the

Figure 7A.5
New Homes Developed at Private Initiative Remaining for Sale, by Region, 2000–13



SOURCE: Central Bureau of Statistics.

[12] See: Carolina Osorio Buitron, et al. (2013), "The Housing Market in Israel", International Monetary Fund (IMF) (December).

[13] As mentioned above, the number of households is negatively affected by the price of homes. The series of households is very volatile.

growth in building starts in recent years. However, because the growth was created in response to demand, a higher rate of sales could have been expected. Therefore, this inventory is consistent with the hypothesis that contractors expect prices to continue to rise, and holding this stock of homes is possible because financing is available.

b. Government decisions

The government adopted many measures this year, some of which were of broad scope, in order to accelerate growth in the supply of homes.

As part of the policy to lower home prices, in April 2013, the new government decided to establish a Ministerial Committee for Housing Affairs (the Housing Cabinet).[14] The cabinet's function is to draw up government housing policy and to approve and advance reforms in land, planning, and residential construction, including rental housing, and urban renewal plans.

The numerous decisions made by the cabinet were intended to make the supply more elastic. The cabinet's very establishment is testimony to the strong rigidity of supply, and the effect of its decisions on the public's expectations regarding supply and prices depends on the public's confidence in these decisions and the ability to implement them. Below are the decisions (in some cases, the legislation process has already been completed).

Extending the temporary order regarding National Housing Committees and increasing their powers: In December this year, the temporary order regarding the NHCs was extended until August 2015.[15] Under the current law: (a) the option of submitting plans to NHCs will be expanded to private parties; (b) the NHCs will also deal with plans for buildings that are not intended for residences—industrial, commercial, and business buildings—but which constitute part of the planned residential environment; (c) the NHCs will handle urban renewal plans of at least 70 housing units; (d) it will be possible to implement plans approved by NHCs within four years, instead of two and a half years.[16] Legislation passed in December 2013 states that at least 25 percent of the plans will include affordable housing.

Blanket agreements with local authorities: The agreements are intended to help deal with infrastructure obstacles, such as the lack of transport, sewage, and public institutions, which delay the marketing of land and the issuance of building permits at the Local Committees. These are plans that include a large inventory of detailed plans for residential construction.[17]

[14] The cabinet chairman is the Minister of Finance, and its members are the ministers of the following ministries: Construction and Housing; Interior; Environmental Protection; Transport; Immigrant Absorption; Negev and Galilee Development; Defense; Justice; and Agriculture and Rural Development.

[15] The NHCs only dealt with plans involving 200 or more housing units initiated by the state, and land that was mostly (over 80 percent) owned by the state. An elaboration appears in this chapter and the Bank of Israel Annual Report for 2011, Chapter 2.

[16] In addition, the "fulfilling conditions for deposit" stage at the district committees ("Initiator revision time") was extended from 60 days to 90 days.

[17] The potential agreements are for the following cities: Modiin (21,000 housing units); Rosh Ha'Ayin (10,000 housing units); Kiryat Gat (6,400 housing units); and Kiryat Motzkin (7,500 housing units).

Promotion of rental housing—the National Housing Project: a plan to increase the supply of rental apartments, including rent-controlled apartments, by 150,000 housing units over ten years. This plan is in addition to the decision to increase the planning inventory by 60,000 housing units per year in 2011–20.

Urban renewal—build-vacate-build: The plan starts by locating available state-owned land close to a location where urban renewal is planned, continues with issuing approval for a building plan, and ends in construction. The residents will move to the new building after construction is completed, before the old structure is demolished. This plan is meant to increase certainty for the parties of the deal—the contractor and the tenants—as well as certainty as to the duration of the construction.

Reducing regulatory measures within the framework of regulations that increase costs of residential construction: It was decided that before the authorized ministries issue regulations that affect residential construction costs, they will consult with the Minister of Finance and will append a cost-benefit analysis. It was also decided that the current regulations would be reviewed.[18]

In addition, the following decisions were made: 1) to increase building rights from 20 percent to 30 percent for an existing lot ("the Sheves regulation"); 2) to establish a fund for financing residential building renovations as part of National Outline Plan (TAMA) 38; 3) to amend the criteria for affordable housing ("Dweller Price"), so as to give priority to the criterion of fulfilling earning power; 4) to amend the Public Land Law (Vacating Land), which deals with actions against squatters, to make it possible to apply the law even when the land is zoned for infrastructure facilities, and not just when the land is zoned for residential, industrial, commercial, or business use; 5) to levy a delay-in-construction tax on land zoned for residences (with at least 200 housing units) held by contractors and for which building permits may be issued; and 6) to allow municipalities to levy double municipal tax on "ghost apartments".

c. Factors of production

(1) Workers

The number of workers in the construction industry rose by 10.7 percent this year to 247,300. The number of Israeli workers rose by a similar rate, to 162,800 workers. However, it is impossible to compare this figure with the past because of the change in labor force surveys in 2012.[19] The number of workers from the Territories rose by

[18] For example, regulations on accessibility, fire safety, communications, sanitation, parking standards and underground construction, residential secure spaces, earthquakes, and acoustics.

[19] At the beginning of 2012, the Central Bureau of Statistics began conducting monthly rather than quarterly labor force surveys. Although corresponding surveys were conducted in the fourth quarter of 2011 and can, in principle, be used to create concatenation, the resulting past distribution is unreliable, since the sample populations have also changed. This year, the Central Bureau of Statistics made two additional changes: First, it changed the industry classification to ISICrev. IV; second, it switched from the definitions in the National Accounts appearing in the SNA 1993 to the definitions appearing in SNA 2008. These factors also changed the industry's capital series, resulting in a difficulty in measuring the industry's productivity.

approximately 9,800, to 46,100 workers. Utilization of the work visa quotas within the Green Line reaches 80 percent, and in the current situation, it is possible to employ 5,000 more workers from the Territories. There has been no significant change in the number of foreign workers, which stands at approximately 38,000 workers, as compared with the quota of 8,000 workers; the difference is therefore an estimate of the number of illegal workers, including infiltrators from Africa. The increase in the number of workers is also reflected in the Survey of Job Vacancies by the Central Bureau of Statistics, which indicates that the vacancy rates of workers in the construction industry fell significantly this year, including among "wet" work.[20] This picture is supported by the Business Tendency Survey, which indicates that the constraint caused by a shortage of labor is less severe than the constraint caused by the lack of building permits and available land.

(2) Financing real estate and construction activity

The regulatory changes regarding sale guarantees, the increase in building completions, and the stability in building starts in recent years, are consistent with a reduction in the financing constraint in the industry, which occurred despite the growth in the volume of activity.

Credit provided to the industry increased this year as compared with last year, amounting to NIS 9 billion. Two-thirds of this growth was due to the capital market: stock and bond issuance rose this year, after this channel had net negative capital raised in the preceding years (Table 7A.4).[21] As for bank credit (section 2 of Table 7A.4), the Total Credit subsection indicates an increase of NIS 6 billion in the construction item, an item that mainly reflects credit given to contractors for projects actively under a construction process. Half of this amount was financed by a decline in the real estate item, which usually includes activities that are not projects under a construction process (such as income-producing real estate).

The growth in outstanding mortgages to homebuyers continued this year, in amounts similar to those of previous years—approximately NIS 20 billion. This provides further evidence of the continued growth in demand for homes. However, while mortgages financed the bulk of construction activity in the industry in 2010 and 2011 through the growth in the construction item of total credit (through the increase in sale guarantees), in the past two years, the growth in mortgages was not reflected in real growth in bank credit to the industry. This is consistent with the reduced capital requirements for sale guarantees (see Table 7A.2), the growth in sales of new homes which have been completed (which require smaller capital allocations for the sale guarantees), and the stability in building starts in the past few years. This is also in line with the Business Tendency Survey, which indicates that the financing constraint was not severe.

[20] The rate of job vacancies out of total filled jobs and vacancies fell from approximately 10 percent in 2011–12 to 4.1 percent at the end of 2013, similar to the rate in 2009, when the survey was first conducted.

[21] The data in Table 7A.4 present credit to the industry, i.e., not just for residences, and including credit for companies operating overseas.

3. ACTIVITY AND PRODUCT

Growth in active construction continued this year, reaching a 15-year high, although the rate of growth moderated and the industry's output increased at a lower rate than overall GDP.

The number of homes in the construction process rose slightly this year, reaching 92,000, the highest number since the beginning of the previous decade, compared with 60,000 housing units a year in 2004–07, the period that preceded the current cycle (Table 7A.1). The growth in activity in homes is not only due to the increase in building starts, but also to longer construction times. The latter is partly because of the higher proportion of high-density construction: in the past three years, 62 percent of homes were in buildings of three or more floors, compared with 53 percent in 2008–09. At the same time as the growth in residential construction, nonresidential construction increased, and its proportion of overall activity (in terms of square meters) was higher this year than in the past decade.

Construction industry output continued to increase this year, but the pace slowed to just 2.1 percent, while both total GDP and business sector product grew by 3.4 percent. Most of the moderation in the growth rate of the construction industry was in

Table 7A.4
Financing of the real estate and construction industry, 2009–13 (NIS billion)

	Balances					Change			
	2009	2010	2011	2012	2013[a]	2010	2011	2012	2013[a]
1. Total credit from the banking system in Israel and from the capital market (2b+3d)						22.4	10.2	2.0	9.1
of which: Balance sheet credit from the banking system in Israel and from the capital market (2a+3d)						5.4	3.0	-2.0	3.0
2. From the banking system in Israel									
a. Balance sheet credit	101.7	106.2	112	111.9	107.9	4.5	5.8	-0.1	3.3-
of which: (1) construction	43.5	42.9	45.5	50.7	51.7	0.5-	2.6	5.2	2.3
(2) real estate activity	58.2	63.2	66.5	61.3	56.2	5.0	3.3	-5.2	5.6-
b. Total credit risk[b]	165.8	187.2	200.2	204.1	203.3	21.5	13.0	3.9	2.8
of which: (1) construction	94.6	112	123.6	134.9	137.1	17.4	11.6	11.2	6.0
(2) real estate activity	71.1	75.2	76.6	69.2	66.2	4.0	1.4	-7.4	3.2-
3. From the capital market									
a. Issues: bonds						5.9	6.1	9.6	14.2
b. Issues: stocks						7.0	1.6	0.4	2.2
c. Repayments (including interest)						12.0	10.5	11.9	10.1
d. Net raising of capital						0.9	-2.8	-1.9	6.3
Mortgages to private individuals	166.8	195.1	214.7	237	251.7	28.3	19.6	22.3	19.6

[a] The balance for 2013 is for September. The change in 2013 is compared to September 2012.

[b] Including the balance sheet credit risk and the off-balance-sheet credit risk of the banks.

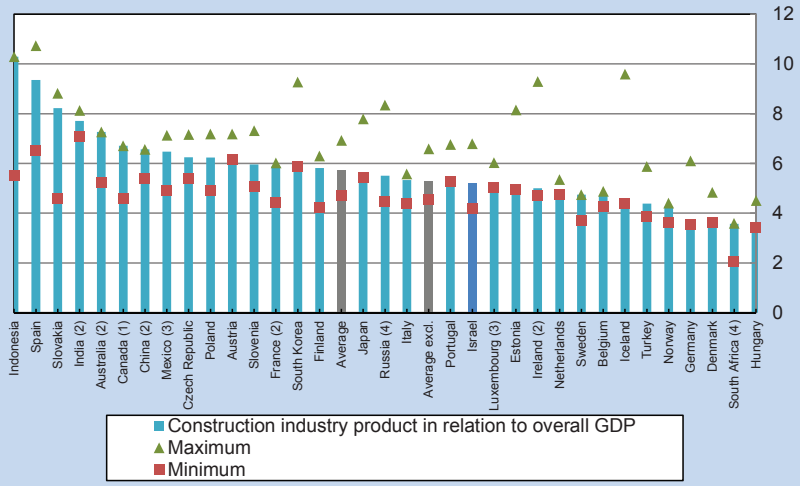
SOURCE: Central Bureau of Statistics, Ministry of Construction and Housing, and Bank of Israel.

housing; nonresidential construction and other types of construction work had higher growth rates (Table 7A.1).

Despite the impressive growth of the industry's output in the past few years, its share of overall GDP is similar to the international average.

The industry's share of GDP increased in the current cycle, and its level is similar to its level in 1999. Figure 7A.6 presents the industry's share of GDP by international comparison in 1995–2010. The ranking was based on the last available figure, and also shows the maximum rate (triangle) and minimum rate (square) during this period. The figure indicates that Israel (5.2 percent) is located near the middle of the distribution, reaching a maximum rate in 1995, during the wave of immigration. In Iceland and Ireland, countries which underwent crises, there is a large difference between the maximum and minimum rates. In other countries where home prices are rising in the current cycle (Canada, Norway, and Sweden), the industry's relative product reached its highest level in the last year.

Figure 7A.6
Ratio of Construction Industry Product to GDP[a], International Comparison, 1995–2012



[a] Industry product is at base prices, and overall GDP is at market prices. The ranking is built on the basis of the last available ratio in the years 2008 to 2012.
(1) Denotes the last figure for 2008.
(2) Denotes the last figure for 2009.
(3) Denotes the last figure for 2011.
(4) Denotes the last figure for 2012.
The last figure for Israel is for 2013.
"Average excl." relates to the average excluding countries with particularly high ratios: Indonesia, Spain, Slovakia and India.
SOURCE: Based on OECD database.

4. PRICES

Home prices and rents continued to rise this year as well, for the sixth consecutive year. After the rate of increase in home prices moderated in 2011 (4 percent), the pace picked up in the past two years, with prices rising by an annual average of 8.3 percent (Table 7A.5). There were corresponding increases in the number of transactions, in

Home prices and rents continued to increase for the sixth consecutive year. Since the beginning of the current rising cycle in 2008, home prices have increased 82 percent, double the increase in rents.

new home sales, and in mortgage volume (Figure 7A.1). In contrast, the rise in rent moderated in the past two years, compared with the previous years in the current cycle. In summary, home prices have risen 82 percent in the current cycle, double the increase in rent; in real terms, prices have increased by 58 percent, triple the rise in rent (Table 7A.5). As a result, the ratio of home prices to rent continued to grow. Construction inputs cannot explain the real rise in the two prices, since the prices of inputs rose in line with the general rise of prices in the economy during this period. Figure 7A.7 shows the annual rate of change in home prices and rent since the beginning of the previous decade. The figure indicates that until 2008, home prices and rent behaved in the same way and their volatility was similar; therefore, the change in prices until then was mainly due to the difference between basic housing demand and the housing supply. However, since 2009, a difference has emerged in the behavior of the two prices; in other words, there is another demand factor in the purchases market, in addition to the demand for housing services: residential investment properties. This demand is partly due to the drop in the interest rate and in alternative yields in the capital market.[22]

Since 2009, a difference has emerged between the behavior of home and rental prices. In other words, there are other demand factors in the purchase market in addition to the demand factors existing in the rental market.

Thus, rent in the past two years increased more slowly than home prices, which reflects moderate growth in demand for rental homes—residential housing—beyond the growth in supply. A similar conclusion is drawn from the comparison between housing prices (rent), which is a nontradable good, and prices of other nontradable goods. Macroeconomic forces influence the prices of nontradable goods, and

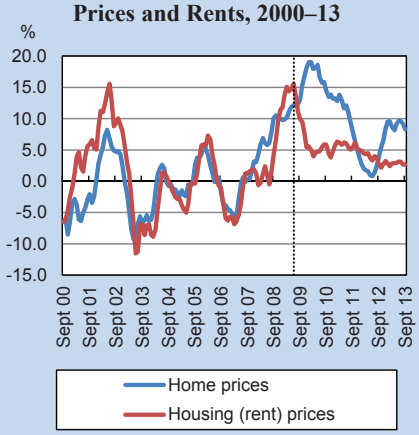
Table 7A.5
Change during the year in home and housing (rent) prices in the current cycle (percent)

	Home prices			Housing (rent) prices			Prices of construction inputs
	Nominal change	Real change, deflated by the CPI	Real change, deflated by the CPI excluding housing	Nominal change	Real change, deflated by the CPI	Real change, deflated by the CPI excluding housing	Nominal change
2008	10.6	6.5	8.7	12.1	8	10.2	3.3
2009	19.9	15.4	16	5.6	1.6	2.1	0
2010	14.1	11.1	11.9	4.9	2.1	2.9	3.9
2011	4	1.8	2.6	5.1	2.9	3.7	3.8
2012	8.7	6.9	7.4	3.3	1.6	2.1	3.3
2013	8.1	6.1	6.5	2.9	1.0	1.3	1.4
2013-2008	81.6	57.8	65.6	38.5	18.3	24.2	16.6

SOURCE: Based on Central Bureau of Statistics.

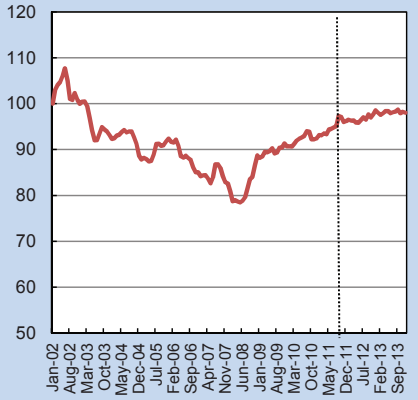
[22] For example, see Nagar, W. and G. Segal (2011), "What explains the development in home prices and rent in Israel in 2009–2010?", Bank of Israel Survey 85 (Hebrew).

Figure 7A.7
Annual Rate of Change in Home Prices and Rents, 2000–13



SOURCE: Based on Central Bureau of Statistics.

Figure 7A.8
Ratio Between Home Prices and Other Nontradable Goods (January 2002 = 100)



SOURCE: Based on Central Bureau of Statistics.

therefore, changes in the prices of many of these goods can be common. As shown in Figure 7A.8, in the past two years, the housing index (which is based on rents) rose at a similar pace to the rise of prices for other nontradable goods. Furthermore, the increase in home prices that began in the current cycle is not unique to Israel. It is shared by other countries—developed and emerging—which were not the focal point of the global crisis, but suffered its consequences, including Hong Kong, Singapore, Canada, Switzerland, Germany, and Sweden. Since the rise in home prices is occurring simultaneously in several countries, it is improbable that it is due to a sudden increase in demand for residential needs in all these countries (see more information in Section 3 of this chapter).

This analysis indicates that the increase that began in the past two years, relative to the preceding years, in demand for homes and in home prices is also substantially affected by demand for homes as an investment asset.

In the past two years, rents have increased at a similar pace to the rise of prices for other nontradable goods, which reflects moderate growth in demand for rentals—residential housing—beyond the growth in supply.

The increase in home prices during the current cycle is not unique to Israel. It is shared by other countries that were not at the focal point of the global crisis but suffered its consequences.

In addition to demand for housing services, home prices were also affected by declines in interest rates and yields in Israel and abroad over the past two years.

7B: EXPORT ISSUES

This section deals with two structural issues that have a great effect on Israeli exports and on their future development: (1) The anticipated increase in the imports of China and other developing countries and the implications for the geographical distribution of Israeli exports and their increase, and (2) the specialization of Israeli exports in high technology industries and the extent of the need for industry diversification in the composition of exports.

Israeli exports are expected to maintain their share of China's imports and this will allow China's share of Israeli exports to double.

(1) The growth of China's imports will make it possible for China's share of Israeli exports to double from 5 percent today to 10 percent in 2035. Israel is expected to maintain its share of China's imports in the future, since Israeli exports are not sensitive to changes in the level of development of the target country and since, based on past experience, the composition of imports of East Asian countries (Japan, South Korea and Taiwan) has not changed significantly in the wake of their process of development. Israel has maintained its share of Chinese imports in the last few years—an achievement in view of the growing diversion of China's trade to the Asiatic bloc—but this success was restricted to only two sectors: fertilizers and electronics (electronic components). It is therefore important to develop other export sectors, such as environmental, agriculture and water technologies, sectors in which China has a need and Israel has a comparative advantage.

Rational government policy which aims to improve productivity in the low-technology and medium-low technology manufacturing sectors contributes to a reduction of income inequality.

(2) Israel's industrial exports are rich in knowledge-intensive products, and are similar to those of the most advanced countries. The reason for Israel's specialization in human-capital intensive industries is their productivity, which is greater than the corresponding industries in other advanced countries, while the productivity of the low-technology industries is lower than the corresponding industries in the other advanced economies. Most of the support the government gives to the principal industries is directed to high technology industries which, as noted, enjoy a comparative advantage. However, diverting some government support to low-technology industries would contribute to an increase in their productivity and might contribute more to the economy than allocating it to industries on the forefront of technology. Increasing the productivity of low-technology industry, apart from its direct contribution to increasing productivity in the economy, also contributes to strengthening the periphery and increasing the wages of less highly educated workers. The Committee to Examine Means to Strengthen Peripheral Areas and Low-technology Industries (the Makov Committee) recommended concentrating government assistance for increasing productivity in low-technology industry on supporting R&D. Since a considerable proportion of low-technology industry is small firms, most of the production of which is designated for the domestic market and in which R&D investment is less worthwhile, consideration should be given to setting up industry-affiliated R&D centers with government funding. As a complementary step, the R&D training of the workforce should be increased, especially of engineers in low-technology industries (chemical, mechanical and other engineers).

ISSUE 1: CHINA'S GROWTH AND ISRAELI EXPORTS

Global trade's center of gravity is expected to shift in the next few years, and developing economies will constitute the dominant force in international trade. The most prominent among the developing economies (by far) is China[1], and it will turn into the most significant economic power in global trade. Currently, China is the largest exporter of goods in the world, and the second largest importer, after the US. According to a forecast published recently by the World Trade Organization, China will continue to grow rapidly, and its share of world trade of goods will increase from the current 15 percent to 24 percent in about two decades. The weights of Europe and the US are expected to decline from about 30 percent to about 20 percent. Israel has widespread trade links with Europe and the US, while the volume of trade with China and the other developing economies is smaller. As such, it is important to assess the potential of expanding trade between Israel and China, and to adopt an appropriate policy. A simulation of the development of world trade, assuming that Israeli exports maintain their current market share among imports of the destination countries (Table 7B.1), indicates that by 2035, Israel's share of world trade will decline, and the weight of exports to China will double to 10 percent, further to the trend in which

Table 7B.1

Distribution of Israel's goods export destinations (excluding diamonds)

(percent)

Country	2000	2012	2035[a]
European Union	32	32	25
Russia	1	2	3
India	1	3	5
Japan	2	2	1
China	1	5	10
United States	30	24	21
Latin America (excluding Brazil)	1	2	2
Brazil	1	3	2
Africa	2	3	4
Asia (excluding Japan, India and China)	12	11	13
The rest of the world	16	14	13
The share of Israeli exports in world imports	0.33	0.25	0.23

[a] The forecast distribution of exports based on Israel's market share (in 2012) in the imports of the countries appearing in the table, and based on forecast growth rates (according to the World Trade Organization) of imports in each of those countries.

SOURCE: Based on World Trade Organization.

[1] According to the World Trade Organization, China's GDP will account for 20 percent of global GDP in 2035, and India's GDP will be about 6 percent.

the composition of Israeli trade has undergone a significant shift toward developing economies in the past decade.

In the past decade, the relative portion of most advanced economies in China's imports has declined. The sources of Chinese imports are mainly concentrated in Asia[2], and the developing economies in general—and Asian countries in particular—are increasing their share in it.[3] China's imports mainly include raw materials and capital goods, and countries with an appropriate export profile have therefore especially benefited from this. Chinese demand for minerals and raw materials has led to significant growth in the volume of exports of countries such as Australia, Chile, Turkey, New Zealand and Brazil, while the vehicle industry has contributed to an increase of dozens of percent in the share of Germany, Slovakia and Austria in China's imports. Table 7B.2 shows the distribution of sources of Chinese imports by industry (excluding mining products and energy products[4]). It shows that the ratio between imports from Asian countries and imports from non-Asian countries has remained steady, while the share of imports from the developing economies—particularly from Asian developing economies—has increased. An examination by industry shows that the sources of imports are undergoing a marked shift to within Asia in the main import industries, such as the electronics industry (which by itself constitutes about 20 percent of total imports), the optical and medical equipment industry, and the chemicals industry (including pharmaceuticals and fertilizers).

Israeli goods exports are managing to maintain their share[5] of China's imports, and are converging to specific industries. Israel's share of China's imports has ranged since 2001 at around 0.14 percent—relatively low compared with the share of Israel's exports in world trade (0.25 percent)—and in the past three years, the annual volume of exports was about $2.7 billion, about 5 percent of total Israeli exports. High technology products[6] constitute the most significant share of exports to China, and are consistently growing. They currently constitute 60 percent of total Israeli exports to China. The composition of exports is rapidly converging to a very small number of industries: the electronics industry and the fertilizers item alone constituted about half of all exports (excluding diamonds) to China in 2007, and in the last year, their share was about 77 percent.[7] In recent years, a number of programs have been formulated to develop other areas of export to China, including environmental technology, agriculture, water desalination, knowledge-intensive industry, renewable energy and medical equipment.

2 There is a very high volume of intra-Asian trade and it provides more than half of the needs of the Asian bloc (similar to the volume of intra-European trade and internal trade in North America).

3 As part of the worldwide trend of increasing their share of trade.

4 These items restrict the possible sources of import. When they are taken into account, the ratio of imports from the advanced economies to imports from developing economies comes close to equal.

5 China is defined as a destination that should be promoted for Israeli exports. As such, tremendous efforts have been (and are being) invested in order to encourage exports to China.

6 Advanced electronics products, pharmaceuticals, and aircraft. There are noneconomic considerations that reduce trade with China in security products.

7 The trend of convergence is unique to the Chinese context and does not represent a trend in total exports. The latter has remained almost unchanged in the subject years.

Table 7B.2
Distribution of Chinese goods imports (excluding mining products and energy), by country of origin's level of development and whether it is located in Asia, 2001 and 2012

(percent)

		2001			2012		
	Asian countries	Advanced	Emerging	**Total**	Advanced	Emerging	**Total**
Distribution of total imports	Yes	43	17	**60**	36	25	**61**
	No	33	7	**40**	30	9	**39**
	Total	**76**	**24**		**66**	**34**	
Distribution by industry							
Machinery and equipment	Yes	44	9	**52**	41	15	**57**
	No	45	2	**48**	43	1	**43**
	Total	**89**	**11**		**84**	**16**	
Electronics	Yes	52	16	**68**	64	20	**84**
	No	31	1	**32**	14	3	**16**
	Total	**83**	**17**		**77**	**23**	
Optical and medical equipment	Yes	42	11	**53**	59	16	**75**
	No	47	1	**47**	24	1	**25**
	Total	**88**	**12**		**83**	**17**	
Chemicals and pharmaceuticals	Yes	44	12	**56**	42	19	**61**
	No	37	7	**44**	34	4	**39**
	Total	**81**	**19**		**76**	**24**	
The other industries	Yes	38	23	**61**	18	32	**50**
	No	27	12	**39**	34	16	**50**
	Total	**65**	**35**		**52**	**48**	

SOURCE: Based on World Trade Organization.

In order to estimate the effect of future growth in China on Israel's market share in China's imports, we used a basic gravity model, which indicates that Israel's share of Chinese imports[8] forecast by the model (0.13 percent in 2012) is similar to the actual market share. This share is not expected to change, as the composition of Israel's exports is less sensitive to geographic distance than the exports of other countries, because a significant portion of Israeli exports is comprised of high technology exports which generally have low transportation costs. In addition, the sensitivity of Israeli exports to per capita GDP in destination countries

[8] The share of Israeli exports in the imports of country j is explained by the per capita GDP of that country in relation to global per capita GDP, the distance between Israel and the country, and the distance squared. The sample includes 90 countries and the data are taken from 2012.

is not significant: The increase in China's per capita GDP is thus expected to add 0.01 percentage points to Israel's market share of Chinese imports in the next two decades. This conclusion is supported by the fact that the market share of Israeli exports in China's imports is close to the share of advanced economies in Asia. This is because China's import composition already leans heavily toward Israeli export products—a significant share of Chinese imports is comprised of electronic products and fertilizers, goods that have a relatively large share in Israeli exports. Because the continued growth will shift demand to additional import products, Israel's share in China's imports is not expected to increase.

I**n addition to the points noted above, if China's import profile converges to the profile of the advanced countries in Asia, Israeli exports to China could be negatively impacted**. Table 7B.3 portrays the distribution of imports[9] of Japan, South Korea, China and Taiwan, and indicates that over time, the share of the advanced countries has declined, particularly the share of advanced countries outside of Asia (the cross-section relevant to Israel). It can also be seen that the convergence of sources to within Asia is becoming significantly stronger in Japan, Taiwan and South Korea[10], and we can conclude that these trends are expected to continue in the coming years in China as well. The main import items (excluding energy products) are presented in Table 7B.4. The electronic components industry[11] constitutes the main reason for the gap between the countries—in 2012, its share was 30 percent of Chinese imports, compared to just 20 percent of imports in Taiwan, South Korea and Japan. From the standpoint of the import of chemicals, there is similarity between the countries: The share of the pharmaceuticals industry—a significant industry in Israeli exports—is 1 percent in China, South Korea and Taiwan, and about 4 percent in Japan. Applying the changes in the imports of advanced (compared to China) Asian countries to the current composition of Israeli exports to China shows that if the distribution of China's imports converges to that of Japan, Taiwan and South Korea, the change in composition of China's imports can be expected to negatively impact Israeli exports to China due to the tremendous dominance of the electronic components industry, while other industries (such as the chemicals and pharmaceuticals industry) will not be able to significantly reduce the negative impact.[12]

The share of services imports in China's total goods and services imports is still lower than in advanced Asian economies (and advanced economies in general), at 13 percent, while it is almost double that in Japan and South Korea, and the average in advanced economies is close to 20 percent. This may indicate that services imports have still not reached their full potential. Between 2005 and 2012,

9 Including fuels and mining products.
10 Even excluding trade with China.
11 Included in the "machines and transportation equipment" item.
12 Similar results are obtained even when examining the effect on exports to developing economies after applying the composition of imports of the advanced economies to them.

Table 7B.3

Distribution of goods imports in China and advanced countries in Asia, 2001 and 2012

(percent)

	Asian countries	2001			2012		
		Advanced	Developing	**Total**	Advanced	Developing	**Total**
Japan	Yes	11	44	**55**	8	55	**63**
	No	40	5	**45**	28	9	**37**
	Total	**51**	**49**		**36**	**64**	
South Korea	Yes	24	37	**61**	17	50	**67**
	No	33	5	**38**	25	8	**33**
	Total	**57**	**42**		**42**	**58**	
Taiwan	Yes	34	26	**60**	27	43	**70**
	No	35	5	**40**	23	7	**30**
	Total	**69**	**31**		**50**	**50**	
China[a]	Yes	41	20	**61**	28	29	**57**
	No	31	8	**39**	27	16	**43**
	Total	**72**	**28**		**55**	**45**	

[a] As written earlier, China imports raw materials that are mainly found outside of Asia. As such, this table, which includes mining products and energy products, shows a decline in the weight of imports from Asia.

SOURCE: Based on World Trade Organization.

Table 7B.4

Total goods imports by country (excluding energy products), 2001 and 2012

(percent)

	Japan	South Korea	China	Taiwan	Japan	South Korea	China	Taiwan
	2001				2012			
Food, beverages and tobacco	15	7	3	4	12	7	4	4
Unprocessed materials	12	11	10	8	17	17	21	15
Chemicals and chemical products	9	12	14	13	12	13	12	16
Processed goods	11	15	19	12	11	16	10	14
Machinery and transport equipment (including electronics)	34	43	47	53	31	36	44	40
Other	20	12	7	11	17	11	9	10

SOURCE: Based on World Trade Organization.

China tripled its volume of services imports[13] to $280 billion, which places it as the third largest services importer in the world (after the United States and Germany).

Israel specializes in services[14]: Israel's business services exports increased in recent years at an average annual rate of about 10 percent, and reached more than $20 billion in 2012.[15] The US and Europe lead among destinations for Israeli exports, and constitute about 75 percent of Israel's total business services exports. In contrast, exports to Asian countries total $800 million. Israel business services exports to China totaled about $150 million in 2012, equaling 1 percent of Israel's total business services exports.[16] The distribution of the services items (Table 7B.5) shows that China's current profile is similar to the profile of the advanced economies, and there is therefore no great potential for growth in the market share of Israeli exports in Chinese services imports. In Israel's main export item (computer and information services), China is already around the same level as the advanced economies. Moreover, the share of computer and royalty services has not changed for more than a decade, ranging around 8 percent.

Table 7B.5

Services imports and exports, 2012

(percent)

	Advanced economies	Developing economies	China	Israel
	Imports			Exports
Computer and information services	3	1	2	15
Royalties and license fees	8	5	7	4
Transport services	22	33	35	14
Tourism services	23	24	28	20
All others	44	36	29	47

SOURCE: World Trade Organization and Central Bureau of Statistics.

In summary, the volume of Israel's exports to China is in line with what is expected by the size of the Chinese economy, its level of development (per capita GDP) and its geographic distance from Israel. Israel's share of China's imports is expected to be maintained in the future because Israeli exports are not sensitive to changes in the level of development of the destination country, and because past

[13] Total Israeli services exports increased by 90 percent during the corresponding period, and business services exports grew by 120 percent. Business services exports from Israel to China increased during the same period by 150 percent, while China's business services imports increased by 250 percent.

[14] Israel's share of services trade is twice as large as its share of goods trade.

[15] Business services constitute about 70 percent of total services exports, and about 20 percent of total goods and services exports.

[16] Israel's business services exports are about 0.05 percent of total Chinese services imports (while it is about 0.08 percent of total services imports in Japan and South Korea, and about 2 percent in the US).

experience shows that the development process undergone by East Asian countries (Japan, South Korea and Taiwan) did not significantly change the composition of their imports. The fact that Israel has maintained its market share in China's imports in recent years is a significant achievement because China's trade increasingly tends toward the Asian bloc. With that, this success has been limited to just two industries: fertilizers and electronics (electronic components). It is therefore crucial to develop additional fields of export—such as environmental, agricultural and water technologies—areas in which China has a need and Israel has a comparative advantage.

ISSUE 2: DIVERSIFYING ISRAEL'S EXPORT INDUSTRIES

The slowdown in global demand for electronic products, and with it an increase in demand from developing countries, mainly China and East European countries, has created a surplus of supply in the industry and led to a sharp decline in employment in it in most advanced economies.

The Israeli economy's process of specialization in human-capital intensive industries[17] has continued in the last few years, due to the rapid growth of global demand for computerization and R&D services, reflected in the rapid increase in US and European Union imports.[18] The increase in demand outstripped the increase in global supply, and so employment in these industries increased in the advanced economies, and in almost all of them the wages of those employed in them rose. Given its specialization in these industries, Israel has succeeded in maintaining its market share in them and has even increased it, and consequently their proportion in Israel's total exports[19] also increased. Against the outstanding success of Israel's high technology services industry, high technology manufacturing exports are languishing—a phenomenon explained at least in part by the slowdown of global demand for electronic products and computers[20], the heart of the high technology industry. The slowdown in global demand for electronic products and the increase in the supply from developing countries, mainly China and East European countries, have created a surplus of supply in the industry. The labor-intensive production operations have moved from the western countries to China and Eastern Europe, which led to a steep drop in employment in them in the US and in most Western

[17] Israel's leading export industries are the computerization services industry and the R&D industry, in which the proportion of scientists and engineers are the highest in the economy's industries (54 percent and 40 percent respectively), the industrial control and supervision equipment industry, the medical and scientific equipment industry—the intensity of skilled workers in which is the highest in the manufacturing industries—and the pharmaceuticals industry.

[18] The international trade of the United States in computerization and communications services increased between 2008 and 2011 at an annual rate of 6 percent, and its rapid growth was halted in 2012.

[19] The volume of exports of computerization and communications services (excluding exports of start-up companies) is one quarter of total goods exports (excluding diamonds, ships and aircraft), but its proportion of value added is greater, since the import component in services exports is smaller than in goods exports (10 percent compared with 25 percent to 30 percent). It can be estimated that the value added of exports of human capital intensive services (including start-up companies) is 50 percent to 60 percent of Israel's total goods exports.

[20] The annual rate of growth of global trade in high tech industrial products fell from 2005 through 2011 to only 3 percent compared with 8 percent in the previous six years (1999 to 2005).

European countries[21], along with a rapid increase in worker productivity. Due to the erosion of profit margins from production operations in the electronics industry and the relatively rapid increase in global demand for the output of the computerization and R&D services industry, the potential for growth of Israeli exports in the next few years would appear to be in the computerization and R&D services industries. This will cause difficulties for the electronics industry due to the competition between the industries for human capital, the composition of which in both is similar.

Israel's industrial exports are concentrated in knowledge intensive products and are on a par with the most advanced economies in the world, despite the medium level of investment in the education system, including higher education.

Israel's industrial export profile is weighted toward high technology products and is similar to that of the most advanced economies in the world. In the 2013 Global Innovation Index, Israel ranked fourth in the percentage of manufacturing production of high and medium-high technology products out of total exports of goods (net) (after Singapore, Ireland and Switzerland) and eleventh in the percentage of exports of the high technology industry. The specialization in knowledge-based and innovation-based exports is even more marked in the export of advanced services: Israel ranked first in the world in the percentage of exports of computerization, communications and information services out of total services exports (alongside Ireland and India) and first in business sector expenditure on research and development out of GDP.[22] Most R&D is conducted in R&D centers set up in Israel by leading multinational companies. Since multinationals choose to operate in a certain country due to its comparative advantages, the high presence of R&D centers of such companies in Israel testifies to its comparative advantage in human capital intensive development activities.

The success of the human capital intensive industries, despite the modest investment in the education system, may derive from the higher investment in the past, the contribution of the human capital of the new immigrants of the 1990s, and the training the IDF gives in these fields.

Israel's specialization in the high technology field is not the result of especially high investment in human capital compared to other countries. Breaking down the Innovation Index into input and output components, Israel's high ranking is found to be attributable to its high outputs; its ranking according to inputs is lower (ninth and nineteenth respectively). Prominent among Israel's weaknesses is the low public investment per student (59th in the ranking of countries) and the low grades of students in PISA tests (38th in the rankings). Israel is in 30th place in the percentage of students in institutions of higher learning in the relevant age group, similar to the average in OECD countries, and its ranking in the percentage of students in the fields of engineering and natural sciences out of those studying in these institutions is even lower. Yet Israel has some advantage in the quality of institutions of higher learning: The OECD ranked the 50 leading universities and research institutes in the world in 16 different fields; the great majority of the leading institutions are in the United States (66 percent) and Britain (13 percent); Israel is ranked 15th, alongside Ireland and Austria, due to one institution outstanding in three fields—computer sciences, mathematics and physics. Thus, Israel's specialization in high technology exports is not due to an abundance of human capital in the technology industry—in other words

[21] The number of those employed in the electronics, computers and optical industry in the United States has fallen in the last few years (between the years 2010-2011 and the years from 1999 to 2005).

[22] According to the Global Innovation Index, Cornell University, INSID and WIPO.

a high percentage of those with an engineering education in the population relative to other countries—but apparently to the high quality of those with such education. Other possible explanations for the success of the human capital intensive industries, despite the low investment in the educational system, are the training in fields of computerization in intelligence and communications units in the IDF (Talpiot, Mafat (R&D for Weapons and Systems Development), and others), a greater investment in higher education in the past, and the contribution of the wave of immigration of the 1990s to the increase in human capital in the science and technology fields (a contribution that is expected to decline in the next few years).[23] However, research[24] indicates a clear and positive link between investment in higher education and in scientific and technological research and the economic performance of the developed countries: "The more countries invest in students and in university R&D, the greater the percentage of those employed in the country's workforce in engineering, science and technology oriented industries".

The low productivity in Israel's low-technology industry, relative to corresponding industries in the advanced economies, suggests that upgrading the productivity in it has the potential to increase the productivity and employment in the economy.

Israel's comparative advantage and specialization in human-capital intensive industries is also a function of the relative weakness of the low and medium technology manufacturing industries. There is a marked difference in Israeli manufacturing between the high technology industries, in which productivity and wages are high and approach those of similar industries in other advanced economies (excluding the US), and the low and medium-low technology manufacturing industries, which employ most of the manufacturing workers in Israel and in which productivity and wages are considerably lower than in similar industries in other developed countries.[25] Since the tradable industries[26] operating in the economy compete not only with the corresponding industries abroad but also with each other, the share of the more efficient tradable industries is gradually increasing at the expense of the less efficient tradable industries.[27] The low productivity in Israeli low and medium technology industries compared to corresponding industries in other advanced economies suggests the potential implicit in boosting productivity in those industries and thus increasing productivity and employment. An increase in productivity should increase the competitiveness of the industry globally and its sales, and thus employment in it. In this context it bears mentioning that the these industries' share of total employment in Israel has stabilized at a lower level than that of the OECD countries (20 percent compared with 23 percent respectively) and also than that of the OECD countries with

[23] The high technology sectors (the ICT sectors excluding the communications sector) employ only 6 percent of all those employed in the economy.

[24] Frenkel A. and Leck E. (2006) "Investments in Higher Education and Economic Performance: Israel in an International Perspective", (page 65, in Hebrew), Samuel Neaman Institute.

[25] Report of the Committee to Examine Means to Strengthen Peripheral Areas and Low-technology Industries, October 2007.

[26] A tradable industry is an industry that manufactures products or services that can be exported overseas or imported from overseas.

[27] The gas production industry recently joined the competition, and it is also expected to displace human capital intensive tradable industries.

a high per capita GDP (22 percent), countries in which the cost of labor is far higher than in Israel.

If the low productivity in low-technology industries is the result of the government not investing enough in essential physical infrastructures for their development or in human capital intended for it, then government involvement will be required to increase the productivity of the low-technology industries.

The economy benefits from its specialization in the high technology industries, but this specialization comes with a certain increase in the exposure of these industries to industry-wide shocks. The extent of the benefit the economy derives from the process of specialization in human capital intensive industries depends on the causes for the low productivity in the low technology industries: If the low productivity is the result of an objective difficulty, for example the geographic distance from world markets and the absence of any economies of scale in manufacturing, then specialization in high technology industries is beneficial to the economy, since it enables it to overcome an objective difficulty and to increase its purchasing power in terms of products imported without attaching additional capital and labor inputs to the export industry. However, if the low productivity is the result of failure, such as insufficient government investment in physical infrastructures essential for the development of the low technology industries[28], or from surplus government subsidy of the high technology industries, which attract manufacturing resources that may be the key to increasing productivity in the low technology industries, then specialization in just the high technology industries may reflect a distortion in the allocation of resources. Specialization in high technology industries of the economy in which a substantial number of workers lack the human capital necessary for the high technology industries also has a downside, since it means reducing employment in the low technology, labor-intensive industries to the detriment of the periphery which is based on the low technology industries.

Non-high technology industries conduct only 10 percent of the industrial R&D in Israel compared with 25 percent in other advanced economies.

The Israeli government provides generous support to research and development, the vast majority of it to the high technology industries. The government budget for support in the principal industries is for the most part directed towards support for R&D (60 percent), activity that mainly supports the high technology, R&D intensive industries. In an international comparison of the amount of government funding for R&D in the business sector[29] (for 2010) Israel was ranked fifth among the 36 advanced economies. Government support was 0.17 percent of GDP, double the median for advanced economies (0.08 percent of GDP). However, since the extent of R&D in Israel is also much greater than the advanced economy average[30], the percentage of government support for business sector R&D in Israel is not much higher than that of the other countries. Most business sector R&D in Israel is conducted in the high technology services industries (65 percent), and the vast majority of industrial R&D

[28] Israel has a low ranking (51) in the quality of infrastructures on the Global Competitiveness Index, in particular the quality of its ports infrastructure (90), railways 51) and roads (39), infrastructures of great importance to the export of goods.

[29] OECD Science, Technology and Industry Scoreboard 2013. The comparison relates to 2011 and the data on Israel relate to 2010. According to the Central Bureau of Statistics, the amount of government support in 2010 was 0.14 percent of GDP.

[30] The percentage of R&D in Israeli GDP is 3.5 percent compared with 1.4 percent in OECD countries (2010-2011).

is conducted in high technology manufacturing industries[31]; non-high technology industries (low, medium-low, and medium-high technology) conduct only 10 percent of total industrial R&D in Israel compared with one-quarter of industrial R&D in the other developed countries. The share of investment in R&D in the output of non-high technology industries in Israel (0.3 percent) is lower than other advanced economies (0.6–1.0 percent in most advanced economies, apart from Hungary and Italy where the proportion is lower). The leading countries in industrial production, among them Germany, Japan and Austria, invest heavily in low technology industrial R&D, thereby improving their competitive abilities. They also have marked success in the high level of employment in manufacturing and in higher productivity per worker.

Table 7B.6
Percentage of industrial R&D in industrial and non-high-technology manufacturing output, 2007–11

(percent)

	R&D in industrial output	High tech manufacturing and transport vehicles[a] in industrial R&D	High tech manufacturing and transport vehicles[a] in industrial output	R&D in non-high technology manufacturing output[c]
US	4	84	33	1
Finland	3.4	86	35	0.7
Denmark	3.1	79	36	1
Israel	2.6	91[b]	30[b]	0.3
Germany	2.5	82	46	0.8
Austria	2.3	75	34	0.9
France	1.9	74	31	0.7
Korea	1.9	84	46	0.6
Belgium	1.5	73	22	0.5
Slovenia	1.5	79	37	0.5
Netherlands	1.4	60	20	0.7
Norway	1.2	52	-	-
Italy	0.7	75	29	0.2
Czech Republic	0.5	67	44	0.3
Hungary	0.5	85	52	0.2

[a] Pharmaceuticals, computers, electronics and optics, electronic equipment, machinery, vehicles, and transport vehicles.
[b] The figure refers to the years 2010–2011.
[c] Non-high technology manufacturing is total manufacturing excluding the high technology and transport vehicle industries.
Source: OECD and the Central Bureau of Statistics.

[31] The average rate of R&D in outputs for the OECD countries is 8.5 percent in the high technology industries, 2 percent in medium-high, and 0.5 percent in the low-technology and medium-low technology industries (2006).

The Makov Committee (2007) claimed that the low productivity in low-technology manufacturing derived from "low investment in innovation, in advanced technology and in research", and recommended an increase in the government subsidy of investment in R&D in those industries.

Increasing government support for R&D will help increase productivity in the low technology industries. As previously noted, there is a pronounced gap in Israel between the high technology industries, in which productivity and wages are high and approach those of similar industries in other developed countries (excluding the United States), and the low and medium-low technology industries, which employ most industrial workers in Israel and in which productivity and wages are considerably lower than in similar industries in other advanced economies.[32] A committee set up to examine means to strengthen the peripheral areas and low technology industries (the Makov Committee, 2007) claimed that the low productivity in the low technology industries was the result of "low investment in innovation, advanced technology and research", and recommended an increase in government subsidies for investment in R&D in those industries. However, from a comparison we made, it appears that investment in R&D in the low technology industries is also not large in other advanced economies, and the difference between them and Israel in their R&D expenditure relative to output is not especially large: investment in R&D in the textile, plastics and nonmetallic minerals industries in Israel is no lower than that in other developed countries. However, in the food industry, the outputs of which are intended for the domestic market, investment in R&D is much lower than the standard in the developed countries (2006 data). Investment in R&D in Israel is also lower in the chemicals industry division, but it is unclear whether the cause is low investment in pharmaceuticals industry, which is R&D intensive, or in the other industries in that division, which are not part of the high technology industries. There are other, objective reasons for the low productivity in the low technology industries apart from the shortfall in investment in R&D—for instance the absence of any economies of scale enjoyed by firms in Europe and the US, and the greater distance from the world's large markets. As noted, if the low productivity in the low technology industries is a result of these objective reasons, then the specialization in the high technology industries is extremely beneficial and allows the economy to overcome them with ease. However, the Committee to Examine Means to Strengthen Peripheral Areas and Low Technology Industries believed that the objective factors are not the only reason for the low productivity in the low technology industries and therefore increasing investment in R&D in the low technology industries would close the gap to a great extent between Israel and other developed countries.

A combination of government R&D subsidies and an increase in the supply of engineers is likely to increase the productivity of the large plants in the low-technology industries. Moreover, consideration should be given to setting up national R&D centers for the low-technology industries instead of R&D centers in the plants, since most of them are too small.

The firms in the low technology industries which were concerned with innovation were the relatively large firms and they employed a higher percentage of engineers. In the Innovation Survey by the Central Bureau of Statistics, a positive correlation was found between the percentage of engineers and scientists and the concern with innovation. However, the low percentage of engineers and scientists in the low technology and medium-low technology industries—only 3 percent compared with 21 percent in the high and medium-high technology industries, obviously makes

[32] See Box 2.1 in Chapter 2 of this report, and the report of the Committee to Examine Means to Strengthen Peripheral Areas and Low-technology Industries, October 2007.

investment in R&D difficult. A combination of government R&D subsidies and an increase in the supply of engineers is likely to increase investment in R&D in low technology industries and to improve productivity in them. Another dimension affecting the volume of investment in R&D is connected with the size of the plant: the Innovation Survey shows that industrial R&D in Israel is concentrated in the large companies, whereas small industrial companies (operating in the same industry) rarely invest in R&D. Small and medium-sized plants are especially prominent in the low technology (and medium-low technology) industries: half of the workers in the low technology (and medium-low technology) industries are employed in plants that employ up to 99 workers, compared with only a quarter of high technology (and medium-high technology) industry workers. These small and medium-sized plants are notable for their low productivity per worker, their low salaries, and the low percentage of exports in their sales. They are incapable of exploiting the comparative advantage of the economy in R&D and human capital, and the difficulties they have with competing imports are expected to continue increasing. Ideally, government aid to R&D in the low technology industries should be concentrated in plants and companies capable of promoting innovation and R&D to give them a sustainable competitive advantage in the global market—in other words, in companies with the potential for a relatively high volume of manufacturing, which allows them to invest in R&D and to establish an international marketing setup. Consideration should also be given to setting up national R&D centers for the low technology industries instead of R&D at plants, most of which are too small.[33] This is similar to the model used in the agricultural sector in which many small manufacturers operate and the R&D for them is carried out in a centralized fashion by the government.

Since engineers and manufacturing workers are complementary factors of production, a shortage of engineers accelerates the contraction of the number of positions for manufacturing workers and prevents any increase in the productivity of manufacturing workers and of the manufacturing industries. The development of academic colleges in the last decade has greatly increased the accessibility of engineering and computer science studies, but the accessibility of engineering studies at the universities remains restricted.[34] The universities rejected 45 percent of the candidates who wanted to study engineering and computer sciences (2007–2008), and many of those rejected are very high-quality candidates who could have contributed to the advancement of Israeli industry.[35] An interministerial team working in 2012 concluded that there is a shortage of Bachelor's degree graduates

The subsidy of studies toward an undergraduate degree in computer and electronic engineering and in computer sciences should be increased, in line with the recommendations of the interministerial committee. In addition, the subsidy for training engineers and practical engineers for non-high tech industries should be increased.

[33] See a recommendation to this effect in the report of the Committee for the Empowerment of the Classical Industry (2011), The Samuel Neaman Institute.

[34] The number of engineering (and architecture) undergraduates increased from 2,553 in 2000 to 5,918 in 2012. The vast majority of this increase is among college graduates: from 680 in 2000 to 3,000 in 2012. One fifth of engineering graduates in the colleges are graduates of industrial engineering and management.

[35] The average psychometric test grade of those rejected was above 600, achieved by only 30 percent of those tested.

Table 7B.7
R&D expenditure as share of output in selected industries: Israel and OECD average, 2006

	OECD median	OECD average	Israel
Manufacturing	1.5	1.6	2.5
Food, beverage, and tobacco products	0.2	0.3	0
Textiles and their products, leather and footwear	0.4	0.5	0.9
Plastic, chemical, rubber and petroleum products	1.7	3	1.4
Chemicals and their products	3.6	5.3	1.5
Rubber, plastic and their products	0.6	0.9	0.9
Nonmetallic mineral products	0.4	0.5	0.6
Machinery and equipment	2	1.9	6.2
Electronic equipment	1.6	1.9	1.7
Radio, television and communications equipment	7.6	7.9	12.4
Medical and optical equipment	3.5	5.3	8.2

SOURCE: OECD.

in computer sciences and electrical and electronics engineering,[36] and recommended an increase in the number of students in these disciplines in universities. Among the evidence for the shortage found by the team are the high salaries of electrical and electronics engineering and computer science graduates, which are almost double those of accounting, economics and law graduates. Prominent also were the reports from companies of a high number of vacancies for engineers: the ratio between the engineers required and the number of engineers employed is more than double the ratio of general vacancies in the economy. Half of the vacancies for engineers are in software development, and these are generally in the computerization and R&D services industries[37], with fewer in the manufacturing industries. This is due to the rapid increase in the number of those employed in these two service industries (an average annual increase of 6 percent in the last seven years). Increasing the budget to

[36] "The Shortage of Personnel Trained in High Technology, Recommendations of the Interdepartmental Team 2012". The team did not find any shortage in the fields of chemistry, physic and biology and the percentage of those rejected in these fields is not especially high, and the number of applicants to study them in colleges in extremely low.

[37] According to data from the Central Bureau of Statistics, in the second half of 2013 there were 2,784 vacancies for academic professionals in the fields of science and engineering: 1,600 of them in the professional services and science and technology services (among which are the computerization and R&D sectors), 850 of them in industry, and 420 in the other sectors of the economy. Only one third of 750 vacancies for electrical and electronics engineers were in the industrial sector.

universities for undergraduate studies in computer and electronics engineering and in the computer sciences, in accordance with the recommendations of the interministerial team, will allow the rapid growth in exports of computerization and R&D services to continue, the necessity of which is in no doubt. However, increasing the budget for training engineers in other fields (chemistry, mechanics, etc.) may remove an artificial barrier to the growth of the low technology and medium technology industries. Consideration should also be given to supporting the training of skilled workers who are not engineers since the number of vacancies for practical engineers, technicians and ancillary professionals in the fields of science and engineering is not much lower than that of engineers in these fields (2,000 and 2,600, respectively, in 2013).

The contribution of capital grants to the increase of productivity in the low technology industries is small. The government budget for support of the principal industries is intended mainly (about 60 percent) for the support of R&D, activities that are a feature of the high technology industries. Another important part of the support to the principal industries (23 percent) is intended for the encouragement of capital investments and is given overwhelmingly to the low technology and medium technology industrial sectors. The purchase of innovative machinery and equipment may be an important tool in increasing manufacturing productivity, since advanced technology is the mainspring of modern equipment. One of the key criteria for obtaining a grant is the contribution of the investment to increasing employment at the plant, which might conflict with the investments contributing to increased productivity while reducing manpower needs. Yet without an improvement in productivity, the low technology industries become more vulnerable to competition from the rest of the world, and so in the longer term, there is not necessarily a dilemma between subsidizing employment-replacing equipment and increasing employment. Apart from the regular budget for subsidizing investment in physical capital, special grants have been given to the electronics components industry: Since 1996, grants of about NIS 6 billion (NIS 333 million a year in nominal terms) have been given to the industry. The average annual grant to the electronics components industry is similar in size to the total annual budget for the encouragement of capital investments in manufacturing (NIS 354 million a year from 2007 to 2012). The electronics components industry, which employs 5 percent of all those employed in manufacturing at wages similar to the average wage in it, gets high grants because it has no difficulty locating new plants in other countries.

The grants in the Encouragement of Capital Investments Law are intended for the purchase of modern machinery and equipment, and they could well be an important tool in increasing productivity in low-technology industries, since high technology is incorporated in modern equipment.

The main direct contribution of the electronics components industry to the economy comes from its wage payments of NIS 4.2 billion (2012). The balance of the value added (the return on capital) goes overwhelmingly to foreign shareholders.[38] Input and output data for 2006 show that the electronics components industry does not purchase much intermediate material from other industries in the economy (15 percent

[38] The return on capital in the sector is 43 percent compared with 40 percent in the industrial sector as a whole (Tables of Inputs and Outputs 2006). Following an upgrade of the Intel plant in 2012, the added value in the sector increased by 40 percent, while total salaries paid to workers in the sector increased by 2 percent.

It would be appropriate for the grants under the Encouragement of Capital Investments Law to be set with the external advantages of the project in mind, in particular its contribution to increased productivity in the economy and to an improvement in the salaries of those employed in it (especially those in the periphery).

of its outputs) in comparison to that purchased by other manufacturing industries (30 percent of outputs). Consequently, an increase in the industry's output (by one shekel) contributes to increased demand in the market much less than a similar increase in the output of the other manufacturing industries: The indirect coefficient of the electronics components industry is 0.24 compared with 0.46 in manufacturing as a whole.[39] The external advantages to the economy from the activities of the industry do not end with the industry's purchases from other industries; they also include advantages that may be of even greater importance: the transfer of knowledge from the industry to other industries and between firms in the industry, the contribution to an improvement in the human capital of its workers and to the strengthening of the geographical area in which the plants are located, and more. It is important that the grants should be given linked to the cash value of these external advantages, even though there is an inherent difficulty in quantifying them[40], in particular those that benefit firms outside the industry and startups operating in the field. As for the external advantages of other plants in the industry, experience shows that they are not large enough to stimulate the establishment of new plants (in other words, their establishment is still dependent on government subsidy). As for the indirect contribution of a new plant to all the workers in the electronics and computer fields, this contribution is important and significant whenever there is a surplus of manpower in the industry. When there is a shortage of manpower, its contribution depends on the ability of the economy to train additional workers in the professions in which there is a shortfall. It is therefore appropriate that future grants should be determined linked to the external advantages of the plant in relation to the wages paid to its workers and not as a fixed part of the investment in physical capital. This is because grants that are a fixed part of the cost of investment in physical capital encourage physical capital intensive industries and the cost of creating a job in them is relatively high.[41] It is also desirable to develop other sectors in the high technology industry with high productivity and no need of large amounts of physical capital, with parallel subsidies to firms (linked to their external contribution to the economy) and to institutes of higher learning where workers are trained in the relevant professions (linked to the extent of the shortfall in those workers).

[39] The contribution of the electronics components plants established between 1995 and 2006 was apparently less, since the indirect coefficient in the sector fell from 0.35 in 1995 to 0.24 in 2006.

[40] Research to this effect examined the relationship tree of nine old-established Israeli high-tech companies using an historical-genealogical approach, and discovered that those who left the old-established technology companies to join new companies made a valuable contribution to the development of the entrepreneurial trend in the young companies. Four of the old-established companies, founded in the "competitive" period (post 1977), produced larger and stronger relationship trees than those produced by the five companies founded in the "cooperative-institutional" period before 1997. Drori, I.S. Ellis, & Z. Shapira, The evolution of a new industry: A genealogical approach, Stanford University Press (2012)

Research was recently conducted into the integration of those who left Intel into the elite technology industry, with the aim of examining the indirect contribution of that company to the domestic industry.

[41] The proportion of the electronics components sector in investment in machinery and equipment is three times greater than it proportion in employment: the accumulated investment in imported machinery and equipment in the sector was 15 percent of that investment in industry (1995 - 2007), and the sector employs 5 percent of workers in industry.

Government policy does not deliberately discriminate in favor of the high technology industries, but in fact government subsidies are allocated mainly to them. The government budget for the support of the principal industries is aimed for the most part at encouraging research and development in the high technology industries: a sizeable budget goes to encourage capital investments by the electronics components industry (a high technology industry), and in government funding of the higher education system there is an intention to prefer the subjects required by the high technology industries (software and electronics engineering), so as to release the bottleneck that is hindering the development of the high technology industries. The government subsidy should not give priority to the high technology industries, but should be set according to the external contribution of the project (although in practice it is extremely difficult to quantify this contribution). As such, there should be consideration of the spillover of knowledge into other companies (a feature of the high technology industries in particular), but also the contribution towards diversifying the export industries of the economy, reducing salary differences between the periphery and the center, and improving labor productivity and manufacturing workers' wages.

It would be appropriate for the government subsidy to be determined in line with the external contribution of the project, including its contribution to increasing the knowledge and productivity of other firms, to reducing salary gaps between the periphery and the center, and to making the export industries of the economy more varied.

To summarize: government policy applied in a rational fashion to improve productivity in the low technology industries is likely to contribute to greater diversification in the export industries of the economy, to increasing the number of those employed in the export industries, and to increasing productivity and GDP. Such a policy is also likely to blunt the impact of any further exposure of the economy to imports, and thus contribute to an additional increase in productivity and GDP.

7C: MONETARY DEVELOPMENTS WORLDWIDE AND THEIR IMPACT ON ISRAEL'S ECONOMY IN RECENT YEARS

Introduction

In the past decade, the correlation between countries in terms of indicators of economic activity, inflation and other nominal variables has increased.

In the past decade, the correlation between countries—both in terms of indicators of real economic activity and in terms of inflation and other nominal variables—has increased. Of particular note is the increased correlation between advanced economies and developing and emerging economies,[1] and the impact of developments in these two "blocs" on Israel's economy. This phenomenon most probably reflects the opening of the developing markets to capital flows, the shift in these economies to an inflation target and a tendency toward a floating exchange rate, and a decline in their inflation rates relative to past levels.

The development of the volume of trade, the growth rate, and stock prices in Israel over the past decade is well in line with global developments.

These developments were reflected in Israel's economy in several areas. The inflation rate in Israel converged to the low rate of advanced economies. The development of the real sector (the volume of trade and the growth rate of output) in Israel in the past decade is highly correlated with global developments, as are stock prices. Nominal and real interest rates declined in advanced economies as well as in Israel, even though a significant gap between them still remains. At the same time, in recent years the long-term real interest rate declined in Israel by a greater rate than that of advanced economies, so that, in other words, real interest differentials became smaller, which reflects a decrease in the pricing (by the market) of the relative risk of the Israeli economy. The per capita growth rate in Israel, and with it the real interest rate, is still higher than parallel figures in the developed countries.

The liberalization of foreign trade and capital flows in Israel made an important contribution to expanding the volume of trade and growth of the economy, but also increased exposure to external shocks.

The liberalization of foreign trade and capital flows in Israel, as in many other countries, thus contributed greatly to expanding Israel's volume of trade with the world, as well as the growth of the economy. This, however, came at a price—greater exposure of the domestic economy to external shocks. From 1997 through the crisis at the end of 2007, Israel adopted a floating exchange rate policy, which helped to absorb the internal and external shocks and increased the effectiveness of the interest rate tool as the only means for stabilizing inflation. In light of the crises that erupted in several large advanced economies, these countries adopted unprecedented monetary accommodation, and countries that were not directly affected by the crisis, including Israel, suffered as a result from a large volume of capital inflows, very large relative to the domestic financial market. In order to moderate the capital flows, many central banks chose to intervene in the foreign exchange market by purchasing foreign currency and/or by other steps. The Bank of Israel chose to purchase foreign currency in order to strengthen the financial resilience of the domestic economy (by increasing foreign exchange reserves) and to moderate the appreciation of the exchange rate, following a decade in which it had implemented a floating exchange rate and did not intervene in the foreign exchange market.

[1] Hereinafter, "developing economies".

The following section briefly describes the monetary developments that took place worldwide and in Israel up to the outbreak of the crisis at the end of 2007. Section 2 enumerates the accommodative monetary steps adopted by the G4—the United States, the eurozone, Japan and the UK—at the start and in the course of the crisis, and details the impact of these steps on other countries in general and on Israel in particular. Section 3 briefly examines the lessons to be learned from the crisis. At the end, some of the implications and the risks of normalization in monetary policy in advanced economies are noted.

1. SUMMARY OF DEVELOPMENTS WORLDWIDE AND IN ISRAEL UP TO THE OUTBREAK OF THE CRISIS AT THE END OF 2007

The Israeli economy is small and open to trade and to capital flows. An increase in global demand leads to an increase in domestic economic activity and inflation.

Before reviewing developments worldwide and in Israel, the analytical framework that describes the two major channels through which global developments affect the Israel economy—trade and capital flows—is briefly presented. The Israeli economy is small and open to trade[2] and to capital flows. Trade affects both GDP and domestic prices. An increase in global demand makes it possible to increase exports (among other things, by facilitating penetration into new markets), which in turn leads to an increase in domestic activity. But it can also reasonably be assumed that this will lead to a rise in global prices and to an increase in the import prices of products and raw materials, which in turn will lead to increased domestic prices. An increase in global demand thus acts to increase GDP and prices in the domestic economy. Regarding capital flows to and from the economy, an increase in the relative attractiveness of investing in the domestic economy—for example, as a result of a decline in interest rates worldwide[3]—acts to increase capital flows into the economy and to the strengthening of the shekel relative to a basket of other currencies, and this appreciation, for its part, acts to reduce the profitability of exports and to increase in the worthwhileness of imports. This leads to a moderation of exports and an expansion of imports, and thus to a moderation of GDP. This appreciation also leads to imports becoming less expensive, and therefore to a decline in domestic prices (or to moderation in their rate of increase). In reaction to a decrease in activity and prices, the central bank will lower the interest rate. It emerges, therefore, that with regard to capital inflows, a decline in global interest rates, in and of itself,[4] leads the Israel economy in the direction of moderation of activity and of prices, which is ultimately reflected also in a decline in the domestic interest rate.

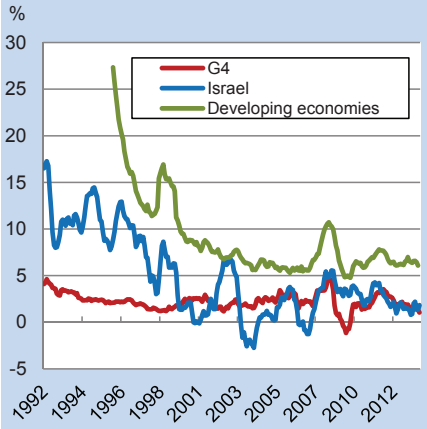
[2] The weight of imports in GDP is about 32 percent, and the weight of exports in GDP is about 33 percent.

[3] Or as a result of a relative increase in the expected domestic growth rate, or a decline in the relative risk of the domestic economy.

[4] A decline in the global interest rate also leads to an increase in global activity, which contributes to increasing exports and activity in the domestic economy (see below as well).

In the period from 1992 up to the crisis at the end of 2007, a stable inflation rate of about 2 percent prevailed in advanced economies. In contrast, in developing countries and in Israel, the inflation rate was much higher, especially at the beginning of the period. From 1995 to 2005, many developing countries introduced programs for reducing the inflation rate as part of the transition to an inflation targeting regime, as a result of which their rate of inflation fell consistently, reaching a rate of about 5 percent (Figure 7C.1). At about the same time, Israel also introduced a program of this kind, and since 2000 it has a similar inflation rate to that of advanced economies, even though until the crisis of 2007, inflation here was more volatile. Note in this context that inflation in developing countries declined also due to a decline in the prices of commodities of which East Asian countries increased their exports at that time. In the wake of the decrease in inflation in these countries, their central banks gradually reduced interest rates (Figure 7C.2) and this reduction was reflected also in a decrease in market interest rates (Figures 7C.3 and 7C.4).

Figure 7C.1
Consumer Price Index: Rate of Change in the Past 12 Months, Israel, G4 Countries, and the IMF's Aggregate of Developing Economies (monthly data), 1992–2013



SOURCE: Bloomberg and the IMF.

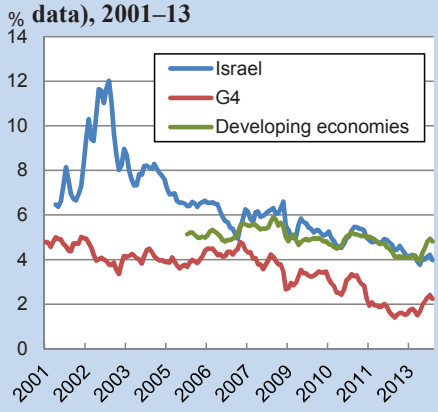
Figure 7C.2
Central Bank Interest Rate: Israel, G4 Countries, and Aggregate of Developing Economies[a] (monthly data), 1998–2013

[a] The weighted average of China, Russia, Colombia, India, Poland, Hungary, South Africa, Argentina, Malaysia, Chile and Brazil.
SOURCE: Bloomberg.

The volume of international trade has been increasing for several decades in the wake of the gradual removal of trade restrictions. Following the removal of these restrictions, and in parallel with a decline in inflation, Israel and many developing countries introduced liberalization policies that mainly entailed the removal of restrictions on capital flows. The liberalization contributed to further growth in international trade volume and to growth in direct investments, but it led also to an increase in the sensitivity of capital flows to yield differentials. This was reflected in, among other things, the strengthening of the correlation between real and nominal developments in countries, as expressed in the correlation between GDP growth rates and trends and

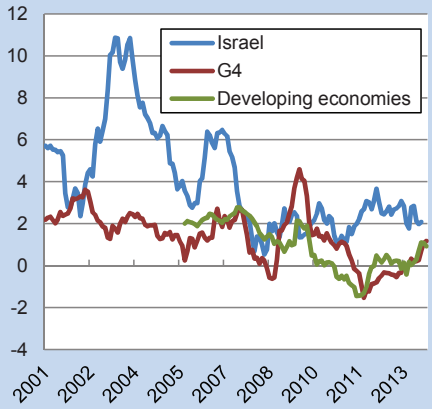
fluctuations of stock prices. Figures 7C.5 to 7C.7 and Table 7C.1 indicate that in the past decade the connection between different countries, and between Israel and the world, have strengthened both in nominal and real variables.[5]

Figure 7C.3
Yields on 10-Year Unindexed Bonds: Israel, G4 Countries, and Aggregate of Developing Economies[a] (monthly data), 2001–13



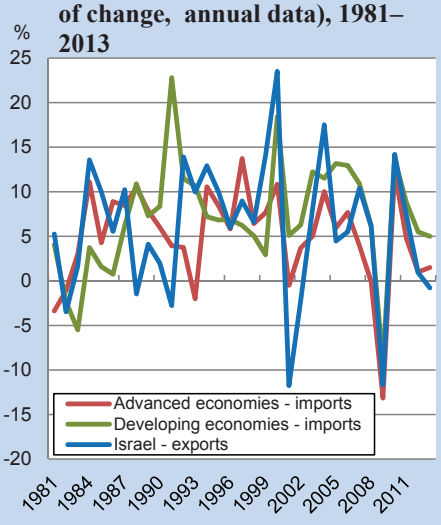
[a] Weighted average of Hungary, Brazil, China, India, Malaysia, Mexico, Poland, Russia, South Africa, Thailand and Chile.
SOURCE: Bloomberg and IMF.

Figure 7C.4
Real[a] Yields on 10-Year Bonds: Israel, G4 Countries, and Aggregate of Developing Economies[b] (monthly data), 2001–13



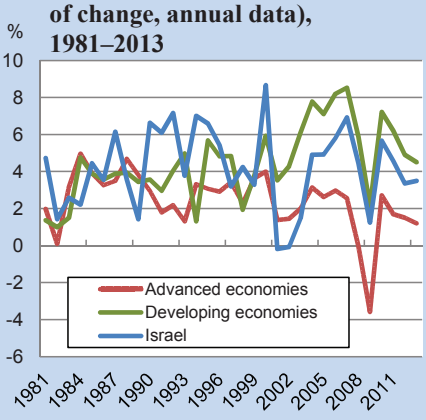
[a] For G4 and developing economies, nominal yield net of inflation in the past year. For Israel, yield to maturity on CPI-indexed bonds.
[b] Weighted average of Hungary, Brazil, China, India, Malaysia, Mexico, Poland, Russia, South Africa, Thailand and Chile.
SOURCE: Bloomberg and IMF.

Figure 7C.5
Israel's Exports and the Imports of IMF Aggregates of Advanced and Developing Economies, (rate of change, annual data), 1981–2013



SOURCE: International Monetary Fund.

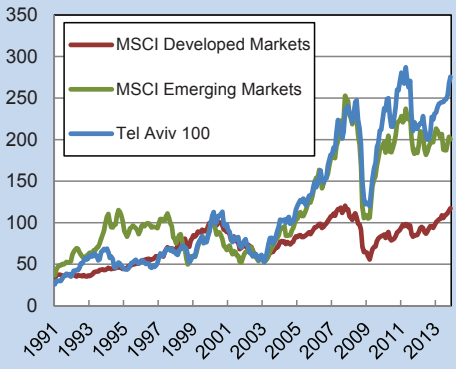
Figure 7C.6
Gross Domestic Product: Israel and IMF Aggregates of Advanced and Developing Economies, (rate of change, annual data), 1981–2013



SOURCE: International Monetary Fund.

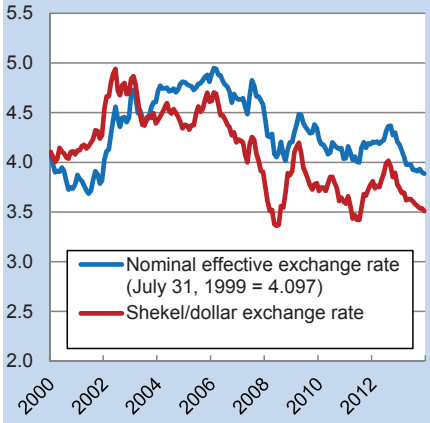
[5] Of course the crisis of the end of 2007 contributed to strengthening the correlations, but the strengthening took place also in the subperiod prior to the crisis (that is, from 2000 to 2007).

Figure 7C.7
Share Price Indices: Israel and Aggregates of Advanced and Developing Economies, (monthly average of daily data, 1991–2013) (2000 = 100)



The share price indices are calculated in dollar terms.
SOURCE: Based on Bloomberg.

Figure 7C.8
Nominal Effective Exchange Rate and Shekel/Dollar Rate (monthly average of daily data) 2000–13



SOURCE: Bloomberg and the IMF.

Table 7C.1
Correlation coefficients between growth rates of trade volume[a], GDP, and stock prices: Israel and abroad, 1981–2013

	Israel vis-à-vis advanced economies	Israel vis-à-vis developing economies	Advanced vis-à-vis developing economies
Trade volume			
1981–1999	0.30	-0.09	0.07
2000–2013	0.82	0.82	0.95
GDP			
1981–1999	-0.08	0.14	0.40
2000–2013	0.57	0.72	0.74
Stock prices			
1981–1999	0.03	0.46	0.40
2000–2013	0.90	0.93	0.90

[a] Israel's exports vis-à-vis the imports of advanced economies and developing economies.
SOURCE: Central Bureau of Statistics and IFS data.

The very existence of international trade links could explain the positive correlation between countries regarding growth rates and inflation rates. These connections, as well as the existence of capital movements, may also explain the positive correlation between the developments of interest rates and asset prices in various countries. This correlation, however, intensified from 2000 onward, and this phenomenon should be explained. Starting in 2001, in response to a cyclical economic slowdown, the

United States and other advanced economies[6] adopted an accommodative monetary policy, which was reflected in substantial lowering of the monetary interest rate and maintaining it at a low level until mid-2005. There is a claim that this led to considerable monetary accommodation in developing countries as well.[7] Research by economists at the Bank for International Settlements indicates that from the start of the previous decade until the crisis that broke out at the end of 2007, both the advanced economies and developing countries adopted an accommodative policy in the sense that the monetary interest rate was lower, sometimes significantly so, than that derived from the Taylor rule—that is, the rule according to which the central bank's interest rate responds to divergences of actual inflation from its target, and to the gap between GDP and its trend.[8] A further indicator of monetary expansion in the two blocs is that the real interest rate (the central bank's interest rate net of inflation) was lower than the per capita GDP growth rate in both advanced economies and developing countries.[9]

This result—namely, a prolonged deviation from the Taylor rule together with the perseverance of real interest lower than the growth rate—does not necessarily attest to over-accommodation. The result could also be interpreted as an adjustment of policy to a negative shock that acted as a slowdown in advanced economies and led to a decline in the expected growth rate in developing countries as well. Support for this could also be seen in the fact that the monetary accommodation did not lead to high inflation, at least not in advanced economies. However, whether this was a case of over-expansion or an appropriate response of monetary policy to a negative shock, the accommodation in advanced economies was met by powerful accommodation in the developing countries. A possible explanation for this powerful response is the desire of the developing countries to moderate the appreciation that took place in the exchange rate as a result of the growth in interest rate differentials and growth differentials. Reducing the interest rate can serve as a substitute to appreciation in balancing the capital flows. The other substitutes that some countries adopted at the time included purchasing foreign currency or restricting capital flows.[10]

The international monetary expansion that was adopted between 2001 and 2005 was reflected in, among other things, a substantial increase in stock prices, particularly in the developing countries but also in advanced economies. This process began in

The international monetary expansion that was adopted between 2001 and 2005 was reflected, among other things, in a substantial increase in stock prices and home prices in many countries.

6 Particularly the other members of the G4 group.

7 See: Dong and Robert (2013): "Transmitting Global Liquidity to East Asia", BIS working paper No. 431, and John Taylor (2013): "International Monetary Policy Coordination", BIS working paper No. 437.

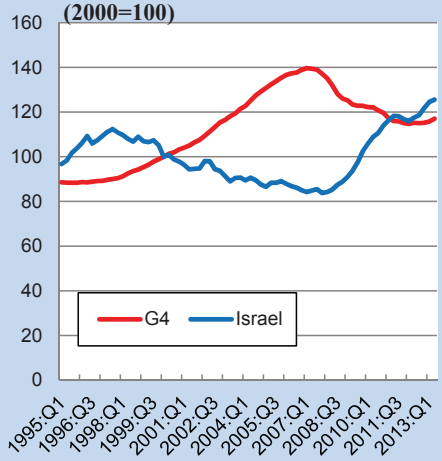
8 See: Hofman and Bogdanova (2012): "Taylor Rules and Monetary Policy: A Global 'Great Deviation'?", BIS Quarterly Review, September 2012. Many research studies found that in the 1980s and 1990s, monetary policy in many countries was in line with the interest rate derived from the Taylor rule. Therefore, the rule became an acceptable way of evaluating monetary policy. A good and clear explanation of the rule appears in the article quoted here.

9 Caruana (2012): "International Monetary Policy Interactions". speech to the SEACEN-CEMLA Conference, Uruguay.

10 Some economies purchased foreign currency even prior to the crisis of the end of 2007 in the wake of the expansion in the advanced economies. A diagram arranged by country, and a description of the steps adopted by certain countries to moderate the capital movements appears in the box published in the Monetary Policy Report for the first half of 2013.

2003 and reached a peak toward the end of 2007. In the United States and other countries this was reflected also in a sharp rise in mortgage volume and house prices (Figure 7C.9). In 2005, in response to the recovery of the Western economies from the recession of the start of the decade, the Federal Reserve (the Fed)—as well as other central banks—started to increase interest rates, a process that continued until the end of 2007. As a result, many borrowers found it difficult to repay loans. For this, and for other reasons, a financial crisis erupted toward the end of 2007, starting in the United States, and strongly affecting the eurozone and other advanced economies, and spilling over to the rest of the world. There is a claim that the low interest rate that prevailed worldwide for a long time led to over-creativity in the development of financial assets whose pricing was difficult to assess, and to a considerable increase in credit without appropriate collateral, thus contributing to the creation of imbalance in the financial markets and ultimately to a crisis. Another possibility is that the crisis was an outgrowth of the failure of regulation and control on the part of those countries in the eye of the storm, and this failure facilitated the development of the financial imbalance.[11]

Figure 7C.9
Home Price Index, Israel and G4 Countries, 1995:Q1-2013:Q2 (2000=100)



SOURCE: OECD.

The monetary accommodation adopted worldwide from 2001 to 2005 is not evident in the data on the Israeli economy, because at that time Israel was experiencing intense internal shocks.

The monetary accommodation adopted worldwide from 2001 to 2005 is not evident in the data on the Israeli economy, because at that time Israel was experiencing internal shocks whose intensity overshadowed global influences. At the end of 2001, against the background of the continuing slump in the domestic economy and the continuing slowdown in the global economy, the Bank of Israel unexpectedly reduced the interest rate by 2 percentage points. This step was adopted in a period of sharp growth in the government's deficit and in fund raising, a period of disagreement between the government and the central bank regarding the extent of the Bank's commitment to the inflation target, and a high risk premium as a result of the security tension prevailing at the time. In these conditions, the monetary and the fiscal expansion led to a sharp and prolonged depreciation of the shekel in the first half of 2002, and to a sharp increase in inflation, inflation expectations, and market interest rates. In order to restore stability to the markets, the Bank of Israel had to drastically increase the monetary interest rate and maintain an especially high interest rate in 2002 and 2003. During 2003, inflation was checked and confidence restored, and the Bank of Israel began to reduce the monetary restraint. In 2004, the interest rate was markedly lowered, and the low level was maintained in 2005. Later, in 2006 and 2007—against

[11] See references in Taylor (2013) and Hofman and Bogdanova (2012).

the backdrop of the rapid growth and interest rate increases worldwide—the Bank of Israel also increased the interest rate, in line with market conditions. An examination using the Taylor rule of the way in which the monetary interest rate in Israel developed in the past decade shows that until the crisis of the end of 2007, developments matched the development derived from the rule. From the beginning of 2008 until 2013, the interest rate was lower than that derived from the rule,[12] which matched the situation in other developing countries.[13]

2. THE MONETARY ACCOMMODATION ADOPTED BY THE G4 SINCE THE OUTBREAK OF THE CRISIS AND ITS IMPACT ON DEVELOPING ECONOMIES[14] AND ON THE ISRAELI ECONOMY

Most of the central banks in the countries that were directly affected by the crisis (particularly the G4) rapidly reduced monetary interest rates to near zero in the first year of the crisis. When this tool was exhausted, many central banks were forced to stabilize the economy using alternatives to the conventional interest rate tool.

In the first year of the global crisis, which broke out at the end of 2007 and still continued in 2013, most of the central banks in the countries that were directly affected (particularly the G4) rapidly reduced monetary interest rates to near zero, with the Federal Reserve leading the trend. When this tool was exhausted (and for other reasons elucidated below), many central banks were forced to stabilize the economy with the help of alternatives to the conventional interest rate tool. These alternatives, known in the economic literature as "unconventional monetary policy",[15] were designed to achieve two goals: to reinstate the proper functioning of the asset and credit markets, and to reduce market interest rates (relative to the central bank's interest rate).[16]

These conventional and unconventional tools acted to reduce interest rates in the markets (lowering the yield curve) and created expectations among the public that the expansionary policy would persist for longer than "usual".[17] In the countries in question these steps led to moderating the decrease in demand, in activity (stabilizing the real economy), and in prices of financial and real assets (including equities and homes).

The accommodative steps led to a moderation of the decline in demand and in activity in these countries, and impacted on the prices of financial and real assets (including equities and homes).

[12] For more details see Chapter 3 of this report and the 2012 Annual Report.

[13] Or in the advanced economies that did not need to lower the interest rate to around zero.

[14] The developing countries are referred to in this context for reasons of convenience. It would have been preferable to separate the countries that were directly and strongly affected (mainly the G4) and those that were affected indirectly and relatively less. The latter include the developing countries, but also quite a few advanced economies, such as Israel, Sweden, Norway, Switzerland, Australia and Canada.

[15] Details of this policy appear in the box published in the Monetary Policy Report for the second half of 2013.

[16] The means used to achieve these goals can be classified into four types: 1. Directed supply of liquidity—to the banks, nonbank institutions, and specific markets; 2. Purchasing private financial assets—mortgage-backed securities, corporate bonds, and tradable securities; 3. Purchase of long-term government bonds ("quantitative easing"); and 4. Improving communication with the public through "forward guidance"—a commitment, depending on developments, to maintain a low interest rate over time. The first two steps are designed to achieve the first goal, reinstating the proper functioning of the markets, and the latter two to achieve the second, reducing market interest rates (lowering the yield curve) relative to the central bank's interest rate. All four, however, assist in achieving the two goals.

[17] The "usual" time span is the average time span, after World War II, necessary to emerge from a typical recession—up to two years.

The monetary accommodation in advanced economies generally had a positive impact on developing markets and on the Israeli economy.

In the wake of the crisis in the G4, the relative risk of investing in those countries increased. As a result, the capital flows to the economies that did not reduce the interest rate to the same extent, including Israel, intensified, leading to an appreciation of their currencies. In response, the central banks in these economies lowered the interest rate.

In order to moderate the appreciation, some of the countries purchased foreign exchange on a large scale. Other countries used different tools, such as taxing capital flows.

The monetary accommodation in advanced economies generally had a positive impact on developing markets and on the Israeli economy, because it reduced the restraining effect of the crisis on the countries that were not in the eye of the storm. But it also had consequences for capital flows to these countries.

In the wake of the crisis in the G4, the relative risk of investing in those countries increased, their expected growth rate declined, and the gap between this rate and the expected rate in the other countries increased. These factors, in and of themselves—that is, even without the monetary expansion—should have caused capital flows from the G4 to other countries. To this was added the effect of reducing the interest rate in the G4, which greatly intensified capital flows to the economies that did not reduce the interest rate.[18] This was reflected in these economies (including Israel) in the appreciation of the domestic currency, which in turn led to a slowdown in inflation and in expected inflation, and also to a slowdown in exports and in activity. In some of the economies, Israel as well, the pressure for appreciation was far stronger than the force derived from the increase in interest rate differentials. In order to moderate the appreciation, to reduce the deviation of the inflation from the target and encourage exports and activity, the central banks in these economies lowered the monetary interest rate,[19] which in turn lowered their market interest rates. Bond purchases by advanced economies, which affected the matching of the asset portfolio of financial bodies,[20] also worked toward reducing market interest rates.

The economies that were not in the eye of the storm, however—namely, the developing economies, Israel and advanced economies not directly affected by the crisis—were less negatively impacted than the G4 (and other advanced economies in the eye of the storm), and thus a smaller reduction in interest rates was required from them than from the G4. The increase in interest rate differentials that accompanied the increased spreads in the expected growth rate was reflected in the prolonging of the capital flows and the pressure for appreciation in the developing countries in general and in Israel in particular.[21] In order to moderate the appreciation, some of the countries purchased foreign exchange on a large scale.[22] Other countries used different tools, such as taxation on capital flows.

[18] Capital movements reflect, among other things, the process of matching the composition of the asset portfolio of the investors in the various countries.

[19] It should be noted that a decline in market interest rates can take place in the domestic market even without capital flows. The very existence of potential for capital flows, and the public's familiarity with the central bank's way of operating, could act to decrease interest rates in the market even prior to the capital flows, and the decrease itself moderates the capital flows.

[20] When the central bank in the countries of origin purchases long-term government bonds, this reduces the inventory of this type of bond. If financial bodies in the countries of origin need long-term bonds, they tend to purchase them in the developing economies, thereby acting to reduce the long-term interest rates in these countries. This effect is added to the impact regarding the short-term interest rate.

[21] The surplus in the current account of the balance of payments, which characterized Israel and some of the developing countries at that time, also contributed to the appreciation.

[22] Among them, Denmark, South Africa, Hungary, the Philippines, Malaysia, Poland, Sweden and Switzerland.

These countries wished to moderate the appreciation, among other things, because considerable appreciation, even if temporary, is liable to have long-term negative repercussions on exports and GDP, because time and resources need to be invested in order to find markets abroad and to develop trade links with importers. But several developing countries had an additional motivation: the interest rate differentials vis-à-vis key countries acted also to increase the demand for foreign credit, and with it a change in composition of the liabilities of these economies, leading to increased risks to their financial stability. In some of the countries this also contributed to an "over-increase" in credit and in housing and stock prices. It also seems that in several developing countries, the appreciation's negative effect on exports and GDP overcame the positive effect of the interest-rate reduction in advanced economies (this affects GDP in advanced economies, and through this, GDP in the developing countries).[23]

The Bank of Israel chose to purchase foreign exchange in order to strengthen the financial resilience of the domestic economy and to moderate the appreciation of the shekel.

Regarding Israel, from the start of the global crisis capital flows into the economy intensified, with corresponding appreciation pressures (Figure 7C.8), as a result of the expansionary steps adopted worldwide and the reduction of the relative risk of the domestic economy. Initially, the Bank of Israel responded by reducing the interest rate relatively moderately and by starting to purchase foreign currency. The moderation was due to the fact that the level of demand and the inflation expectations at the time were high relative to those prevailing in other advanced economies. The purchase of foreign currency was a result of the need to increase the reserves in order to strengthen the resilience of the economy, and this action was consistent with the need to moderate the appreciation of the shekel. At a later stage the Bank adopted unconventional measures that were designed to support the proper functioning of the money market and the credit market.[24]

As the global situation deteriorated, the Bank of Israel reduced the monetary interest rate from 4.25 percent in September 2008 to 0.5 percent in April 2009.

During 2008, as the global situation deteriorated (including the collapse of Lehman Brothers), the growth rate of domestic demand declined greatly and the danger of inflation decreased, the Bank of Israel initiated more aggressive accommodation: it lowered the monetary interest rate from 4.25 percent in September 2008 to an effective minimum level of 0.5 percent in April 2009. The central bank also activated an additional tool—purchases of government bonds.[25] Starting in September 2009, against the backdrop of an improvement in activity and a high level of inflation expectations, the Bank began to gradually raise the interest rate, to a level of 3.25 percent in June 2011; this development contributed to increasing appreciation forces, particularly in 2010, but the pressure continued in 2011 as well.[26] Later, the growth

[23] Taylor (2013) indicates that this result occurs in Latin American and East Asian countries, according to the GPM6 model that was developed in the IMF.

[24] Details of the steps and the tools can be found in the Bank of Israel Annual Reports from 2009 to 2011.

[25] An accumulated amount of NIS 18 billion, for a limited period (between February and September 2009).

[26] Contributing to the pressure were the announcements of the natural gas discoveries in 2009 and 2010.

rate of activity decreased, and during 2012 and 2013 the Bank of Israel resumed the gradual lowering of the interest rate, to 1 percent in October 2013.

From the end of 2007 both rents and home prices seemed to be increasing, probably reflecting a shortage of residential homes. The drastic reduction of the interest rate at the end of 2008 and the beginning of 2009, and the low level of the interest rate later, helped to accelerate the rise of home prices (see Figure 7C.9) and a substantial rise in the ratio between home prices and rent, supported by the large and continual growth in the volume of mortgages. The marked increases in home prices and in mortgage volume were among the major factors underlying the financial crises that hit several countries in recent years, and on the basis of this experience, the Bank of Israel adopted several macroprudential measures over the years to ensure the quality of the banks' mortgages portfolio.[27] As noted, an additional factor contributed to the increase in home prices, namely, a shortage in housing services as a result of a low level of activity in previous years. The shortage was reflected in a substantial and continuous rise in rents, which in turn raised the rate of inflation as measured by the CPI, which later necessitated raising the interest rate.

This development—a rapid increase in asset prices, including home prices, in the wake of monetary accommodation—is not unique to Israel. The monetary expansion adopted worldwide between 2001 and 2005 led to home price appreciation in many countries. In some of them (particularly those not in the eye of the storm) home prices continued to soar even after the outbreak of the crisis in 2007. The developments in home prices are shared by many countries, and they reflect also the global impact of the monetary policy that was adopted after the crisis. Table 7C.2 presents the real increase (a) in home prices, (b) in rent, and (c) in price relative to rent both in the period prior to the outbreak of the crisis at the end of 2007, and in the period following it, and relates to Israel and other OECD members which saw a real rise in home prices since the crisis. The table also presents the cumulative change in the interest rate in each of the countries in the two years following the outbreak of the crisis.

Home prices in Israel increased in the years following the outbreak of the crisis by an exceptional extent relative to the increase in several other countries that were not directly affected by the crisis. However, the cumulative increase in the years 1999 to 2013 is significantly lower than that recorded in most of the other countries.

The table indicates that since the crisis, Israel leads the increase in home prices and rent by a substantial margin over other countries. Particularly salient is the exceptional development of rents, a reflection of the fact that Israel has a shortage of housing services relative to the other countries. A comparative examination of the development of prices relative to rent—a component which reflects the influence of monetary expansion, domestic and global, on home prices—indicates that its development is less exceptional than that of rent. Comparing the development of home prices (relative to rent as well) over the whole period shows that Israel is in third place from the bottom, above Germany and Austria. Particularly noteworthy is the substantial increase that took place in home prices (relative to rent as well) in Norway, Canada, Belgium, Australia and Sweden in the period preceding the crisis (1999 to 2007), a period characterized, as noted, by global monetary expansion. These countries were not in the eye of the storm, and the real increase in home prices continued in them even after

[27] For details, see Section 7A of this chapter (the housing market).

Table 7C.2

The real increase[a] in home prices and rents in the past decade, and changes in the monetary interest rate around the start of the crisis: selected OECD members[b]

	Real change in home prices	Real change in rents	Change in home price/rents ratio	Real change in home prices	Real change in rents	Change in home price/rents ratio	Real change in home prices	Change in the monetary interest rate
	2007:Q4–2013:Q2			1999:Q4–2007:Q4			1999:Q4–2013:Q2	2007:Q4–2009:Q4
Israel	49.9	19.1	25.9	-20.3	-9.8	-11.7	19.4	-3.00
Switzerland	26.8	7.4	18.0	10.8	4.9	5.6	40.5	-2.75
Austria	21.7	5.6	15.3	-2.1	6.4	-7.9	19.2	-3.75
Norway	15.7	4.0	11.3	65.7	10.5	50.0	91.8	-3.50
Germany	13.1	-1.3	14.7	-16.6	-2.7	-14.3	-5.7	-3.75
Canada	12.0	0.7	11.2	67.4	-2.6	71.8	87.5	-3.50
Luxembourg	8.6	1.2	7.3	---	---	---	---	-3.75
Belgium	5.9	-1.9	7.9	56.7	-1.8	59.6	66.0	-3.75
Australia	1.7	15.0	-11.6	79.1	3.0	73.8	82.1	-4.00
Sweden	0.8	4.0	-3.1	81.0	4.5	73.2	82.5	-3.00

[a] Relative to the Consumer Price Index. Change in prices and rent is in percent. Change in interest rate is in percenrtage points.

[b] The countries in which there was a positive real increase in home prices since the start of the crisis.

SOURCE: Central Bureau of Statistics and OECD data.

the outbreak of the crisis. It can be concluded that despite the exceptional increase recorded in home prices in Israel in the years following the outbreak of the crisis—an increase that also took place in other countries that were not directly affected by the crisis—the cumulative increase in the years 1999 to 2013 is significantly lower than that recorded in most of the other countries appearing in the table.

3. MONETARY LESSONS TO BE DRAWN

Several lessons can be drawn from the developments that took place in the world since the start of the millennium, and particularly since the outbreak of the crisis. In a small and open economy like Israel, it seems that usually—even in periods of financial or real crisis—implementing a policy of a floating exchange rate alongside the use of the traditional tool of monetary interest rate, provides an effective framework to stabilize inflation and moderate GDP fluctuations (relative to potential GDP). However, when a powerful global shock occurs, countries that are not directly affected are liable to be influenced by capital movements whose volume is very large relative to what the domestic financial market is able to absorb. In this case it may be necessary to intervene in the foreign exchange market in order to moderate the volume of capital movements or their effect on appreciation of the domestic currency.

With regard to countries directly affected by the crisis, massive monetary accommodation, including the extensive use of unconventional tools, helped greatly in stabilizing the economies.

With regard to countries directly affected by the crisis, one of the lessons to be drawn is that massive monetary accommodation, including the extensive use of unconventional tools, helped greatly in stabilizing the economies. The different economies apparently needed to adopt macroprudential measures to reduce the danger of creating further financial crises. At the same time, while it is necessary to make use of the macroprudential tools in routine times as well, the unconventional tools should generally be restricted to emergency situations. This is because their use is designed to deal with the defective functioning of the financial markets as a result of a crisis. In regular times, when the markets are operating efficiently, this kind of intervention is unnecessary. Another reason is that the use of unconventional tools is liable to cause losses to the central bank, the handling of which may require coordination with the fiscal authority.

Low interest rates over time are liable to create an imbalance in the asset markets.

Another lesson to be drawn is that low interest rates over time, even if they do not cause inflation, are liable to create an imbalance in the development of the asset market and its functioning. Macroprudential measures play an important role in preventing distortions of this kind from affecting financial stability. In this context it should be mentioned that the time that elapses until the recovery from a financial crisis is generally longer than that required to recover from a typical cyclical recession. The time that has elapsed—and is expected to elapse—until the recovery from the current crisis is particularly long, seeing that at this stage the US Federal Reserve is not expected to increase the interest rate before the end of 2015.

4. NORMALIZATION IN ADVANCED ECONOMIES AND ITS POSSIBLE IMPLICATIONS ON DEVELOPING ECONOMIES AND ON THE ISRAELI ECONOMY

The effect of monetary expansion was analyzed above. The current accepted global assessment is that during 2014 and even more so in 2015 the growth rate worldwide will increase and the Federal Reserve (and later other central banks) will begin tapering their asset purchases; in other words, a process is expected of reducing the volume of monetary injection, and with it an expected gradual increase in market interest rates.[28] Later, the central banks are expected to begin raising monetary interest rates. An increase in market interest rates in advanced economies and the reduction of liquidity in the world is expected to lead to a rebalancing of the global financial markets.

And indeed, in April and May 2013 expectations began to develop in the markets that the Federal Reserve would start tapering at the end of 2013. This was reflected in a significant increase of long-term interest rates in the United States. For example, the yield to maturity of 10-year US Government notes increased between May and

[28] In December 2013 the Fed decided to reduce the monthly volume of bond purchases by $10 billion, starting in January 2014.

August by about one percentage point. This development led to capital flows from the developing countries to the United States and to other advanced economies, and with them—to depreciation in the exchange rate, an increase in interest rates, a decline in stock prices and a slowdown in the expected growth rate in some of the developing countries. The above developments had a moderate effect on the Israeli economy. In May, long-term interest rates increased somewhat and the shekel depreciated. However, the long-term interest rate decreased later and the appreciation in the shekel resumed (see details in Chapter 3).

This pattern of development in the developing countries will not necessarily recur in the future (when the interest rates continue to rise), because the last event expressed mainly expectations of an increase in the interest rate and the short-term effect of the interest-rate increase on capital movements. The increasing of interest rates in advanced economies also has an expansionary influence on developing countries—the depreciation increases the exports of the latter—even though this is manifested with a certain lag. Furthermore, it is reasonable to assume that the increase in market interest rates in advanced economies will constitute a response to the process of the growth of activity there, and growth of this kind is likely to have an expansionary influence also on activity in the developing countries.

The resilience of the various countries to the negative consequences of an interest rate increase in the advanced economies is to a large extent dependent on the macroprudential situation in each country.

In any event, the resilience of the different countries to the negative consequences of the tapering of monetary accommodation in the G4 (including the possibility of a significant interest rate increase) is dependent on the macroprudential situation in each country, as reflected in several key factors, including the current account deficit, the government deficit and debt, the economy's external debt, the exchange rate regime, the extent of the expansion that took place in recent years in the central bank's balance sheet (the growth in the foreign exchange reserves and the volume of asset purchases), and the level of asset prices and credit.

In recent years, as a result of the financial crisis, some countries experienced a substantial increase in their government deficit and in public debt. A significant increase in the interest rate implies an increase in the cost of rolling over debt, and if the deficits will not decrease, it is liable to pose difficulties for the recovery of these economies. In Israel, since 2003 public sector debt (relative to GDP) has been in an almost continuous trend of decline, a trend that continued after the outbreak of the crisis as well. In 2013, public debt continued to decrease and reached 67.5 percent of GDP—due to, among other reasons, the consolidation measures that were adopted in the middle of the year, in advance of the decision on the budget for 2014. Currently, Israel's debt level is low relative to the average of the other OECD members, but the country's interest rate is higher (reflecting relatively high risk). If the interest rate on bonds increases significantly, it will lead to an increased debt burden.

An increase in the interest rate in advanced economies could result in depreciation of the currency in developing countries.

An increase in the interest rate in advanced economies could result in depreciation of the exchange rate in developing countries, which, in turn, could lead to an increase in the inflation rate, which would necessitate raising the interest rate in those economies. In Israel, credibility has been gained with regard to policy makers' commitment to fiscal targets and an inflation target, and the country also maintains a relatively high level of

foreign exchange reserves, which reduces the concern of a sudden large depreciation. In any case, Israel's economy has been characterized in recent years by appreciation forces[29], apparently even excess appreciation forces (that is to say, beyond the extent derived from fundamental conditions), which has created difficulties for the export sector. A rise in the interest rate in advanced economies could moderate these forces.

The Bank of Israel's foreign exchange purchases in recent years were reflected in a sharp increase in banks' reserves deposited with the Bank of Israel as interest-bearing shekel deposits. Currently the interest rate on these deposits is low, as is the interest received from abroad on investing the foreign exchange reserves. These deposits are likely to remain in the Bank of Israel if the banks don't choose to utilize them in order to increase credit in the economy. As long as the interest rate increase here is a response to a rise in the interest rate worldwide, and the interest rate differentials are not large, the Bank of Israel is not expected to incur a significant loss. A loss of this kind could be caused if for any reason the interest rate here rises substantially relative to interest rates worldwide.[30]

In recent years mortgage volume and home prices in Israel have increased greatly. A rapid increase in interest rates implies a growth in borrowers' repayment burden. This could lead to a decline in home prices. As noted, in order to reduce the expected risks to borrowers and to the banking system from this development, the Bank of Israel has adopted several macroprudential measures in recent years aimed to ensure the quality of the banks' mortgage portfolio.[31] At the same time, a development of this kind—that is, a decline in home prices against the backdrop of an increase in interest rates, is liable to lead to moderation in demand and in economic activity.

[29] Due to the gas discoveries, among other reasons.

[30] It should be noted that this is largely a theoretical discussion. In practice, monetary policy makers are not motivated by considerations of losses or profits created by their actions, but rather by the benefit to be derived by the economy.

[31] For details see Section 7A of this chapter (the housing market).