

Recent Economic Developments 140

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Recent Economic Developments is published every half year. The **first part** includes a macroeconomic review and a fiscal survey. The macroeconomic review describes the main economic developments which occurred during the period covered in the publication, and then focuses on a current economic issue; it is not a wide-ranging description and analysis of current economic developments. The fiscal survey analyzes fiscal developments in light of the budget targets, and from a long term perspective. This is intended to complement, rather than replace, the comprehensive analyses that appear in the Bank of Israel Annual Report. The **second part** of the publication presents analyses by the Research Department of relevant topics in Israel's economy.

Part 1: Economic Developments and Fiscal Survey

Main economic developments

The growth rate of Israel's economy fluctuated markedly in the six months between April and September (the period under review). In the second quarter of the year (April to June), the economy showed no growth, and in the third quarter (July to September) the rate of growth increased to 2.1 percent, approaching the basic growth rate in the past two years—2.5 percent.¹ Several indicators show that some acceleration in growth occurred in the fourth quarter of the year. Growth rates of private and public consumption—two components that led the growth of the past two years—showed similar variance in the period under review. Private consumption increased by only 0.9 percent in the second quarter, and by 2.5 percent in the third quarter, while public consumption increased by 1.2 percent in the second quarter and by 3.5 percent in the third quarter. The changes in private consumption growth mainly reflected the variability in the consumption of semi-durable goods, while current consumption increased at a rapid pace over the entire period, and durable-goods consumption declined. Alongside the variability in consumption, there was also variability in goods and services exports, which declined by 11.3 percent in the second quarter and increased by 9.1 percent in the third quarter. Over the entire period under review, exports declined by 3.4 percent, mainly due to weak global demand and to appreciation of the shekel, and possibly also due to the strike at Israel Chemicals Ltd. At the same time, total imports declined by 6.2 percent, mainly in the goods component. Fixed capital formation continued to stagnate, similar to the past two years, but investment in construction showed renewed growth (1.8 percent) after a slowdown in 2014. See below in the first part of this publication for more on the construction industry's contribution to economic growth in times of expansion and contraction.

With regard to the labor market, the employment rate stabilized at a high level, while the unemployment rate remained low. In the period under review, the increase in wages accelerated in most sectors and the mean nominal wage per employee post increased rapidly, by an annual rate of 3 percent. The job vacancy rate continued to rise and the number of employee posts stabilized. These trends may indicate that solid demand in the labor market could create a supply constraint that might slow continued expansion in some industries. Data from the Companies Survey for the

fourth quarter point to a rise in the number of companies that report a labor shortage.

Annual inflation remained negative throughout the entire period under review, and was -1.0 percent in December. Declining prices were driven by global energy and commodity prices and were also affected by changing taxation rules and administrative price adjustments that had a transitory impact on inflation. One-year inflation expectations remained below the lower bound of the target range defined as price stability (1–3 percent), but long-term expectations remained around the midpoint of the target range.

As inflation remained under the target range in the period under review, short-term inflation expectations were low, economic activity slowed down, the Monetary Committee kept the basic interest rate at its record low of 0.10 percent. In this period, the Bank of Israel purchased \$4.3 billion, of which \$1.3 billion was through a program designed to offset the effects of natural gas production on Israel's current account. In this period, the current account surplus was \$7.3 billion. Between April and December, the shekel appreciated by 5 percent in terms of the nominal effective exchange rate.

The government budget deficit (excluding net credit granted) amounted to NIS 24.5 billion in 2015, NIS 6.9 billion lower than the planned deficit, reflecting expenses that were lower than originally forecast by NIS 3.3 billion and revenues that were higher than originally forecast by NIS 3.6 billion. The deficit reached 2.15 percent of the GDP, although the budget originally defined a target of 2.75 percent (the rate is relative to the actual GDP²). Almost throughout the entire year, the government operated without an approved budget, as the 2015-2016 budget only passed the first reading in Knesset in November. An extensive discussion of the fiscal situation appears in the first part of this publication below.

In the Part 2 of this publication, analyses of five issues related to Israel's economy are presented: the initial results of the survey conducted among individuals eligible for the earned income tax credit are reviewed; the efficiency of tax benefits in peripheral towns and cities is examined; the decline in the rate of salaried employees who changed employers and its connection to the increase of the retirement age is examined;³ we examine whether financial factors affect private consumption in Israel; and renewable-energy consumption in Israel is reviewed.

¹ The basic growth rate is the growth rate less factors considered to have a transitory effect.

² Relative to the GDP that was forecast when the budget was prepared, the maximum deficit is 2.9 percent.

³ These three analyses were published separately in recent weeks.

The construction industry and its contribution to growth

- In recent years, an expansion in construction industry activity in Israel has been seen. This expansion differs from preceding ones. While previous periods of strong growth occurred during accelerating growth in population and GDP, the current expansion is related to, among other things, the global economic crisis and the countercyclical actions taken in order to protect the economy from it.
- The increase in construction industry activity is reflected in its increased share in GDP, rising from 4.4 percent in 2007 to 5.7 percent in 2013. During that time, construction industry product increased by a faster rate than GDP did, and its average contribution to annual growth was 0.3 percentage points.
- During this period, 54,000 workers were added to the industry, and the share of construction in employment increased from 6.1 percent to 6.7 percent. However, it had a smaller effect on employment of Israelis—only about one-half of the new workers were Israelis, and its share in employment of Israelis remained virtually unchanged at around 5 percent.
- The upswing in the industry that occurred against the background of the global economic crisis is an exception among OECD countries. The upswing was made possible by the Israeli economy's resilience upon entering the crisis, and contributed to GDP growing, in contrast to the trough in the global business cycle and the slowdown in exports.
- An international comparison indicates that before the crisis, the share of construction in GDP was lower than the OECD average, apparently because supply expanded by a relatively lower rate than domestic economic and demographic characteristics. After the expansion that occurred in the construction industry in recent years, its share in GDP became even with the OECD average.

Construction and the business cycle

In recent years, construction industry activity in Israel has expanded, and its share in GDP increased from 4.4 percent in 2007 to 5.7 percent in 2013. Construction industry product increased between 2007 and 2013 by 7.9 percent, a more rapid rate than that of GDP, which grew by 3.5 percent. The average contribution of the construction industry to annual GDP growth reached about 0.3 percentage points.

The policy response in Israel and worldwide to the economic crisis of 2008 contributed to the expansion noted above. The crisis brought with it reductions in interest rates around the

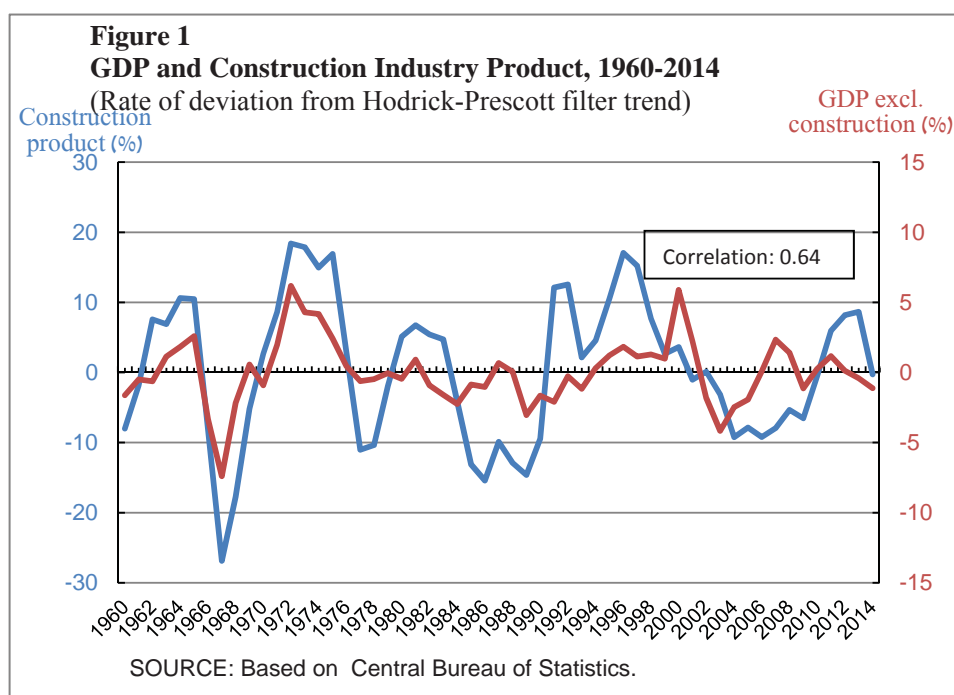
Written by Arnon Barak.

world and domestically, which were reflected in reduced yields for all terms. These, in turn, contributed in Israel to an increase in demand for homes, which came after a prolonged period of slowdown in construction. In response, investment in residential construction increased, together with a complementary increase in other types of construction. Thus, there was countercyclical, enhanced, activity in the construction industry, which helped to moderate the negative effect of the global crisis on Israel's economy.

It is not inherently clear if a correlation should be expected between the business cycle and construction industry product. Strong growth in the business cycle is characterized by an increase in income, which impacts positively on demand for residential homes. In addition, some business cycles in Israel were created following waves of immigration that directly accelerated demand for housing and the need for infrastructures. However, at the same time, accelerated growth is generally accompanied by increased interest rates, which is likely to slow construction activity while growth is still rapid, if construction activity responds to interest rates faster than the other components of aggregate demand.

The difficulty in identifying the link between the fluctuations in the construction industry and the business cycle derives from, among other things, the cycles in the construction industry, throughout the world, being longer than the business cycle. While business cycles last for several years, construction industry cycles last for at least 10 years, both in residential construction and in nonresidential construction. In this regard, it should be noted that the volatility apparently does not derive from changes in the cost of construction, but rather from demographic changes and aggregate demand shocks (Leung 2004, Leamer 2007), and from land planning policy—which leads to supply responding slowly to demand. It appears that this explanation may apply to Israel as well, and may be suggested by the weak link between the construction inputs index and the home price index. For example, the index of prices of residential-building inputs declined by 16 percent in real terms since 1994, while the home price index increased by 36 percent.

However, despite the difficulties noted, it is possible to identify a link in Israel between fluctuations in construction industry product and the business cycles (calculated through the deviation from the trend using the Hodrick-Prescott filter). In particular, in the past there was a positive correlation between construction industry product in Israel and the business cycle (Figure 1). The correlation was high until the middle of the 1970s and then weakened, but remained positive until 2003. From that year, the link between the construction cycle and the GDP cycle turned negative: until the global economic crisis, the economy accelerated while the construction industry essentially stood



still, apparently because during the previous industry cycle a large stock of homes was built, relative to demand, and because in 2005 planning limitations were imposed within the framework of National Outline Plan 35. Since 2008, the trends reversed and construction grew faster than GDP. Accommodative monetary policy contributed to this result, as it encouraged domestic demand, including demand for housing, as a response to a decline in global demand. The low level of construction activity in the years prior to the crisis also contributed to it. The countercyclical policy in Israel was made possible due to, among other things, a new reality created in the past decade in Israel's economy—a surplus in the Current Account. In this situation, the domestic interest rate may be reduced without causing too sharp a devaluation of the shekel, and investment in the economy may be increased without concern of a large deficit in the Balance of Payments; such as concern was accorded greater weight in the past when formulating policy in Israel.

Much research has attempted to examine if there is a causal link between investment in construction and economic growth, and if such a link exists, in what direction is it (does construction lead the business cycle, or vice-versa), but these issues remain unclear (Giang and Pheng, 2011). With that, it appears that there is generally a positive correlation between investment in construction—residential and nonresidential—and the GDP cycle (Leung 2004, Sun, et. al 2013).

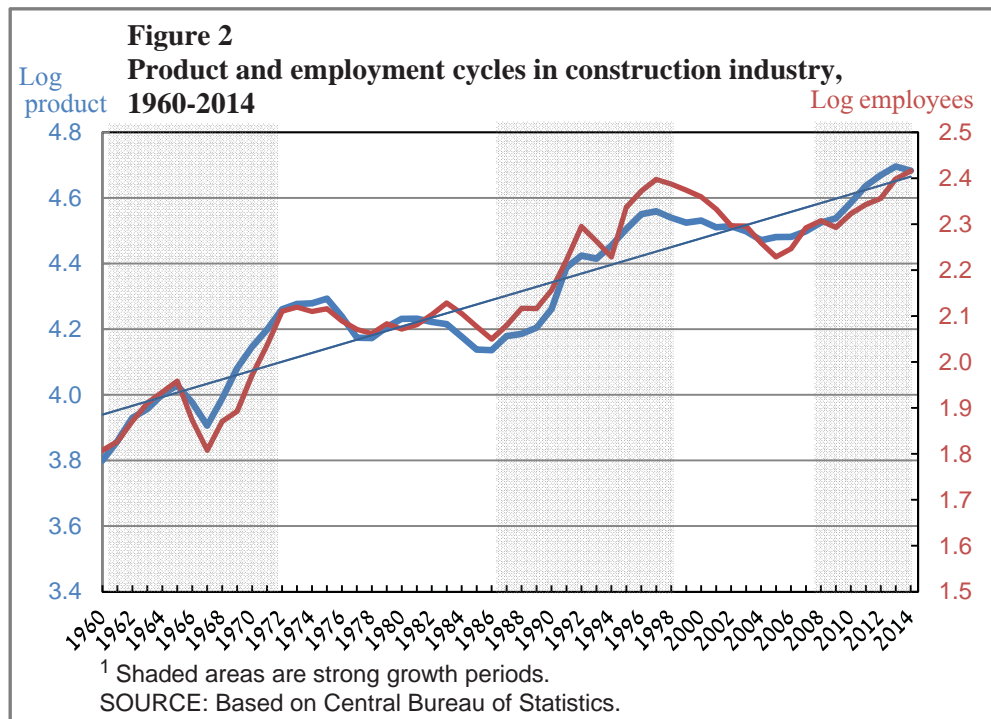
The investments in the construction industry in Israel are made up of investment in residential construction (60

percent, on average) and investments in other construction activity, including public infrastructures and commercial buildings. An examination of the correlation between the series indicates that the industry's cycles are shared by both types of construction (correlation of 0.53), although this link is not requisite—residential construction is expected to be correlated with the population growth rate, while other construction is related more to business sector activity. Furthermore, the two types of construction compete for the same production factors and thus each is likely to be at the expense of the other. However, the correlation between the series shows that these activities are actually complementary, not supplementary, apparently because extensive construction of new homes involves setting up the appropriate infrastructure (laying electricity lines and water pipes, streets, public buildings).

Construction industry product

Periods of steep growth alongside periods of moderate contraction are features of construction industry product. A long-term view shows that the current increase in activity is not out of line, in its relative strength, to previous periods of strong activity (Figure 2).

The first cycle (growth and contraction) in the period studied began in the beginning of the 1960s. Israel's economy grew at that time by a very rapid rate (9.4 percent per year), the population increased sharply (3.4 percent per year), and construction industry product did not lag behind. In



the middle of this growth period the industry suffered sharp declines for two years, during the recession that preceded the Six-Day War in 1967, but with the exit from it the construction industry recovered as well, as the flow of immigration and public construction renewed vigorously. The growth in the industry's product derived first and foremost from the sharp increase in demand for residential housing, and also from an increase in security construction and renewed investment in construction in the principal industries. After the Yom Kippur War in 1973, there was a slowdown in the population growth rate and the upswing in construction ended. The industry entered a low period and its share in GDP declined from around 11 percent in the beginning of the 1970s to around 5 percent at the end of the 1980s. This process was accompanied by a relative decline in labor productivity: in the 1960s, output per employee in the construction industry was higher than the figure for the overall economy, and it gradually declined, until it reached 60 percent of the level. This deterioration derived from relative erosion in capital per employee in the construction industry as well as construction workers from the territories entering the industry after the Six-Day War. These laborers were employed at a low wage and their availability provided contractors with a negative incentive to invest in capital stock.

The second cycle began at the end of the 1980s due to the immigration from the Former Soviet Union, a process that gathered strength in the beginning of the 1990s and by the end added about 1 million people to the State's population.

The rapid increase in the population led to rapid growth in construction industry product through a sharp rise in demand for residential housing and adjusting infrastructure and buildings to the new employees. During those same years, there was an increase in the share of construction industry product, and it was created through a sharp rise in employment and not an increase in productivity. When this process was exhausted (with the end of the wave of immigration), the share of the construction industry resumed its decline, and the share of its employees out of total employees in the economy declined from about 10 percent in the middle of the 1990s to around 6 percent in the middle of the previous decade.

In 2008–13, as noted, there was a renewed upswing in construction industry activity despite the population growth rate remaining stable. The upturn in the industry's product was reflected in an increase in output per worker (in line with the increase in capital stock per worker), and employment in the industry expanded at a rate similar to that of the expansion in the rest of the economy, and therefore the share of construction in employment increased only slightly.

In 2014, construction industry product contracted by 2.9 percent because nonresidential construction declined sharply and residential construction stabilized. Quarterly data for 2015 (excluding the final quarter) indicate that the investment in construction returned to growth at a moderate rate and that construction industry product remains essentially at a standstill.

Table 1
Periods of growth and contraction in construction industry product, 1961-2015
(annual average, percent)

Period	Population	GDP	Average annual growth			Construction's contribution to growth ^b	Construction's share in GDP ^c
			Construction industry product	Investment in residential construction ^b	Investment in other construction ^b		
1961–1972	3.4	9.4	9.2	11.1	4.1	1.0	10.8
1973–1986	2.1	3.5	-2.0	-2.9	-2.3	-0.2	5.0
1987–1996	2.9	5.4	10.0	9.8	13.9	0.5	7.7
1997–2007	2.1	4.0	-1.1	-1.9	-2.3	-0.1	4.4
2008–2013	2.0	3.5	7.9	9.3	5.5	0.3	5.7
2014–2015 ^a	1.7	2.3	-2.2	0.4	-3.7	-0.1	5.3

^a Data for the most recent period are based on quarterly data and include partial data for 2015.

^b Data on investment begin in 1965. The Central Bureau of Statistics does not publish GDP data by sub-industry. In contrast to industry product, investment also include an import component. In addition, part of the construction industry product is directed to uses that are not included in investment for residential or other construction. For these reasons, differences are likely between the growth rate of industry product and the weighted average rate of growth in investment components.

^c The contribution to growth is equal to the growth rate of construction industry product multiplied by its share at the end of the previous period.

^d At the end of the period.

SOURCE: Based on Central Bureau of Statistics.

Construction industry employment

The cycles in construction industry product are also seen in growth and contraction of employment in the industry (Table 2). In periods of strong growth, the number of employees in the industry increases sharply and at a more rapid rate than the rest of the economy. However, similar to construction product, the industry's share of employment is on a downward trend. After the share of employed people in construction rose above 10 percent in the early 1970s and during the course of the 1990s, in the past decade it has been lower than 7 percent (as noted, in recent years the upswing in construction industry product was virtually not reflected in the share of employed persons).

The industry's share in employment is in fact higher than its share in GDP, but this gap disappears when examining its effect on employment of Israelis alone. The upturns and downturns in construction industry product impact quite strongly on employment of foreign and Palestinian workers in the industry, while they have a more moderate impact on employment of Israelis. On average, an increase of 1 percent in construction industry product is accompanied by an increase of about 1 percent in the number of foreign and Palestinian workers and by an increase of only 0.6 percent in the number of Israeli workers. (In 2014, about 170,000 Israelis and about 90,000 foreign workers were employed in the industry, so that in both cases the addition would be about 1,000 workers.)

Construction industry share in GDP

From a long-term perspective, the direct contribution of construction industry product to growth has declined over the years. Its share of GDP contracted by more than half since 1960, and in recent years it has been around 5 percent (Figure 3).

The decline in construction's share in Israel is not atypical. This is a known phenomenon in advanced economies, and is in line with a general theory that the share of construction in GDP follows a bell shaped curve, known also as the Bon curve. According to this theory, in low income countries the construction industry has a small share, as the country develops the share of construction in GDP increases, it reaches its peak at the end of the industrialization process, and then contracts. This theory is based on the insight that the early stages of economic development come along with urbanization, an increase in population, and building infrastructures and manufacturing facilities, so that the construction industry grows more rapidly than the rest of the economy. In later stages, this process has been exhausted and demand for other products and services increases. Thus overall product increases at a faster rate than the construction industry and so the latter's share in GDP contracts (Bon 1992).

Table 2
Periods of growth and contraction in construction industry employment, 1961-2015
 (annual average, percent)

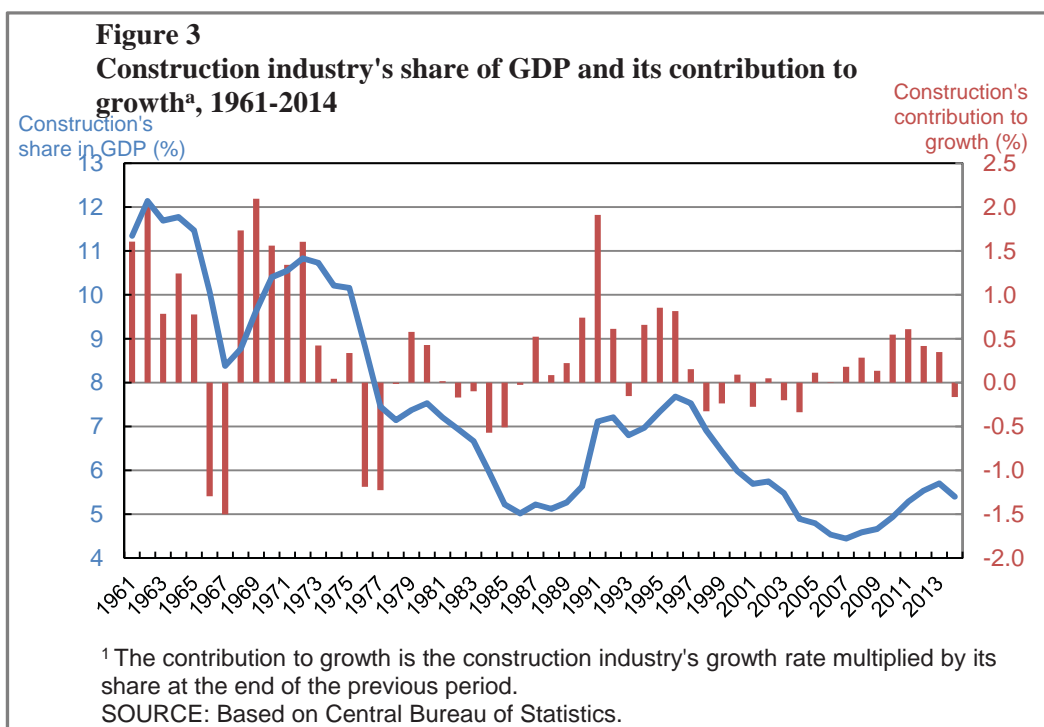
Period	Only Israelis				Total employees			
	Overall employment	Construction industry employment	Construction's contribution to employment ^b	Construction's share in employment ^c	Overall employment	Construction industry employment	Construction's contribution to employment ^b	Construction's share in employment ^c
1961–1972	3.1	3.8	0.3	9.0	3.6	6.1	0.5	10.9
1973–1986	2.0	-3.1	-0.3	4.3	2.2	-1.0	-0.1	7.0
1987–1996	4.0	8.0	0.3	6.3	4.2	7.7	0.5	9.8
1997–2007	2.4	-0.1	0.0	4.7	2.4	-1.5	-0.2	6.1
2008–2013	2.7	3.1	0.1	4.8	2.8	4.2	0.3	6.7
2014–2015 ^a	2.6	4.0	0.2	4.9	2.4	4.0	0.3	6.9

^a Data for the most recent period are based on quarterly data and do not include data for the final quarter of 2015.

^b The contribution to employment is equal to the growth rate of construction industry employees multiplied by its share of total employment at the end of the previous period.

^c At the end of the period..

SOURCE: Based on Central Bureau of Statistics.



Later research confirmed the Bon curve empirically by using cross sectional data across countries¹ (Crosthwaite 2000 and Ruddock and Lopes 2006). In contrast, Choy (2011) used

panel data on 205 countries for 1970–2009, and found that the Bon curves are in line with the variation, over time, within (advanced) economies but that it is not beneficial for describing the differences between the various countries. This criticism was discussed further by Girardi and Mura (2014). Those researchers conducted their own analysis and

¹ Bon also described a decline in the level of construction industry product (not just its share), but all the empirical evidence in the research contradicted this.

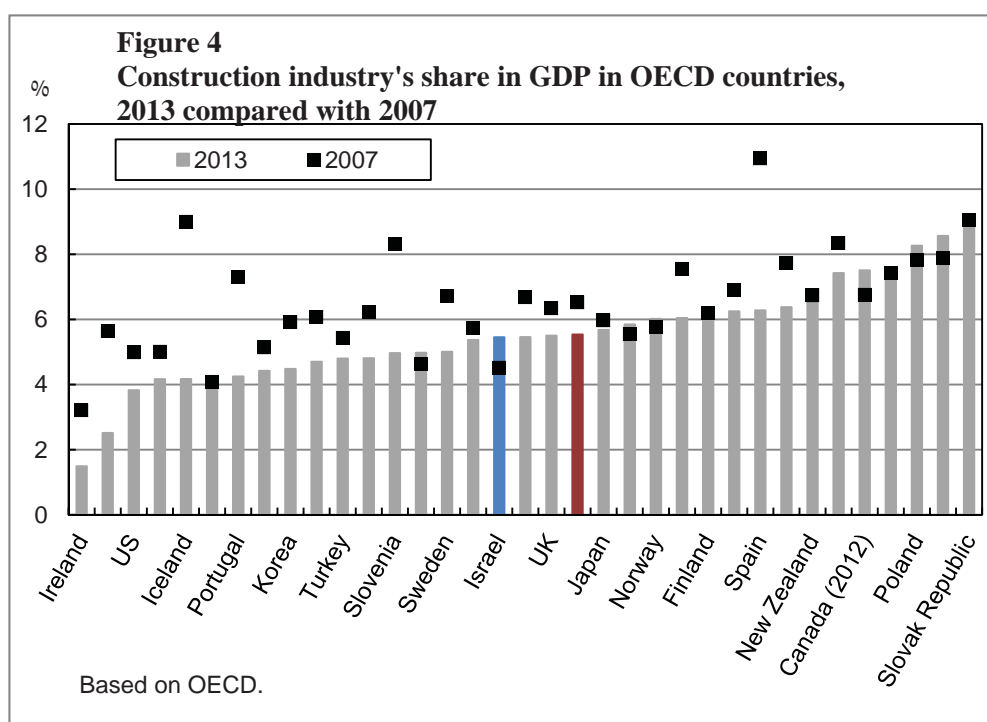
suggested a revised curve—it is not symmetrical, and the decline after industrialization is slow and reaches a point of stability in advanced economies.²

In addition to the actual building activity itself, the construction industry also contributes to growth by using the stock of residential homes. The share of housing services³ product in Israel reached a record high in the 1980s—about 16 percent of GDP—but from the middle of the 1990s it has been around 12 percent of GDP, and its direct contribution to growth is stable at around 0.5 percent per year. This is after the industry and housing services product increased since the early 1990s by an atypical amount due to the wave of immigration, and this increase caused a deviation from the trend of decline expected by the Bon curve. The contribution of housing services product is not sensitive to cycles in

supply housing services)—about 4 percent on average since the share of housing services stabilized in the 1990s.

International comparison

When comparing OECD countries in terms of the construction industry’s share, it is found that Israel’s relative state changed considerably due to the global economic crisis. Figure 4 indicates that in 2007, prior to the crisis, construction’s share in GDP in Israel was relatively very low, and was higher than only Germany and Ireland. In 2013, Israel was already in the middle of the distribution, with the share of construction equal to the OECD average, mainly because the share of construction in GDP declined in the countries in the comparison.

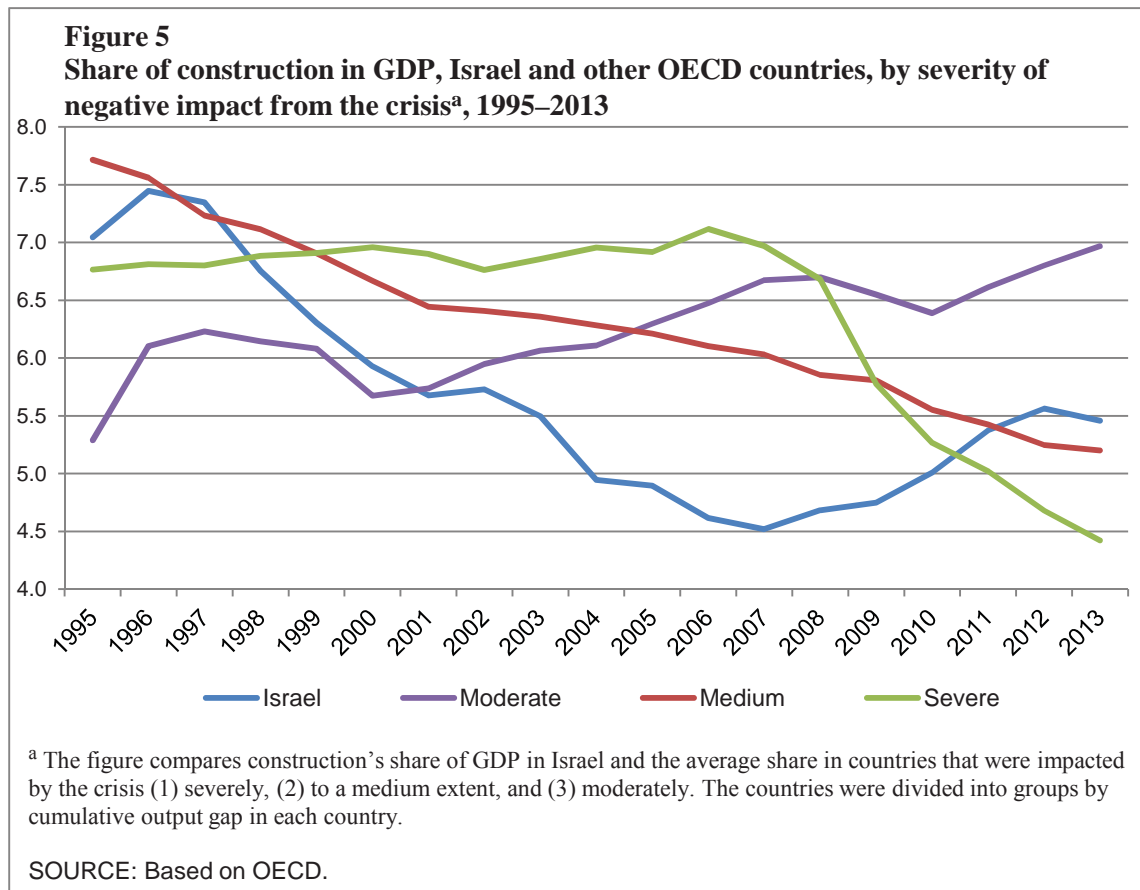


construction activity since new construction of residential homes (deriving from construction industry product) has a low share in the stock of existing homes and buildings (that

² Gruneberg presents another qualification. He claimed that although the theory is valid regarding overall construction activity, it is not valid for the infrastructure subsector, because that one requires consistent development in order to support increasingly advanced demands.

³ Housing services product is equal to rent plus imputed owned-dwelling services and municipal taxes, less FISIM (Financial Intermediary Services Indirectly Measured), which reflect the value of financial intermediation services in mortgages, less the cost of structure insurance.

Figure 5 presents vividly the strength of the construction industry’s expansion in recent years, as it shows that the sharp increase in domestic construction product occurred in parallel with contraction in construction activity in most OECD countries. When countries are ranked by the cumulative output gap in 2009–14, it is found that the countries adversely impacted the most severely by the global crisis also suffered a sharp decline in the construction industry. This was also reflected in a steep drop in construction’s share in GDP—that is, the decline in construction industry product in those countries was well beyond the decline in the overall economy. In countries that suffered a medium-level adverse economic impact, the crisis



did not have a major impact on the construction industry's share, and it continued on its downward trend of before the crisis.⁴ In countries where the output gap was negative, but small, the share of construction increased before the crisis, the trend halted over the two years following it, and then the increase resumed.

Israel, in contrast, was negatively impacted the least since the global crisis and also derived the largest average contribution by the construction industry to annual growth⁵ (about 0.3 percentage points). These phenomena are interconnected: Israel's economic resilience allowed it to increase investment in the construction industry, in contrast to countries that were negatively impacted by the financial crisis and experienced a credit shortage. Yet at the same time, the actual increase in construction industry product itself helped the economy persevere in its growth despite the trough in the global business cycle and the slowdown in exports.

As noted, in recent years the share of the construction industry in Israel increased in relative terms, and in 2013 it equaled the OECD average. However, to properly assess the share of the industry in an international comparison, it is important to relate to the features that are characteristic of each country and that impact on the construction industry. To do so, we estimated the expected share of construction in each country while controlling for several main variables identified by Sun et al.⁶ The results for Israel indicate that the share of construction at the end of the wave of immigration, in 1997, was very close to its forecast level based on the parameters estimated using data from other countries. With the slowdown in the population growth rate and the increase in interest rates in the economy, the estimate for the construction industry declined, but the actual figure declined even more. After exiting the recession of the beginning of the previous decade, a gap developed between the estimated and actual share of construction in the direction of the change: while the estimate stabilized, the actual share of construction

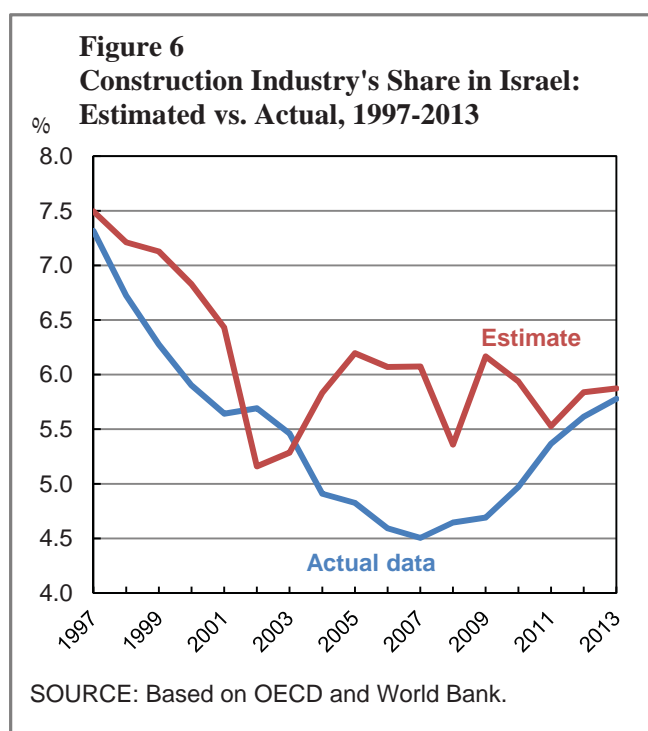
⁴ In Germany, the share of construction actually increased since the global crisis, and is an outlier observation in the group of countries that were negatively impacted to a medium extent by the crisis.

⁵ Together with Poland.

⁶ The variables that were controlled for are the unemployment rate, population increase, GDP per capita, dependency ratio, density, interest rate, and tourist expenditures. The variables were chosen based on the research literature and in accordance with availability of data, their economic relevance, and statistical significance.

continued to decline. (It is likely that these trends also reflect over-building in the period before 1997.) However, the gap closed due to the acceleration in construction activity with the onset of the global crisis, and the share of construction returned to a level nearly identical to the expected level based on the estimated parameters and domestic features (Figure 6).

It is important to emphasize that the above analysis focuses on the share of construction in Israel relative to the share in OECD countries. It does not provide a definitive conclusion regarding the share of construction in Israel vis-à-vis its desired level, as it is not clear if the share of construction in OECD countries is the desired level.



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Fiscal Survey: The fiscal situation for 2016, and trends expected over the remainder of the decade

- The government budget deficit declined to 2.15 percent of GDP (NIS 24.5 billion) in 2015, from 2.8 percent of GDP in 2014. The debt to GDP ratio declined to 64.9 percent at the end of 2015, from 66.7 percent at the end of 2014. The decline strengthens Israel's position in the capital markets and reduces the Israeli economy's risk premium.
- Tax revenues, adjusted for an increased provision of NIS 1.5 billion to the Property Tax Fund, were NIS 6 billion greater than forecast at the beginning of the year. This was primarily due to a more rapid than expected increase in wages, and due to the sharp increase in real estate activity.
- The decline in the ratio of public debt to GDP is mostly explained by an increase in the GDP deflator alongside a decline in the Consumer Price Index, to which about half the public debt is indexed. Also contributing to the decline in the debt to GDP ratio were debt repayments by the public to the government, and receipts from land sales.
- The government increased the deficit ceiling for the 2016 budget from 2 percent of GDP to 2.9 percent of GDP as a result of structural steps—an increase in the expenditure ceiling as well as tax reductions. This deficit level is not consistent with a prolonged reduction of the debt to GDP ratio. Based on current economic forecasts, and assuming that government expenditures will be in line with the ceiling, the government is expected to meet the target.
- The Ministries of Finance and Defense agreed on a new multiyear framework for the defense budget. Its implementation will contribute to stabilization in the process of building and managing the State budget, and to increased efficiency in the administration of the defense establishment. It is important for the government to approve a multiyear work plan for the ministry of defense that will be in line with the agreed upon budget framework.
- The government's expected expenditures in 2017—based on approved plans—are about NIS 14 billion higher than the expenditure ceiling for that year, assuming that the increase in the defense budget, in accordance with the framework, is financed in 2016 by a permanent reduction in civilian budgets.
- Based on an amendment to the law, which was approved at the end of 2015 (the “numerator”), the government must adjust—when the 2017 budget is approved—its forecast expenditures' deviation in 2018–19 from the expenditure ceiling set by the fiscal rule.
- At the end of December, public-sector wage agreements were signed, which include a moderate increase in public

sector wages in 2016 and 2017, and which do not threaten the budget targets, even from a multiyear perspective.

- In the past year, the government expanded the use of budgetary recording methods which weaken the link between its activities and how they are presented in the budget, particularly in the area of housing. When expenditures in the housing sector are presented in a manner that is in line with common accounting standards, the expected deficit for 2016 increases to 3.3 percent of GDP.

1. 2015 budget performance

Based on preliminary estimates published by the Ministry of Finance, the budget deficit for 2015 was 2.15 percent of GDP. This is a decline of 0.6 percent of GDP compared with the 2014 deficit, and is a continuation of the successful fiscal adjustment carried out by the government when approving the budget for 2013 and 2014. The deficit (measured in cumulative terms over the preceding 12 months) declined from over 4 percent of GDP in the middle of 2013 to about 2.5 percent of GDP in the middle of 2014, and stabilized at that level until the middle of 2015. It then declined sharply to about 2 percent of GDP beginning in July 2015 (Figure 1), due to particularly high revenues in July and August, and it stabilized at that level. From a full year perspective, the decline in the deficit reflects mostly an increase in the share of government revenues in GDP, as well as a moderate decline in the share of expenditure (Table 1).¹ The increase in the ratio of non-tax revenues to GDP derived mostly from an increase in National Insurance Institute surpluses (which are recorded as revenue in the budget), due both to a more moderate than expected increase in payment of allowances and to an increase in collection of National Insurance fees—partly due to the increase in employers' contribution rates.² In addition, the share of tax revenues in GDP increased by 0.1 percent of GDP.³ The debt to GDP ratio declined from 66.7 percent at the end of 2014 to 64.9 percent at the end of

¹ The discussion on 2015 budget performance refers to the net budget—that is, the budget net of expenditures contingent on income and net of the income earmarked for specific expenses. The deducted sections impact equally on the amount of expenses and revenues excluding taxes, and therefore do not impact on the deficit or on tax revenue data.

² Based on the forecast appearing in the budget foundations book for 2015–2016 (page 156 in Hebrew), total allowance payments, excluding military reserves compensation payments and including operational expenses, was to total NIS 75.1 billion. The actual payment was NIS 72.5 billion.

³ In December, the government moved forward a provision to the Purchase Tax Fund totaling NIS 1.5 billion. An adjustment in respect of this provision will bring the increase in tax revenues to NIS 0.3 percent of GDP and will reduce the deficit to 2 percent of GDP.

2015, largely due the decline in the ratio of the Consumer Price Index (CPI), to which half the debt is indexed, to the GDP deflator. The government chose to increase the deficit ceiling in 2016 to 2.9 percent of GDP, and to increase the path of the deficit over coming years rather than perpetuating the achievements in budget performance in 2015. Furthermore, the government approved plans for the next several years that deviate markedly from the new—and higher—expenditure ceiling that the Knesset approved in November.

Tax revenues (including VAT on defense imports) increased in 2015 by 5.9 percent⁴, compared with an increase of 4.8 percent in nominal GDP, and revenues were about NIS 6 billion greater than expected in the beginning of the year.⁵ An examination of the factors behind revenues increasing more than forecast, using the Research Department’s tax model⁶, indicates that most of the increase derives from the relatively rapid increase of wages in the economy, after several years in which they increased by a moderate rate

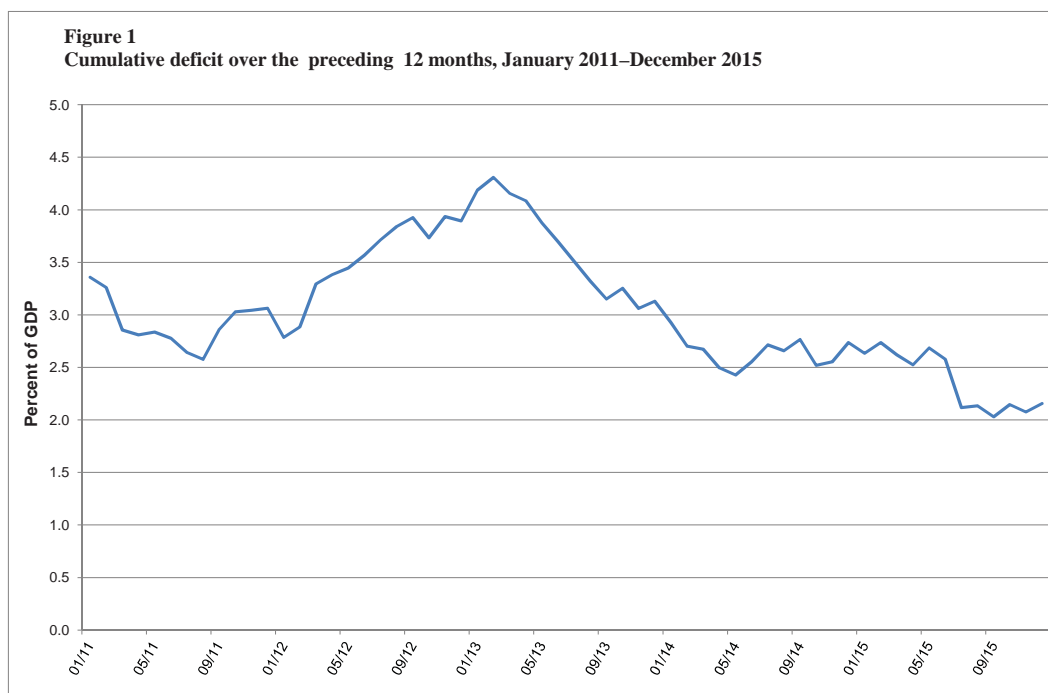


Table 1
Components of change in deficit, 2014 vs. 2015
(percent of GDP)

	2014	2015	Difference
Total revenue (excluding credit)	25.9	26.3	0.4
Grants from abroad	0.8	0.9	0.1
Taxes	23.4	23.5	0.1
Other revenue	1.7	1.9	0.2
Total expenditure (excluding credit)	28.7	28.5	-0.2
Deficit excluding credit (-)	-2.8	-2.2	0.6

Source: Based on data from Accountant General and Central Bureau of Statistics.

⁴ Net of the surplus allocation totaling NIS 1.5 billion to the Purchase Tax Fund.

⁵ Based on the forecast used when writing the Fiscal Survey that appeared in Recent Economic Developments 138, April–September 2014 (Bank of Israel, 2015).

⁶ Brender, A. and G. Navon, “Predicting Government Tax Revenue and Analyzing Forecast Uncertainty”, *Israel Economic Review* 7(2), 2010, pp. 81-111.

(Figure 2). The sharp increase in real estate transactions— influenced by the cancellation of the zero-VAT on homes plan—also contributed to increased revenues. An additional contribution came from the more rapid than expected increase in nominal GDP, which reflected a rapid increase in the GDP deflator alongside real growth that was slightly lower than expected.⁷ Actual revenues were very similar to the estimate calculated by the model on the basis of known (retroactively) macroeconomic data; when calculated with a lagged effect of tax rate increases in 2013, they were even slightly lower than forecast.⁸

Government expenditures increased in 2015 by 3.8 percent (a real increase of 4.6 percent). This is a rapid rate, which was made possible by the increase in the expenditure ceiling in the 2015 budget. Although the government operated until November 19th under an interim budget, which limits its ability to carry out some of its activities, and although the increase in the expenditure ceiling as noted only came into effect in November, the percentage of the original budget spent was 99 percent, similar to previous years. However, there was some variation in the budget execution rate: civilian ministries utilized 97 percent of their budget, and defense

Table 2
Variables explaining the increase in tax revenues compared with forecast at the beginning of 2015

	2015 Forecast	2015 Estimate	Effect on the gap between forecast and actual tax revenues
	(Percent)		(NIS billion)
Total increase in tax revenues ^a	3.5	5.9	6.0
Nominal GDP growth rate	4.5	4.8	1.1
Increase in wages beyond that related to GDP ^b	0	1.5	4.6
Increase in sales of new homes	12.5	29.7	1.3
Additional variables in the model ^c	-0.7
Legislative changes (in percent of tax revenues) ^d	-0.4	-0.8	-1.0
"Adjusted" revenue forecast	5.3
Effect of legislative changes from previous years ^e	...	0.6	1.5

^a Total government revenues from taxes, including VAT on defense imports. The figure for 2015 includes the atypical amount of the provision to the Purchase Tax Fund.

^b Real increase in wage per employee post, beyond the increase that derives from the multiyear correlation between wages and GDP.

^c Consumer goods imports, change in equity prices in Israel, bank credit denominated in and indexed to foreign currency, and Bank of Israel interest.

^d Reduction of VAT rate to 17 percent in the final quarter of 2015; additional legislative and timing changes made in 2014 and 2015 were included in the original forecast.

^e In percent of total revenues. Based on Brender and Politzer(2014) (see above).

SOURCE: Based on Accountant General and Central Bureau of Statistics data.

⁷ According to the model, the impact of an increase in the GDP deflator relative to the CPI, as occurred in 2015, is equal to an increase in real GDP. This apparently reflects the effect of a decline in import prices, which contributes to an increase in the GDP deflator and to a decline in the CPI, on disposable income and on profitability of companies in the economy.

⁸ A discussion on the dispersal of the effect over several years appears in Brender, A. and E. Politzer, "The Effect of Legislated Tax Changes on Tax Revenues in Israel", Bank of Israel Discussion Paper 2014.08 (Bank of Israel, December 2014).

expenditures reached 105 percent of the original budget (after required adjustments to the budget presentation). The real increase in defense expenditures relative to performance in the 2014 budget was notable, about 8 percent, despite the defense budget receiving a one-off supplement in 2014, due to expenditures deriving from Operation Protective Edge.

The ratio of public debt to GDP declined from 66.7 percent at the end of 2014 to 64.9 percent at the end of 2015. This decline contributes to the strengthening of Israel's position

in capital markets and to a reduction in the risk premium and the debt-repayment burden on the government and the Israeli economy.⁹ This is particularly because the Public Debt Management Unit at the Ministry of Finance acted in parallel to lengthen the term to maturity of the debt issued and thus reduced its risk profile even further. The decline this year reflects in large part a contribution of 1.1 percentage

also expected to decline as the stock of mortgages gradually declines, as in recent years virtually no new mortgages have been granted through the government's eligibility program.¹¹ In terms of receipts from land sales, their amount clearly depends on the scope of transactions, but also on the manner of recording the costs of government programs in the area of real estate. (See discussion below.)

Table 3
Factors affecting the change in public debt to GDP ratio, 2014 (end of year) vs. 2015 (end of year)
(percent of GDP)

Debt to GDP ratio on December 31, 2014	66.7
Effect of deficit and real growth on GDP	0.5
Privatization revenues and public's debt repayment to government	-0.8
a. Effect of change in GDP deflator on unindexed debt and foreign-currency debt	-0.7
b. Effect of change in GDP deflator and CPI on CPI-indexed debt	-1.1
Total effect of GDP deflator and CPI (a+b)	-1.8
Increase in non-central-government public debt, excess debt raising, changes in currency rates, and change in accrued interest	0.3
Total change in debt to GDP ratio in 2015	-1.8
Debt to GDP ratio on December 31, 2015	64.9

points from the increase in the GDP deflator relative to the CPI (Table 3), an increase which eroded the CPI-indexed debt (about half the government debt) relative to the nominal CPI. Since over time, the GDP deflator and the CPI increase by a similar rate¹⁰, this is a transitory effect, which cannot be used as a basis for the continued reduction in the debt to GDP ratio by a similar rate in coming years, though in 2016, it is still expected to contribute somewhat to its reduction. Also contributing to the decline in the debt were debt repayments by the public to the government (primarily mortgages to eligible borrowers, which had been granted in the past), and land sales totaling jointly approximately NIS 9.4 billion. The repayment of loans reduces the debt, but also the government's financial assets, and therefore does not reduce the net debt. The contribution of this factor is

2. The 2016 budget

The government decided to increase the deficit ceiling in 2016 from 2 percent of GDP to 2.9 percent of GDP, by markedly increasing the expenditure ceiling and reducing tax rates. The increase in the expenditure ceiling reflected the government's difficulty in achieving its social, defense, and economic targets within the framework of the existing expenditure ceiling, which dictates a continued decline in the share of public expenditure in GDP, even though the share of civilian expenditure in Israel is already very low compared with other advanced economies. This difficulty has been reflected continuously in recent years in the accumulation of expenditure programs whose total cost is higher than the expenditure ceiling, and with repeated adjustments of the budget targets alongside postponements, cancellations, and reductions of government plans shortly after they had been approved.¹² At the same time, the government decided to reduce tax rates, and thus increase the structural deficit even more. Furthermore, the budget includes accounting

⁹ An examination of the effect of the debt to GDP ratio on the cost of government debt appears in Brender, A. and Sigal R., "The Effect of Fiscal and Monetary Policies and the Global Economy on Real Yields of Israel Government Bonds", Bank of Israel Discussion Paper 2015.02 (Bank of Israel, January 2015).

¹⁰ Since 2001, the year in which the permanent inflation target range of 1–3 percent was set, through the end of 2015, both the CPI and the GDP deflator increased by an annual rate of 1.9 percent. In 2015, the CPI declined by 1 percent during the year, the GDP deflator increased by 2.4 percent.

¹¹ In 2016, the amount of net repayments is already expected to decline to NIS 3.8 billion.

¹² An expanded discussion appears in Chapter 6 of the Bank of Israel Annual Reports for 2013 and 2014.

treatments that reduce the reported deficit by accounting shifts of revenue and expenditure items between years, and presenting part of its activities in the housing sector in a manner that is not in line with generally accepted accounting practices.

The fiscal rule adopted by the government at the end of 2013 establishes that government expenditures are to increase in real terms in accordance with the population growth rate over the past three years (1.9 percent for the years 2012–14, the determining years for 2015 and 2016), plus the quotient that results from dividing 50 (the long term goal for the debt

to GDP ratio) by the debt to GDP ratio in the most recent year for which it is known (67 percent at the end of 2014). Based on this calculation, the real increase permitted for the 2015 budget is 2.66 percent, which means an addition of NIS 8.4 billion.¹³ The calculation of the expenditure ceiling for 2016 based on the rule is similar, as that year's budget was ratified together with the 2015 budget and the calculation is based on the same data. The only difference between the calculations is that the increase in 2016 is based on the 2015 budget rather than the 2014 budget, so the expenditure rule increased the 2016 budget by NIS 8.7 billion (Table 4).

Table 4
Calculation of expenditure ceiling for 2016

	(NIS billion)
1. Expenditure ceiling in 2014 budget (net, including credit)	319.3
2. Reduction of base, in line with government decisions ^a	3.8
3. Base for calculating expenditure ceiling for 2015 (1–2)	315.5
	(%)
4. a. Real rate of growth of expenditure, according to the rule	2.66
b. Increase of budget base	2
	(NIS billion)
5. Addition to 2015 budget [(4a+4b)*3]	14.7
6. Addition in respect of inflation expected for 2015 ^b	-0.7
7. 2015 nominal expenditure, per expenditure rule (3+5+6)	329.5
8. Addition to 2016 budget [4a*7], per expenditure rule	8.7
9. One-off addition of 0.25 percent to 2016 budget	0.8
10. Adjustment of budget ceiling to increase in government participation in National Insurance Institute budget	3.85
11. Addition in respect of expected inflation in 2016 ^c	4.8
12. Nominal expenditure in 2016, per expenditure rule (7+8+9+10+11)	347.7

^a In December 2013, the government decided to reduce the expenditure ceiling in parallel with reducing income tax and National Insurance Institute fees.

^b The adjustment in the budget is based on the assumption that the average of the Consumer Price Index in 2015 would decline by 0.2 percent compared with the CPI for 2014. The actual decline was 0.6 percent. Based on the actual figure, a further reduction of NIS 1.5 billion was required.

^c Based on the forecast that the CPI in 2016 would increase by 1.5 percent compared with the CPI average for 2015. Based on the Bank of Israel forecast from December 2015, the CPI is expected to decline by 0.1 percent. Based on this forecast, an additional reduction of about NIS 5 billion is required.

Source: Based on budget data.

¹³ This calculation is based on the government's interpretation of the Budget Law. According to this interpretation, the reduction in expenses by NIS 3.75 billion in the beginning of 2014, in parallel with the reduction of taxes at the same time, cancels out the need to reduce the budget (by about NIS 6 billion) in respect of the fact that the increase in prices was lower than that used to construct the budget for 2013–2014 (See section 2, page 10, in the proposed government budget for 2015, which was submitted to the government on October 7, 2014).

As the cost of carrying out expenditure plans that were added to the budget, including the steps decided on by the new government, deviates from the permitted increase in expenditure based on the fiscal rule, the government, in the 2015 budget, increased the base for the expenditure ceiling by 2 percent (NIS 6.4 billion) and added another 0.25 percent on a one-off basis to the 2016 budget. Beyond that, the government used price coefficients that were much higher than the current prevailing inflation forecasts in preparing the 2015 and 2016 budgets (which were approved, as noted, on November 19, 2015). This increased the 2016 budget base by a further NIS 6.5 billion. Based on the budget rule, the government will need to subtract from the increase in the expenditure ceiling for 2017 the addition that derives from the spread between the inflation forecasts in the 2015 and 2016 budgets and the actual increase in prices. Despite the marked increase in the expenditure ceiling, the supplement to the defense budget, which was agreed upon within the framework of the outline being compiled between the Finance and Defense Ministers, was not reflected in the budget. When that will be approved, the government will need to shift over to the defense budget about NIS 4–5 billion from other sections.¹⁴ In light of the budget performance rates by civilian ministries in recent years, and the large additions planned for their budgets, it is reasonable to assume that this shift will be possible without markedly impacting their activity in 2016. With that, the notable gap that will be created as a result, between the composition of the budget that was approved and the budget that will be executed, adversely impacts on the public and parliamentary discussion on the government's priorities, especially as the amount that will be redirected to the defense budget supplement was budgeted as part of specific civilian line items. Other than the defense budget supplement, the budget framework that was approved does not include the costs of some government programs in the housing area (see Section 3 below), and when these are added to the budget data, it may become difficult to meet the expenditure ceiling without negatively impacting other activities. The budget also does not reflect the cost of the addition to child allowances to be paid into savings accounts for children in respect of 2016. This cost totals around NIS 1.7 billion, and the government decided that the payment will be spread out evenly over the years 2017–19.¹⁵

¹⁴ This amount is an estimate by the Bank of Israel of the budgetary cost of the agreement, and includes both the direct supplement to the defense budget as well as the cost of activities that were shifted from the defense budget to other budget sections but will be executed, such as protection of gas wells, IMI agreements, and constructing the eastern border fence. It is possible that some of the amount was already transferred to the Ministry of Defense as an advance at the end of 2015.

¹⁵ An additional cost of about NIS 1 billion, in respect of the 2015 supplement, was spread out in the same manner.

The use of the higher price-forecast than the inflation forecast in constructing the budget, enables the government to increase the expenditure ceiling when preparing the budget for a given year, at the expense of a required reduction in planned expenditure for the following year, and thus to temporarily get around the expenditure rule. Such use becomes more attractive when the government operates on the basis of two-year budgets, when a government's term becomes shorter, and when a government chooses not to retroactively correct gaps between the price forecasts and actual inflation, as was done in the 2015 budget with regard to the gap in 2014. A solution to the lack of consistency in calculating the real increase in the budget, the calculation method set currently by the expenditure rule, is to switch to nominal budgeting, based on the midpoint of the inflation target range.¹⁶ Furthermore, since there is an only tenuous link between public expenditure and consumer prices, the adjustments that the current process necessitates are procyclical—when there is a slowdown in the economy, and the inflation rate is low, a budget reduction relative to the original outline is needed, and when activity accelerates, an expansion is possible. In contrast, budgeting on the basis of the midpoint of the target is a-cyclical—that is, it does not strengthen macroeconomic shocks. Such a process will also bolster the transparency in budgeting: currently, there is marked uncertainty in the budgeting, in terms of the budget size, until the presentation of the calculation of the price adjustments in respect of previous years and the price forecast for the coming year.¹⁷

An additional process, which increased the expenditure ceiling in 2016 by NIS 3.85 billion, is the change in the manner of the government's participation in the National Insurance Institute budget. Although the change does not impact on the size of the deficit, as surplus revenues of the National Insurance Institute are recorded as revenue on the government's budget¹⁸, it contributes to a clearer presentation of government expenditures. In the coming years, the change will also impact on government policy, as the increase in transfers to the National Insurance Institute from their current level will be recorded against the expenditure ceiling. The process has three components:

¹⁶ A broader discussion appears in Section A of the 2013 Bank of Israel Annual Report (2014) and in the fiscal survey that appeared in Recent Economic Developments 139, October 2014–March 2015 (Bank of Israel, 2015).

¹⁷ These usually are not presented in government discussions to approve the budget, but are calculated later by the Ministry of Finance and are included in the budget proposal submitted to the Knesset.

¹⁸ A description of the system of accounting between the government and the National Insurance Institute appears in Box C.3 of the 2002 Bank of Israel Annual Report (2003). The system has not changed markedly since then.

1. Payments for medical expenses in the work-injury division and hospitalization grants for women giving birth, which have been paid until now by the National Insurance Institute, will be paid, beginning in 2016, directly from the state budget (and therefore will reduce National Insurance Institute expenditures, and increase its surpluses).

2. The government will increase each year the payment that it transfers to the National Insurance Institute as participation in senior citizen and nursing-care allowances in accordance with the growth of the relevant population, and not in accordance with the increase in collection, which is lower. This means that in the coming years, government expenditure for this objective will increase by more than dictated by the previous rule, and the government will need to adjust its other expenditures in order not to deviate from the expenditure ceiling. This is an important change that incorporates a significant component of the effects of the aging of the population into the budgeting process.

3. Combining all government participations in revenues of all National Insurance Institute branches into one amount. As a result, if there will be a deficit in one branch, the National Insurance Institute will cover it from sources of the other branches. The process is more lenient for the government, which will not have to deal with deficits in a specific branch as long as there are surpluses in others, although in actuality, the government nonetheless acted in that way in many cases in the past.

Assuming that government expenditures in 2016 will be in line with the ceiling that was set, the expected deficit is in line with the new target—2.9 percent of GDP. If the costs of government programs in the real estate sector, which are not included in the budget, would be recorded in accordance with common accounting principles, the deficit would reach 3.3 percent of GDP. Revenues from taxes are expected to increase this year by more than 2 percent, despite the reduction in value added tax (VAT) and corporate tax rates, which will reduce revenues by more than NIS 5 billion compared with 2015. The very rapid increase in revenues derives primarily from expectations of continued increase in wages, against the background of trends in the labor market, public sector wage agreements and the Minimum Wage Law, as well as from a forecast increase of the GDP deflator due to the decline in global commodity prices. In addition, the advanced allowance to the Property Tax Fund in 2015 will increase the recording of revenues in 2016 by NIS 1.5 billion.

A central component of government expenditures, which impacts on the ability to act within the framework of the fiscal targets, is the defense budget. Recently, the Ministries of Finance and Defense reached an agreement on a

multiyear framework that sets the size of the defense budget until 2020, and includes a range of steps in the areas of wages, pensions, rehabilitation and transparency, which are intended to ensure that the budget in fact converges to within the agreed upon framework. In parallel, a multiyear work plan was prepared by the Israel Defense Forces (IDF) for the same period, which is in line with the agreed-upon budget framework. There is great importance to the framework, as it markedly improves the ability to plan the state budgets in coming years and enables the defense establishment to increase its efficiency by utilizing the advantages of budget stability and a planning horizon. With that, the test of the framework that was approved will be in its implementation, as sections of it (particularly related to pensions) have not yet been fully analyzed, and the experience with the previous multiyear framework for defense expenditures, which was based on the recommendations of the Brodet Committee, is that its advantages were not fully utilized due to disagreement on particulars of implementation.¹⁹ In order to prevent the obstacles that adversely impacted the realization of the previous framework, it is important that the government adopt a clear plan that presents the IDF with a balance of risks and strategic targets that are in line with the budget framework.

At the end of December, the government and Histadrut (National Federation of Labor in Israel) agreed on a framework for public sector wage agreements through the end of 2018. Based on these agreements, the wage increases that will be paid in 2016 and 2017 are moderate and are not expected to weigh on meeting fiscal targets. The increases derived from the agreements for 2018 and 2019 are greater, but nonetheless are not out of line.²⁰ With that, the framework agreements in the public sector are not the end of the story in the process of determining wages, and over the course of the years individual agreements, in specific areas of the public sector, are added to it (such as wage agreements for teachers, physicians and nurses in recent years). The costs of those agreements could be significant.

¹⁹ A detailed discussion on budgeting defense expenditures appears in Brender, A. (2012), "On transparency and simplicity: Setting the size of the defense budget since the adoption of the Brodet Committee's recommendations", *Economy and Society*, Volume 8, Van Leer Institute.

²⁰ The wage additions will be paid until the end of 2018, but since part of them will only be paid toward the end of the year, they will impact on the increase in the average wage between 2018 and 2019. A description of the additional factors impacting on the path of wages in the public sector appears in Mazar, Y. (2014), "The development of wages in the public sector and their connection with wages in the private sector", *Bank of Israel Survey* 88, pp. 97–134 (in Hebrew).

3. Presenting the government's plans in the housing area in the state budget

One of the main targets that the government set for itself in recent years is reducing home prices. In order to promote this target, the government is working to vacate IDF bases from areas in high demand in order to make land available for construction. This plan has a notable cost, which is required to finance the construction of new bases, for the cost of relocating the various units, and developing the civilian infrastructures in areas where the bases are being set up. This is besides the cost of preparing the vacated land for residential purposes. In addition to this plan, the government is working to remove obstacles to promoting construction of residential neighborhoods through the budgeting and execution of development plans for local authorities in which the new neighborhoods will be located. These budgets are allocated after individual negotiations with the municipalities, with the goal of upgrading their infrastructure and developing public services for the existing and future populations. The budgets are necessary for, among other things, gaining the support of the local authorities, who can significantly delay the progress of construction plans in their area. These agreements are termed “blanket agreements” and are intended to contribute to the welfare of the residents in localities where large projects are promoted.

The expenditure on the plans in the real estate area is required in order to attain the goals set by the government, and it is important to present it in the state budget in a clear and complete manner so that the budget properly reflects the priorities in government activity and the plan's cost to the public. However, the cost of these plans, based on, for example, the presentation of the 2016 budget, is reflected only partially in the budget. This incomplete presentation reflects two accounting treatment processes: 1. Presenting Israel Land Authority (ILA) receipts from sales of state land that are transferred to the government as revenue in the budget, instead of as a financing item²¹; 2. Financing the cost of blanket agreements through the ILA budget, including expenditure items that are not required for physical development of the land intended for construction but for the improved welfare of residents in the local authority where the project is located. As a result, these activities—which are public expenditure, as they replace activities that the public sector is supposed to execute—are not recorded in the budget, and the ILA (defined as an extra-budgetary business entity) pays directly for them with the receipts from

²¹ Such accounting of revenues allows presenting them in the budget in parallel with expenditures in respect of the projects as “income-contingent expenses”, which by law is not included in the calculation of expenses for meeting the fiscal rule. The “income” against which this expense is recorded is the receipts from the sales of state lands.

the sale of government lands, and at the same time reduces the transfer of sales receipts to the government (recorded as a financing item of privatization revenues in the budget).²² As a result of this accounting, the deficit presented in the 2016 budget is about NIS 3.5 billion smaller than the deficit according to accepted accounting treatment, as it does not take into account the expected costs of the “Shoham 3” (“Marketing and Moving Bases”) program and the transfer of bases to the Negev region in the south. This, even though the Accountant General's division in the Ministry of Finance already determined that these expenditures should be recorded as regular expenses in the budget, and even recorded them that way in the performance estimates of the 2015 budget.²³ Likewise, the budget does not include the planned cost of the blanket agreements, which will be paid by the ILA. From December 2013 through today, the ILA's Planning and Development Committee approved expenditure of more than NIS 3 billion, and it is expected that this amount will increase markedly with the signing of additional agreements.²⁴ The actual scope of expenditures, and how they are spread out over the coming years, will be determined in accordance with detailed plans that will be agreed on with local authorities.

Another central component in government activity in the housing area is the “Dweller's Price” plan. According to the plan's goals, the government will reduce the prices of homes—by up to NIS 120,000 per home—for eligible buyers who meet the criteria it set, by reducing the price of land to contractors who build and market the homes, and through direct subsidy of development costs or a grant to buyers. In return for reducing the price of the land and development levies, the contractors commit to sell the homes at a below-market price, which is determined through a tender. Thus, this is essentially a government subsidy of a defined amount (for each home in the program), for a group of eligible people

²² Privatization revenues are not recorded in the budget as income, as they reflect the change of a government asset (such as land) to a liquid one. In contrast with budgetary revenue, which increases total sources available to the government, privatization doesn't change them.

²³ In the 2015 budget, the amount is only NIS 200 million.

²⁴ This amount refers only to about one-fifth of the housing units included in seven existing agreements, and in the coming years it is expected that the committee will approve development budgets for the remaining units. Likewise, additional agreements, at a notable scope, are expected to be signed. Moreover, the Ministry of Construction and Housing signed similar agreements—in Beersheva (at a cost of about NIS 770 million) and Rosh Haayin (at a cost of about NIS 700 million), which will also be financed by the ILA. In examining the amounts approved, it is important to remember that the actual cost of development per housing unit, for the most part, is lower than the amount originally approved, due to price reductions during the process of the tender, as well as the existence of a reserve for unexpected expenses.

that is compiled in accordance with the government's policy. However, in this case, the government does not intend to record the full cost of the program in the budget, which in accordance with the goals is expected to reach NIS 1.5–2 billion per year. Instead, the part of the plan's cost derived from reducing the prices of land (estimated at more than NIS 1 billion per year) will be reflected in a reduction of revenues from sales of state land. As a result of this recording method, the deficit and the scope of expenditures presented in the state budget are lower than they are in actuality.

The under-presentation in the budget of the cost of government activities in the housing area, and its financing through the sale of land, is not solely a technical issue. These are expenditures of large amounts of money, from the public's funds, that are designated for a specific goal and are aimed at supporting a specific segment of the population—eligible people in the “Dweller's Price” program and residents of local authorities that benefit from blanket agreements—and the defense budget. Even though the government's increased expenditures in the housing area are in line with the targets it presented, when they are not presented clearly in the budget, they do not reflect the burden they impose on the rest of the population and on the government's budgets in the future. This burden derives from the government sale of a public asset, the revenues from which could also have been used to finance other programs, in the present or in the future, if they would have been transferred to the budget or used to reduce debt, respectively. Moreover, the use of receipts from sales of land outside the budget prioritizes housing programs, since it is easier to use this source of funding for them than for other activities of the government.

The use of processes that bypass the budget, to finance activities in the housing area, are liable, as noted above, to distort the presentation of the fiscal picture through government accounts. This concern led the Accountant General's division at the Ministry of Finance to include the costs of Shoham 3 and the transfer of IDF bases to the south in government expenses as reported in preliminary estimates of budget performance for 2015, in contrast to the initial recording that appeared in the budget proposal. It is important to correct, accordingly, the presentation of budget data for 2016, a year in which the expenditure on these items is expected to be markedly higher, and it is important that the government act to present in an accurate and transparent manner, as a budget expense, the relevant costs of implementing the umbrella agreements and the “Dweller's

Price” program.²⁵ The correct accounting treatment in the budget does not require avoiding the carrying out of these activities, and the government can budget for them within the framework of the fiscal targets it sets, and even increase the expenditure ceiling and deficit for a limited period of time by the amount required for this goal, particularly as most of the additional deficit would be financed by selling properties without increasing the public debt. A deviation from the accepted accounting methods would negatively impact not only the precision of the presentation of the budget, but would also be an incentive for additional initiatives to bypass the limitations of the budget set by the fiscal targets and to distort the priorities in the government's activities in accordance with the ease of use of budget-bypassing tracks (for example, the “Path to a Home” plan as well as several additional initiatives that were already adopted). Moreover, planning that is based on uncommon accounting methods is liable to ultimately adversely impact the execution of the plans, when the government will need to reflect their cost in its accounts.

4. Forecasts and scenarios for 2016–2020

The deficit and expenditure ceilings set in law are intended to create a stable multiyear path that enables the government to plan its expenditures and tax rates over time, and at the same time to support business-sector decision making processes and macroeconomic stability. As such, it is important to examine the ramifications of fiscal decisions that are made, not only with regard to the current year's budget, but also with regard to fiscal policy over the remainder of the decade. The analysis below is based on the assumption that growth rates in the economy from 2017–20 will be 3 percent per year, on average—a rate that takes into account the expected moderation in growth of the working age population.

A very important factor in analyzing the expected development is that in addition to the marked increase in the expenditure ceiling described above, the government deferred, when approving the budgets of 2015 and 2016, the implementation of some of its decisions to coming years, so that it will again face complex challenges when preparing the budget for 2017. Due to a change in the Foundations of the Budget Law and in government procedures, which were approved within the framework of the Increasing Economic Efficiency Law, beginning with the 2017 budget, the government will need to handle, when approving the budget,

²⁵ Relevant definitions regarding the issue appear in Sections 2.4 and 8.31 of Government Finance Statistics Manual 2014; Sections V.2.2.4, V.2.2.5, and Chapters 12 and 14 of Eurostat's Manual on Government Deficit and Debt 2013, and in Sections 22.33 and 22.137 of System of National Accounts 2008.

the deviations from the expenditure ceiling expected in 2018 and 2019.²⁶ This is an important change: it increases the transparency in budget administration and is intended to halt the process that has intensified in recent years—providing a response to budget problems by deferring them, while creating a surplus of commitments for future years. The significance of the new amendment to the law is that it will be difficult for the government to return to solve some of the budgeting problems in 2017 by deferring the execution of various plans, and it will require setting multiyear priorities for its activities in accordance with the fiscal goals it set.

According to current estimates, based on previous government decisions regarding various plans, and the expenditure path derived from various laws and demographic developments (such as education and health expenses, and National Insurance Institute allowances)²⁷, the size of the reductions required in government expenditure in order to meet the expenditure rule for 2017 is NIS 14 billion. This is assuming that the reductions to be made in civilian budgets in 2016 in order to allow the defense budget to increase in accordance with the framework will be permanent, and assuming that the supplements required in order to reflect in the budget the cost of government plans in the housing area will deviate from the expenditure and deficit ceilings. Of the required adjustment, about NIS 6.5 billion reflect an expected correction in the high inflation-forecasts used to construct the 2015 and 2016 budgets. To the extent that the government does not use these sums to finance current programs in 2016, the adjustment burden will be reduced.²⁸ In addition, the government, as noted, will need to present with the 2017 budget the adjustments required to converge expected expenditures in 2018 and 2019 to within the framework set by the fiscal rule. This will require

²⁶ The Economic Efficiency (Legislative Changes to Achieving the Budget Targets for 2015–2016) Law, 5775-2015—preparing a three-year budget (numerator). When the 2017 budget is approved, excess commitments for 2018 and 2019 should be reduced to 100.5% of their respective expenditure ceilings.

²⁷ The assumption regarding all the coming years is that the additional wage agreements that will be signed in the public sector, on top of the general agreements signed in December 2015, will not lead to the wage scale increasing in real terms by more than the increase in productivity in the economy.

²⁸ According to the Ministry of Finance's estimate (budget foundations book for 2015–2016 (page 90 in Hebrew), the required adjustment on the expenses side is NIS 5.7 billion, but this estimate was published before the agreement was reached on the addition to the Ministry of Defense budget within the multiyear framework, and does not account for the price adjustment expected in the 2017 budget. This is reflected in the Ministry of Finance's forecast presenting at the same time the need for "additional steps"—increasing revenues or slowing the growth of expenditures to a rate lower than that allowed by the fiscal rule—by NIS 8.7 billion. Cumulatively, the total adjustment necessary that was presented with the budget reaches NIS 14.4 billion.

implementing in these years additional steps totaling about NIS 2 billion (assuming that all the adjustments in 2017 are permanent, and assuming that between now and the approval of the 2017 budget the government will not decide on any new program that increases its expenditures over the remainder of the decade). To the extent that the government does not reduce its expenses in accordance with the gap in the price forecast, additional revenues of NIS 6–7 billion will be required in order not to deviate in 2017 from the deficit ceiling of 2.5 percent of GDP, set in law.

Figure 2 presents the path of deficit targets set by law, which were approved with the 2016 budget (the red line). Based on this path, the deficit is to decline gradually from 2.9 percent of GDP in 2016 to 1.75 percent in 2020, and to 1.5 percent in 2021 and beyond. Figure 3 indicates that if this path is realized (the red line), the debt to GDP ratio will decline gradually from its current level and reach 63 percent of GDP in 2020. Meeting the target will require significant decisions by the government regarding its expenditures, assuming that the framework is based on the expenditure ceilings set in law, and it will also require prolonged dedication to implementing them. Likewise, an increase in revenues by about NIS 4 billion will apparently be required in 2018–20, even if the expenditure ceiling is adhered to.

The black lines in Figures 2–4 represent the outcomes of alternative policy scenarios, in which the government acts based on the specific expenditure plans that it approved—that is, does not bring its expenditures in line with the expenditure ceiling but also does not decide on additional expenditures until 2020, and does not change the tax rates.²⁹ In this scenario, the deficit is expected to increase to around 3.5 percent of GDP in 2017 (about 3.8 percent when including the plans in the housing area) and to stabilize at that level for the remainder of the decade. The debt to GDP ratio will increase gradually and reach 68 percent in 2020. Such a policy will also be reflected in a stable share of public expenditure in GDP, and the share of primary civilian expenditure in GDP will increase by about 0.5 percent. The blue lines in Figures 2–4 represent what is expected if the government adheres to the expenditure ceiling (without an adjustment to prices in the 2017 budget) but does not change tax rates. In this case, the deficit will decline gradually to about 2.5 percent of GDP, and will be higher than the targets set in law in all the years. Such a deficit will stabilize the debt to GDP ratio at its current level, while reducing the share of public expenditure in GDP by 0.7 percentage points by the end of the decade. In order to meet the expenditure

²⁹ Figures 2 and 4 are presented without the cost of the government's housing plans, a cost which has not yet been recorded in the 2016 budget. When it will be included in the budget, the deficit and expenditure levels will increase accordingly.

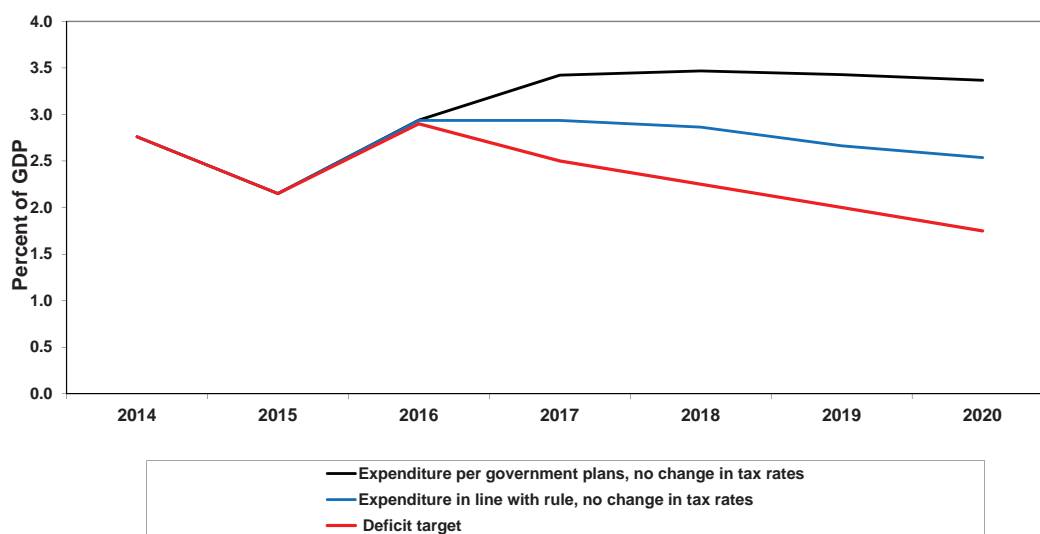
ceiling in 2018–20, the government will need to reduce the expenditure plans by a cumulative NIS 4 billion. This is in addition to the reduction necessary in 2017, and subject to the assumptions that the adjustments in each year will be permanent and that the government will not decide on additional expenditures through the end of the decade.³⁰ This sharpens the expected challenge to the government in the years discussed, within the framework of the effort to meet the expenditures ceiling it set: not only does it not have the option of reaching decisions on increasing expenditures in any item without reducing expenditures in another item, but more than that, it will need to markedly reduce existing expenditure plans or those whose execution has already been decided on. This is even though already today the share of civilian public expenditure in GDP is one of the lowest among advanced economies.

The analysis above indicates that meeting the deficit targets set in law will require notable budget adjustments of about 1.7 percent of GDP (about NIS 20 billion) in 2017–20 (the difference between the red and black lines in Figure 2), assuming that the deficit target is raised in line with the cost of the government’s housing programs. The earlier the government makes such an adjustment, the smaller its scope

can be, as the public debt—and related interest payments—will not increase. Clearly such an adjustment will require conceding numerous programs to which it attributes great importance, or markedly increasing tax revenues.

The analysis presented here is sensitive to assumptions regarding the economy’s future growth rate. The current evaluation is based on assumptions that are slightly higher than the growth forecasts of the OECD and other entities assessing Israel’s economy, and there is some uncertainty regarding them. When analyzing how a change in the growth rate would impact on the path of the deficit, in the scenario in which the government meets the expenditure ceiling but does not increase revenues, it is found that if the growth rate is 4 percent per year, on average, the government will be able to meet the declining deficit targets (the green line in Figure 5). In contrast, a decline in the growth rate to an average of 2 percent is expected to lead to a gradual increase of the deficit to 3.8 percent of GDP (the black line in Figure 5). If the government increases its expenditures per the plans that it has approved, and growth is 2 percent on average, the deficit will increase to more than 4.5 percent, with a concurrent increase in the debt to GDP ratio to around 74 percent.

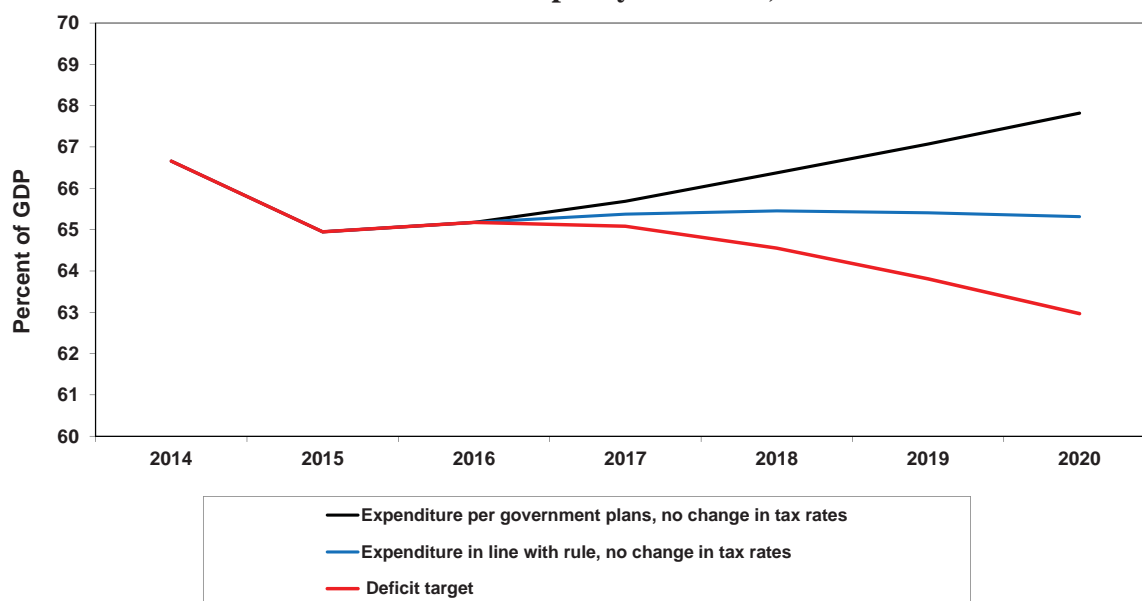
Figure 2
Share of deficit in GDP under various policy scenarios, 2014–20



SOURCE: Based on budget data.

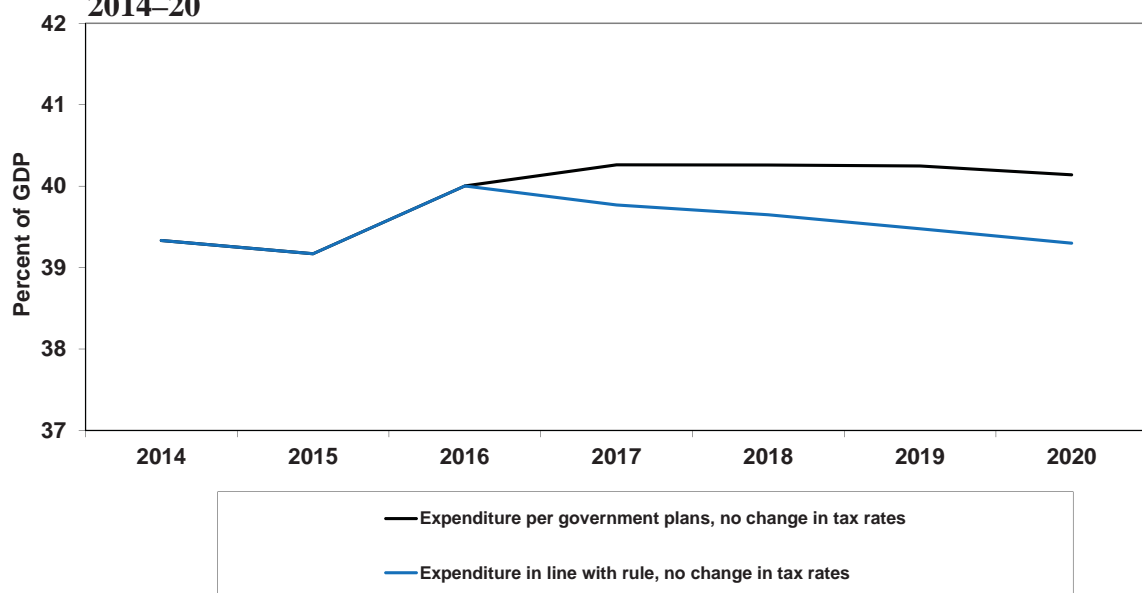
³⁰ The size of the required adjustment each year is impacted on by the adjustments made in previous years, both because the expenditure ceiling increased relative to the previous year’s ceiling, and not relative to actual expenditure, as well as because the deficit in a specific year increases the interest payments in following years.

Figure 3
Debt to GDP ratio under various policy scenarios, 2014–20



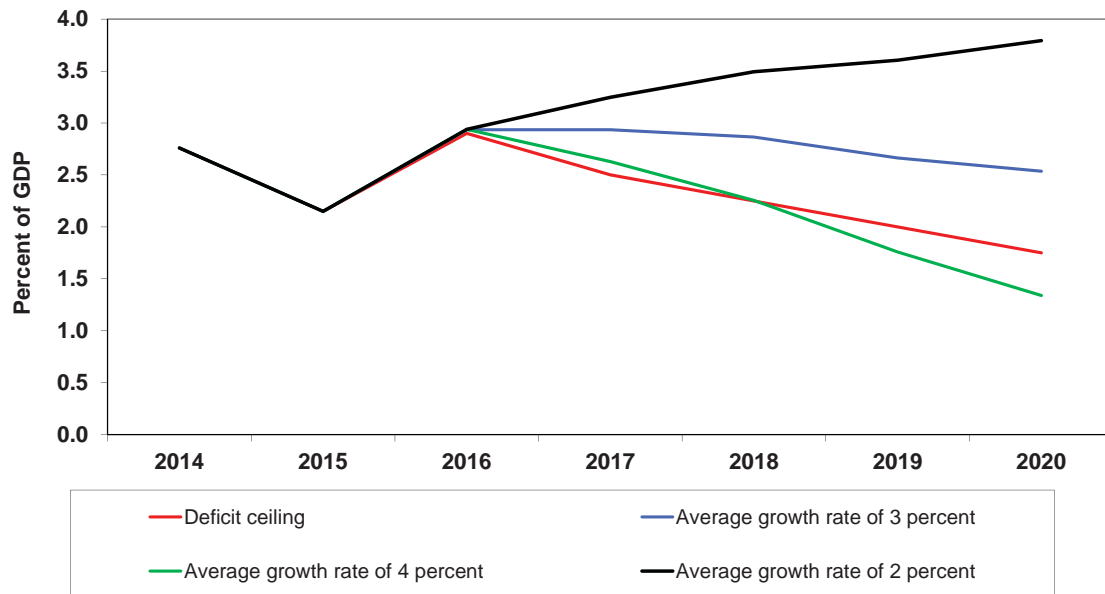
SOURCE: Based on budget data.

Figure 4
Share of total public expenditure in GDP under various policy scenarios, 2014–20



SOURCE: Based on budget data.

Figure 5
The deficit as a share of GDP under various growth rate assumptions, 2014–20
 Tax rates and expenditures under each scenario are based on the 2016 budget.



SOURCE: Based on budget data.

Statistical Tables

Table 1.1 National Accounts, 2014-2015

(percentage change in annual terms, at constant prices, seasonally adjusted)

	2014 ^{a,b}	Change from previous quarter					Year-on-year change ^b	
		2014		2015			2015	
		III	IV	I	II	III	II	III
GDP	2.6	0.9	5.4	2.0	0.2	2.5	1.8	2.4
Business-sector product	2.3	-1.6	7.5	1.6	-0.9	2.7	0.9	3.0
Private consumption expenditure	3.7	5.8	7.6	5.7	1.5	2.4	4.9	5.4
Gross domestic investment	1.0	-0.8	-0.8	17.6	2.6	-10.5	-2.2	2.5
Fixed investment	-2.0	-7.8	10.1	-7.9	-3.1	0.7	-1.1	-0.1
Goods and services exports excl. diamonds	2.6	-2.8	5.3	-5.6	-11.0	8.2	-3.6	-2.0
Goods exports ^c	1.6	2.6	0.0	-3.4	-14.1	0.7	-1.2	-7.9
Services exports ^c	1.4	-15.2	3.3	-3.3	-4.7	10.1	-5.4	0.9
Goods and services imports excl. diamonds ^d	3.3	11.8	0.6	6.4	-7.0	1.3	1.6	1.6
Goods imports ^e	1.4	20.3	-11.2	15.9	-16.5	-1.5	2.0	-4.1
Services imports ^e	7.7	7.3	-9.8	10.1	0.4	14.7	-1.6	6.4
Public sector consumption	3.3	7.4	1.9	-0.1	-1.5	1.6	2.8	-1.5
Public consumption excluding defense imports	2.9	6.5	1.0	0.1	1.0	3.9	3.8	-0.8
Domestic use of resources	3.2	5.7	3.7	7.0	1.0	-0.4	3.1	3.3

^a Compared with previous year.

^b Unadjusted data.

^c New calculation - excluding subsidies.

^d Excluding defense imports, ships and aircraft.

^e New calculation - excluding taxes.

SOURCE: Based on Central Bureau of Statistics data.

Table 1.2 Indicators of Business Activity, 2015
(percentage change, in annual terms, seasonally adjusted)

	Change from previous month						April-September		
	2015						Change from previous period	Year-on-year change ^a	Last month for which data available*
	Apr	May	Jun	Jul	Aug	Sep			
Composite state-of-the-economy index	0.2	0.2	0.4	0.3	0.3	0.1	1.6	3.1	September
Large-scale retail trade	-4.1	0.8	-3.0	2.3	2.1	-0.8	-2.2	-0.5	September
Industrial production (excl. diamonds)	-4.6	-1.2	4.6	-2.5	2.1	-4.2	-2.5	-0.5	September
Index of trade revenue	-0.6	1.0	1.1	-0.6	1.4	-0.4	1.8	2.7	September
Index of trade and services revenue	0.7	-0.5	1.9	-0.5	1.5	-0.7	2.1	4.3	September
Index of services exports	-2.8	5.0	-1.9	2.9	-3.7	1.1	-1.6	-4.4	September
Tourist arrivals	4.8	0.9	0.5	1.5	-1.1	3.0	10.7	-0.2	September
Residential construction									
Starts	4.7	-6.2	3.2	2.4	-1.8	-25.3	0.5	4.8	September
Completions	-14.6	17.3	-0.6	-19.1	28.5	-10.9	-11.1	-4.1	September
ILA land permits (units) ^{a,b}	1,738	2,559	5,037	2,988	1,178	229			September
Climate indices based on Business Tendency Survey ^c									
Assessment of present activity: total business sector	0.23	0.24	0.28	0.25	0.27	0.26			September
Assessment of present activity: manufacturing industry	0.27	0.27	0.27	0.28	0.26	0.24			September
Assessment of present activity: services industry	0.21	0.22	0.28	0.22	0.27	0.27			September
Assessment of future activity: total business sector ^d	0.24	0.24	0.26	0.23	0.24	0.22			September
Business Climate Index (total business sector)	0.23	0.24	0.24	0.26	0.25	0.26			September

* For monthly indicators, when the last month for which data is available is September, the previous comparison period is October–March; when the last month with data available is August, the comparison period is October–February; when the last month with data available is July, the comparison period is October–January. When the last month with data available is June, the comparison period is October–December. For indicators produced quarterly, the comparison is to the last complete quarter in the previous period reviewed.

^a Unadjusted data.

^b Land transactions authorized by the Israel Lands Authority in the relevant period.

^c Figures are in terms of monthly growth of business product.

^d Expectations are attributed to the middle of the three month period following the survey.

SOURCE: Based on Central Bureau of Statistics and Ministry of Construction and Housing data.

Table 1.3 Indicators of Labor Market Developments, 2014-2015
 (percentage change, seasonally adjusted)

	Percent change from previous quarter						April-September			
	III/2015 (thousand)	2014		2015			Change from previous period	Year-on-year change ^a	Last month for which data available*	
		III	IV	I	II	III				
Civilian labor force	3,861.2	0.3	0.5	0.0	0.8	0.6	0.6	2.0	September	
Israeli employees	3,659.1	0.2	1.1	0.3	1.1	0.5	0.5	2.9	September	
<i>of which</i> : in public services	1,309.7	1.1	2.2	0.6	0.2	0.6	0.6	3.7	September	
in business sector	2,348.6	-0.2	0.6	-0.2	1.4	0.7	0.7	2.5	September	
Foreign workers and Palestinians (unadjusted)	304.5	-1.6	1.2	0.7	0.1	-0.5	-0.5	1.6	September	
Average hours worked weekly per Israeli employee	35.4	-0.8	3.4	-2.7	0.6	-0.6	-0.6	-3.2	September	
Weekly labor input in business sector (incl. foreign workers and Palestinians)	110,814.7	-0.2	1.5	-0.5	2.1	-0.3	-0.3	-0.1	September	
<i>of which</i> : Israelis	97,276.4	0.2	1.5	-0.5	2.4	0.0	0.0	0.0	September	
Weekly labor input in public services (Israelis)	32,292.7	1.9	2.8	-1.1	-0.3	-0.7	-0.7	-1.8	September	
Unemployed	202.1	1.6	-8.9	-4.1	-4.3	3.2	3.2	-12.1	September	
Job seekers	193.1	1.3	-0.9	-2.2	-3.9	-2.2	-6.0	-7.4	January	
Claims for unemployment benefits	85.5	9.0	-0.4	-0.7	-10.0	6.5	-7.4	-5.2	September	
Job vacancies	85.2	-1.6	12.6	6.8	-2.6	8.4	4.8	25.5	September	
	(NIS)									
Real wage per employee post ^b		0.6	0.2	0.9	1.1	0.9	2.0	2.8	September	
In public services		0.8	0.3	1.2	0.8	0.5	1.7	2.9	September	
In business sector		0.8	0.5	1.0	0.9	0.5	1.7	2.8	September	
Nominal wage per employee post ^b	9,402.5	0.6	0.1	0.8	0.7	0.9	1.5	2.4	September	
In public services	9,073.2	0.6	0.3	0.7	1.1	0.4	1.6	2.4	September	
In business sector	9,561.0	0.9	-0.1	0.8	0.9	0.7	1.6	2.4	September	
Unit labor cost		1.2	-1.9	0.4	-0.3				June	
		Percent, seasonally adjusted								
Participation rate		64.2	64.2	63.9	64.1	64.2			September	
Employment rate		60.2	60.6	60.5	60.9	60.8			September	
Unemployment rate		6.2	5.6	5.4	5.1	5.2			September	
Depth of unemployment ^c		16.7	21.2	21.6	22.1	19.9			September	

* For monthly indicators, when the last month for which data is available is September, the previous comparison period is October–March; when the last month with data available is August, the comparison period is October–February; when the last month with data available is July, the comparison period is October–January. When the last month with data available is June, the comparison period is October–December. For indicators produced quarterly, the comparison is to the last complete quarter in the previous period reviewed.

^a Unadjusted data.

^b Including foreign workers and Palestinians. Seasonally adjusted data.

^c Percent of unemployed seeking work for more than six months (unadjusted).

SOURCE: Central Bureau of Statistics Labor Force Survey, except for data on Israelis, non-Israelis, and labor input in the business sector, and total Israelis employed, which are the Central Bureau of Statistics (CBS) National Accounts estimates; job seekers, which are derived from the Israeli Employment Service; claims for unemployment benefits, which are derived from the National Insurance Institute; job vacancies, which are derived from the CBS Survey of Job Vacancies, and the Balance of Employment, which is derived from the Ministry of Economy's Employers Survey.

Table 1.4 Government Budget Performance, 2014-2015

	Change from previous quarter						April-September			
	2014 ^a	2014		2015			Change from previous period	Year-on-year change	Last month for which data available*	
		III	IV	I	II	III				
Domestic deficit, as percent of GDP	-1.8	-1.5	-5.3	1.4	-0.5	0.4			September	
Total deficit excluding credit, as percent of GDP	-2.7	-2.3	-6.7	0.2	-1.5	-0.1			September	
Deviation from domestic budget path, excl. credit extended: ^b										
				(NIS billion)						
Revenue	-1.3	-0.1	-0.3	0.7	-0.2	4.6	4.8	4.7	September	
Expenditure	-6.9	0.9	-2.8	-2.0	-4.6	-0.3	4.3	-1.2	September	
Deficit	5.6	-1.0	2.5	2.7	4.4	4.9	0.6	5.9	September	
Total deficit excluding credit	-29.9	-6.2	-19.0	0.6	-4.2	-0.2	14.0	6.2	September	
		Real change year-on-year (percent)								
		2015								
		Jul	Aug	Sep	Oct	Nov	Dec			
Government domestic revenues excluding credit		16.5	11.8	7.2	3.5	8.0	-1.0	9.3	December	
Government tax revenue		12.8	9.7	10.0				9.0	September	
of which : income tax, net		13.5	3.6	22.3	-1.1	17.4	3.8	10.0	December	
VAT, gross		11.7	2.6	4.0	3.5	4.8	-6.5	5.5	December	
Government expenditure excluding credit		0.3	9.8	4.4	9.1	4.6	5.4	5.4	December	
National Insurance allowances		3.9	0.0	-2.9	1.0	4.2		2.5	November	
of which : Unemployment benefit		-3.8	-1.4	-5.7	-11.0	-7.1		-1.1	November	
Income support ^c		-4.3	-5.2	-6.4	-3.9	-6.0		-3.7	November	
Payments to the National Insurance Institute by the public		7.5	5.6	6.6				6.7	September	

* For monthly indicators, when the last month for which data is available is September, the previous comparison period is October–March; when the last month with data available is August, the comparison period is October–February; when the last month with data available is July, the comparison period is October–January. When the last month with data available is June, the comparison period is October–December. For indicators produced quarterly, the comparison is to the last complete quarter in the previous period reviewed.

^a Compared with previous year.

^b The path is determined in accordance with the deficit ceiling. The figures compared with the previous period and with the corresponding period are differences.

^c Not including income support in old-age and survivors' pensions.

SOURCE: Based on Ministry of Finance and National Insurance Institute data.

Table 1.5 Foreign Trade, Balance of Payments, and the Reserves, 2014-2015
 (Seasonally adjusted)

	Change from previous quarter						April-September			
	2014 ^{a,b}	2014		2015			Change from previous period	Year-on-year change ^b	Last month for which data available*	
		III	IV	I	II	III				
	(rate of change, percent) ^c									
Trade in goods ^d										
Goods imports	4.4	-1.6	-0.1	-5.4	0.5	2.9	-0.9	-5.5	September	
<i>of which</i> : Consumer goods	9.0	1.2	2.0	-9.3	2.0	3.2	-1.4	-6.2	September	
Capital goods	4.9	-3.5	1.8	-11.7	7.5	2.6	2.2	-4.4	September	
Intermediates	2.3	-2.2	-1.8	-1.4	-2.2	2.8	-1.6	-5.5	September	
Goods exports	1.4	0.6	0.0	-1.4	-4.6	1.9	-4.4	-7.0	September	
<i>of which</i> : Manufacturing	1.5	2.2	-1.2	-2.0	-4.7	4.5	-3.6	-6.8	September	
<i>of which</i> : High-tech	-1.5	-1.8	4.7	8.4	-2.0	6.2	5.1	11.2	September	
Balance of payments										
		\$ million								
Goods and services exports	98,563	24,380	24,102	23,497	22,565	22,523			September	
Goods and services imports	93,176	23,830	22,615	21,903	20,724	20,005			September	
Balance of trade in goods and services account	5,387	551	1,487	1,594	1,841	2,517			September	
Balance of trade in current account	11,538	1,729	2,749	2,498	3,431	3,831			September	
Surplus/deficit in financial account (excl. foreign exchange reserves) ^b	-8,572	-498	-5,269	-5,286	1,708	-1,285			September	
<i>of which</i> : Nonresidents' direct investments ^b	6,738	2,056	-30	4,724	3,259	2,305			September	
Nonresidents' portfolio investment ^b	9,555	1,916	2,894	-705	-513	-867			September	
Residents' direct and portfolio investment abroad ^b	11,907	1,717	392	4,569	4,793	1,883			September	
Bank of Israel foreign currency reserves, end-period ^b	86,101	86,183	86,101	84,969	88,183	89,331	5.1	3.7	September	
Net external debt (percent of GDP) ^{b,e}	-35.4	-31.1	-34.3	-37.3	-35.3	-36.6			September	

* For monthly indicators, when the last month for which data is available is September, the previous comparison period is October–March; when the last month with data available is August, the comparison period is October–February; when the last month with data available is July, the comparison period is October–January. When the last month with data available is June, the comparison period is October–December. For indicators produced quarterly, the comparison is to the last complete quarter in the previous period reviewed.

^a Compared with previous year.

^b Unadjusted data.

^c The change relates to the dollar values of imports and exports.

^d Not including ships, aircraft, diamonds, and fuel.

^e GDP is calculated at the end-of-period NIS/\$ exchange rate.

SOURCE: Based on Central Bureau of Statistics data.

BANK OF ISRAEL RESEARCH DEPARTMENT

Table 1.6 Selected Price Indices, the Effective Exchange Rate, Nondirected Bank Credit, Interest Rates, Yields, and the Share Price Index, 2014-2015
(rates of change, percent)

	Change from previous month								April-September		
	2015								Change from previous period	Year-on-year change	Last month for which data available*
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov			
CPI	0.6	0.2	0.3	0.2	-0.2	-0.4	0.1	-0.4	0.7	-0.5	September
Consumer price index, seasonally adjusted	0.2	0.0	0.0	0.0	-0.2	-0.1	-0.1	-0.1	-0.1	-0.5	September
Price index of owner-occupied homes ^a	0.2	0.8	1.0	0.2	0.0	0.7	1.1		3.2	6.9	September
General share-price index ^b	0.3	1.4	-3.3	6.8	-4.9	-7.4	4.6	-0.5	-7.4	2.6	September
Real effective exchange rate ^c	-1.3	-0.4	-1.5	-2.2	0.8	1.8	-0.6	0.2	-3.6	0.6	September
Nominal effective exchange rate	-1.1	-0.5	-1.4	-2.0	0.5	1.3	-0.8	-1.0	-4.8	-1.5	September
Nondirected bank credit	-0.2	-0.1	0.9	0.8	0.7	0.5	0.3	0.1	2.0	4.4	September
Effective interest rate in daily deposit auction ^b	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.6	September
Yield to maturity on 5-year notes ^b	-0.7	-0.8	-0.4	-0.4	-0.3	-0.3	-0.3	-0.2	-0.5	-0.2	September
Risk premium ^{b,d}	-0.6	-3.8	-1.2	0.2	1.4	0.9	0.8		-7.1	-15.3	September
	Change during previous 12 months ^e										
CPI	-0.5	-0.4	-0.4	-0.3	-0.4	-0.5	-0.7	-0.9	0.2	-0.4	September

* For monthly indicators, when the last month for which data is available is September, the previous comparison period is October–March; when the last month with data available is August, the comparison period is October–February; when the last month with data available is July, the comparison period is October–January. When the last month with data available is June, the comparison period is October–December. For indicators produced quarterly, the comparison is to the last complete quarter in the previous period reviewed.

^a Not part of the CPI.

^b Daily average over the month.

^c The real effective exchange rate is the weighted geometric mean of the exchange rate of the shekel against 28 currencies, representing 38 of Israel's main trading partners (weighted by the extent of Israel's trade with those countries), adjusted for the difference between the rate of inflation in Israel and the rates of inflation in those countries.

^d As measured by 5-year credit-default-swaps (CDS). Calculated as the difference in basis points.

^e Year-on-year period change.

SOURCE: Based on Central Bureau of Statistics data.

Table 1.7 Indicators of Economic Development in Advanced and Developing Economies^a
(annual change, percent)^b

		2013	2014	2015 Projection	2016 Projection
World GDP		3.3	3.4	3.1	3.6
	Advanced economies	1.1	1.8	2.0	2.2
	Emerging and developing economies	5.0	4.6	4.0	4.5
World trade		3.3	3.3	3.2	4.1
	Advanced economies				
	Imports	2.0	3.4	4.0	4.2
	Exports	2.9	3.4	3.1	3.4
	Emerging and developing economies				
	Imports	5.2	3.6	1.3	4.4
	Exports	4.4	2.9	3.9	4.8
Commodity prices (\$)	Oil ^c	-0.9	-7.5	-46.4	-2.4
	Nonfuel	-1.2	-4.0	-16.9	-5.1
Inflation (CPI)	Advanced economies	1.4	1.4	0.3	1.2
Short-term interest rate (%) ^d	Dollar deposits	0.4	0.3	0.4	1.2
	Euro deposits	0.2	0.2	0.0	0.0
Unemployment rate	Advanced economies	7.9	7.3	6.8	6.5

^a According to the World Economic Outlook, Israel is classified as an advanced economy. The advanced economies include the industrialized countries and some emerging markets.

^b Except for unemployment and interest rates (percent).

^c The average price of a barrel of U.K. Brent, Dubai and West Texas Intermediate crude oil in 2014 was \$96.25, excluding freight costs. Estimated price for 2015 is \$51.62 and for 2016, \$50.36.

^d Six-month Libor rate for US dollar deposits, and three-month Libor rate on euro deposits.

SOURCE: World Economic Outlook (IMF), October 2015.

Part 2: Broader Review of Selected Issues

The earned income tax credit: A preliminary report on a designated survey among eligible individuals

- After three years of nationwide applicability of the Earned Income Tax Credit, approximately 255,000 individuals received the allowance in 2014 (for work performed in 2013)¹, compared with approximately 181,000 in the first year of the program's nationwide applicability.
- A survey conducted among eligible workers indicates that for most of them the allowance provides notable assistance, and in most cases they used the funds to pay for necessities—food, housing, and services—or to repay debt.
- The work allowance is well-focused on weaker population groups—a marked share of eligible people with children reported that during the course of the preceding year they encountered economically difficult situations: about half forewent dental treatment, about 30 percent had bank accounts restricted, about one-quarter held off visiting a medical specialist, and about one-fifth reported that during the surveyed period their electricity or telephone service was cut off.
- There was a slight increase the take-up rate in 2014 (for work performed in 2013), and it reached 64 percent. Preliminary data indicate that it continued to increase in 2015. This share is high relative to similar programs in other countries at such an early stage in their implementation. Reports from eligible people show that the main reason that eligible people do not submit an application for the allowance is lack of knowledge about it or about ways to receive it.
- The size of the allowance is positively correlated with the extent to which the employee persisted in employment in recent years.

The Earned Income Tax Credit (EITC) is a policy tool intended to reduce economic distress and poverty among working families. The allowance improves the economic wellbeing of eligible people without adversely impacting the incentive to work, as it is contingent on employment and the amount depends on the wage of the eligible person. The allowance is paid to workers who have children and

Written by Ella Shachar.

¹ The data for 2014 are updated to November 2015. Eligibility for the allowance is based on the average monthly wage during the work year (eligibility year), and the allowance is paid during the following year. This analysis refers to the payment year and not to the eligibility year.

relatively low earnings. Due to its focus on the population of weaker workers, it increases their economic wellbeing at a lower cost than other support programs.² In Israel, the amount of the allowance is relatively low compared with the amounts provided within the framework of similar programs in other countries, and increasing its size will allow further contraction in the incidence of poverty among workers, at a relatively low cost.³

The EITC is paid mainly to families of working people with children, as well as to older workers (aged 55+). The amount of the allowance depends on the employee's earnings and number of children: an employee with 3 or more children is eligible for a larger allowance.⁴ The eligibility for the allowance is personal and thus both members of a couple can receive it if they are found eligible. Beginning with 2013, mothers are paid an allowance that is 50 percent greater than that paid to fathers or to eligible people without children under the age of 19. The eligibility for the allowance is determined by the Israel Tax Authority based on reports it has, and it sends eligible people notices thereof. In order to utilize the eligibility and receive the allowance, an eligible person must submit an application at a post office. It is a quick and simple process, which includes filling out a short application with a declaration on number of employers and reporting the bank account for payment—there is no need to submit additional documents.⁵ The Israel Tax Authority is working to promote a process that will allow those who have submitted a request for the allowance in the past (whether by post office or at the assessor's office) to submit the request online, beginning in 2016.

² See, for example, a comparison between the EITC and minimum wage as policy tools for reducing poverty in Chapter 5 of the 2014 Bank of Israel Annual Report (2015) <http://www.boi.org.il/en/NewsAndPublications/RegularPublications/Research%20Department%20Publications/BankIsraelAnnualReport/Annual%20Report%202014/chap-5.pdf>

³ The proposal to expand the allowance and its effects on the incidence of poverty appear in Recent Economic Developments 136, "Payment of the Earned Income Tax Credit in 2012: The First Year of Nationwide Expansion" (Bank of Israel, 2013).

⁴ The amount of the allowance depends as well on other income of the family, including earnings of the spouse of the eligible person.

⁵ Submitting a form is required because enquiries to the Israeli government generally still do not provide for electronic signature, because some employers report to the Israel Tax Authority late, and also to verify that the details reported in the past to the Israel Tax Authority are correct, precise, and complete, and also include details of the bank account to which the allowance is to be sent.

Payment of the EITC began in 2008 as a pilot program, and operated in areas in which the “Orot Le’Taasuka” welfare-to-work program (also called the “Wisconsin Plan”) had been implemented. After two years of the pilot (2008–09) and two years of partial nationwide applicability (only for mothers with children up to age two, 2010–11), payment of the allowance was expanded nationwide for all eligible people.⁶ The annual costs of the payments increased from NIS 74 million in the first year (2008) to about NIS 1 billion in 2014. In 2014, a special survey was conducted among eligible people, to become more familiar with the funds’ target population.⁷ The survey included approximately 1,300 respondents, and was conducted within the framework of the work of the joint research team accompanying the implementation of the law related to the EITC.⁸ This document presents an initial report on the survey’s findings, and its full results will be presented in a report that the team is set to publish in 2016. The analysis is based both on the survey’s findings and on administrative data from the Israel Tax Authority.

Characteristics of eligible people

The number of people eligible for the EITC increased after nationwide applicability of the payment in 2012, and in 2014 (for work performed in 2013) it reached about 396,000 (Table 1). About 64 percent of those eligible submitted a request for the allowance and received it—about 6 percent of total employed persons in the economy. The take-up rate is relatively high compared with that of similar programs worldwide in early stages of their implementation. In the US, for example, the take-up rate reached about 70 percent only after 30 years of paying the allowance (EITC). The average annual allowance paid in 2014 totaled about NIS 3,422 per recipient, and is greater than the average amount of the potential annual allowance per eligible person because individuals who are eligible for a high allowance have a greater tendency to utilize their eligibility. Therefore,

⁶ An expanded discussion of the implementation of the law during the pilot years and the partial nationwide applicability appears in Recent Economic Developments 134, “Preliminary results of the first four years of implementation of the Earned Income Tax Credit Law” (Bank of Israel 2013).

<http://www.boi.org.il/en/NewsAndPublications/RegularPublications/Research%20Department%20Publications/RecentEconomicDevelopments/develop134e.pdf>

⁷ The survey was conducted among people eligible to receive the allowance in 2012 for work performed in 2011.

⁸ The team includes representatives from the Bank of Israel, the Israel Tax Authority, the National Insurance Institute, the Myers-JDC-Brookdale Institute (which conducted the survey) and the Hebrew University.

the take-up rate of allowance amounts was greater than the take-up rate of eligible people and totaled 70 percent.

In 2014, a survey was conducted among eligible people in order to become more familiar with their characteristics, the accessibility of the allowance, what it is used for, and their perspective regarding the affect on their economic wellbeing and on their employment. Added to that were administrative data from the Israel Tax Authority on the amount of the allowance per eligible person, the actual take-up of the allowance, demographic characteristics, earnings, etc.

The administrative data indicate that the vast majority of eligible people are workers with children up to the age of 18 (80 percent), and that one-third of all eligible people have 3 or more children. About 24 percent of those eligible are immigrants, about 21 percent are Arabs, and 14 percent are ultra-Orthodox Jews. Eligible people have a stable presence in the labor market—about 85 percent of them worked in at least 4 of the past 5 years. Based on reports in the survey, most of them are skilled (about 77 percent), of which 85 percent have professional experience. About 39 percent of eligible people had post-secondary or academic education.

Table 1
Main results regarding the allowance, 2012–14

Characteristics	Payment year		
	2012	2013	2014 ^a
Eligible people	370,000	386,131	395,887
EITC recipients	181,000	240,577	254,992
Average annual allowance paid, NIS	2,923	3,680	3,729
Average annual allowance per eligible person, NIS	2,675	3,365	3,422
Take-up rate, percent	50	62	64
Budget cost, NIS billion	0.5	0.9	1

^a Data for 2014 updated to November 2015.

SOURCE: Israel Tax Authority data and Israel Tax Authority’s file of employed persons, 2014.

Although most of the eligible people persist in the labor force and have professional experience, it is a relatively weak population. The survey indicates that during the preceding five years, about half of the eligible people went through a period in which they felt poor, and about 70 percent of eligible people reported that they do not manage to cover their monthly household expenses. Against this background, a marked share of eligible people reported that in the year preceding the survey they endured states of economic difficulty: among families of eligible people with children,

about half forewent dental treatment, about 30 percent had bank accounts restricted, about one-quarter held off from a visit to a medical specialist, and about one-fifth reported that during the surveyed period their electricity or telephone service was cut off (Table 2).

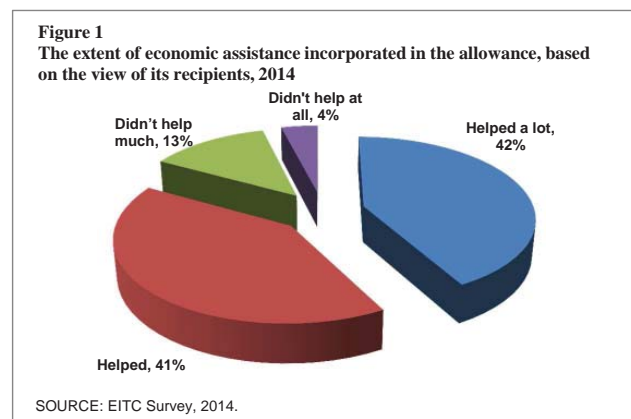
Table 2
States of economic difficulty endured by those eligible for the allowance, in the 12 months preceding the survey, 2014

	Total eligible people	Eligible people with children	Eligible people aged 55+
Passed up dental treatment	46	48	39
Bank account restricted	27	30	13
Passed up visit to medical expert	26	27	23
Passed up purchase of pharmaceuticals	24	26	18
Electricity or phone service disconnected	17	20	7

SOURCE: EITC Survey, 2014.

The effect of the allowance on the economic wellbeing of its recipients

In view of the economic difficulties faced by eligible people, the work allowance is a significant source of income for them and improves their situation. More than 80 percent of allowance recipients reported that the allowance helped them, or very much helped them (see Figure 1).



The importance of the allowance to eligible families is reflected as well in the ways they used it (Table 3). In most cases they used the funds to pay current household expenses (such as food, housing, various bills), or to repay debt. This

fact emphasizes how crucial the allowance is for them. Only 5 percent of allowance recipients reported that they used it for savings. It can be seen that families also channeled the allowance to other expense categories, such as clothing and footwear, and health and education, though in such cases the percentages were lower.

Table 3
Uses of allowance by recipients, 2014

Types of expenditure ^a	Percent
Current expenses	71
Cover overdraft/repay debt	62
Clothing and footwear	26
Health	18
Education	12
Electronic equipment	7
Furniture	5
Savings	5
Culture and entertainment	5
Home renovations/car repairs	4

^a More than one answer was permitted in the survey.

SOURCE: EITC Survey, 2014.

Take-up of eligibility and factors impacting on it

Although the allowance improves the economic wellbeing of its recipients, about a third of those eligible for it do not submit a request to receive it even though the process was accelerated: about 80 percent of those submitting a request reported in the survey that the process at the Post Office took between 15 minutes and a half-hour.⁹ In the survey, eligible people were asked if they would want to receive the allowance without submitting a request, but rather through their employer. Most recipients (65 percent of those responding to the question¹⁰) responded in the negative, among other reasons due to the concern that it would adversely impact their wage or employment conditions (31 percent of those that responded in the negative). Additionally, half of those who did not utilize their eligibility and responded to the question preferred that it would not be paid via the employer.

⁹ As noted in footnote 5, the allowance cannot be received automatically or without submitting the application. One of the reasons for this is that the eligible person must sign the request and thus authorize the details submitted to the Israel Tax Authority. Currently, there is no legal basis for using an electronic signature for these purposes. In addition, the eligible person provides on the application the details of the bank account to which to send the allowance.

¹⁰ Not including those who responded "don't know".

The survey indicates that the main reason why eligible people do not submit the request for the allowance is a lack of knowledge about the program or about ways to receive it. Research shows that detailed information about the allowance has an important impact on its receipt and its amount.¹¹ In 2014, about a quarter of eligible people reported that they were totally unaware of the allowance. The low level of awareness was especially notable among men (38 percent of eligible men did not know about the law, as opposed to 20 percent of eligible women), secular Jews (22 percent of eligible secular Jews were unaware of the law, compared with only 9 percent among the ultra-Orthodox), and older people (one-third of eligible people aged 55+ did not know about the law, compared with one-quarter of younger eligible people). Awareness of the law is correlated with the education level of the eligible person: among those with post-secondary education, 65 percent had heard of the law, compared with 54 percent among the less educated.

The survey indicates that friends and family members are a main source of information about the allowance (Table 4), and that more than around a third of eligible people were exposed to information about the allowance due to notices of eligibility sent to them by the Israel Tax

Authority or by television ads. The survey points to other sources of information, which expand the possibilities to get information about the allowance to specific population groups: newspapers for ultra-Orthodox and radio and Internet for immigrants. The table does not include information on the Arab population because conflicting reports were received in the survey: a significant portion of recipients of the allowance (based on administrative data) reported that they had not heard of its existence.

The notices of eligibility sent by the Israel Tax Authority are mailed toward the end of the date for submitting the request (generally in September) to eligible people who have not yet submitted it. These eligibility notices contribute to increased take-up—48 percent of eligible people who received the letters subsequently submitted a request (Table 5). The contribution of the letters differs between population groups. It is especially high among ultra-Orthodox (59 percent of eligible ultra-Orthodox who received the notice submitted a request for the allowance) and among single mothers (56 percent). In contrast, the letters contributed less to the Arab population—only about a third of eligible Arabs to whom letters were sent submitted a request for the allowance. It is possible that this derives from difficulty

Table 4
Eligible peoples' sources of information about the allowance, 2014

	Total eligible people	Ultra-Orthodox	Immigrants	Jews, non-immigrants
Knew about allowance	72	91	74	84
Sources of information				
Friends or family members	67	77	75	62
Letter from Israel Tax Authority	36	40	33	41
TV	36	4	34	40
Radio	22	15	27	19
Newspapers	19	38	13	23
Internet	18	10	24	17
Post office	11	7	13	11
Employer	4	5	7	3
Government entity	2	2	1	3
Publication in Israel Tax Authority offices	2	0	2	2
Nonprofit organization	1	3	0	1

SOURCE: EITC Survey, 2014.

¹¹ See, for example, the research of Chetty, Friedman and Saez (2013), "Using Differences in Knowledge across Neighborhoods to Uncover the Impact of the EITC on Earnings", American Economic Review.

in understanding Hebrew or from addresses that have not been updated. Beginning in 2013, a short notice in other languages (including Arabic) was included with the letter. The added notice includes the telephone number of a hotline that provides information in various languages, but this addition did not materially change the letters' contribution.

Table 5
Efficiency of Israel Tax Authority eligibility notices:
Take-up rate among eligible people to whom the Israel Tax Authority sent eligibility notices, 2014

Population group	Percent
Ultra-Orthodox	59
Single mothers	56
Women	55
Eligible people aged 55+	50
Immigrated in 1990s	50
Total recipients of notices	48
Eligible people with children	47
Men	40
Arabs	35

SOURCE: Israel Tax Authority's file of employed persons, 2014.

A multivariate probability regression analysis of the factors impacting on eligible peoples' awareness of the allowance finds that eligible people who are older than 45 have a relatively low chance of knowing about the allowance (it is about 8–10 percent lower than for younger eligible people). Unmarried fathers with children up to age 18 have a 17 percent lower chance than other eligible people. Low fluency in Hebrew is an additional factor for lack of awareness of the allowance—among immigrants who have difficulty reading Hebrew the chance is about 18 percent lower. Factors that increase the chance of being aware of the allowance include post-secondary/academic education and eligibility for the allowance in previous years.

The impact of the allowance on employment¹²

The survey studied how recipients of the allowance in 2012 view its effect on their employment in 2014. Among eligible people who received the allowance in 2012 and were working at the time of the survey, more than a third reported that it has an effect on their continued employment.

¹² A detailed analysis of the allowance's impact on employment appears in Bank of Israel (2015), "Report by the research team monitoring the Earned Income Tax Credit program, through 2012", <http://www.boi.org.il/he/NewsAndPublications/PressReleases/Documents/20%מעקב20%דוה20%של20%צוות20%המחקר20%-20%מענק20%העבודה> (in Hebrew).

This share is greater among males (Table 6). According to the view of recipients of the allowance, its effect on hours of work is lower and is focused mainly on males. About one-quarter of men who received the allowance responded that it has an effect on their decision related to hours of work. Overall, about 12 percent of those surveyed responded that the allowance will contribute to an increase in their number of work hours.

Table 6
The effect of the allowance on employment, in the view of recipients who worked at the time of the survey, 2014 (percent)

The extent to which interviewee's allowance impacts on the decision to:	Total	Men	Women
Continue to work			
Impacts	36	41	34
Doesn't impact at all/don't know	64	65	71
To work fewer or more hours			
Impacts	18	24	14
Doesn't impact at all/don't know	82	76	86

SOURCE: EITC Survey, 2014.

A positive correlation between receipt of the allowance and the chance of an eligible person continuing to work in 2014 was also found in a multivariate analysis based on survey findings. The analysis examines the factors correlated with the probability of eligible people persisting in the labor force. It highlights the importance of the size of the allowance to persistence in the labor force—the chance of persisting also rises with the increase in the allowance (even when including a control for wages)—and indicates that the education level and the number of children of an eligible person are positively correlated with it. In contrast, the chance of remaining in the labor force is lower among eligible females with children up to age 3.

Summary

The survey's findings verify that the EITC is well-focused on the population of working people who are enduring economic difficulties and that it is efficient in improving their economic situation. Therefore, increasing the amount of the allowance will allow an efficient increase in the support for families of low-income employed people. An additional manner of increasing the efficiency of the allowance is to increase the take-up rate among eligible people. Although the overall take-up rate is relatively high, among eligible Arabs

it is lower, and survey findings indicate that the Israel Tax Authority's notices of eligibility are not efficient among that population group, apparently due to language difficulties. Therefore eligibility notices in various languages (including Arabic, Amharic and Russian) should be used in order to increase the take-up rate.

Locality-based income tax credits: Characteristics and limited efficacy in encouraging internal migration¹

- Locality-based income tax credits in Israel are not an efficient policy tool for attracting people to move to the periphery: Only about 10 percent of the potential credits in 2008 (which totaled NIS 921 million) were given to wage-earners who moved to beneficiary localities, and only a minority of those employees moved due to the tax credits. About three-quarters of the potential credits were given to veteran residents who probably would not have moved away from the beneficiary localities had they not received the credits, and about 12 percent were given to employees who doubtfully lived in the beneficiary localities.
- The experience accumulated in the previous decade shows that granting credits to additional localities may strengthen incoming migration to Jewish localities to a certain extent, but it is not expected to have an impact on outgoing migration. The changes in tax credits in 2003 are in line with the characteristics and numbers of wage-earners who entered the localities thereafter, but not with the characteristics of wage-earners who left those localities.

In recent months, the Knesset has discussed income tax credits for residents of the periphery, and at the end of November, the Knesset passed legislation to expand the number of localities receiving the tax credits from 182 to about 430, while moderately reducing the rate of the credits in some of the localities. The new tax credits take effect with the 2016 tax year, and the budget for them is expected to grow from about NIS 800 million to about NIS 1.2 billion per year. This is the first comprehensive reform made to tax credits since they were reduced in 2003. In that year, the number of communities benefiting from the credits was reduced from about 460 to about 165, and the tax credits were expanded for some of the localities, particularly those near the border with Lebanon.

This analysis sheds some light on the credits policy. It examines the characteristics of the credits and their distribution in 2008, the year in which there was a Census conducted that provides details about the characteristics of the recipients and their actual place of residence (as opposed

Written by Haggay Etkes; data processing by Michal Weissbrod.

¹ The author wishes to thank the Central Bureau of Statistics, and particularly Anat Katz, Hadas Yaffe, Orly Forman, and David Gordon, for preparing the data and making them accessible for work in the Research Room.

to their place of residence reported in the Population Registry). The analysis also examines how the change made to credits in 2003 has affected the migration of residents of the relevant localities in the north in the medium term, and provides indications of the limited impact of the expanded credits in the coming years. The analysis concludes by presenting evidence of abuse of the locality-based tax credits.

1. The development of the tax credits

In the past few decades, income tax credits have been granted to residents of certain communities in order to attract more established population groups to economically weaker localities, strengthen the periphery, and encourage settlement along the country's borders.² The credits are granted in the form of credits that reach a certain rate of gross income (11–22 percent in 2014) as long as it is lower than the income ceiling (NIS 125,000–NIS 241,000 in 2014). For instance, Kiryat Shmona is one of the localities receiving a broad scope of credits, and if a resident earned NIS 250,000 in 2014, that resident would receive a tax credit totaling about NIS 53,000—the product of the benefit as a share of income (22 percent) multiplied by the relevant income ceiling (NIS 241,000). The credit lowers the income tax payment, but does not generate a payment to individuals whose total tax payment is lower than the total credit. Therefore, the credit improves the situation of those with high incomes—the population group that the law is trying to attract to the periphery—more than it does the situation of those with middle and low incomes.

Until 2015, the list of localities eligible for the credits developed without clear and uniform criteria being set for eligibility.³ The number of localities expanded at the beginning of the previous decade, with the enactment of the Negev law. In 2002, the residents of about 460 localities benefited from the grants, with the vast majority of those communities being in the northern and southern districts, Judea and Samaria, and the Gaza Strip. However, in 2003, the number of the benefiting localities was drastically reduced, to 165, as part of the policy adopted by the government in order to reduce the budgetary deficit. In general, the residents of localities in the Arava and of about 20 other

localities in the southern district continued to benefit from the credits, and the credits were even expanded to localities in proximity to the borders with Lebanon (2003) and the Gaza Strip (2007). According to unofficial estimates, the total credit in 2013 was about NIS 850 million, and about 80,000 taxpayers benefited from them. (The average credit totaled about NIS 10,600 per taxpayer.)

Since the tax credits were not given according to criteria, the Supreme Court invalidated the arrangement in 2012 and gave the legislative branch an extension to arrange the credits according to objective criteria. The recent decision reached by the Knesset on the matter (November 2015) set out criteria for the credits and their scope, based on geographic location (location in the periphery and proximity to the border) and socio-economic status of the locality. In the 2016 tax year, about 430 localities will benefit from the credit. About 248 localities that did not benefit from it in recent years will benefit from an average credit of about 8.5 percent. The credit for 92 localities will be slightly expanded, from about 8.5 percent to about 12.4 percent on average. At the same time, the credit will be slightly lowered for about 41 localities, and will not change for 56 other localities, mostly around the Gaza Strip (Table 1a).

Table 1b also shows the changes that took place in 2003 in the tax credits for localities in the northern district where the tax credits were stable between 1998 and 2002 and between 2004 and 2012. Changes in income in the localities covered by the study, and the characteristics of migration to those communities are examined in Section 4, in order to shine light on how the expansion of the credits that were recently approved is expected to impact those communities. A comparison of the changes in 2003 to the changes in 2016 shows that the expected increase in the credit rate in the next year is similar to the increase in 2003, and it is therefore reasonable to draw inference from the impact of the change in the previous decade to the expected impact in the next few years.

2. The distribution of tax credits between beneficiary population groups in 2008

Combining the data from the 2008 Census with the data from the employer-employee files for that year makes it possible to distinguish the characteristics of the potential tax credits and their distribution among various resident groups, at a level of detail that is not possible for other years in the previous decade. The potential tax credits are credits that individuals can receive if they or their employers approached the Israel Tax Authority in order to realize them. They are estimated according to income reported

² The legislator's aim is to encourage new residents to join those localities and to reduce the departure of veteran residents, so that there is a positive migration balance over time, which will in the end lead to the expansion and strengthening of the localities.

³ Israel Tax Authority (2008). Zussman (2003) even brought evidence of a connection between credits to localities, voting patterns in Knesset elections and the question of whether political activists live in those localities.

Table 1
Changes in income tax credits in all districts in Israel (2015–16) and in the study localities (2002–04)

a. Recent change in tax credits (2015–16)					
	Number of localities	Average tax credit rate		Average ceiling (NIS thousand)	
		2015	2016	2015	2016
Tax credit introduced	248	0.0%	8.5%	0	148
Tax credit expanded	92	8.5%	12.4%	218	193
Tax credit unchanged	56	19.2%	19.2%	241	235
Tax credit reduced	41	13.1%	10.5%	184	167

b. Change in the tax credit in the study localities (2002–04)					
	Number of localities	Average tax credit rate		Average ceiling (NIS thousand)	
		2002	2004	2002	2004
Tax credit expanded	76	4.5%	13.2%	125	196
Tax credit unchanged	105	0.0%	0.0%	0	0
Tax credit eliminated	40	6.8%	0.0%	120	0

SOURCE: Bank of Israel based on Israel Tax Authority.

to the Israel Tax Authority and according to the tax credit points derived from the information gathered in the 2008 Census. This method of calculation creates a slight upward bias in the estimate of the local tax credits since some of the personal data entitling an individual to credits do not appear in the 2008 Census, and because some of those eligible for the credits do not realize them. It is therefore not surprising that potential credits totaled about NIS 922 million in 2008, while the estimated take-up of the credits as per the Ministry of Finance was about NIS 750 million. According to our estimate, the number of recipients of the potential credits reached about 86,000 people, and the average potential credit was about NIS 10,800 per year (Table 2).

About 10 percent of the potential credits in 2008 were given to wage-earners who, according to Census data, migrated to beneficiary localities between 2003 and that year. Only about 4.3 percent of total credits were given to those who migrated from the Tel Aviv, central and Haifa districts, accounting for about 3.9 percent of recipient wage-earners. This is a low rate considering that the credit policy is intended, among other things, to encourage migration from the center of the country to periphery localities. Moreover, on the basis of the localities included in the study, we infer that only a small portion of migrants to beneficiary localities did so due to the tax credits: Migration between 2002 and 2008 to communities in the north where the credits were

cancelled (expanded) is about one-fifth lower (higher) than migration to the control localities (See Part 4). It therefore seems that only a small percentage of the credit budget actually increased the volume of migration to the beneficiary localities.

About three-quarters of the potential tax credits were given to veteran residents who lived in the beneficiary localities in both 2003 and 2008. Apparently, this population group includes an additional target group of the policy—the population group that would migrate from the beneficiary localities were it not for the credit. However, a detailed analysis of how the change in the tax credit affected the group of localities in the northern district does not show a connection between the changes made to the credits in 2003 and the volume or characteristics of outgoing migration in the following years. (The exceptions are Tzfat and Tiberias; see the left panel of Table 3 in Part 4.) About 12 percent of the potential grants are attributed to residents that were surveyed in a different locality in the 2008 Census, and there is therefore a concern that they did not actually live in a locality that made them eligible for the credit.

These figures show that the tax credits are not a focused policy tool, because only a small percentage of the expenditure on them serves the main purpose of the policy—to attract population with high earning potential to the periphery. The

Table 2
Distribution of locality-based income tax credits and characteristics of potential beneficiaries^a by population group, male and female wage-earners, 2008

	All potential beneficiaries	Migrated to the locality between 2003 and 2008	Migrated from Tel Aviv, Central and Haifa districts	Veteran residents	"Registered residents" ^b
Cost of tax credits (NIS million)	921.6	96.3	39.4	702.2	116.5
Percentage of tax credit cost	100.0%	10.4%	4.3%	76.2%	12.6%
Number of recipients (thousand)	85.7	8.2	3.3	65.9	10.7
Percentage of all recipients	100.0%	9.6%	3.9%	76.9%	12.5%
Average tax credit (NIS thousand)	10.8	11.8	12.1	10.7	10.9
Average age	41.4	35.8	35.4	43.3	33.9
Average years of education	13.7	14.7	15	13.4	14.4
Bachelor's degree	30.6%	45.1%	49.9%	27.4%	39.6%
Percentage of Arabs	10.2%	6.2%	0.7%	10.8%	10.3%
Married	74.5%	76.2%	72.3%	78.1%	52.0%
Average number of children	1.1	1.1	0.9	1.2	0.6

^a The potential tax credits are equal to the difference between the actual tax payments and the tax payments excluding the locality-based credits, and are calculated based on personal information collected in the 2008 Census and according to gross income from personal labor. Potential beneficiaries are those with potential tax credits irrespective of actual uptake.

^b Residents who have an official address in the beneficiary localities but were surveyed in another locality for the 2008 Census.

SOURCE: Bank of Israel calculations based on 2008 Census (Central Bureau of Statistics) and Employer-Employee data file (Israel Tax Authority).

vast majority of the credits are given to veteran residents who would doubtfully migrate away from the localities in the absence of the credits, and to wage-earners who doubtfully lived in the beneficiary communities.

The loss of income caused to the State due to the granting of credits to these residents can be minimized by limiting the total cumulative credits to a reasonable yet generous amount, such that will maintain the incentive to migrate to the beneficiary localities. For instance, in Canada, the total credit granted to Bachelor's degree recipients living in the periphery is limited to C\$15–20 thousand (see Part 3). It is also worthwhile examining whether the provision of high-quality public services—for instance in the areas of education, culture and transportation⁴—may serve the policy's objective more efficiently.

An examination of the characteristics of potential beneficiaries (Table 2) shows that the migrants to the beneficiary localities are younger and more highly educated than the veteran residents. (A comparison to similar localities that do not have the benefit appears below.) In both groups, more than three-quarters of wage-earners are married, and individuals have an average of just over one child. The "registered" residents in the beneficiary localities are even younger than the migrants, and about half of them are not married. It is likely that a significant portion of the "registered" residents are students or young adults whose official address is the same as their parents' address. However, there are indications that some of the "registered" residents in the 30–55 age range unlawfully exploit the credits, as discussed in Part 5.

3. Tax credits and migration in Israel and abroad, according to research literature

As mentioned, the tax credits are intended, among other things, to strengthen the periphery by attracting migrants to beneficiary localities, and the effect of the credits in Israel at the beginning of the previous decade has been examined in

⁴ Frish and Tsur (2010) showed that investment in transportation infrastructure (roads and railway lines) has a positive impact on the number of commuters and on wages in areas where the transportation infrastructure within them and in relevant employment areas was expanded.

a number of studies. In general, it was found that reducing the credits did not have an impact on the growth rate of the population in the beneficiary communities. The most comprehensive and up-to-date examination of the issue was conducted by the Israel Tax Authority (2008), and related to the growth rate of the population recorded in the Population Registry between 2002 and 2005 (two years after the cancellation of credits). It turns out that the growth rate in the localities where the credits were reduced or cancelled is similar to the rate in localities that continued to receive grants or never received them.

Ben-Naim (2010) examined the increase of credits for Ofakim, Dimona and Netivot between 2000 and 2007, and found that it did not lead to higher wage earners migrating to those localities. In contrast, Liebig et al. (2007) studied how the income tax paid in a canton affects migration between cantons in Switzerland, and found that those with Bachelor's degrees migrate to cantons with lower income tax rates, but the scope of the phenomenon is limited.⁵ Morger (2013) shows that when there are differences in income tax between neighboring cantons, they are also reflected in differences in real estate prices. Similarly, Akcigit et al. (2015) found that income tax rates for high wage earners cause leading scientists who file a large number of patents to migrate between countries. Moretti and Wilson (2015) found the same to be true regarding the United States. Similarly, Jacobsen et al. (2013) found that income tax rates had an impact on the migration of European football players within the EU, after the Bosman ruling (1995) allowed them to play in any country in the EU.

Similarities can be found between the locality-based credits in Israel and the tax credits given to those with Bachelor's degrees in a number of peripheral provinces in Canada (Nova Scotia, New Brunswick, Manitoba and Saskatchewan) if they continue living there after completion of their studies.⁶ The program is intended, among other things, to reduce the migration of those with higher education from those provinces. The maximum total credit ranges from C\$2,000 to C\$4,000 per year, while the maximum total credit over the years ranges from C\$15,000 to C\$20,000. Webb (2014) found that these programs did not have an effect on the migration of the graduates of universities in those provinces, but they did raise the graduation rates. The Nova Scotia

⁵ Kirchgassner and Pommerehne (1996) found that similar phenomena existed in Switzerland in the 1970s and 1980s among high income earners. At first glances, the effect in Switzerland is expected to be smaller than in Israel, because income tax in Switzerland increases the subsidy for local public services, while in Israel there is no direct connection between tax credits and the financing of public products in beneficiary localities.

⁶ Graduate Retention Credits.

government also found that these credits were not helpful in preventing the migration of university graduates, and cancelled them in 2014.⁷

4. The change made to the tax credits in 2003 and its impact on the migration of wage-earners in the northern district (1998–2012)

This section provides an examination of how the changes in the tax credits impacted migration to and from the localities in the study, by examining treatment groups and control groups that include Jewish localities in the northern district. For these communities, the tax credits were changed significantly one time, in 2003, but not in the other years during the study period (1998–2002, and 2004–2012). It is therefore possible to examine how this change impacted the localities in the study. In other areas in Israel, there were a number of changes, and it is therefore difficult to isolate the effect of each change on migration to and from the beneficiary localities.

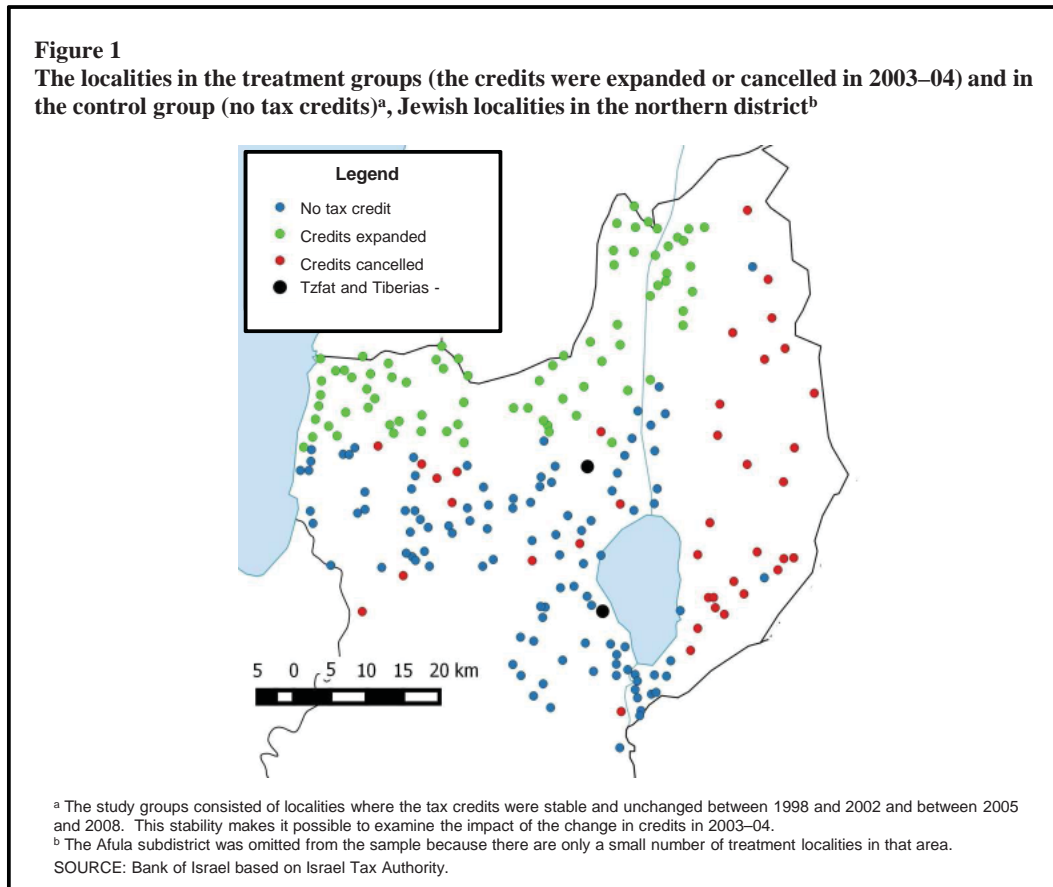
One treatment group includes localities in proximity to the border with Lebanon where the tax credit rate was increased from 0 percent or from 7 percent to 13 percent⁸ (the group is labeled in green in Figure 1). Another treatment group includes localities in the Golan Heights, as well as a number of localities in the Galilee, where the tax credit—of 5–7 percent⁹—was cancelled in 2003 and not renewed thereafter (labeled in red). In Tzfat and Tiberias (labeled in black), the tax credits were cancelled in 2003, and they are labeled separately because wages in those cities are very low compared to the wages in the other localities in the study. The control group includes localities in the northern district that did not receive credits during the study period (1998–2012, the group is labeled in blue). The study group does not include Arab localities, because a small minority of them received tax credits during the study period. It also does not include the Afula subdistrict (the Jezreel Valley and the Beit She'an Valley) because this district is far from the localities in the Golan Heights and along the border with Lebanon where the credits were changed. (The credit characteristics of the localities in the study appear in Table 1b.)

The database compiled for this analysis includes a merge of the 2008 Census—which included 14 percent of the

⁷ Nova Scotia Ministry of Finance website: <http://www.novascotia.ca/finance/en/home/taxation/tax101/personalincometax/grr.aspx>

⁸ The exception is Kiryat Shmona, since the tax credit there was increased to 25 percent in 2003.

⁹ The exception is Migdal HaEmek, which had a tax credit of 3 percent until 2003.



population that in that year had reached the age of 15—and of the records of those surveyed in the Census from the file of wage-earners for the years 1998–2012. This combined file makes it possible to examine the changes in the places of residence of wage-earners over the years, according to the file of wage-earners, and the connection between them and the detailed information gathered on individuals in the 2008 Census, such as information on education, including religious studies, the number of work hours, and so forth.

The identification strategy in this section is based, as stated above, on dividing the localities into a treatment group containing localities in which the tax credits were expanded, two treatment groups in which the tax credits were cancelled (Tzfat and Tiberias in one, and other localities in the other), and a control group in which localities never had tax credits. Since the main changes in the tax credits to communities took place only in 2003, it is possible to examine the connection between the tax credits and the characteristics of wage-earners that moved into or out of the study communities, and thus to shine light on the ramifications of future changes in the tax credits.

The connections between changes in the tax credits and the characteristics of wage-earners who moved into or out of the study localities

We examine the differences between the number and characteristics of wage-earners who moved into or out of the study localities between 2002 and 2008 and the veteran wage-earners who lived in those communities in 2002 and in 2008. An examination of the difference between the rate of wage-earners moving out of these communities and the veteran employees in them (the first row in the right panel in Table 3) shows that a reduction in the credits does not correlate with an increase the volume of people leaving, and expanding them does not correlate with a decline in the volume of those leaving. A comparison of the characteristics of those leaving and the veterans in the study localities, excluding Tzfat and Tiberias, shows that this comparison also does not support the argument that tax credits help keep employees with higher education and high earning potential in the beneficiary localities. This finding does not support the argument that the tax credits serve as an effective policy tool in preventing migration from the beneficiary localities.

The exceptions are Tzfat and Tiberias, because they suffered from positive selection in outgoing migration: the number of weekly work hours of those leaving is 3.6 hours more than among veteran residents, while in the other study localities, the parallel difference is close to zero. The employment rates among those leaving Tzfat and Tiberias are about 19 percentage points higher than among the veteran residents, and the parallel differences in the other study localities range between 5 and 9 percentage points. Similarly, the differences between monthly income of those leaving Tzfat and Tiberias

and that of the remaining veteran residents are greater than the differences in the other localities. The social processes undergone in Tzfat and Tiberias were also reflected in the fact that graduates of advanced yeshivot (institutes of higher religious learning) tended to remain in those communities more than other wage-earners. A possible explanation for the changes in these cities involves the high unemployment rate that was prevalent in those cities at the beginning of the previous decade, even before the tax change in 2008.

Table 3
The difference between the characteristics of residents who moved into or out of the study localities between 2002 and 2008 and characteristics of veteran residents in those communities during that period

	Departing wage-earners				Incoming wage-earners			
	Tzfat and Tiberias	Credit cancelled	No credit	Credit expanded	Tzfat and Tiberias	Credit cancelled	No credit	Credit expanded
Migrants as a share of residents, 2002	13.4%	14.8%	14.6%	16.0%	6.4%	10.7%	12.8%	15.7%
	Difference between departing wage-earners and veteran residents				Difference between incoming wage-earners and veteran residents			
Age	-7.3 (0.7)	-8 (0.7)	-9.1 (0.5)	-6.3 (0.4)	-4.7 (1.3)	-5 (0.8)	-4.3 (0.6)	-3.8 (0.5)
Years of education	1.1 (0.2)	0.6 (0.2)	0.8 (0.2)	1.1 (0.2)	0.7 (0.4)	0.4 (0.2)	1 (0.2)	0.7 (0.2)
Holders of at least a matriculation certificate	18.0% (4.2%)	9.4% (3.0%)	4.9% (2.5%)	16.2% (2.1%)	1.5% (6.7%)	4.7% (3.2%)	8.9% (2.4%)	7.9% (2.4%)
Bachelor's degree or higher	12.1% (3.6%)	15.6% (3.7%)	15.8% (3.0%)	16.8% (2.7%)	-1.9% (4.6%)	6.8% (3.7%)	14.9% (3.2%)	13.5% (2.7%)
Graduates of higher religious education	-1.6% (1.3%)	1.5% (1.1%)	-0.5% (0.5%)	1.0% (0.7%)	4.9% (3.7%)	0.5% (1.0%)	0.1% (0.8%)	0.0% (0.6%)
Weekly work hours	3.6 (1)	-0.6 (0.9)	0 (0.7)	0.5 (0.5)	1.5 (2.1)	-2 (1.1)	-0.1 (1)	1 (0.7)
Months of work	0 (0.3)	-0.2 (0.2)	-0.2 (0.2)	-0.2 (0.1)	-1 (0.5)	-0.1 (0.2)	0.1 (0.2)	0.2 (0.2)
Employment rate in 2008	19.7% (2.2%)	8.8% (1.3%)	7.9% (1.3%)	9.4% (1.2%)	-8.1% (5.5%)	1.0% (1.6%)	3.5% (1.0%)	2.8% (1.0%)
Monthly labor income per wage-earner	2.3 (0.9)	1.2 (0.9)	1.1 (0.9)	1.4 (0.7)	-1.6 (1.1)	-0.2 (0.7)	2 (0.7)	2 (0.8)

^a The standard deviations appear in parentheses.

^b Wage earners moving into (out of) a locality are included among the residents of the locality in 2008 (2002) but did not appear as wage-earners in the locality in 2002 (2008), whether due to migration or due to no longer working as wage-earners.

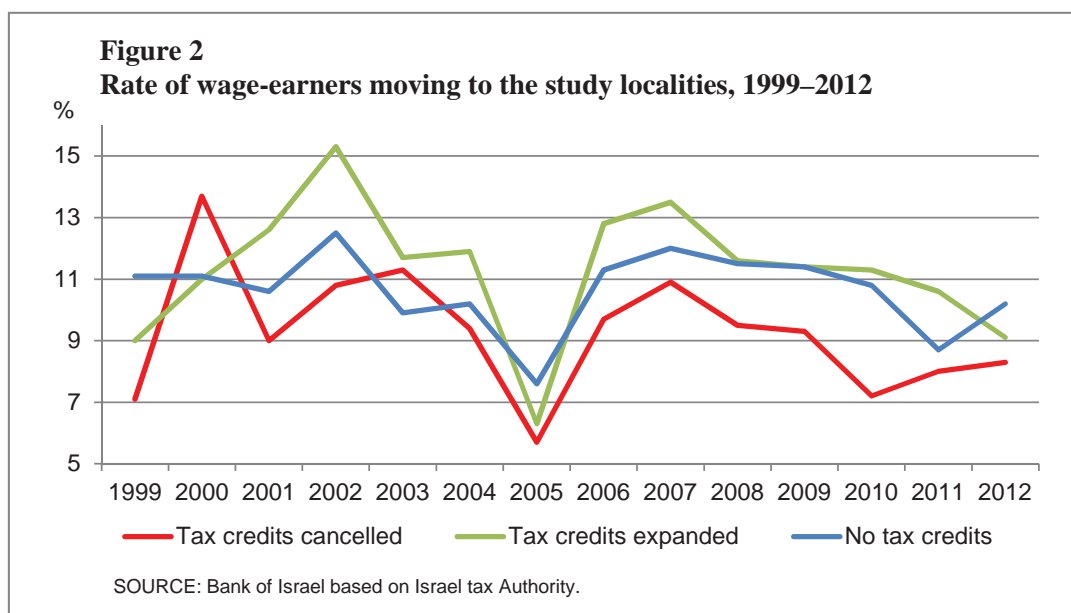
SOURCE: Bank of Israel based on the File of Wage-Earners and the 2008 Census.

These findings hint that the change made in the tax credits in 2003 did not have an impact on the volume of outgoing migration from the study localities. It is possible that the change in the credits had an impact only on the characteristics of those leaving Tzfat and Tiberias, but not on the other localities in the study group. If so, then about three-quarters of the budget for the credits—the share of the veteran residents (Table 2)—did not serve one of the objectives of the policy—to maintain a strong population in the periphery—and it is doubtful whether it had any impact on the characteristics of those leaving the study localities.

In contrast, the rate of wage-earners moving into beneficiary localities out of total residents in those communities, does correlate with the change in the tax credits (the first row in the left panel in Table 3). The rate of wage-earners moving into localities that lost the credit, particularly Tiberias and Tzfat, is lower than the rate moving into the control localities (those without credits), and is slightly lower than the rate of those moving into the localities in proximity to the border with Lebanon, where the credit was expanded. In order to examine the effect of the change made to the tax credit in 2003 on the change in the rate of wage-earners moving into the localities, we compare the rate of those moving in during the years preceding the change in the credits to the rate of those moving in in the years following the change (Figure 2).¹⁰ It cannot be argued that the increase in the rate of wage-earners moving into the localities in proximity to the border with Lebanon—which began around the time the

IDF ended its presence in southern Lebanon (2000)—was the result of the increase in credits in 2003. In contrast, the decline in the rate of wage-earners moving into localities in the Golan Heights—where the credit was cancelled in 2003—relative to the same rate in the control localities, began in 2004 and can be attributed to the change in policy. It is therefore likely that the change in tax credits negatively impacted incoming migration to the localities where the tax credits were cancelled (the localities in the Golan Heights and some communities in the Galilee), but we did not find an impact on migration to the localities where the credits were expanded (the localities in proximity to the border with Lebanon).

Furthermore, we find a correlation between the tax credits and the characteristics of the wage-earners moving into the localities, compared to the characteristics of veteran residents (Table 3, left panel). The differences between the rates of those with matriculation certificates and those with Bachelor’s degrees in localities that lost the tax credits, including Tzfat and Tiberias, are smaller than in the control localities and in the localities where the credits were expanded. Moreover, wage-earners who moved into localities that lost their credits earned less than veteran residents, while those moving into the control localities and localities where the credit was expanded earned more than the veteran residents. Thus, in contrast to the lack of impact on outgoing migration from the beneficiary localities, the tax credits could have a beneficial impact on the characteristics



¹⁰ The rate of wage-earners who did not live in the locality in the previous year or who were not registered as wage-earners in the previous year, out of total wage-earners living in the locality in the examined tax year.

of those migrating to such localities. However, since only about 10 percent of the credit budget was allocated to those migrating into localities, it is likely that these migrants can be attracted by other, more efficient policy tools.

The foregoing analysis indicates that the expansion of credits in 2016 is not expected to have a major effect on outgoing migration from the localities where the credits are expanded or on incoming migration to those localities. In contrast, in view of the experience following the change in credits in 2003, it is likely that migration to localities where the credit is expanded will include a slightly higher rate of individuals with high earning power.

There are a number of factors that affect the estimated impact of the effect of expanding the credits on the characteristics of the expected migration to the beneficiary localities. The rapid increase in the number of beneficiary localities—from about 160 to about 430 localities in the northern and southern periphery—reduces the focus of the credit, and is therefore expected to reduce the rate of migration to each of the beneficiary localities. In addition, a significant portion of the localities that are now eligible for the credit are Arab localities, and the rate of migration to them is low. In contrast, some of the localities where the credit was expanded are close to population and employment centers, which may increase the impact of the effect of the tax credits on incoming migration to those localities.

5. Credits for wage-earners who did not live in the beneficiary localities

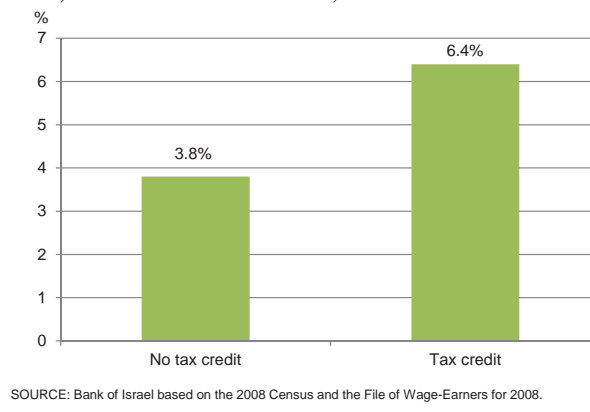
There are side-effects to heterogeneous taxation according to place of residence, one of which concerns the possibility of unlawfully receiving credits by registering in a beneficiary locality. The merger of data from the 2008 Census and from the Israel Tax Authority's Wage-earner File makes it possible to distinguish between actual residents of a locality, meaning those who were surveyed in that locality, and "registered residents", meaning those who were surveyed in another locality but have an official address in the first community according to the Population Registry. This discrepancy may be the result of the fact that residents forget or don't bother to update their address, or prefer to receive official mail at a permanent official address belonging to their relatives. However, it can also be the result of a desire to unlawfully benefit from tax credits.

A number of studies have found indications of the abuse of locality-based tax credits, using various methods to identify "registered residents". Ben-Naim (2010) discussed wage-earners who worked at a great and suspicious distance from their official address, and according to an estimation she

conducted, such people account for about 10–15 percent of wage-earners in the beneficiary localities. Ben-Naim argued that the phenomenon is particularly prevalent in Dimona and in Kiryat Shmona. In contrast, Zussman (2001) discussed individuals who in 1998 requested that their drivers licenses be sent to them at an address located outside of a beneficiary locality. According to the estimation he conducted, they account for just 0.6 percent of wage-earners and self-employed individuals in the beneficiary localities, but he noted that according to the information held by the Israel Tax Authority, this is a short estimate. Zussman showed that among the self-employed, individuals (as opposed to spouses or parents with children) and those with high incomes had a higher chance of reporting one address for receiving drivers and vehicle licenses from the Ministry of Transportation, and another address—perhaps fictitious—on income tax forms.

We discuss residents with an official address in beneficiary localities who were surveyed in another locality ("registered residents"), and compare them to residents surveyed in the locality in which they are registered ("actual resident").¹¹ The comparison includes localities from the northern and southern districts that were and were not eligible for the credit in 2008, and was conducted based on two parameters: The rate of "registered residents" in the locality, and the gap between their income as reported to the income tax authority and the income of actual residents. See Figure 3 and 4.

Figure 3
The number of "registered" residents relative to the number of actual residents, by the locality's eligibility for tax credits, wage-earners aged 30–55, northern and southern districts, 2008

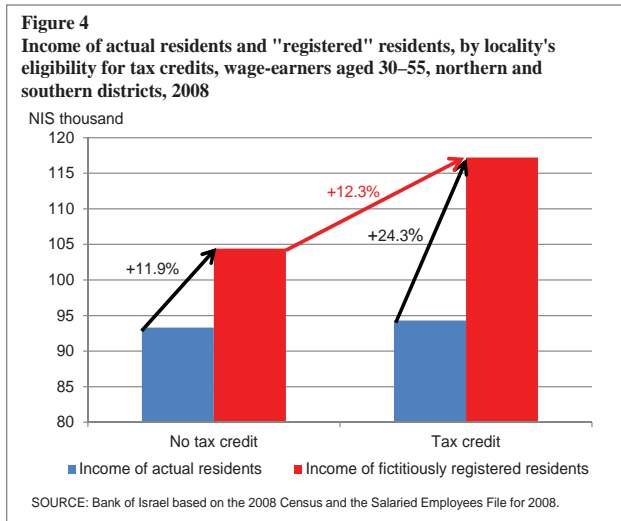


We can see that there are "registered residents" even in localities that did not have tax credits, amounting to the equivalent of 3.8 percent of actual residents. "Registered

¹¹ The sample in this section includes men aged 30–55 in order to omit students and young people, since those population groups tend to change addresses frequently.

residents” in these localities earned more than the actual residents, with the gap reaching about 12 percent on average. It seems that the gap is the result of the fact that wage-earners tend to migrate to other localities, inter alia to obtain higher paying jobs than what is available locally, and it is therefore more likely to find a non-updated address among those with higher wages.¹²

In localities that received a tax credit in 2008, the number of “registered residents” amounted to the equivalent of 6.4 percent of actual residents, and they earned wages that were about 27 percent higher than the wages of actual residents. The confluence of these figures indicates the possibility that two-fifths of “registered residents” in the beneficiary localities, or about 3,500 wage-earners aged 30–55 with high incomes, received tax credits in 2008 even though they were not surveyed, and apparently did not live, in the beneficiary communities. The phenomenon is particularly prominent in Mitzpe Ramon and localities in the western Negev that had tax credits at the maximum rate: 25 percent. In those places, the rate of “registered residents” stands at 11 percent, and the gap between their wages and those of actual residents reaches 29 percent.¹³ The phenomenon of abuse is also attested to by the 12.3 percent wage gap between the “registered residents” of beneficiary localities and the “registered residents” of non-beneficiary localities.



¹² The 2008 Census was conducted in December, and the official address in the data in our analysis is updated to December 31, 2008.

¹³ Dimona and Yeruham are exceptions: The tax credit rate in those localities was 20 percent, but the “registered residents” phenomenon was lower than in localities that did not receive tax credits in 2008, while the wages of “registered residents” was lower than those of actual residents. This finding contradicts Ben-Naim (2010), since that study found that in 2007, there was a particularly high rate of those unlawfully receiving the tax credit in Dimona.

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Private consumption and financial factors

- The equation of private consumption for Israel is for the first time estimated here with financial variables that provide an indication of household liquidity. These variables are added to the commonly accepted explanatory variables, such as income, assets and the interest rate.
- The study separates household assets into their components and provides a separate estimation of the effects of liquid financial assets, illiquid financial assets, and real estate values on private consumption. It also uses aggregate data to obtain indicators of households' ability to borrow and to smooth consumption over business cycles.
- It was found that the financial asset aggregates have more of an effect on private consumption than real estate values, and that adding financial variables to the equation has an impact on the coefficients of the other variables. It was also found that individuals consumer in accordance with temporary changes in their current income, which shows that they face a liquidity limitation that makes it difficult for them to smooth their consumption.¹

1. Introduction

The recent global crisis began with a shock in the financial markets, but rapidly became a crisis in the real economy that was accompanied by low growth and high levels of unemployment. Many economists around the world believe that private consumption is a link between the two crises.² They claim that the drop in home prices and in share prices reflects a decline in household wealth, which creates a new and lower limitation on the total future consumption that they can allow themselves. The decline in asset values, together with the high debt accumulated by households and the limitations created on their abilities to borrow, led to a decline in private consumption. This decline led in turn to an increase in unemployment and to a decline in growth rates, which in turn intensified the decline late on.

Written by Tzvil Kovetz.

¹ In essence, this analysis takes just a first step, since it does not provide a clear expression of the significant changes that have taken place in the rules of operation of the financial system and its institutions during the long sample period of the study. These changes are reflected in the results of the analysis: We found that the estimates of the coefficients in the consumption equation are sensitive to the various financial variables used (but it is important to note that despite their instability, all of the coefficients reconcile with reasonable theoretical approaches). This issue shows that there is need for continued research on this topic.

² See for instance: John Muellbauer, 2010; Christelis, Georgarakos and Jappelli, 2014.

The financial developments during the recent crisis therefore had a large effect on private consumption, which emphasized how important it is to clarify what factors have an impact on private consumption. The commonly accepted theory regarding private consumption is that people consume only in accordance with their expected permanent income, and that there are no limitations on their ability to borrow. The theory does not take the financial sector's effect on households into account. Therefore, according to this approach, households can adjust their consumption at any time to their desired level, even if their income is low and they do not have liquid assets. Many empirical studies conducted over the years rejected this theory in various countries, including in Israel³, but the use of this theory remained common. The recent crisis brought into sharper relief the understanding that weaker assumptions regarding the behavior of individuals should be used, and that in parallel, specific mechanisms that affected private consumption during the global crisis should be examined.

The analysis provided in this study takes a first step in this direction. It is based on the work of Muellbauer (2010), an economist who examined the development of private consumption in the UK since the end of the 1960s. Based on his findings, the analysis presents a new consumption equation that includes financial variables, and examines its empirical contribution to the explanation of private consumption in Israel. As customary in this type of analysis, we assume an error correction model in the equations, assuming that there is a long-term connection between the levels of private consumption and variables such as income and assets, and that any deviation from it leads in the short term to a change in private consumption that is intended to correct it.

2. The Global Financial Crisis and the lessons regarding the private consumption function

The literature written following the crisis indicates three main variables that impacted private consumption—the value of household assets, household debt, and credit conditions in the economy. Even though most of the studies relating to these variables were conducted prior to the crisis, they took on added significance following the crisis—literature in the field expanded, and many people understood how important it was to assimilate their conclusions in economic theory.

A number of studies prior to and following the crisis examined how the **value of household assets** affects private consumption. Some of them separated the assets into their

³ See for instance, Campbell and Mankiw, 1989; Y. Lavie, 1998.

various components, with the understanding that a drop in home prices affects the real economy differently than a drop in share prices, since individuals have different consumption tendencies from different assets.⁴ There are many reasons for this, the main ones having to do with the difference in the ability to realize various assets.

Some financial assets constitute liquid savings that can help to smooth consumption over business cycles. In other words, individuals accumulate financial assets during periods of high current income, in order to use them as a source of financing a level of consumption in a case where their current income declines. The effect of financial assets on private consumption has been examined in various countries, and it was for the most part found that the effect is positive and significant.⁵ In contrast, real estate has over the years been considered a very illiquid asset, such that a change in its value is not supposed to affect household consumption. (Most households live in a dwelling they own.) But studies from recent years show that the liberalization that took place in credit conditions in most advanced economies—a process that led to easier terms for taking out collateralized loans—increased the liquidity of real estate and led to real estate values having a considerable effect on private consumption.⁶

However, household assets do not reflect the resources actually available to households, since there are also **debts** which reached a peak in the period prior to the crisis. Since the large debts remained while the value of assets declined, there were fewer resources available to households, and many households reduced their consumption. We therefore view net assets—assets minus liabilities—as the variable that determines the inter-period budgetary limit of households. There is a correlation between private consumption and contemporaneous private sector debt, since some of the debt serves to finance consumption. In the year after debt is taken on, when the borrower for the most part has used the money, the debt begins to create a negative effect on consumption due to the reduction of future resources. An increase in the net value of assets—due to an increase in asset values and/

or a decline in the value of debt—releases a limitation on potential consumption over the lifetime, and is therefore supposed to lead to an increase in current consumption in the following period.

The third variable that affects private consumption—**credit conditions in the economy**—is measured by the deviation of the cost of credit to the consumer from the monetary interest rate. The easy credit conditions that prevailed in the US prior to the crisis and made it possible for households to take out loans very easily, contributed to a temporary increase in private consumption, but also to the accumulation of debt and to the creation of a crisis in the following period. The increased rigidity of credit conditions following the crisis created a liquidity limitation, which had a large effect on the ability of individuals to continue with their consumption patterns.⁷

However, these variables are not sufficient to explain private consumption. Muellbauer (2006, 2010) adopted the principles of the life cycle approach⁸, but argued that there are more variables affecting private consumption. First, the model assumes that people determine consumption according to their permanent income, meaning the capitalized flow of future income that they rationally expect, based on the main economic variables to which they are exposed.⁹ Second, due to liquidity limitations, consumption is not affected only by expectations of future income, but also by current income. The extent to which households are concerned about the future can be derived by the unemployment rate, since in addition to that rate being an estimate of changes in the current income of those entering and exiting the labor force, it serves as an indicator of uncertainty and of the risk reflected in the future income of all individuals.

3. The consumption function

Many studies have found a long-term connection between the levels of private consumption and income. When there is a deviation from the long-term connection—for instance when consumption during a certain period is higher than income-generated expectations—there is an error correction

⁴ See for instance, Case, Quigley and Shiller, 2005; Muellbauer, 2010.

⁵ See for instance, Poterba, 2000; Mehra, 2001.

⁶ More on the effect of credit conditions in the economy on the liquidity of real estate can be found in Muellbauer, 2010. Even though various studies led to different findings relating to the effect of real estate values on private consumption, a number of studies conducted in the past decade found a positive and significant effect. See for instance, Case, Quigley and Shiller, 2005; Carroll, Otsuka and Slacalek, 2006. In addition, Kahn and Ribon (2013) conducted a study on microeconomic data in Israel, and found that home prices—a reflection of real estate values—in the past decade do have a positive impact on private consumption.

⁷ A discussion on the importance of credit conditions to private consumption can be found in Mian, Sufi and Rao, 2013. More on the specific mechanisms through which credit conditions affect households' tendency to consume can be found in Muellbauer, 2010.

⁸ The life cycle approach is presented in the study by Ando and Modigliani from 1963.

⁹ It is important to emphasize that when attributing rational expectations to people, we do not argue that they are able to completely forecast their future income, but that they efficiently use the information available to them in each period.

process in the short term, leading to less growth of private consumption in the following periods, until it returns to balance. Accordingly, we estimate an error correction model (ECM) and insert the variables that affect private consumption over time into the long-term equations, while the variables that affect the changes in private consumption in the current term are inserted into the short-term equations. We attributed the variables to these categories according to the studies by Muellbauer (2006, 2010), except for one case: Contrary to his approach, we attributed the real interest rate to the short-term, since most studies in the field view it as a cause of current changes in private consumption, and this argument forms the basis of monetary policy's ability to affect consumption in the short term. This is the general formulation of the equation that we propose:

Long-term (first stage):

$$\ln C_t = \alpha_0 + \alpha_1 \ln Y_t + \alpha_2 \Delta UR_t + \alpha_3 \ln(Y_{perm}/Y)_t + \alpha_4 \ln NA_{t-1} + \alpha_5 CC_{t-1} + \varepsilon_t$$

Short-term (second stage):

$$\Delta \ln C_t = \beta_0 + \beta_1 \Delta \ln Y_t + \beta_2 R_{t-1} + \beta_3 \hat{\varepsilon}_{t-1} + u_t$$

represents real per capita disposable income from wages; UR represents the unemployment rate in the economy¹⁰; NA represents net per capita assets in the non-financial private sector, separated into its various components: value of real estate per capita, value of illiquid financial assets per capital, and value of liquid financial assets per capita, from which liabilities are deducted; R represents the real annual yield on bonds (an expression of real interest rate expectations); and represents the rest of the long-term equation. In addition, Δ symbolizes the change in the variable, and \ln symbolizes the natural log.

¹⁰ In accordance with the proposal raised by Muellbauer (2010), the change in the unemployment rate is taken into account, and not the unemployment rate itself. This figure better reflects unemployment that is not natural but that is derived from the business cycles—meaning unemployment that causes individuals to save due to caution. The level of the unemployment rate also includes the natural unemployment rate, and since this rate is expected to change during a long sample period, its effect on private consumption is not consistent.

CC represents one of the three indicators of credit conditions in the economy: (1) the ratio between liabilities and assets (Llab/A). This indicator reflects the leverage rate of households, and a high value indicates easy credit conditions; (2) the rate of liquid assets out of total assets (LA/A). A high ratio indicates that household assets are characterized by a high level of liquidity; and (3) the ratio between liabilities and income from wages (Liab/Y). This indicator reflects the income required to obtain a loan, and a high value indicates that credit conditions are also easy for population groups with low levels of income. Since there is a high correlation between the variables, and since we wanted to reduce the number of variables in the long-term equation, we inserted just one of them each time.

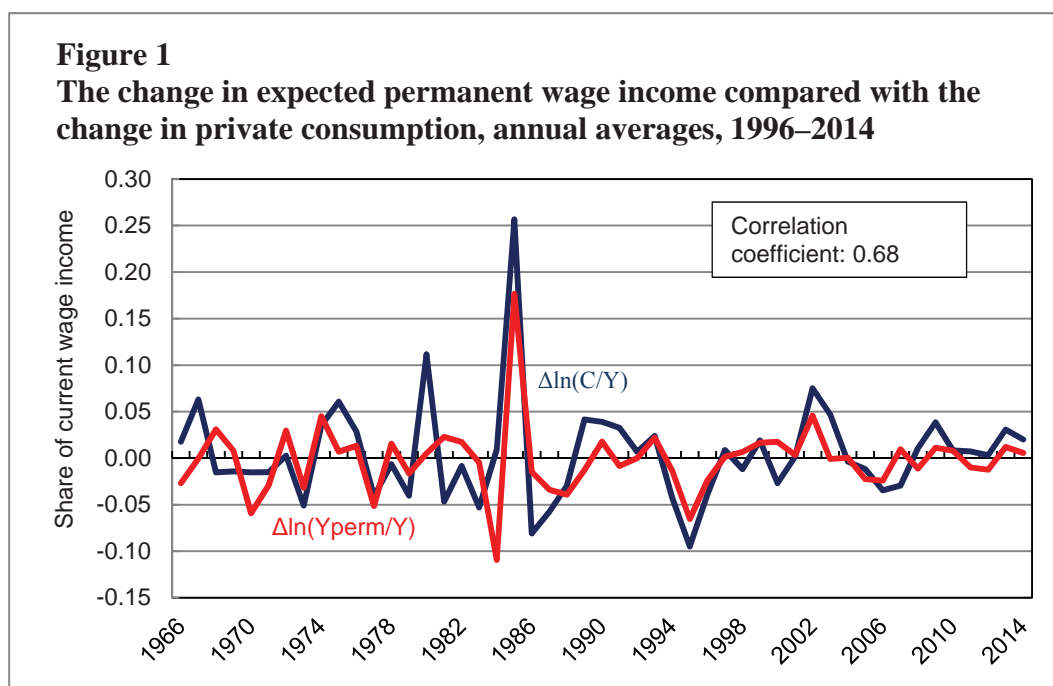
Y_{perm}/Y represents the ratio between the expectations of individuals regarding permanent income and current income, where they have perfect foresight. We already discussed the equation of the effect of current income on consumption, and we would now like to know what effect a deviation of future income from this figure has. We therefore divide expected future income by current income, and calculate it according to the model proposed by Muellbauer (2010):

$$\ln\left(\frac{Y_{perm_t}}{Y_t}\right) = \sum_{s=1}^{10} (1-\delta)^{s-1} \ln Y_{t+s} / \sum_{s=1}^{10} (1-\delta)^{s-1} - \ln Y_t$$

where we assume that individuals look at a horizon of 10 years forward and take into account a capitalization rate (δ) of 10 percent per year.¹¹ According to the theory that holds that individuals determine their consumption only based on their expected future income, the extent to which expectations of permanent income deviate from current income should explain the entire change in the ratio of consumption to current income. Figure 1 shows that in Israel, there is a high correlation between these variables, even when expectations of permanent income are calculated on the unlikely assumption that individuals have perfect foresight.

Since in actuality individuals do not have perfect foresight regarding the ratio between permanent income and current income, we use the estimate that appears in the equation. We estimate the variable through basic variables to which it can be reasonably assumed that individuals are exposed, and base them on expectations of the future: the change in current income, the change in the real exchange rate, an estimate of the rate of unionized workers, the real interest

¹¹ These assumptions were chosen in accordance with Muellbauer (2010). The capitalization rate is the second highest among the four rates proposed by the study, and was selected since it is not considered extreme.



rate, the change in inflation, and the rate of 20–30-year-olds in the population.

4. The results

We examined the model on yearly aggregate data from Israel between 1970 and 2014.¹² Table 1 presents the results from various different versions of the equation.

Column one shows the most general version of the equation, without financial variables, where only the current income explains long-term consumption. In column 2, we added the deviation of expectations of permanent income from current income, the change in the unemployment rate, and the three types of assets to the long-term equation. We added a different indicator of credit conditions in the economy in each of columns 3–5.

The results indicate the importance of the financial variables. When taking into account the effect of the financial variables over the long term (columns 2–5), we can see that the change in private consumption responds much more powerfully in the short term to any deviation from the long-term balance; that the short-term equations

have a better explanatory capability; and that the average error of the equation is lower. The illiquid financial assets have a positive and significant effect on the level of private consumption. Net liquid assets also have a positive effect on private consumption, except when controlling for the rate of liquid assets out of total assets (column 4). It seems that this is a more significant variable in determining consumption, and the coefficient between them neutralizes the effect of the value of liquid assets. In Israel, real estate values do not have a significant effect on private consumption during the sample years. It is possible that the reason for this has to do with the long sample period, since during most of the period, credit conditions in the economy made real estate a very illiquid asset, and it is possible that the reason has to do with the contrasting effects of real estate values on homeowners and on young people saving to buy a home. The different effect that we found for each type of asset strengthens the argument that the differences between them are important.

Over the years of the sample, there were significant change to the financial system, which led, inter alia, to changes in the liquidity of real estate and the various other assets. We therefore examined the possibility that the coefficients are not stable over the years by adding interaction variables between types of assets and a dummy variable for the recent period to the long-term equations. We found that liquid and illiquid financial assets had less of an effect on private consumption from 2003 onward, while real estate values had a positive and significant effect on private consumption during this period. In particular, beginning in 2003, an increase of one percent in real estate values led to

¹² The figures are taken from the Central Bureau of Statistics, Bank of Israel, Bank of Israel Annual Reports, and the database used by Lavie (1998). The figures were processed for the purpose of this analysis.

Table 1
Explanation of private consumption by financial variables, real annual per capita data, 1970–2014^a

	(1)	(2)	(3)	(4)	(5)
Long-term equation ^b	lnC	lnC	lnC	lnC	lnC
Log of income from wages	0.955*** (54.71)	0.858*** (18.55)	0.555*** (10.82)	0.509*** (8.90)	0.719*** (15.03)
Change in the unemployment rate		-0.486 (-1.73)	-0.772*** (-4.92)	-0.391* (-2.50)	-0.509* (-2.61)
Estimated deviation of expectations of permanent income from current income		0.319** (3.54)	0.056 (0.91)	0.121* (2.06)	0.137 (1.88)
Log of net liquid assets with a lag		0.014 (1.46)	0.020*** (3.65)	-0.075*** (-5.13)	0.006 (0.87)
Log of illiquid financial assets with a lag		0.058* (2.37)	0.134*** (7.62)	0.178*** (7.88)	0.086*** (4.73)
Log of real estate values with a lag		-0.038 (-0.68)	0.037 (1.17)	0.063 (1.88)	0.011 (0.28)
Liabilities to assets ratio with a lag			0.780*** (6.62)		
Liquid assets out of total assets with a lag				1.107*** (6.82)	
Liabilities to income from wages with a lag					0.035*** (3.87)
Engle-Granger-statistic	-4.44	-4.42	-5.75	-5.82	-5.36
Mackinnon p-value ^c	0.01	0.27	0.05	0.05	0.1
Short-term equation ^d	ΔlnC	ΔlnC	ΔlnC	ΔlnC	ΔlnC
Speed of adjustment	-0.259 (-1.27)	-0.711** (-3.40)	-0.951** (-3.22)	-0.886** (-3.36)	-0.768** (-2.911)
Change in the log of income from wages	0.580** (3.44)	0.582*** (5.37)	0.643*** (5.36)	0.542*** (5.30)	0.613*** (5.08)
Expected real interest rate with a lag	0.256 (1.58)	0.403** (2.74)	0.330* (2.26)	0.389* (2.63)	0.334* (2.25)
Adj. R ²	0.492	0.593	0.579	0.582	0.567
RMSE	0.027	0.024	0.025	0.025	0.025
D.W.	2.234	2.062	2.237	2.133	2.122
Instrumental variables with a lag for the change in the log of income from wages: the change in private consumption, the change in wages from income, the change in inflation	√	√	√	√	√

^a The figures in brackets represent the values of t-tests. * denotes significance of 5 percent; ** denotes significance of 1 percent; *** denotes significance of 0.1 percent

^b The long-term equation was estimated with the FMOLS method, since most of the variables in the long-term equation are I(1). This method is intended to correct the deviation due to endogeneity and serial correlation so that the standard statistical tests will be valid. While the small sample can create a deviation in the estimates and their significance, this is the only way in which any conclusions can be derived from the long-term equation.

^c This test examines whether the remainder of the long-term equation is stationary, and according to the zero-assessment the remainder is I(1). The results are calculated based on the critical values calculated by Mackinnon (1996) for instances of cointegration. Since at least some of the variables in the long-term equation are I(1), when we find that the remainder is stationary, the conclusion can be drawn that the variables in the long-term equation are cointegrative, meaning there is a long-term connection between them.

^d We estimated the short-term equation with the TSLS method, and the change in income from wages with instrumental variables with a lag of one year. Since income and current consumption are sometimes determined simultaneously, the use of instrumental variables with a lag enables us to see, in the estimated coefficient, how the change in expected current income during the previous period effects the change in private consumption during the current period.

an increase of about 0.2 percent in private consumption.¹³ Almost all of the other coefficients remained stable even after the interaction variables were added.

The coefficients of each of the indicators of credit conditions in the economy (columns 3–5) are positive and significant. In other words, easy credit conditions lead to an increase in private consumption. In addition, when discussing the credit conditions in the equation, the current income coefficient declines. This leads to the conclusion that credit conditions in the economy explain some of the sensitivity of private consumption to current income. It seems that during the sample period, there is a liquidity limitation for individuals in the economy, as a result of which they cannot fully smooth consumption in accordance with the limitation on assets available to them for the rest of their lives. Instead, they are forced to change their consumption in accordance with the available current income.

In the short-term equation, we can see that private consumption already corrects at least three-quarters of any deviation from the long-term balance in the first subsequent year. In addition, there is a significant result regarding the marginal tendency to consume out of expected current income in the preceding period, and an increase of 1 percent in disposable income leads to an increase of 0.5–0.6 percent in private consumption. This finding is in line with the Keynesian approach that current income has a marked effect on private consumption. In parallel, it seems that the real one-year yield—a reflection of interest rate expectations—has a considerable effect on the change in private consumption. The effect of the interest rate on consumption represents the emphasis that individuals place on a change in their future income and their preparedness to replace current consumption with future consumption. An increase of one percentage point in the real yield leads to a delay of 0.3–0.4 percent of private consumption to the following year. This finding is in line with the widespread theory that monetary policy has the ability to effect private consumption through the interest rate.

5. Conclusion

¹³ This finding is in line with the theory that holds that the sophistication of the financial markets increased the liquidity of real estate due to its value as a collateral, and it can explain the difference between the findings that we raised in Table 1 and the findings of Kahn and Ribon (2013). These researchers discovered, as mentioned, that in the past decade, real estate has a positive effect on private consumption. Despite the fact that the two studies differ in methodology (Kahn and Ribon used microeconomic data and examined the effect on the rate of change of public consumption and the effect on home prices, and not on real estate values), when we focus on coefficients during a similar sample period, their findings are similar.

In the world in general, and in Israel in particular, empirical analyses have been conducted that show that individuals do not determine their consumption based solely on expectations of future income. As a result, there is greater understanding that if we want to better understand the connections between various variables of economic activity, we must relate to the complex mechanisms that determine private consumption levels. Following the outbreak of the Global Financial Crisis, there were increased calls for specifically dealing with the financial sector's effect on private consumption.

The results of this analysis indicate the importance of financial factors in determining private consumption levels in Israel between 1970 and 2014. We found that financial assets have more of an impact on private consumption than does real estate. We also found that reducing the liquidity limitation in the capital market has a positive effect on consumption. In other words, during the sample period, Israeli households could not perfectly smooth their consumption over business cycles. This may explain—at least partially—the sensitivity of private consumption in Israel to current income. These connections are stable throughout most of the sample period, but there are certain marked changes in the effects of financial assets and real estate values at the end of the period, due to significant financial reforms such as those carried out at the beginning of the century.

These findings have ramifications on the monetary policy measures that are considered appropriate to have an effect on private consumption. In particular, a change in the interest rate changes only future income, and if individuals do not consume based solely on that, monetary policy will have less of an effect on private consumption. But it should be remembered that the liquidity limitation—a limitation that causes individuals to change their consumption patterns mainly based on currently available income and less on the basis of future income—is created mainly due to rigid credit conditions. As the capital markets become more sophisticated, credit conditions become easier, people can adjust consumption to their future income, and the potential effect of the interest rate increases. The findings also indicate long-term connections between consumption and the main economic variables, which can help us to understand the long-term trends and the ways to influence them. By way of illustration, if there is a connection between policy and asset prices, then policy has an unconventional channel through which to influence private consumption.

In conclusion, we emphasize that this analysis shows that there are connections between the financial sector and private consumption. Hence its importance. In order to quantify the precise effects of the various factors in the financial system on private consumption, and to discuss how

the agency mechanisms have changed over the years, more in-depth research is necessary.

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The use of renewable energy in Israel^{1*}

- The Israeli government has set targets for electricity generated using renewable energy sources—5 percent of electricity production in 2014, 10 percent in 2020, 13 percent in 2025, and 17 percent in 2030.
- Israel did not meet the government target for 2014, as it only generated 1.5 percent of its electricity through renewable sources. Therefore an enhanced effort must be made in the coming years to meet government targets and international norms.
- The cost of solar energy facilities declined sharply between 2010 and 2015, as did the cost of the subsidy required to encourage setting them up.

In December, the 2015 Climate Convention was held in Paris, with the participation of representatives from nearly 200 governments, including Israel's. In September 2015, ahead of the conference, the government decided that by 2025 Israel will produce at least 13 percent of its electricity through renewable energy, and that by 2030 this proportion will be at least 17 percent.

This decision followed previous ones reached by the government regarding the issue, which were implemented only partially. These decisions come against the background of international norms in the sector, and have been accompanied by technological advances that in recent years have greatly reduced the cost of producing electricity through solar energy. These decisions raise questions that combine economic, regulatory, and even diplomatic considerations, and this survey is intended to serve as an introduction to understanding the various sides of the issue.

The survey describes the background to the use of renewable energies and the market failure in the sector, a phenomenon that requires government intervention. Following that is a survey of government decisions in the area and their implementation, against the background of the rapid technological development in recent years, and a presentation of several insights regarding the question of how to continue to promote the use of renewable energy in Israel.

Written by Lior Gallo, Yossi Margoninsky, and Yehuda Porath.

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Background

Renewable energy is produced from energy sources that are not depleted with use—such as the rays of the sun, wind, water currents, geothermal energy, and even bio-mass (such as waste, sludge, etc.). Fossil fuel sources, in contrast, are depleted with use (oil, natural gas, coal). In addition, these resources are concentrated in a small number of regions around the globe, while renewable energy sources are dispersed over the vast majority of the world. Since for the most part, such renewable energy sources as the wind and the rays of the sun are “free” and have no owners, there is also an economic advantage, as it were, in its production. However, the production of energy from renewable sources does involve significant economic costs, making it generally more expensive than the use of fossil fuels.

The main motive for the use of renewable energy relates to concerns about health and the environment²: In contrast to the use of fossil fuels, the use of renewable energy generally does not involve the emission of toxic pollutants and/or materials that lead to global warming. Increasing awareness of environmental quality issues in recent decades has led to the formulation of international norms regarding the reduction of emissions of environmental pollutants, and since the use of renewable energy does not result in pollutant emissions, the global tendency to use such energy is increasing.³ Growing demand for renewable energy has led to improvements in the efficiency of relevant technologies which, for their part, have led to a decline in production costs.

Another motive for the use of renewable energy that is voiced often concerns national energy security. The use of renewable energy could increase the energy security of countries that do not have fossil fuel resources. But it must be remembered that the production of renewable energy and the costs involved, depend on the climate and land conditions of each area, as well as on the level of available technology. For instance, experience accumulated over a long time in the use of water currents makes it easier to use them to produce renewable energy in northern Europe and North America. In contrast, there is, as of yet, less experience and knowledge in the use of the sun's rays—an energy type that is better

² A small number of countries—such as the US, Norway and Canada—produce renewable energy, mainly hydro-electric power, for purely economic reasons.

³ Even though the use of renewable energy does not emit pollutants, this does not mean that there are no negative externalities. For instance, the production of solar energy involves the use of large tracts of land, while the use of wind turbines harms birds and may also be a blemish on the natural landscape.

suited for warm countries such as Israel—though they are developing rapidly.

The use of fossil fuels to produce electricity brings with it health and environmental damage. These constitute a negative externality⁴, and lead to market failure, since most of the damage from them is absorbed by people who are not a direct party to the transaction. According to economic theory, this situation invites corrective government intervention. When the total costs or benefits are limited by state boundaries, the relevant party for this purpose is the government. But when they concern all countries in the world—such as the externalities of fossil fuels, namely global warming—international cooperation is required.

Government decisions in Israel and exercising them

As mentioned, in September 2015, the government decided that by 2025 electricity consumption from renewable energy will total 13 percent, and that by 2030 it will total 17 percent. This decision followed decisions adopted by the government in 2002, 2007, 2009 and 2011, to wit: By 2014, 5 percent of electricity will be produced through renewable energy sources, and in 2020, the rate will be 10 percent. The 2014 target was not met, and only 1.5 percent of electricity that year was produced through renewable energy sources.⁵

Table 1 details the distribution of licenses for the production of electricity from renewable sources, and the targets, by energy source. The target previously set by the government—production of 10 percent of electricity output through renewable energy by 2020—means the production of 2,760 megawatts (MW) from renewable energy. Among the types of renewable energy through which it is currently possible to produce electricity (bio-gas, bio-mass, water currents, wind and sun), the main and most usable forms in Israel are wind and solar energy. According to the government plan, 2,550 MW of electricity—about 93 percent of the general quota for renewable energy—will be produced from these two sources in 2020. The Table shows that in 2015, electricity production from renewable sources was just 427 MW—28 percent of the target for 2015. Most of this electricity—about 93 percent—is produced through solar energy. In retrospect, the fact that Israel did not meet the target saved the public NIS 1–2 billion per year⁶ over the next 20 years (before deducting the cost of externalities), because solar technology prices in Israel and around the world declined sharply between 2010 and 2015 (see Table 2). However, the delay will require enhanced efforts in order to narrow the gap.

Table 1
Electricity production from renewable energy in Israel in 2015, compared to government targets

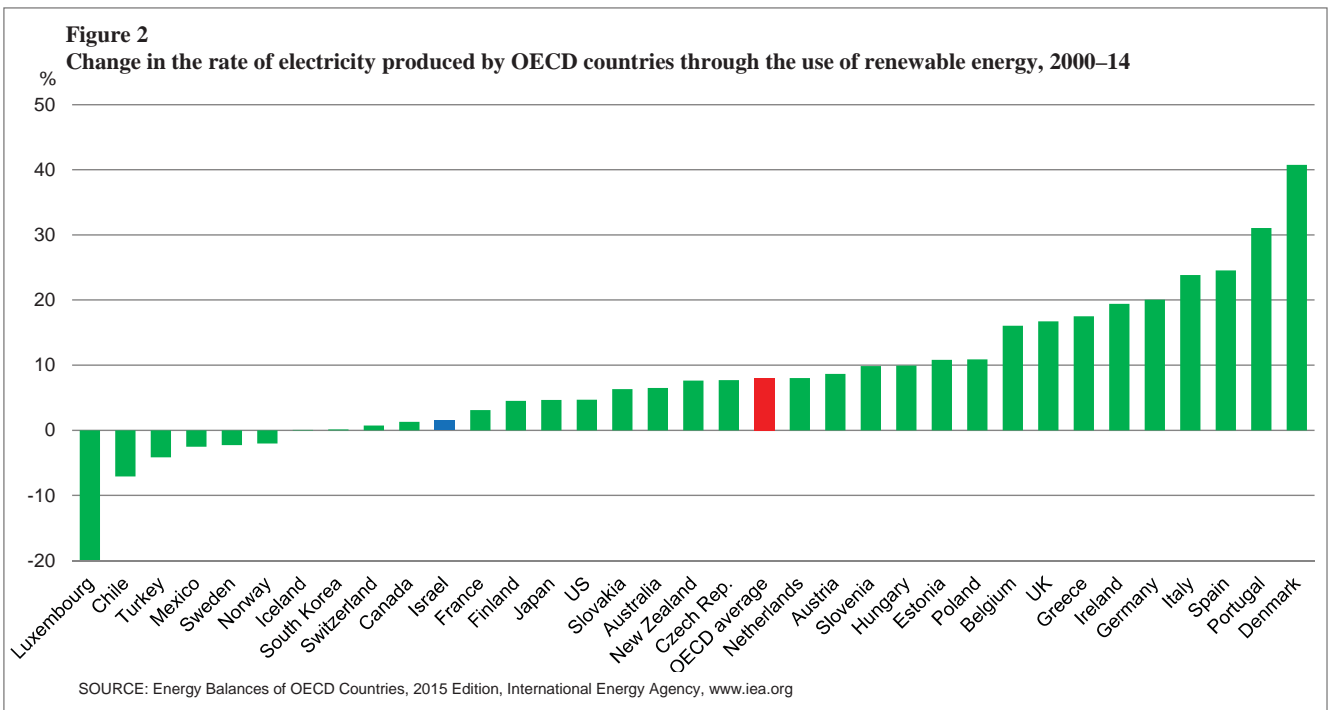
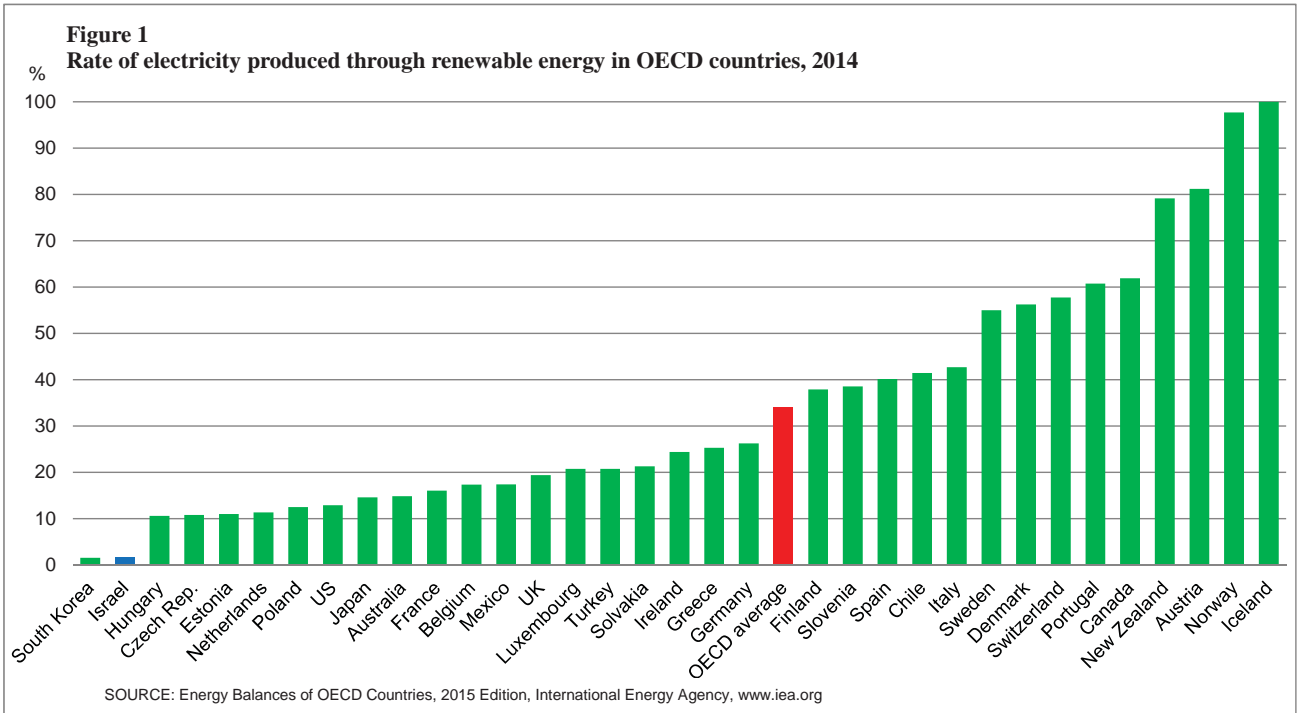
Energy source	Actual production licenses in 2015	Quota for electricity production from renewable energy (in MW) by year		Ratio between current production and quota for year		Remaining unused quota (in MW) from 2015 until 2020
		2015	2020	2015	2020	
		Solar	399	1,250	1,750	
Wind	6	250	800	2%	1%	794
Bio-gas / biomass	22	50	210	45%	11%	188
Total	427	1,550	2,760	28%	15%	2,333

SOURCE: Bank of Israel based on Electricity Authority.

⁴ Externality—the cost (or benefit) caused by an economic transaction, borne by (or benefitting) the people or firms that are not directly involved in the transaction.

⁵ Renewable energy is used not just to produce electricity, but also for other purposes, such as heating water through solar water heaters. In 2014, 5.1 percent of Israel's energy supply was provided through renewable energy, compared to just 1.5 percent of its electricity supply. See Energy Balances of OECD Countries, 2015 Edition, OECD / International Energy Agency, www.iea.org

⁶ The gap between the average input price in 2010–2013 and the input prices in 2015–2016, multiplied by the gap between the volume of production licenses in 2015 and the target for 2015, then multiplied by 1,700 yearly hours of renewable energy production in Israel.



The quantity of renewable energy actually produced depends on a number of parameters, including the volume of quotas issued by the government, the process of publishing tenders for quotas, the response to those tenders, the process of obtaining price approvals, and the time necessary for the planning and construction of the facilities. The effects of technological changes are also very important. The changes mentioned above led to a sharp decline in the cost of solar facilities, thereby causing the Electricity Authority or developers to lose interest in projects that had been profitable a few years earlier.

We must remember that in areas connected with environmental quality, international norms are an important and influential factor in determining national policy. Israel is currently in last place in the OECD in terms of the rate of electricity production from renewable energy (Figure 1).⁷ Even when the government targets are met, Israel will be left at the bottom of the ranking of advanced economies in this area. While one main reason for Israel's relative position is due to the fact that it does not have renewable energy resources of the scale of countries that have rivers and waterfalls or geothermal energy, an examination of the change in the international environment (Figure 2) shows that we can expect that pressure will increase on Israel to act to expand the use of renewable energy and to assimilate it into the electricity grid. It is therefore important to advance preparations for this even now.

Technological improvements in the world reduced the cost of producing electricity from solar energy by about 85 percent between 2009 and 2015.⁸ However, we must remember that this is only the cost of production, while the cost of providing electricity to the consumer also includes the cost of transmission from the production sites to the consumers. For instance, in 2014, the cost of transmission of electricity in Israel and in the US was estimated at about one-third of the consumer price of electricity.

As a result of these technological changes, the cost of construction of a solar energy production facility declined sharply, and with it the price per kilowatt/hour—the input price—received by producers for future facilities. The input prices set by the Electricity Authority for 2016 (Table 2) are lower in Israel than the cost involved in producing

electricity from fossil fuels. Therefore, there will in practice be no subsidy for new facilities for producing electricity from renewable energy.⁹ However, even if solar energy production costs are not higher than fossil fuel energy production costs, these technologies are only partial substitutes for each other. For instance, solar energy can only be produced during daylight hours. Despite the development of the field and the tremendous amount of research in the matter of electricity storage, no inexpensive storage possibilities have been found, thus far, for large quantities of electricity. It is therefore still not possible to use electricity from solar energy during nighttime hours, which makes it necessary for a backup system of energy production from other sources. That is not the case for fossil fuels.¹⁰

Table 2
Input rates for solar energy based on production costs

Year	Agorot per kW/h
2010	180—221
2011	160—205
2012	93—126
2013	46—71
2014	53—64
2015	47—50
2016	27—31

SOURCE: Bank of Israel based on Electricity Authority.

Renewable energy subsidies in Israel and regulation in the field

Policy tools with which it is possible to regulate the energy market include taxation of the negative externalities of fossil fuels and/or subsidizing the positive externalities of renewable energy.¹¹

⁷ Figure 1 does not only present the efforts of the various countries to reach their renewable energy goals, since countries differ in the natural resources they have available to produce electricity (such as rivers or sources of geo-thermal energy). Figure 2 better presents this effort, since it presents the change in output over the period.

⁸ Most of the cost of producing electricity from solar energy sources comes from the cost of the module. However, the costs of accessories, installation, financing and developers' profit must be added to this.

⁹ The rapidly declining price environment may cause windfall profits for developers (due to the time that elapses from approval of the rate for the project and its completion) and raise taxation and regulation questions.

¹⁰ The extent of the substitutability between fossil fuel energy production and renewable energy production depends on additional factors, including—as stated above—the cost of transmission of energy from the production sites to consumers.

¹¹ The negative externalities of fossil fuels can be taxed, for instance through a carbon tax. The effects of taxation and subsidies are not equal, since taxation may reduce total electricity consumption, while subsidies may increase it.

There are two main methods of subsidizing renewable energy. The first is having the state set quotas for the production for electricity from renewable energy, and the second is having the state set an economic price and purchase the entire quantity of electricity produced through renewable energy at that price.

The advantage of the first method is in the fact that it directly achieves emission targets, and the selection of producers through a tender leads to the more efficient producers being the ones to supply the required quota. The great disadvantage of this method is in the uncertainty regarding the optimal production quantities.

In contrast, the advantage of the second method—where the state sets the price at which it will purchase the entire quantity from the producers—is in the fact that the market sets the quantity in accordance with the “correct” price, meaning the price that reflects the externalities through the subsidy (the difference between the price paid to the producers and the price of electricity produced from fossil fuels). This subsidy reflects the utility accruing to the economy from the production of electricity from renewable energy, which is comprised of preventing the negative externalities caused by the burning of fossil fuels (greenhouse and toxic gas emissions), and also perhaps the improvement of Israel’s energy security. The main disadvantage in this method is in the difficulty in properly quantifying the social utility of the various externalities, particularly the economic cost of production through the use of fossil fuels—a cost that reflects the damage from emissions of carbon dioxide, a gas that contributes to global warming, as well as the damage from other toxic emissions.¹² There is tremendous uncertainty regarding the social costs of greenhouse gasses, because there are many different estimations of the damages caused by carbon dioxide, which vary in accordance with the methodologies and quantitative parameters used. Golosov, Hassler, Krusell and Tsyvinski (2014)¹³ surveyed

the professional literature and found that the differences in estimations may be as high as 18-fold.¹⁴

According to regulation in Israel, the Electricity Authority sets quotas for electricity production from renewable energy in accordance with the volume of such production it would like to add to the economy; it individually examines proposals to construct energy facilities; and it chooses among the proposals that meet the greenhouse and toxic gas emission requirements. The Authority calculates the price quote per unit of electricity (the input price in shekels per kilowatt/hour) so that it covers the developers’ costs and the return on their investment. In other words, the producers receive production quotas, and get a long-term guarantee of a price that reflects the costs of establishing the facilities.¹⁵

In order to overcome the disadvantages in this method, the Committee To Examine the Economic Advantage of Renewable Energy proposed replacing it with a method in which a price is set reflecting the total advantage derived by the economy from the energy produced—directly and indirectly (fuel, pollution, energy security, technological and employment advancement in the periphery).¹⁶ The report’s writers recommended replacing the quota regime with a subsidized price regime, which will make it possible for developers to construct facilities without depending on pre-approved production quotas. The Committee’s report for the first time presents an estimation regarding the desired input price in Israel, and includes, inter alia, the social costs of greenhouse gasses. However, as we explained above, the gaps in the estimations of this cost can reach 18-fold, and it is therefore preferable to examine additional assessments before deciding on whether to move to this policy instrument.

Summation

The production of electricity from renewable energy is, for the most part, more expensive than from fossil fuels, and

¹² The toxic emissions mainly affect morbidity and death rates, while greenhouse gasses and global warming mainly affect declining long-term global manufacturing productivity, capital erosion, and increased production costs, such as for air conditioning systems or agricultural produce.

¹³ A description of the model appears in Boyer and Nordhaus (2003). Nordhaus first developed a model that integrates an economic model and an ecological-environmental model. Golosov, Hassler, Krusell, and Tsyvinski (2014) integrated Nordhaus’s model as part of a dynamic stochastic equilibrium, and presented new estimations regarding the social cost derived from carbon dioxide emissions. In their work, they compared their results with the results of leading studies in the field by adjusting the parameters in their model to those of the others.

¹⁴ The differences between the various estimates are only the result of the differences in carbon dioxide emission estimations. The cost estimation derived from other toxic emissions remained fixed.

¹⁵ Essentially, the actual subsidy (meaning the difference between the input rate for solar energy and the cost of producing electricity by the Israel Electric Company) depends on the cost of conventional electricity production, and is mainly affected by global fuel prices. This means that the actual subsidy will increase as the cost of conventional electricity production declines as a result of a decline in global fuel prices, and vice versa.

¹⁶ Prime Minister’s Office, National Economic Council (2013), “The Committee to Examine the Economic Benefit of Renewable Energy: Recommendations of the Interministerial Team”. The committee is sometimes referred to as the “Kandel Committee”, and its recommendations have thus far not been implemented.

requires an additional system as backup. Moreover, the production of electricity from fossil fuels or from renewable energy have externalities that are not internalized by the market, and the industry must therefore be regulated. However, even though the use of renewable energy involves increased prices for electricity consumers, there are two main factors that may justify it. First, hazardous pollutants emitted into the air and atmosphere as a result of the use of fossil fuels are damaging to health and to the environment. Second, in view of the growing recognition of the damages of pollution for the global community, an international normative framework is being formulated in this area, and countries acting outside this framework may suffer a negative impact to their image and, in the future, possibly economic damage as well.

Israel is lagging in the adoption of the use of renewable energy both relative to programs adopted by the government, and relative to the international norms. The increasing importance of the issue in the public discourse in the developed world supports the position that these gaps should be closed. However, the decline in the price of renewable energy production over time has made it possible to do so now at a lower cost than in the past, which shows that there is logic in a gradual adoption of new technologies. Gradual but constant progress will also make it possible to develop the technical and governmental abilities required to integrate renewable energy in Israel's electricity supply chain.

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The development of job mobility¹ in 2003–13

- Between 2003 and 2013, the mobility of workers between employers declined.
- Job mobility declined for various reasons, but primarily because of a slowdown in the business sector's growth rate, a development reflected in a decline in the job vacancy rate.
- Between 2003 and 2013, employment expanded, particularly among older age groups (55+) due among other reasons to the retirement age being raised by two years.
- The estimation we conducted indicates that the increase in the retirement age contributed to a reduction in mobility among the 55+ cohort. It appears that the increase caused the employees affected by it to reduce the risks they took in the labor market.

Job mobility in Israel and its development between 2003 and 2013

Between 2004 and 2009, the retirement age in Israel for women increased from 60 to 62, and for men from 65 to 67, due to the change in the Retirement Age Law.² The increase expanded, between 2004 and 2009, the labor force participation rate among individuals approaching the retirement age (women aged 55–62, and men aged 55–67) notably more than the expansion during that period in other age cohorts (beforehand, the participation rate of various age cohorts moved nearly in tandem). The analysis below deals with the impact of the increase on mobility—the share of people changing employers—and it focuses on the business sector in Israel and on employees whose age ranged from 35

Written by [Tanya Suhoy](#) and [Tamar Ramot-Nyska](#).

¹ Inter-firm mobility. In order to measure mobility, we take the number of people moving between employers between consecutive years, and calculate their share of total employed people. Identification of voluntary movers was based on the registration related to severance pay in the Israel Tax Authority's file of employed persons. If the employees did not receive severance pay, we concluded that they left on their own volition. This identification method yields an estimation which is exposed to two types of errors. One leads to an overestimate: the group includes employees who were laid off but nonetheless did not receive severance pay, because they worked for their employer for less than one year and are not eligible for those benefits. The second error type leads to an underestimate: the group does not include employees who left their workplace on their own initiative but nonetheless received severance pay. In order to assess the effect of the identification problem, we will also present empirical tests that were conducted only among employees with more than one year of tenure with their employer.

² See the Retirement Age Law, 5764-2004. There is an expanded discussion in Chapter 8 of the Bank of Israel's 2010 Annual Report (2011).

to retirement age.³ The job mobility rate in 2003–13 ranged from 8–20 percent, and around 80 percent of people moving between employers did so voluntarily. Figure 1 presents the dynamics of the share of voluntary movers by gender and by age group. The increase in the retirement age serves in 2003–13 as a one-off event that impacted differentially on mobility in various age groups and was in addition to factors that reduced mobility in a similar manner in all age groups. An analysis of the mobility is intended to examine if the change in the retirement age impacted on the conduct of employees in the economy, and sheds light on the dynamics of employment at older ages.

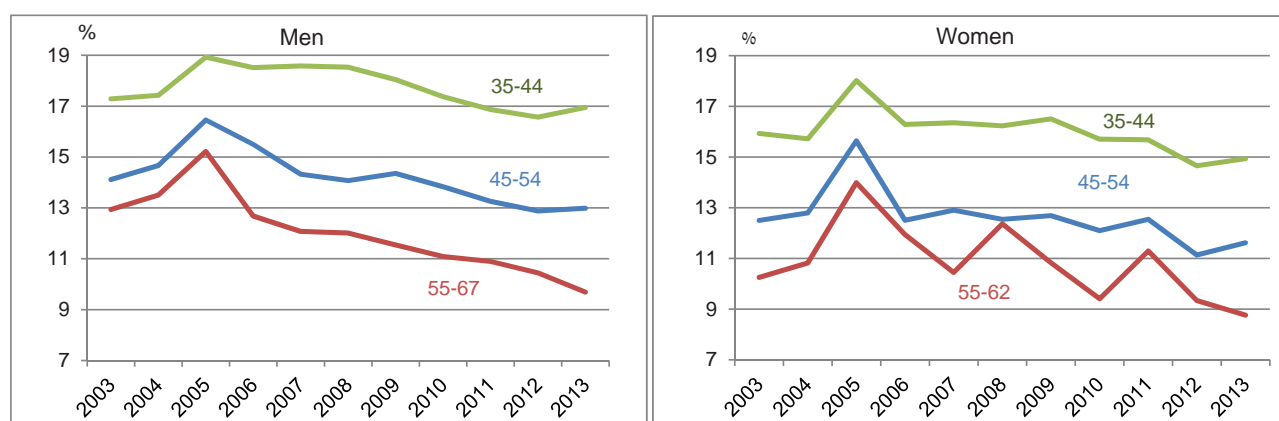
Job mobility is one of the ways of allocating inputs (workers) in the labor market. Workers seek opportunities to improve their wages and their terms of employment, or to find a position that is more compatible with their preferences (for example, part time work), and employers seek workers that are appropriate for the position. The quality of matching between workers and employers depends both on macroeconomic and sectoral factors—such as the unemployment rate and job creation in various industries—as well as on microeconomic factors, such as individual characteristics and qualities of the firm.

Mobility in the labor force has many facets. Mobility of workers between companies contributes to growth because it incorporates a transfer of knowledge and professional experience, and thus increases labor productivity (Parrotta and Pozzoli, 2012). A high rate of voluntary mobility is also correlated, at the worker level, with an increase in wages and with career development, and is more typical in the structure of knowledge-based industries. Therefore, job mobility means an improvement in the allocation of the labor input between companies. Yet, high mobility has costs: employers bear the cost deriving from training employees and from the loss of company-specific human capital; employees bear the high costs involved in searching for work. Job mobility is higher when labor market regulation is looser (Dustmann and Pereira, 2008).

The empirical literature worldwide indicates that men are more mobile than women, and that mobility declines with age, and data for Israel paint a similar picture. The literature also teaches that accruing tenure with the same employer has a positive effect on wage, and the return to switching employer declines as tenure increases (Mincer and Jovanovic, 1988). Our data also indicate that about 56 percent of those changing employers did so after they had worked for their

³ The analysis does not deal with employees below age 35, because that group has a high incidence of job mobility deriving from acquisition of professional training and education, and we wanted to neutralize such mobility from the analysis to the extent possible.

Figure 1
Share of voluntary movers, by gender and age-group, 2003–13



SOURCE: Based on sample from the Israel Tax Authority's file of employed persons.

employer for up to 2 years, and about 78 percent had worked for up to five years, and that the tendency to move between employers is higher among those who already changed employers in the past. Mobility is higher among workers employed in part-time or temporary positions, and among workers holding multiple jobs (in many cases these are part-time positions).

In order to draw conclusions regarding the changes in job mobility between 2003 and 2013, we compared the share of workers moving between employers in two growth periods: 2004–06 and 2010–13. The data indicate that mobility rates declined between the two periods by about 2 percentage points. The mirror image of the moving between employers

can be seen in Table 1: The table shows that the average length of service at the same employer increased between the two periods for all age groups.

Several factors explain the overall decline in mobility. First, the strength of growth declined between the two periods. Table 2 indicates that between the two periods there are differences in growth of business sector product, as well as changes in creating new positions by company size—the main channel through which growth impacts on mobility. Second, during the course of the period there was a decline in the share of part-time workers, who typically move between employers more frequently. Finally, job search became more efficient, and the amount of time necessary

Table 1
Average tenure with employer: Comparison by age group^a and growth period, 2004-06 and 2010-13

Period	Age group	Average tenure with employer (years) (Standard deviation in parentheses)			
		Women		Men	
2004-06	35–44	(5.2)	6.3	(4.3)	5.3
	45–54	(8.8)	9.9	(8.0)	8.3
	55+	(10.4)	11.9	(10.8)	10.9
2010-13	35–44	(5.3)	7.0	(4.8)	6.4
	45–54	(8.4)	10.8	(7.7)	9.6
	55+	(11.1)	14.2	(11.4)	13.6

^a The older age group includes women aged 55-62 and men aged 55-67.

SOURCE: Based on sample from Israel Tax Authority's file of employed persons.

Table 2
New job creation and mobility rate by company size: comparison of two growth periods:
2004-06 and 2010-13

Period	Average growth rate of business sector product	Size of employee's new company (by number of employees)	Share of new positions in total jobs (annual average; standard deviation in parentheses)		Mobility rate (of employees, annual average)	
					Women	Men
2004-06	6.2	Up to 20	2.5	(0.6)	19.6	19.6
		20-49	2.0	(0.4)	19.9	19.2
		50-99	1.6	(0.2)	19.4	17.6
		100-249	1.6	(0.8)	18.2	16.6
		>250	0.9	(0.3)	12.0	11.9
2010-13	4.6	Up to 20	2.2	(0.4)	16.9	17.1
		20-49	2.3	(0.5)	17.1	16.9
		50-99	1.9	(0.6)	16.8	15.9
		100-249	1.3	(0.4)	15.8	15.1
		>250	0.7	(0.2)	10.1	10.1

SOURCE: Based on sample from Israel Tax Authority's file of employed persons, Ministry of Economy's Employers Survey, and National Accounts Data from the Central Bureau of Statistics.

to fill open positions shortened.⁴ However, this may point to two processes with opposing effects on mobility. It may show improved matching between employees and positions, which would be expected to reduce mobility. Yet, at the same time, it may indicate improved job-search technology and changes in policy regarding unemployment benefits—factors that provide an incentive for unemployed people to accept job offers faster and those may not be favorable for them. This would likely increase mobility as employees will search for a more appropriate position, although mobility will not increase without a guaranteed alternate position.

Estimation of the effect

We estimate that the increase in retirement age served as a one-off event that reduced mobility and impacted primarily on the older age cohort. The increase in retirement age lengthens the time left to work, and therefore the return to a move between employers (if accompanied by an increase in wage or improvement in conditions that are important to the worker) is likely to be higher. However, in contrast, lengthening the time until the retirement age is likely to cause a decline in employees' willingness to take on the risks inherent in switching jobs, chief among them the

risk of layoff. This is because the chance of dismissal is higher for recently recruited workers. The average length of unemployment is higher among unemployed persons aged 55+ (in comparison with younger unemployed persons) and the probability of returning to work declines with unemployment duration. Therefore, the probability of reentering employment is smaller at older ages. If the risk effect is dominant, a secondary effect is also expected (spillover effect) on mobility in age cohorts that were not directly affected by the change in the law, because the rate of vacating positions declines.

Our estimation is based on a sample taken from the Israel Tax Authority's file of employed persons. Out of this sample, we constructed our research population—male and female Jewish employees, between the ages of 35 and the previous retirement age (65 for men and 60 for women); we chose the previous retirement age in order to maintain, as much as possible, the similarity between the groups being compared. The file makes it possible to monitor employees by their place of work, and includes sociodemographic details, data on wage and months of work, and details on the workplace. To the micro data in the file we attach data on new job creation rates by firm size⁵—we calculated them on

⁴ See Chapter 5 of the Bank of Israel's 2013 Annual Report (2014).

⁵ The data we use does not include information on the economic industry, but (approximate) company size can be calculated in it.

Table 3
 Contributions of independent variables in Poisson regressions of the difference in differences relative to the basic mobility rate (share of voluntary movers in 2010-13)

Independent variable	Age groups and gender in difference-in-differences regression			
	Women		Men	
	Treatment: 45-54; Control: 35-44	Treatment: 55-60; Control: 45-54	Treatment: 45-54; Control: 35-44	Treatment: 55-65; Control: 45-54
Base rate	*** 34%	*** 23%	*** 36%	*** 27%
Vacancies creation rate	*** 19%	*** 17%	*** 17%	*** 15%
Age (years)	*** -2%	*** -2%	*** -2%	*** -1%
Belonging to treatment group	*** 10%	-5%	*** 10%	** -6%
Period 2010-13	*** -9%	*** -16%	*** -13%	*** -19%
Number of additional jobs held by employee	*** 38%	*** 41%	*** 41%	*** 41%
Combination with self-employment income	*** 47%	*** 43%	*** 28%	*** 6%
New immigrant (relative to native-born)				
Immigration year: 1947-60	-6%	*** -10%	-5%	** -8%
Immigration year: 1961-89	*** 8%	*** 9%	* 6%	** 8%
Immigration year: 1990-91	*** 22%	*** 28%	*** 18%	*** 28%
Immigration year: 1992-2000	*** 29%	*** 30%	*** 27%	*** 32%
Immigration year: 2001+	*** 24%	*** 27%	*** 30%	*** 37%
Family status (relative to single)				
Married	*** -53%	*** -43%	*** -24%	*** -28%
Divorced	*** -12%	*** -14%	2%	-2%
Widowed	*** -22%	*** -20%	*** -11%	*** -15%
Maximum time of inter-year unemployment phases (months)	*** 15%	*** 16%	*** 17%	*** 18%
Ultra-Orthodox	*** -23%	-5%	*** -15%	*** -15%
Higher education	*** -87%	*** -89%	*** -83%	*** -74%
Pension income by spouse	-8%	-3%	*** -21%	* -6%
Wage income by spouse	*** 23%	** 17%	*** 14%	*** 16%
Pension income	*** 32%	*** 32%	*** 17%	*** 11%
Tendency to work less than 30 hours per week	*** 37%	*** 19%	*** 36%	** 6%
District (relative to Judea and Samaria)				
Jerusalem	*** -16%	*** -15%	*** -8%	* -6%
North	1%	-6%	1%	3%
Haifa	1%	0%	-1%	4%
Central	** 7%	** 3%	** 2%	** 5%
Tel Aviv	** 8%	3%	0%	** 4%
South	5%	1%	* 2%	-1%
Difference-in-difference effect	1%	** -7%	-2%	** -5%
Number of observations in regression	95,388	66,634	92,739	69,052

^a The base rate is equal to the exponent set in each regression, and reflects the rate of mobility among employees belonging to the base category—that is, employees belonging to the control group in 2004-06, native born, single, non-ultra-Orthodox, without higher education, working at a full-time position, not holding multiple jobs, not combining wage employment with self employment, without pension income, and without spouse income from wages or pension.

^b The probability of having higher education of 16 years of schooling or more/working at a part-time position. It is estimated based on the statistical correlation between the employees file and the Income Survey file (for that year or the consecutive year). The statistical correlation is conducted on segments of age groups and family status (married/unmarried).

^c The interaction between belonging to the treatment group and the period 2010-13.

^d Net of observations repeated of the same employee during the entire period.

Chi-square significance level of (10 percent) ***, (5 percent)**, (up to 1 percent)*.

the basis of the Ministry of Economy's survey of employers. In addition, as the employees file does not contain data on the extent of the position or education, we calculate the tendency to work at a part-time position and to have a high level of schooling. This calculation was conducted on the basis of statistical correlation between the employees file and the Income Survey file (for the same or adjacent year). The statistical correlation is conducted by strata of age and family status (married/not married).⁶

We test the research hypothesis—that the increase in retirement age impacted mobility among individuals near the retirement age (55–60 for women, 55–65 for men) more than other age cohorts—through the difference-in-differences method. We compare the mobility rates in adjacent age-cohorts and in two growth periods in the economy—in the beginning of the implementation of the law (2004–06) and after its full implementation (2010–13)—and thus attempt to isolate the law's effect on mobility.⁷ This method assumes that there is a systematic gap in mobility between the two age groups (the treatment group and the control group), and that this gap was maintained between the two growth periods, without a change in the law (treatment). If there was a change in the trend, the estimation attributes this change to its effect on the treatment. As noted above, there were other factors, other than the retirement age, in the decrease in mobility of workers in Israel, but we assume that they impacted on all age groups similarly.

We estimate the effect on mobility of the change in the retirement age through a Poisson regression⁸ in which we control for macroeconomic and sectoral variables and employee characteristics. The four regressions we ran are based on adjacent age cohorts, in order to isolate the

difference in differences effect by controlling for exogenous dependent variables. The estimated parameters make it possible to characterize the profile of people moving between employers, and these are presented in Table 3. We found that the probability of moving between employers declines with age, and is high among unmarried men, employees who do not have high levels of schooling, individuals who tend to work in part-time positions, and individuals who dealt with intra-year unemployment periods—among those it increases as the terminations persist. We also found higher tendency to move between employers among workers who hold multiple jobs at the same time, and among employees who integrate this with self-employment.⁹ Among people who immigrated after 1989, there is a high tendency to move between employers (though the tendency is heterogeneous among the immigrants). Married people are typically less mobile, but their mobility increases when their spouse has wage income and/or when the employee has pension income. This indicates the importance of a family income safety net in increasing mobility. The difference-in-differences estimator (the integration between the growth period and belonging to an age group) gives the impact of the law on mobility, in percent.

Table 4 and Figure 2 focus the estimation of the difference-in-differences effect in various versions of the model. The estimation of the basic model (presented in Table 3 as well) yields the following results regarding the effect of the change in the retirement age on the treatment group: after full implementation of the change, the differential decline in mobility reaches 7 percent among women and 5 percent for men (Table 4, Panel A), and this is a decline of 0.8 and 0.7 percentage points in mobility, respectively. This change explains about one-third to one-half of the decline in mobility in pre-retirement age groups. We also conducted a placebo test for the effect of the change in the law: we examined the mobility of 45–54 year olds against the mobility of 35–44 year olds, since according to our hypothesis the change in the law is expected to affect them equally. In this test, we did not find a statistically significant differential effect. To confirm that the estimated effect of the change in the law is not sensitive to errors in identifying the individuals who moved voluntarily, we repeated the test in the sample of employees with tenure of more than one year with their employer. This selection filters out about 12 percent of total employees in the entire sample and about 37 percent of total movers (Table 4, Panel B).

⁶ The ITA's file of employees and the Income Survey have joint characteristics that enable us to calculate the tendency for part-time work and/or the tendency to have high level of education. These include: the decile of the employee's real wages, the work status (if the person is an employee or self-employed), number of children, number of children below age 2, if the person receives a pension, spouse's income (for those married), and region. We also calculate the cross-correlation between the two tendencies (calculated on the basis of Income Surveys) and coefficients in order to maintain in the employees file as well the proportion of employees who have a tendency for part-time work or a tendency to have a high level of education.

⁷ The first growth period (2004–06) does not precisely capture employees' conduct before the treatment, as the law was already in its first stages of implementation. Despite this, we chose it in order to present the period that preceded the treatment, for several reasons: (1) the law was implemented gradually from the middle of 2004 until the middle of 2009 and therefore until the end of 2006 it only had a partial effect; (2) the file of data that we had allows an analysis beginning in 2001. In 2001–02 there was a recession and high unemployment, so that it is difficult to use them in a comparative analysis.

⁸ Because it is a rare occurrence.

⁹ It is not possible to directly identify the details that integrate work as an employee and self-employed work, but they may be estimated by a tax simulation of the employee files. Based on this identification, the share of this population ranged from 2.5 percent in 2004–06 to 1.6 percent in 2010–13 (similar data are seen from the CBS's Income Survey).

Table 4
Results of difference-in-differences regression: Differential effect (percent) in treatment groups after implementation of the law, 2010-13 compared with 2004-06

	Placebo effect ^a Ages 45-54 vs. ages 35-44		True effect ^a Ages 55-retirement age ^b vs. ages 45-54	
	Estimate	Prob X ²	Estimate	Prob X ²
Panel A: Movers who did not receive severance pay				
Men	-5.1%** (66,634 observations) ^c	0.05	-2.4% (92,739 observations) ^c	0.44
Women	-6.7%*** (66,634 observations) ^c	10.0	-1.1% (95,388 observations) ^c	0.57
Panel B: Movers who did not receive severance pay and worked more than a year^b				
Men	-4.9%** (60,766 observations) ^c	0.05	-4.3% (81,035 observations) ^c	0.14
Women	-9.0%*** (52,934 observations) ^c	0.001<	-3.4% (82,896 observations) ^c	0.28

^a *** denotes statistically significant at the 99% level. ** denotes statistically significant at the 95% level.

^b The retirement age in this examination is 65 for men and 60 for women.

^c Net of observations repeated of the same employee during the entire period.

Figure 2
Estimate of difference in differences, and confidence intervals, by version of the model



In addition, we examined whether the results are sensitive to choice of age groups: instead of keeping the age groups constant, in accordance with the previous retirement age (men aged 55–65 vs. aged 45–54, and women aged 55–60 vs. aged 45–54, in the two periods), we define age groups with varying composition, while keeping a constant distance (in years) from retirement age (men aged 55–65 in 2004–06 and aged 57–67 in 2010–13, and women aged 53–60 in 2004–06 and 55–62 in 2010–13). To this alternative, as well, we added a test of the sensitivity to the definition of voluntary mobility by focusing on employees with tenure of more than a year with the employer. Figure 2 presents the estimates for the difference of differences according to the basic model and sensitivity tests. The results indicate that the estimated effect remains statistically significant, but its power is sensitive to the definition of the sample.

Conclusion

In 2010–13, about 9 percent of employees between the ages of 55 and the retirement age changed employers voluntarily; this share is lower by about 2 percentage points than the mobility level measured for 2004–06, at the beginning of the implementation of the new Retirement Age Law. According to the analysis we conducted, the change in the Retirement Age Law explains about one-third to one-half of the decline. This result teaches that the concern of losing one's place of work due to the lengthening of the employment horizon impacted older workers slightly more than the increase in the value inherent in moving to a more desirable work place. We note that it is likely that the change in the law is a one-off shock whose effect will wear off with time. Among younger age cohorts, as well, a decline in mobility is apparent, but most of the explanation for that is related to other factors, including the reduction in the rate of job creation, an increase in schooling, and an increase in scope of the position.

As there is a link between mobility and the development of efficiency, and between mobility in various age groups, a policy that encourages employment of older workers should allow conditions that facilitate mobility in order to make it easier for workers to take risks and thus improve the allocation of workers among employers. We do not recommend specific steps in this document, but such a policy can be reflected in increased professional training for older people, in increasing flexibility of conditions to receive unemployment benefits at older ages, and a public campaign that encourages employment of older people.

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