

The Economic and Social Impact of Bank Hapoalim on the Israeli Economy in 2018

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Preface

Bank Hapoalim is the largest bank in Israel in terms of the value of its holdings and the size of its credit portfolio. As of December 31, 2018, the value of its holdings stood at NIS 461 billion. It is the largest supplier of credit in the Israeli economy with a loan portfolio of NIS 301 billion. The bank has 8,967 employees and a network of 225 branches located throughout Israel.

The bank plays a critical and central role in the economy as a facilitator between lenders and borrowers and creates sources of credit that enable the economy to operate and flourish. The granting of credit is crucial for economic activity. Credit enables businesses to finance their current activities and undertake projects that require initial financing, without which this would not be possible. In a similar vein, the granting of credit to households assists them in investing for their betterment.

In addition to Bank Hapoalim's role as a key supplier of credit, its commercial activities have a substantial economic impact on the Israeli economy, which stems from its position as a local economic entity this is responsible for creating business activity contributing to GDP and employment in the economy. This includes direct impact of the bank's own activities as well as the indirect impact resulting from its suppliers and employees.

The major aim of this study was to examine the economic impact of the Bank Hapoalim's commercial activities on GDP and employment in the Israeli economy in 2018. The contribution was examined from the standpoint of the bank itself, without its subsidiaries, and its operations abroad. The economic impact of the bank was quantified using the input-output model developed by the Nobel laureate economist Wassily Leontief.

The study was commissioned by Bank Hapoalim as part of its perception of corporate responsibility, with the aim of examining its impact on the Israeli economy. The major results of the study have been incorporated in the bank's 2018 corporate responsibility report. The study was conducted by a team of BDO economists headed by chief economist Chen Herzog, with professional academic oversight provided by Dr. Yoram Ida of Tel Aviv University.

The results of the study found that Bank Hapoalim was directly and indirectly responsible for NIS 19.5 billion of GDP, which represent 1.5% of Israel's total GDP in 2018. Bank Hapoalim is responsible for the employment of 51,534 workers in the Israeli economy. This figure includes bank employees, workers employed by the bank's suppliers, as well as workers employed as a result of the private consumption that is driven by the wages of those workers. Ninety two percent of the direct contribution of Bank Hapoalim to GDP remains within the confines of the Israeli economy.

The study also includes an estimate of the economic impact of the bank's financial contributions to social causes. The findings point to substantial economic impact of the bank's activities for advancing social and environmental causes in Israel, with an emphasis on the contribution to the country's outlying and less developed regions for improving financial education, cultivating small and medium sized businesses, and the contribution stemming from the financing of projects that advance environmental sustainability.

The economic contribution of the bank stands out especially in light of the fact that its commercial activity is characterized by a high level of worker productivity, a relatively high level of employment in the outlying regions of Israel and the scale of the bank's tax payments.



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Background

Bank Hapoalim was founded in 1921 and is today the largest bank in Israel in terms of the value of its holdings and credit portfolio. As of 12.31.2018, the bank's assets totaled NIS 461 billion, and the bank is the largest supplier of credit to the Israeli economy with a loan portfolio of NIS 301 billion. The bank employs 8,967 workers and has a network of 225 branches spread throughout the country.

The Bank Hapoalim Group operates in Israel in all of the various banking segments through two main divisions: the Corporate Division and the Retail Division. The Corporate Division serves most of the business customers, with large corporate customers handled by a separate unit that operates by sector. The middle market companies are handled by business centers that are located throughout the country as well as at bank branches that offer these customers operational services. The Retail Division serves household and private banking customers, foreigners, and small businesses through a network of 225 branches including digital and mobile branches. The division also offers services through self-service devices at branches as well as a website, mobile, applications, Poalim by Phone, and broadly distributed self-service stations.

In addition to traditional banking operations, the bank has extensive activity in the capital market. The group's activities in this field include brokerage and custodial services for shares, trading in foreign currency and in derivatives, research and advisory services, management of financial assets, management of investment portfolios, investment banking, underwriting and management of share offerings.

The main aim of this research report is to examine the economic impact of Bank Hapoalim business activities on GDP and employment in the Israeli economy in 2018. The examination of the contribution was undertaken for the bank's own activity, without that of its subsidiaries and activity outside of Israel.

The economic impact of the bank is estimated by using the input-output model that was developed by Noble Prize-winning economist Wassily Leontief. The model is considered the standard and most widely used in Israel and around the world for examining the induced and total impacts of companies and sectors on the overall economy.

The study is based on input-output data of the Central Bureau of Statistics on the 70 sectors of the economy that was adapted for 2018 using the RAS methodology, data from Bank Hapoalim, the bank's financial reports for 2018, as well as BDO's processing of this data. In addition, the study

presents the economic impact of the bank's activity to advance society and the environment in Israel, with an emphasis on the contribution to supporting outlying regions, financial education, the growth of small and medium sized businesses in the economy, and the contribution stemming from the financing of projects that advance environmental sustainability.

Bank Hapoalim commissioned the study as part of its perception of corporate responsibility and with the purpose of examining impact on the Israeli economy. The major findings of the study are included in the bank's 2018 report on corporate responsibility. The study was undertaken by a team of BDO economists headed by chief economist Chen Herzog and under the professional academic oversight of Dr. Yoram Ida of the Tel Aviv University.

2. Results of the Study — Executive Summary

The economic and social impact of Bank Hapoalim in 2018 was measured on three levels:

 <p>The Impact on the Israeli economy</p> <ul style="list-style-type: none">• The direct economic impact stemming from the bank on the GDP and employment in Israel• Calculation of the contribution of the bank's activities on state tax revenues• Impact of the bank's activity on advancing outlying regions	 <p>Impact of the Social Contribution</p> <ul style="list-style-type: none">• The total economic impact of the financial contribution for social causes that the bank donated to in the past five years	 <p>Credit Creates Value</p> <ul style="list-style-type: none">• Increasing the economic activity in the economy through the granting of credit to small and medium sized businesses• Impact of the bank's activity on advancing outlying regions
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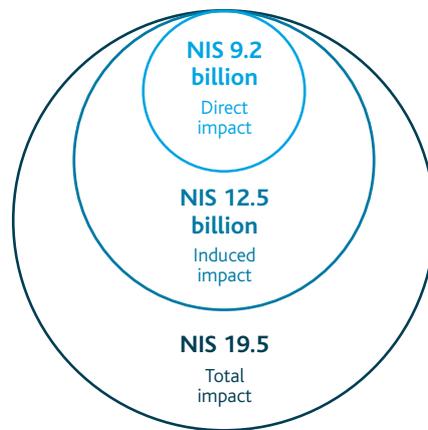
2.1 Impact on the Israeli Economy

On a direct basis, Bank Hapoalim contributed NIS 9.239 billion to Israel's GDP, provides employment for 8,967 workers and is responsible for NIS 3.547 billion in taxes.¹

Bank Hapoalim was directly or indirectly responsible for NIS 19,551 billion in GDP, the equivalent of approximately 1.5% of the State of Israel's total GDP in 2018. This figure includes the direct contribution of NIS 9.239 billion to GDP, an additional NIS 3.220 billion to GDP from the bank's suppliers and their suppliers, as well as the additional contribution to GDP of NIS 7.092 billion stemming from the private consumption of the bank's workers and those of its suppliers which results from wages.

¹ Including: Corporate taxes, national insurance and income taxes, municipal taxes, as well as national insurance and health fees, and income tax paid by bank workers from their salaries.

Impact of Bank Hapoalim on GDP in 2018, in billions of shekels



Weighting of the various components of the direct impact of the bank on GDP shows that 92% of the total direct impact of the bank remains inside Israel.² In other words, 92% of the direct impact on GDP is equal to the direct contribution of the bank to GNP.

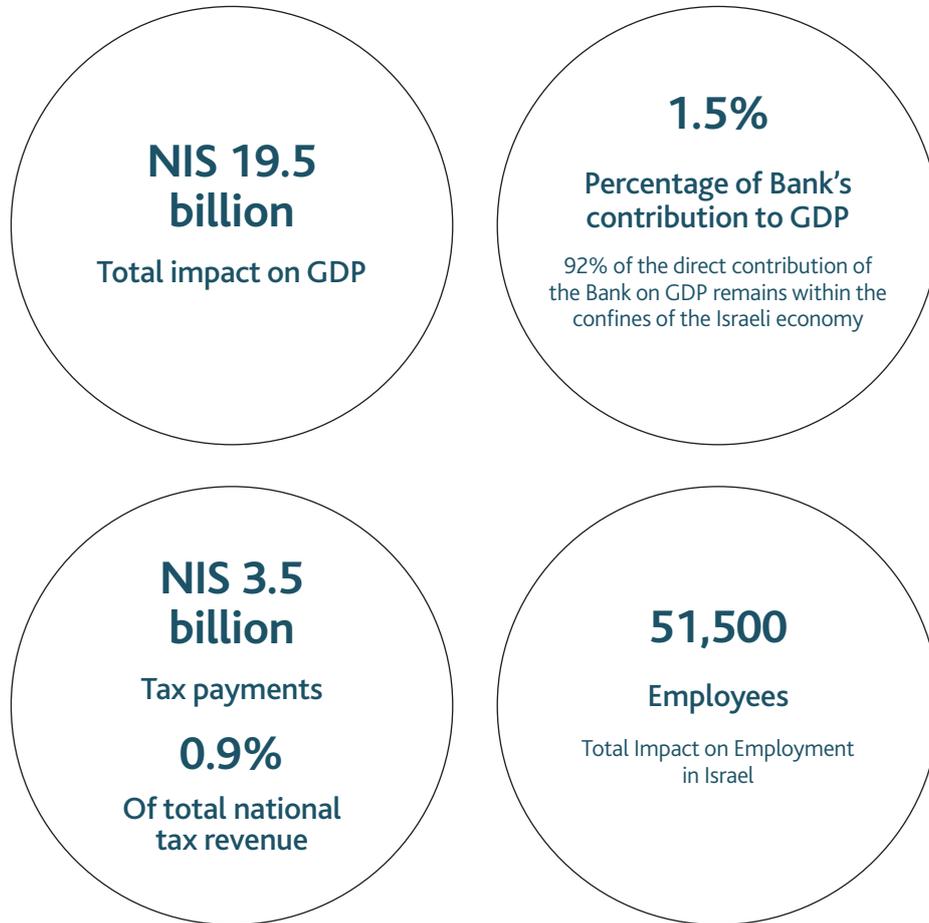
From an overall perspective, Bank Hapoalim is responsible for the employment of 51,534 workers in the Israeli economy. This figure includes 8,967 workers employed by the bank, 10,519 employed by the bank's suppliers and their suppliers, along with 32,048 workers whose employment is derived from the private consumption of the bank's workers and those of its suppliers which is in turn powered by their salaries.

Impact on Employment in the Economy in 2018



² This situation occurs, since all wage payments, corporate tax payments, and most of the bank's profits remain within the Israeli economy.

Summary of the Impact of Bank Hapoalim on GDP and Employment in the Economy in 2018



Bank Hapoalim is a major employer with widespread commercial activity in the outlying regions. Thirty four percent of the bank's workers reside in those regions and their average wage is 63% higher than the average wage in the economy as a whole. In addition, 18% of the bank's suppliers are located in outlying regions, and an important part of the bank's activity takes place in outlying regions, since 45% of its branches and ATMs are located there.

In addition, the study examined the economic impact of the bank's activities on advancing of society and the environment in Israel with an emphasis on its contribution to outlying regions, financial education, fostering the growth of small and medium sized businesses in the economy, as well as the contribution stemming from the financing of projects that advance environmental sustainability. The estimate of the economic impact of the financial donations by the bank for social causes is also assessed in accordance with the methodology of the input-output model. This estimate allows for assessing the total impact on the Israeli economy of these contributions beyond their direct financial value.

Bank Hapoalim contributed NIS 193 million in the past five years (2014–2018).³ The results of the study show that the total impact of the bank's financial contribution for social causes on the revenues in the overall economy over the past five years amounted to NIS 675 million. And the total impact of the bank's financial contribution for social causes on GDP was NIS 352 million.

Bank Hapoalim is the leader in the granting of credit to small and medium sized businesses. An examination of the contribution to the economy from the additional credit to small and medium sized firms shows that Bank Hapoalim granted excess credit totaling NIS 20.25 billion to this sector and reduced by 13.8% their need for credit. The additional credit of Bank Hapoalim to this sector led to substantial economic activity: a NIS 24.8 billion addition to GDP from small and medium sized firms, additional employment of 160,500 workers and a NIS 66.2 billion addition in revenues in small and medium sized firms.

Beyond the direct economic contribution of the bank's purchases from suppliers, the bank also serves as an important financier of business activity in the economy by granting credit to businesses and for private consumption. An examination of the bank's credit portfolio shows that the bank granted NIS 8.7 billion to projects that advance environmental sustainability in 2018. An analysis of the reduction in greenhouse gas emissions created by the bank's part in the investment in these projects translates into a reduction 400,000 tons of carbon dioxide emissions per year. This represents 1.1% of the total emissions created in the production of electricity in Israel in 2018. The economic value of this future reduction in emissions is estimated at NIS 500 million.

³ The contribution of the bank by itself without subsidiary companies. The total contribution of the bank including its subsidiaries stood at NIS 212 million shekel.

3. Methodology

3.1 Principles of the Input-Output Model

The input-output model was used in order to assess the total contribution of Bank Hapoalim to the Israeli economy. This model was developed in 1936 by economist Wassily Leontief, who was awarded the Nobel Prize in 1973 for his work.⁴ This model is the most widely accepted from an academic and business perspective for examining the total contribution of companies and economic sectors in Israel and abroad.⁵

As noted by Miller and Blair in their book *Input-Output Analysis: Foundations and Extensions*:⁶

“Today, in the USA alone, input-output is routinely applied in national economic analysis by the US Department of Commerce, and in regional economic planning and analysis by states, industry, and the research community. The model is widely applied throughout the world; the United Nations has promoted input-output as a practical planning tool for developing countries and has sponsored a standardized system of economic accounts for constructing input-output tables.”

The input-output model teaches us that there are industrial relationships within the economic system as a whole. The inputs of one sector are the output of another one and vice versa, so that in the end the mutual relationships lead to a balance between supply and demand in the economy. This model presents the economy as a matrix that registers all inter-sectorial transactions that occur in a region, when the sectors that are ‘selling’ appear as rows in the model and the sectors that are ‘buying’ for production purposes as columns. The model permits an analysis of the influences between each manufacturing industry to all of the others, as well as with the economic sectors for final uses, which are: private consumption, public consumption, investments and exports. This analysis is possible due to the detail of the purchasing relationship between sectors of manufactured products on the one hand and consumption products on the other.

⁴ See: Leontief, WW. (1936). Quantitative Input and Output Relations in the Economic Systems of the United States. *The Review of Economic Statistics*, 105–125.

⁵ Example: The analysis of the scale of economic impact of Israel Chemicals on the Israeli economy (Dr. D. Friman, Dr. M. Malul, Dr. M. Rosenbaum June 2010), and the impact of ICL on the development of the Negev and the national economy (Dr. Daniel Friman, 2015), Impact of the contribution of Intel Israel on the national economy 2018 (Shmuel Neeman Institute), the impact of the diamond industry on the Israeli economy 2018, BDO, Impact of Bazan Oil Refineries on the national economy 2019, BDO. The Leontief input-output model has been utilized by financial institutions worldwide to examine the economic contribution by companies and institutions including: New Jersey Bankers Association, Bank of America Boston Marathon, Malta Financial Services Authority, Regions Financial Corporation, California Bankers Association.

⁶ Miller, R.E., & Blair, P.D. (2009). *Input-Output Analysis: Foundations and Extensions*. Cambridge University Press.

The Leontief input-output model has many uses, including the planning of production in an economy and the estimation of impact multipliers. The planning of production in an economy is made possible through one of the essential features of the model which enables determining the amount of production that needs to be increased in a particular sector in order to increase production in another sector that serves as an output for these sectors. For example, let's suppose there is a need to increase production in the steel sector, the input-output matrix would enable us to know how much production needed to be increased in other sectors, for example: agriculture and energy (which consume steel in their production processes), in order to raise demand in the steel sector.

The main application of the model was presented back in 1941 by Wassily Leontief,⁷ and is the calculation of the impact multipliers of a specific economic entity on the GDP and employment in an economy during pre-determined periods. Impact multipliers stem from input-output model presentation of the connections between the inputs and the outputs in the economy. This notes that any production of a product in the economy leads to the production of other products and services needed for producing the original product. One can therefore conclude that the production of a product in a specific economy will have an indirect impact on general production and employment in that economy.

3.2 Input Output Multipliers

According to the impact multiplier methodology, there are two main economic multipliers:⁸ the added value multiplier and the employment multiplier. Each multiplier examines the impact of economic entity on one of the levels to which it is connected. Hence the added value multiplier examines the impact of the economic entity on production in the economy (this from the approach of the value added to estimation of production that states that GDP is equivalent to the total value added that was realized by the economy over the period of a year), and the employment multiplier examines the impact of the economic entity on employment in the economy.

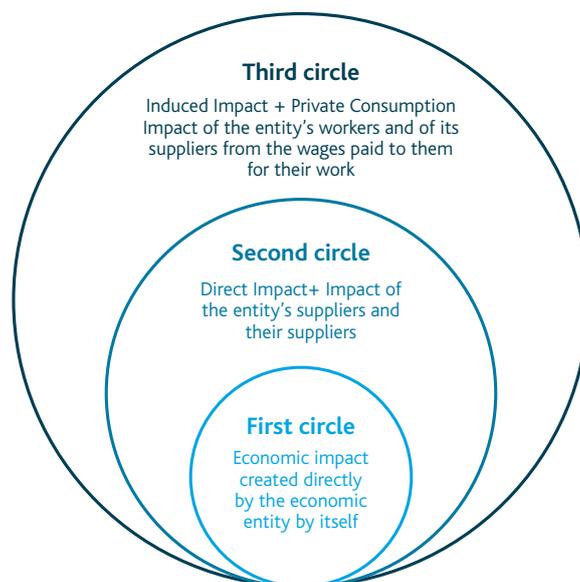
The impact of the economic entity on the economy on a certain level (the GDP or employment level) works on three circles of influence:

- 1/** The circle of direct impact: describes the direct impact of the activity of the entity on a certain level. The direct impact multiplier is always equal to 1.
- 2/** The circle of induced impact: includes the direct impact as well as the impact of the suppliers to that entity, and the suppliers to those suppliers create on a certain level.
- 3/** The circle of total impact: the induced impact with the addition of the impact of private consumption of the workers of the entity and the workers of its suppliers that is created from the wages paid to them for their work. This effect is calculated by the total multiplier.

⁷ See: Leontief, W. (1941). The Structure of the United States Economy, 1919–1939, Harvard UP, Cambridge, Mass.

⁸ A multiplier is a number connected to a certain factor. The multiplying of the multiplier by the same factor to which it is connected will lead to the estimation of an indicator that is necessary for calculating it.

Circles of Impact of an Economic Entity on the Economy



Description of the circles of impact divided on the basis of GDP and employment

	GDP level	Employment level
Direct impact	Direct impact the impact of the entity itself on GDP (net profit with the addition of depreciation + wage expenses + taxes) ⁹	Direct Impact Workers directly employed by the entity
Induced impact	Direct impact on GDP+ impact on GDP from suppliers of the entity as well as their suppliers.	Workers of the entity + workers employed by its suppliers and those of their suppliers
Total impact	Induced impact on GDP + impact of the private consumption of the workers of the entity and of its suppliers from wages paid to them for their work, on the GDP.	Induced impact on employment + employment created by the private consumption of the entity's workers and those of its suppliers from wages paid to them for their work

*All impact created by suppliers to the entity includes only that part that stems from direct purchases from the suppliers.

⁹ According to the value-added approach for calculating GDP

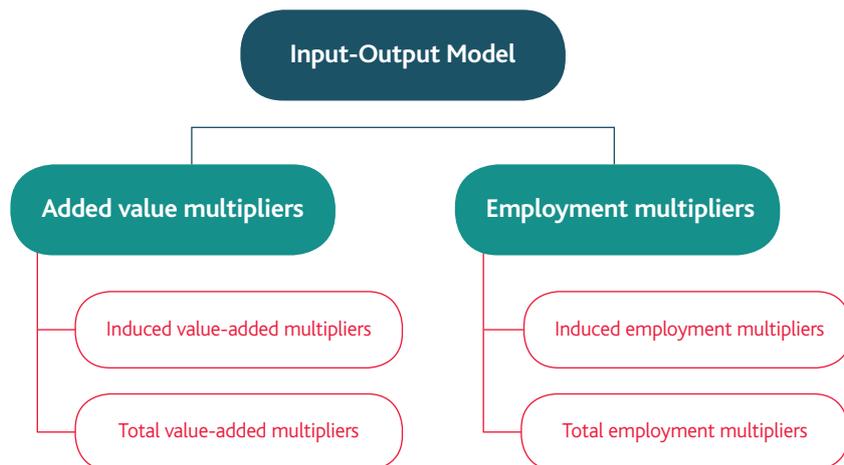
As noted, the estimation of the induced impact and the total impact is conducted by the impact multiplier that are derived from the input-output model. These multipliers are usually associated with the two main multipliers that sum up the combined impact at each stage:

1/ Induced Multiplier - calculates the direct and induced impact, by multiplying it by the direct impact factor.

2/ Total Multiplier - sums up the direct, induced and total impact, by multiplying it by the direct impact factor.

The results of the application of the input-output model can be summed up by calculating the four multipliers as noted in the following chart:

The Calculated Multipliers from the Input-Output Model



It should be noted that an additional kind of multiplier can be derived from the input-output model and that is the income multiplier. The income multiplier measures the impact of an economic entity on income in the economy in accordance with the impact circles.

3.3 Input-Output Model

The Leontief input-output model describes all of the transactions of independent economic entities with each other within an economic framework during a given period of time. In this way, the input-output model describes the range of the supply output, and the input of uses of goods and services in the economy. This description is carried out by devising a matrix built from four quadrants where each quadrant defines on the one hand supply (output) and on the other side uses (input) of goods and services in an economy.

In order to simplify the chart below, we will envision a closed economy without imports or exports, and that the bodies in the economy are economic sectors, such as agriculture, energy production, and health services. They are noted as A, B and C. The input-output matrix of an economy would look as follows:

Example of an Input-Output Matrix

Rows - Production (sales) of each sector

		A	B	C	Final demand	Total production
Columns - division of expenditures on input	A	5	3	2	12	22
	B	10	9	5	5	29
	C	5	7	8	4	24
	Value added	2	10	9	17	
	Total production	22	29	24		75

Quadrant 1
Quadrant 2

Quadrant 3
Quadrant 4

It is clear that the above matrix is comprised of four quadrants. The four quadrants are: intermediate uses, final demand, primary inputs to production and primary inputs to final demand.

First quadrant, intermediate uses (in the chart above on the left): This quadrant describes the flow of goods and services from the manufacturing sectors. The numbers in this quadrant serve a double purpose. From one angle the numbers in the columns represent all the inputs of each sector

purchases for production of its goods. From another perspective the numbers in the rows represent the production of each sector that is consumed by other sectors as an input for production of its own goods.

Second quadrant, the final demand (in the chart above on the right): This quadrant describes the group of end demand of the production of the economic sectors. This group is comprised of private consumption of the households, public consumption, investment and exports. In reality, the production of a specific sector is not consumed only by the productive sectors of the economy as detailed in the first quadrant but also by the factors of the final demand quadrant.

The row schema in the first and second quadrants presents the total uses that the economy executes from goods and services produced by each sector.

Third quadrant, primary inputs to production (in the chart at the bottom left). This quadrant includes principle inputs in the production process. These inputs primarily include wages, profit and taxes. This quadrant can also be described as the total of added value that is derived from each sector.

The schema of the columns of the first quadrant and of the third quadrant present the total inputs invested in the production process of each sector.

Fourth quadrant, primary inputs to final demand (in the chart at the bottom right): represents the total inputs consumed by the factors of aggregate demand.

A close look at the first quadrant shows that all of the manufacturing sectors are duplicated on to two identical parts of one matrix. The main assumption for the transactions described in the first quadrant is that each economic entity is dependent on another one to buy goods and services from it. In other words, each economic entity uses inputs¹⁰ in order produce output. Therefore, the inputs of one economic entity are actually the outputs of another one, which are used as inputs for other economic entities in the economy.

For example, the output of the energy sector serves as an input for the agricultural sector, since energy is needed to power machines that plant and harvest crops in agriculture. In the same way, there is a need for food as an input in the energy sector to feed the workers who are producing energy which is the output of this entity.

The example in the above chart, the letters A B C represent the sectors in the economy. Each row represents outputs (revenues) of these sectors.

¹⁰ Input-represents total resources, work and the expenses that are connected with the production process or with economic activity.

In examining the rows of the matrix, it can be determined that there are two principle consumers of all the outputs in the economy. One consumer is the sectors of the economy, and the second consumer is the final demand entities which consume the same production. These final demand users are comprised of private consumption, public consumption, investment and net exports which are located in the second quadrants. The schema of total consumption of the sectors of the economy along with the final demand uses will form the total output produced by a certain sector.

For example, examination of the above chart, shows that the numbers in column A describe the goods or services that sector A produced and that was used by several of the other entities in the following manner: The amount 5 was purchased by sector A (self-purchase by the same sector), a sum of 3 was purchased by sector B, the sum of 2 was purchased by sector C and the sum of 12 was consumed by the final uses in the economy (private consumption, public consumption, investments and net exports). The row schema which adds up to 22, represents the total production of sector A in the economy.

In examining the columns of the matrix, the side of expenditures and added value of the sector can be seen. For example, one can see the cost of inputs utilized in sector A for production of its products were as follows: the sum 5 was purchased from sector A (internal purchases from the same sector), the sum of 10 from sector B, and the sum 5 from sector C and the sum of 2 represents the primary inputs to production of sector A in its production which are wages, taxes and the sector's profit. The column schema shows that sector A purchased inputs from suppliers for a value of 20 and created profits, paid wages for its workers and taxes in the amount of 2. In this manner, the schema of the total of numbers in the column is equal to the production in the sector. The total production of sector A at the bottom of the column of the sector equals the total production of sector A that is described at the end of the row representing the sector.

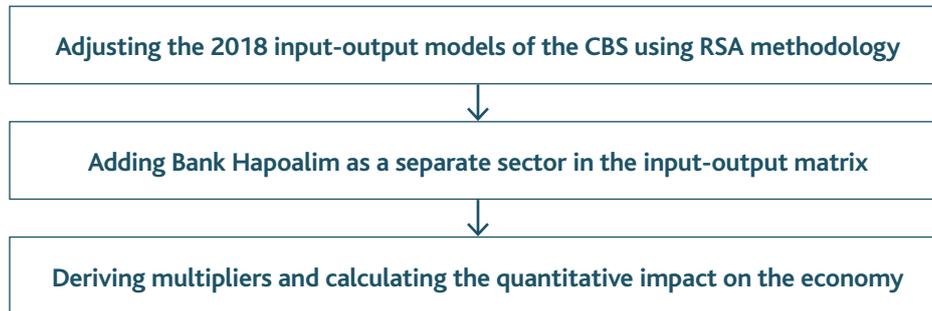
3.4 Input-Output Multiplier Model

The process of calculating multipliers is complex and involves two main stages: the first stage is the adjustment of the Central Bureau of Statistics input-output matrix for 2018 with the use of the RAS methodology,¹¹ which is used for updating the input-output tables from previous years to the current year. The second stage is the calculating of the multipliers for GDP and employment. As detailed below an essential part of the first stage includes the addition of Bank Hapoalim to the input-output matrix as a standalone entity along with the sectors of the economy.

¹¹ See: Parik, Ashok. "Forecasts of input-output matrices using the RAS method." *The Review of Economics and Statistics* (1979): 477–481.

Dewhurst, JH LL "Using the RAS technique as a test of hybrid methods of regional input-output table updating." *Regional Studies* 26.1 (1992): 81–91.

Process of Building an Input-Output Model



Details of the principle stages as shown in the chart below:

3.5 Updating of the Input-Output Charts for 2018 and the Addition of Bank Hapoalim to the Matrix

The CBS recently published input-output charts for the state of Israel in 2013, based on data of 2006. These charts include the categorizing of the economy into 70 sectors. In order to adjust the tables for 2018, RAS methodology was used,¹² which is considered to be among the most acceptable¹³ for updating input-output tables. As part of the updating process of the input-output tables, updated supply tables of the CBS were also used, along with data on the development of Israeli GDP over the years.

Following the updating of the input-output tables for 2018, Bank Hapoalim was added as sector number 71 to the matrix. After this was done the bank's purchases from suppliers was added to the matrix column and the bank's sales to customers to the matrix row, and this in accordance with the division of the sectors of the economy in the matrix.

3.6 Adjustment for Matrix Tables and Calculation of Multipliers

The calculation of the impact multipliers within the input-output model is a mathematical process¹⁴ that includes several stages that are based on one another and this is in order to calculate the value added and employment matrices.

¹² Parikh, Ashok. "Forecasts of input-output matrices using the RAS method." *The Review of Economics and Statistics* (1979): 477–481.

¹³ Randall Jackson & Alan Murray (2004). "Alternative Input-Output Matrix Updating Formulations." *Economic System Research*, 16:2, 135–148.

¹⁴ Duchin, Faye and Albert E. Steenge. (2007). *Mathematical Models in Input-Output Economics*. Rensselaer Polytechnic Institute, Troy, NY.

First stage of calculations

- 1/ Matrix AI-dividing of the purchases of all the sectors by the production of each sector for the first quadrants.
 - 2/ Matrix $AI=(I-A)^{-1}$
-

Second stage of calculations

- 1/ 1/ MI matrix-dividing the purchases of all the sectors by the production of each sector
 - 2/ Vector H-the wages in the third quadrants of the M matrix
 - 3/ Matrix $MI=(I-M)^{-1}$
-

Value added multiplier calculations

- 1/ Creating Matrix T-divide purchases of the sectors by the total production of each sector
 - 2/ Direct GDP multiplier-the value added in the third quadrants of matrix T
 - 3/ Induced GDP multiplier- $G*A+G*AI$
 - 4/ Total GDP Multiplier- $G*MI$
-

Calculation of Employment Multipliers

- 1/ Direct employment multiplier-Vector E-employees for a NIS 1 million production for each sector
- 2/ Induced employment multiplier- $E*A+E*AI$
- 3/ Total employment multiplier- $E*MI$

Since the data relating to the direct impact of the bank are known, the GDP and employment multipliers have been adjusted so that the direct multipliers are equal to 1. The quantitative impact of each circle was calculated by multiplying the relevant multiplier by the direct impact factor.

4. The Economic Impact of Bank Hapoalim According to the Input-Output Model

In this chapter the results of the input-output model for Bank Hapoalim will be presented. Examining the impact circles on the GDP and employment levels were undertaken for Bank Hapoalim in reference to 2018. The sources of information that were used consisted of CBS data, the bank's financial reports for 2018 and data that was supplied by the bank.

4.1 An Examination of the Direct Contribution of the Bank to the Economy

In an examination of GDP, the direct contribution of Bank Hapoalim to GDP in 2018 totaled NIS 9.239 billion. The calculating of the direct contribution of Bank Hapoalim to GDP in 2018 was conducted in the value-added method:

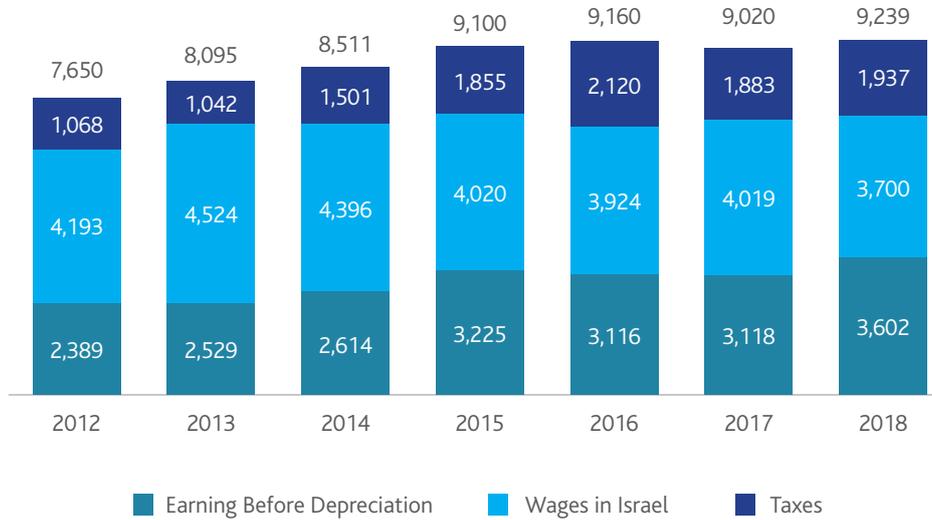
The Direct Impact of the Bank on GDP in 2018

	Millions of NIS, 2018 data
After tax profit with depreciation added	3,602
Cost of wages of the bank in Israel minus the wages of workers abroad	3,700
Corporate tax	1,937
Total direct local value-added	9,239

The components of Bank Hapoalim's contribution to GDP: profit after taxes with depreciation added, wages that the bank paid its local workers, and corporate taxes that the bank paid to the state. As stated, the total of these components amounts to NIS 9,239 million.

A historical examination of the bank's contribution to GDP shows a constant growth in its direct contribution to GDP in Israel.

The Direct Contribution of Bank Hapoalim to GDP from 2012–2018, in millions of NIS



Source: Bank Hapoalim financial reports, BDO analysis

In examining the contribution to employment, Bank Hapoalim employed 8,967 workers in 2018 (not including manpower outside of Israel) whose total wages amounted to NIS 3.7 billion. The above figure includes 8,166 workers directly employed by the bank and another 801 who are contract workers.

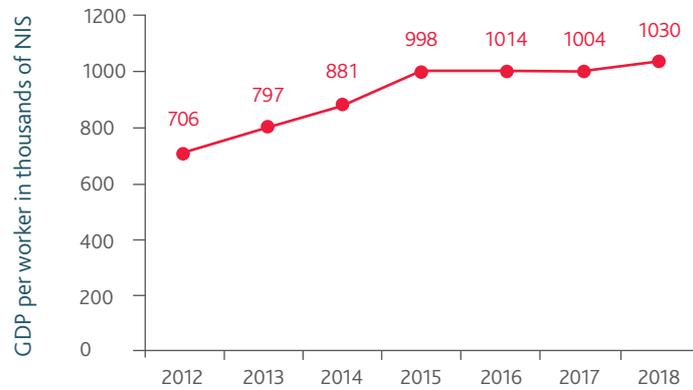
Characteristics of the Bank Hapoalim work force:

- 66% of the bank's workers are women, compared to 59.4% in the economy as a whole;¹⁵
- 6.4% of the bank's workers are from the Arab sector;
- 2% of the work force is from the Haredi Orthodox sector;

A close look at the value per worker at Bank Hapoalim over the years shows a continuing upward trend.

¹⁵ Gender Index, the Van Leer Institute based on CBS data Work Force <https://genderindex.vanleer.org.il>

Value-Added/GDP per worker at Bank Hapoalim in Recent Years, Thousands of NIS



Source: Bank Hapoalim financial reports and BDO analysis

The total GDP per worker in 2012 stood at NIS 700 thousand and in the past four years averaged approximately NIS 1 million. An overview shows there has been an upward trend in GDP per worker at Bank Hapoalim.

4.2 Impact of Bank Hapoalim on Israel's GDP

Adopting the impact multiplier methodology from the input-output model gives the following results for Bank Hapoalim in 2018:¹⁶

Summary of Impact Multipliers on GDP at Bank Hapoalim

GDP level	
Direct multiplier	1.00
Induced multiplier	1.35
Total multiplier	2.12

*Since the total impact on the bank is known, the multipliers have been adjusted to a situation where the direct multiplier is equal to 1.

¹⁶ The multipliers have been adjusted with the bank's social contributions removed, and they will be reviewed separately.

From these results it can be deduced from a quantitative perspective the induced and total impact of Bank Hapoalim on Israel's GDP. Each impact is calculated by multiplying the direct impact of the suitable multiplier.

Summary of the Impact of Bank Hapoalim on GDP in 2018 in millions of NIS

	Multiplier	Impact on GDP	Marginal addition to GDP of each circle
Direct impact	1	9,239	9,239
Induced impact	1.35	12,459	3,220
Total impact	2.12	19,551	7,092

- The direct impact of the bank's activities on the economy stood at NIS 9,239 million (net profit with depreciation charges + wage expenses + taxes).
- Total GDP from induced impact stood at NIS 12,459 million. The induced impact includes the direct impact of the bank on GDP + the impact on GDP created by the bank's suppliers and their suppliers.
- Total GDP resulting from the total impact stood at NIS 19,551 million. The total impact on GDP is comprised of the induced impact on the GDP + the impact of private consumption of the workers of the bank and its suppliers from wages paid to them.

**The activity of Bank Hapoalim in 2018 contributed NIS 19.5 billion to GDP,
accounting for 1.5% of Israel's GDP**

4.3 Input-Output Model Results on the Employment Level

Adapting the impact multiplier methodology from the input-output model leads to the following results for Bank Hapoalim in 2018:¹⁷

Summary of the Employment Impact Multipliers for Bank Hapoalim

Employment level	
Direct multiplier	1.00
Inducted multiplier	2.17
Total multiplier	5.75

From these results one can deduct from a quantitative perspective the induced and total impact of Bank Hapoalim on employment in the economy. Each impact is calculated by multiplying the direct impact by the appropriate multiplier.

Summary of the Impact of Bank Hapoalim on Employment in 2018 in terms of the number of full-time positions

	Multiplier	Impact on Employment	Marginal addition to employment in each circle
Direct impact	1.00	8,967	8,967
Induced impact	2.17	19,486	10,519
Total impact	5.75	51,534	32,048

- Bank Hapoalim directly employs 8,967 workers.
- The total number of positions created from the induced impact stood at 19,486. The induced impact is comprised of the bank workers + the suppliers' workers and those of their suppliers.

¹⁷ These multipliers are adjusted for the impact of the social contributions of the bank, which will be summarized separately later on.

- The total number of positions created from the total impact stood at 51,534. The total impact is comprised of the induced impact on employment + the employment created by the purchases of the bank's employees and those of its suppliers from wages paid to them.

The activity of Bank Hapoalim during 2018 is directly and indirectly connected to the employment of 51,534 workers

4.4 Specifics on the Composition of Induced Impact

As noted, the induced impact is the result of impact of the entity's suppliers and the total suppliers of initial suppliers. Since the factor that produces the induced impact is the bank's expenditures for purchases from its suppliers, the input-output model enables details to be extracted from the induced impact created according to the classification of the bank's suppliers.

Induced Impact of the Bank on GDP and Employment According to the Classification of the Supplier

	Impact on GDP (Millions NIS)	Impact on Employment (Number of jobs)
Direct contribution of the bank	9,239	8,967
Construction, real estate, maintenance of properties	557	1,496
Manpower, professional services and consultancy	719	3,267
Projects, purchases and upgrading of technology, infrastructure and communications	1,506	3,086
Printing, PR and office need	47	238
Transportation, shipping and secured transport	156	845
Other	235	1,586
Total	12,459	19,486

It can be easily noted that on the impact level of GDP, the induced impact circle creates marginal impact of NIS 3,220 million, so as that out of the direct impact of NIS 9,239 million a total induced impact of NIS 12,459 is created. In addition, on the employment impact level, the induced impact circle creates a marginal impact of 10,519 jobs. Therefore, from a direct impact of 8,967 employees the total of induced employment created stands at 19,486.

It can be easily discerned that most of the impact of employment and GDP stemmed from suppliers of manpower, professional services and consultancy, along with suppliers of projects, acquisition and maintenance of technology, infrastructure and communications. This substantial impact is in direct correlation with the relatively high level of spending by the bank on these suppliers.

4.5 Summary of the Results of the Input-Output Model

In the following table the summary of the multipliers for the impact circles can be seen as well as the total quantitative impact of the bank on the various impact circles.

Summary of the Findings of the Input-Output Model for Bank Hapoalim

	Impact on GDP (millions of NIS)	GDP multiplier	Impact on Employment (number of positions)	Employment multiplier
Direct impact	9,239	1	8,967	1
Induced impact	12,459	1.35	19,486	2.17
Total impact	19,551	2.12	51,534	5.75

From the economy's standpoint, the total impact of the bank on GDP amounts to 1.48% of the total GDP of Israel in 2018 and stands at NIS 1,327,395 million.¹⁸ More than 80% of the bank's shareholders are Israeli, therefore, more than 80% of the bank's profits remain in the Israeli economy. As a result, the weighting of the components of direct impact of the bank on GDP means that 92% of the direct impact remains within the Israeli economy.¹⁹ In other words, 92% of the direct contribution of the bank on GDP is equal to the direct contribution of the bank to GNP.

¹⁸ Source: CBS.

¹⁹ This situation exists since all of the components connected with direct impact on GDP, such as wage payments, and corporate tax payments remain in the Israeli economy.

5. Estimate of the Contribution of the Bank's Activities to State Revenue from Taxes

The total tax payments of the bank in 2018 amounted to NIS 3,546 million, which accounted for 0.88% of state revenues from taxes. State revenue from taxes in 2018, is comprised of all of state revenues from taxes, municipal taxes, and the collection of National Insurance and health fees by the National Insurance Institute. The total amount of taxes was approximately NIS 401,244 million.

In addition, to corporate tax paid by the bank, there are a number of levels of taxation that the bank pays from its activities in Israel. The table below gives a summary of all of the taxes paid by the bank.

Tax Payments by the Bank in 2018, Millions of NIS

Tax category	Total payments in 2018
Corporate Tax	1,937
National Insurance and Wage Taxes	631
Municipal Taxes	243
Tax on workers' income*	736
Total	3,547

*Income tax, national insurance and health fees on workers' income.

6. Bank's Contribution to Advancing Outlying Regions

6.1 Bank Hapoalim is a Major Employer in Outlying Regions

A substantial part of the Bank Hapoalim's contribution to the outlying regions²⁰ in Israel in 2018 stemmed from the fact that the bank is a major employer in these areas. An examination of the data from the bank leads to the following conclusions:

- 2,820 of the bank's employees, comprising 34% of its work force, live in outlying regions.
- The average salary paid to a bank worker in these regions is 63% higher than the average wage in the economy.
- Out of 2,326 suppliers to the bank in 2018, 423 are located in outlying regions, and account for 18% of the bank's suppliers.

The contribution to outlying areas of Israel is substantial because these areas are characterized by fewer employment opportunities in comparison to the center of the country. The higher than average wage paid to bank workers in comparison to other workers in these areas is also a substantial contribution, since it leads to higher private consumption that contributes to greater economic activity. As a result, the bank's contribution to employment in outlying areas leads to a reduction in the inequality between these regions and the center of the country.

6.2 A Substantial Portion of the Bank's Activities are in Outlying Regions of the Country

Bank Hapoalim is a banking institution whose primary activities are granting loans, receiving deposits, managing accounts in local and foreign currency and of making credit available to companies and business initiatives. The bank's activities are of key importance for the managing of an orderly and efficient and economic framework.

²⁰ The definition of outlying regions is based on the CBS classification of peripheral clusters ranking 1–6.

A substantial percent of the bank's operations is located in outlying regions:

- Out of a total of 225 bank branches, 101 are located in outlying regions, representing 45% of the total, and the bank has 28 branches in the Arab sector and 15 others are in towns with mixed Jewish and Arab population or near Arab communities.
- Out of the 767 ATMs operated by the bank, 342 are located in outlying regions and represent 45% of the total of the bank's ATMs.

The fact that a substantial part of the bank's operations is located in outlying regions of the country leads to the expanding of the wealth potential in these areas. The bank's activities in the outlying regions are essential for the economic growth of these areas, expanding the competitive edge of businesses located there, as well as creating a higher standard of living for the residents of these regions.

The bank's activities in the outlying regions also reduce inequality between those areas and the center of the country. The outlying regions are characterized by a lower level of economic activity than in the center of the country. The network of branches in the outlying regions contributes to reducing inequality and making banking services available in regions of lower economic activity and are comparable to those that exist in the center of the country.

In addition, the deployment of ATMs in the outlying regions eases the withdrawal of cash which is essential for a proper economic system. The importance of cash as a means of payment stems from the existence of business owners who do not have the option to receive payment by credit card or by transferring funds between individuals.

7. The Economic Impact of the Financial Contribution by the Bank to Social Causes

7.1 The total economic impact of the bank's financial contributions

In addition to the economic impact of Bank Hapoalim's business activities, the study also assessed the economic impact of the bank's activities to advance society and the environment in Israel, with an emphasis on its contribution to the outlying regions and of financial education. An estimate of the economic impact of the bank's financial contributions for social causes was also conducted using the input-output model. The measuring related to the financial contributions over the past five years (2014–2018) in order to measure the ongoing social impact on the Israeli economy.

At the time of the making of the contributions for social causes, the bank increases its revenues in the economic sector from which the social activity is associated. For example, in a Passover project, the bank financed the opening of museums and cultural and heritage sites for the entire Israeli public during the days of the weeklong holiday. Without the contribution visitors would have had to pay for tickets to enter the museums and sites. Therefore, the Passover project, that was financed by the bank, increases the revenues of the cultural, arts and sports sector which includes cultural and heritage sites.

In order to calculate the total impact of the bank's contributions to the community, each contribution was categorized to one of the sectors in the input-output model: education, accessibility, welfare, culture, arts and sports. Since every contribution to one of these sectors led to an increase in revenues in that sector, it is possible to calculate the total impact circle that is created as a result of the economic activity in that sector according to the input-output model. The calculating of the total impact was carried out by using total multipliers of each sector, which are derived from the results of the input-output model. The calculating of the total impact of the various contributions was conducted on the revenue level and the GDP level.

Summary of the Total Impact of the Bank's Contributions According to its Classification During the years 2014-2018 in Millions of NIS

	Total initial contribution of the bank in the past five years*	Total impact on revenues in the economy	Total impact on GDP
Financial education	33	102	60
Accessibility	39	180	86
Outlying regions	45	137	81
Opening of sites to the public during Passover	22	71	34
Strengthening of not for profit associations	6	22	11
Volunteering of employees	13	46	24
Culture and sport	20	67	32
Welfare	13	51	24
Total	193	675	352

*The bank's contribution on its own. the bank's contribution including its subsidiaries amounted to NIS 212 million.

The total impact of the bank's financial contributions for social causes can be seen in the above table. The table shows that the total impact of revenues in the economy stood at NIS 675 million in the past five years, and the total impact on GDP was NIS 352 million over the same period.

8. The Contribution to the Economy as a Result of Additional Credit to Small and Medium Size Enterprises

8.1 The need for credit in the small and medium size business sector

The BDO analysis of the data from a survey conducted by the Israel Small and Medium Enterprises Authority at the beginning of 2018,²¹ found that there were about 279,300 small and medium size firms, which represent 54.4% of the sector, who expressed the need for credit. An analysis of the data from the survey came up with the following findings:

Findings from the Analysis of the Scale of Credit Needed by Small and Medium Size Businesses

Number of small and medium size businesses	Amount of credit needed in millions of NIS	Total demand for credit in billions of NIS
41,860	Above 1 million	62.8
64,120	1-0.3	41.7
62,707	0.3-0.15	14.1
79,196	0.15-0.05	7.9
31,428	0.05-0	0.8
279,310		127.3

²¹ From the periodic report on the state of small and medium size businesses in Israel 2018, Economy Ministry, Israel Small and Medium Enterprises Authority chapter 9.3.

The above table shows that the volume of credit in demand is NIS 127.3 billion by 279,310 small and medium sized firms. An examination of financial reports of the banks shows that the distribution of credit at each bank. According to Bank Hapoalim's 2018 financial report, 31.4% of all credit granted by the bank went to small and medium sized firms.²² The amount totaled NIS 95 billion. While the weighted average of the credit granted to small and medium sized firms by the four other large banking groups stood at 24.7%. From a quantitative perspective, the average total amount of credit at the four banking groups was NIS 44 billion.

The Average Weighted Credit for Small and Medium Sized Firms at the Four Other Banks in Comparison with Bank Hapoalim



From the above table one can see that from the perspective of the total percentage of the credit portfolio, Bank Hapoalim supplies credit to small and medium sized firms that is 6.8% higher than the average of the other large banks. This percentage from a quantitative basis amounts to NIS 300.87 billion and comprises a NIS 20.35 in additional credit to the sector.²³ It can be concluded that Bank Hapoalim contributed to the reduction in the demand for credit in the sector of small and medium sized firms to the tune of approximately NIS 20.35 billion. The demand for credit in this sector would have been even greater if Bank Hapoalim would not have offered this additional credit.

It can be concluded that the additional credit granted by Bank Hapoalim led to a 13.8% reduction in the demand for credit in the small and medium size business sector.²⁴

²² The definition of small and medium size enterprise is according to the approach of sectors under supervision.

²³ $300.87 * 6.8\% = 20.35$

²⁴ The percent of additional credit of Bank Hapoalim to the demand for credit before the reduction by the bank:

$20.35 / (127.4 + 20.35) = 13.8\%$

8.2 The Contribution to the Economy in Light of Bank Hapoalim's Additional Credit to the Small and Medium Size Business Sector

The additional credit granted by Bank Hapoalim to the small and medium size business sector led to substantial economic activity in the economy. The additional credit offered by Bank Hapoalim to this sector can be viewed as the stimulus for the extra economic activity of small and medium sized firms.

From an examination of the data in the 2018 Economy Ministry report on the situation of small and medium enterprises it is possible to assume that the impact of one shekel of credit in this sector on GDP, employment and income in the economy on the following basis:

- One shekel of credit translates on average to NIS 1.22 addition to GDP resulted from small and medium size business.
- NIS 1 million additional credit creates 7.9 jobs.
- One shekel of credit on average leads to NIS 3.25 in additional income in the small and medium size business sector.

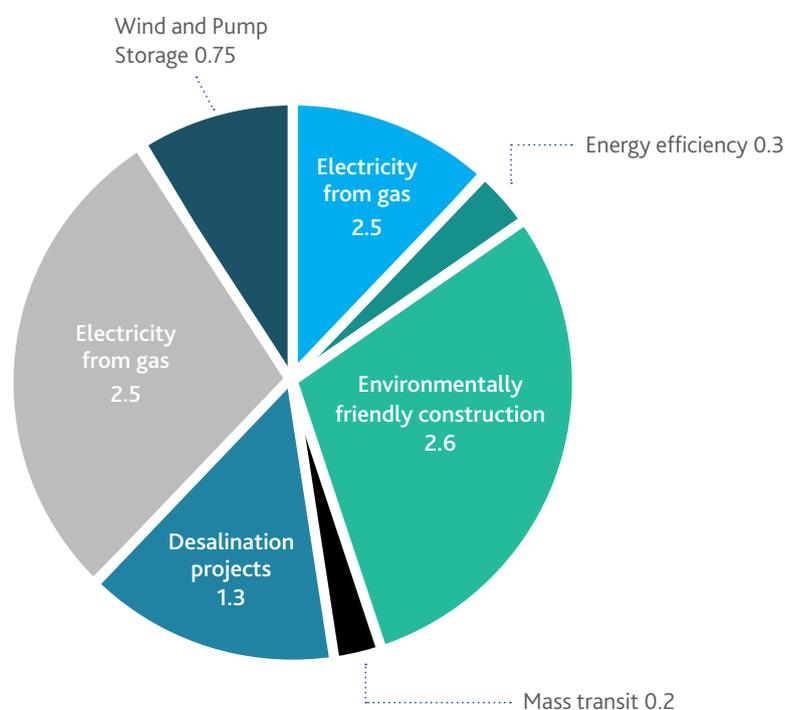
From the above it can be concluded that the additional credit granted by Bank Hapoalim to the small and medium size business sector amounting to NIS 20.35 billion led to the following economic activity:

- NIS 24.8 billion in additional GDP from the sector.
- NIS 66.2 billion in additional revenue to the sector.
- 160,500 additional jobs in the sector.

9. The Impact on the Environment through Projects that Advance Environmental Sustainability

In 2018 the bank financed a wide range of projects that advance environmental sustainability. These projects included: solar initiatives, energy efficiency, Environmentally friendly construction, mass transit, desalination projects, electricity production from gas, wind and pump storage energy projects. During 2018 the bank granted NIS 8.7 billion in credit for these types of projects.

Distribution of Credit Given for Environmental Sustainability Projects in 2018, in billions of NIS



Out of the total credit given to environmental sustainability projects, NIS 1.8 billion was given in financing for power plants that produce electricity from renewable energy sources. These power plants are thermo-solar, biogas, wind, pump storage and solar projects.

On the other hand, there are power plants that produce electricity from fossil fuels (coal, natural gas and refined oil products). These plants lead to the production of greenhouse gas emissions to the atmosphere and cause tremendous environmental pollution, climatic changes and to global warming. The financing by the bank of power plants that produce electricity from renewable sources leads to the switching away from polluting plants and to a reduction in the emission of carbon dioxide, which would otherwise have been emitted from electricity produced at gas power plants.

Two stages were taken in order to calculate the reduction in emissions resulting from the bank's financing of renewable energy power plants: the first was calculating the megawatts per hour capacity that was actually produced and that can be attributed to the bank's percentage in the power plant project. The second calculation for determining the reduction in carbon dioxide emissions by using carbon dioxide emissions coefficient from gas power plants, which would be replaced by renewable energy plants.

The analysis of the reduction in emissions shows that when the renewable energy projects the bank is financing are completed, the bank's proportional share from the financing will lead to a reduction in carbon dioxide emissions on the order of 400,000 tons per year, the equivalent of 1.1% of the total emissions from electricity production in Israel in 2018.

The emission of greenhouse gas has additional economic cost to the economy and include:

- Speeding up the process of climate change and global warming, that lead to greater demand for energy in Israel.
- Damage to hothouses and the biological diversity.
- Acidity of the oceans and damage to fishing.
- Lessening of rainfall and increased number of drought years that lead to crop damage and higher prices for agricultural products, along with damage to tourism especially in northern Israel.
- An increase in extreme climatic events like floods.
- A rise in the level of the sea that leads to the receding of the coast and damage to the beaches and structures near them.
- Increased severity of forest fires.

The capitalization of the future economic savings that will accrue from the reduction in emissions that will result from Bank Hapoalim's proportion in the financing of renewable energy power plants is estimated at NIS 500 million.²⁵

²⁵ Current net value of the reduction in emissions over 20 years using 7% capitalized interest rate.

10. Appendices

10.1 A Research Survey of the Economic Impact of Banks on an International Scope

1. Economic Impact of Banks-Measuring the Benefits in California-Beacon Economics

A similar use of the input-output methodology for assessing the contribution to the economy of the banking system in California in 2012. The document estimates the economic impact including those that stem from and derive from GDP by using the input-output model, as well as the direct and indirect economic impact on the economy by detailing tax payments by the sector. In addition, the social contributions of the sector were also examined, the contribution from high wages and workers' conditions in the banking sector. The results of the research project on the economic impact on GDP are as follows:

Contribution to GDP	
Induced multiplier	1.37
Total multiplier	1.68

- Banks in California pay competitive wages in relation to other sectors. The wages of California bank workers are 34% higher than the average national wage in other sectors of the private sector. In addition, those workers without higher education earn more than alternative employment in another sector.
- The banking sector provides its workers with extensive health insurance and generous retirement benefits.
- The banking sector makes numerous contributions to education, the community, health and welfare services and numerous other fields. Bank sector workers volunteer a total of 600,000 hours annually in the community.

A comparison of the California research project to BDO's shows an induced GDP multiplier of 1.37 in California compared to 1.35 in Israel. These very similar multipliers demonstrate a similar induced impact of Bank Hapoalim to banks in California on the GDP in the economies where they operate. On the other hand, there is a greater difference in a comparison of the total multipliers.

The Bank Hapoalim total GDP multiplier was 2.12 while in California it was 1.68. The difference in the multipliers stems from relatively high impact of the private consumption of Bank Hapoalim's employees and of its suppliers on GDP of the economy in comparison to their counterparts in California.

2. Contribution of the Commercial Banking and Savings Institutions Sectors to the New Jersey Economy-Rutgers, Edward J. Bloustein School of Planning and Public Policy

Another study that examined the contribution of the banking sector by using the input-output methodology took place in New Jersey in 2016 and was conducted by Rutgers, School of Planning and Public Policy for the New Jersey Bankers Association. This study measures the economic impact of the banking sector in New Jersey through the calculating the total impact on GDP, based on the input-output model, as well as calculating the total revenue from taxes created on the federal and local levels. In the end the study describes the social contributions of the sector to the community in New Jersey.

Contribution to GDP	
Total multiplier	1.86

From this multiplier the total economic impact on GDP was calculated at \$16.7 billion in 2016. In addition to the contribution to GDP the banking sector in New Jersey pays \$530 million in federal taxes and \$934 million in states taxes.

The study also describes the social contributions of the banking sector to the community. These contributions include volunteering by workers, sponsorship of social events, participation in local community events, and activities to support the environment.

A comparison of the New Jersey research study to that of BDO shows that the total GDP multiplier in New Jersey was 1.86 similar to the 2.12 of Bank Hapoalim. These multipliers demonstrate a similar total impact, from a relative point of view, for Bank Hapoalim and the New Jersey banks in relation to the economies where they operate.

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