



# Allotment of Designated Bonds in Pension Funds

## Policy Paper

### Team members

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The Israeli pension system operates on two levels: first, the **old age pension** that is intended to enable a minimal standard of living; the second, the **employment pension**, is designed to provide savers with a standard of living that is similar to what they had prior to retirement. In recent decades, the pension system has undergone changes aimed at strengthening and stabilizing the structure and adapting it to the evolving labor market so as to prevent actuarial deficits. The changes include a transition from programs that define benefits (DB) to programs that define contributions (DC); changes with regards to ownership of pension funds; tax benefits for retirement savings only; and the widening of the base mandatory pension contributions. However, the primary reform to the pension system was the application of an adjusted financial savings model (similar to the "Chilean Model"), two years ago. The model divides pension fund investments in the capital market by age, into three periods:

- a. From entrance to the workforce until the age of 50: 20-30 years.
- b. From age 50 to 60: 10 years.
- c. Over the age of 60: on average, a period of between two years for women and seven years for men.

The earmarked bonds are those issued by the State to pension funds exclusively, and they guarantee an annual interest of 4.86%, plus linkage to the Consumer Price Index (CPI). Until now, savings in pension funds were eligible for earmarked bonds, and they represented 30% of savings portfolios. Meanwhile, the State guarantees 30% of the money invested in pension savings, while the rest of the portfolio is invested in the capital market. With the aim of providing greater protection for elderly savers, the Ministry of Finance's Capital Market Authority announced in 2016 that a change in the way designated bonds were allocated would be implemented. According to the plan, savers over the age of 60 would be eligible to receive 60% of these bonds, while the balance would be dispersed to other savers, with this remainder to decrease for younger ages<sup>1</sup>. While the new scheme refers to age, it does not address differences in salary levels. However, many recent studies

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1 The implementation of the plan will gradually take place over a 30 year period. In approximately 20 years the rate of bonds designated for young people will fall to 15% and only after 30 years will it be completely eliminated. By the end of the process, retirees will receive 60% of the designated bonds, savers between the ages of 50 and retirement will receive 30% and young savers under the age of 50 will not receive designated bonds at all.

show an increase in income inequality as well a growth in income gaps, which have a differential effect on life expectancy. An increase in life expectancy for individuals with high income levels leads to additional profits, via earmarked bonds, which are now being used not only as a fixed-rate anchor but also as a substantial subsidy for longer periods of time, through the National Insurance Allowance.

Beside institutionalizing inequality, the growing gap between various income groups may undermine the pension system's ability to function, as well as weaken its financial position and solvency, since it is obliged to finance high annuities over a continuous and long period of time.

We estimate that if the plan is implemented in its current form, it could seriously harm the pension benefits of Israel's low wage earners. We therefore propose two alternatives, taking into consideration, both age and level of income, maintaining the overall limit of designated bonds (30%). This design ensures both better performance and equity.

## Outline of Proposed Earmarked Bonds Allocation: Adding an Income Variable

Since the model has already been adopted, this document will discuss only the manner in which the designated bonds are distributed according to the basic assumptions of the Ministry of Finance, without discussing advantages and shortcomings. In order to present the outline for the allocation of designated bonds, we will refer to the basic model adopted by the Capital Market Authority as Model A. The two alternatives we propose (B and C) meet the aggregate limit of the earmarked bonds as issued by the Ministry of Finance, and do not exceed the growth rate of the public's savings in pension funds. However, in addition to the age variable, these models also take levels of income into account.

Below, are the three alternatives:

1. **Model A: Outline of the New Government's Capital Market Authority, by age.** Starting in 2022, eligible members up to the age of 50 will not receive designated bonds at all; members up to the age of 60 will receive 30%, and members over the age of 60 will receive 60%.

2. **Model B: Alternative Approach, by Age and Income.** This proposal is based on the same amount of designated bonds as in the Ministry of Finance's model, but with a different distribution scheme, one based also on wage levels. Specifically, for given age, low wage earners would receive a higher proportion of designated bonds relative to high wage earners.
3. **Model C: Alternative Approach, by Age, Income and lower Rate of Return.** This proposal is based on the same cost of allocating earmarked bonds as in the Ministry of Finance's model, but the distribution would be according to wage levels (similar to Model B.) In addition, Model C proposes to reduce the rate of return of designated bonds to 4%, instead of 4.86%. This would be done without exceeding the budgetary framework, allowing a larger total amount of bonds, so that in this model, low-wage earners would receive higher rates of earmarked bonds relative to high-wage earners.

The main point to keep in mind is that designated government bonds today serve not only as a fixed return anchor but also as a significant subsidy to members. Long-term CPI-linked government bonds, which are the equivalent financial products for designated bonds, are traded in the market at rate of about 2.2% (for the first quarter of 2017). Such a rate implies a 2.66% subsidy for bondholders. Thus, the more a person deposits in a pension fund, the higher the subsidy he/she receives from the Ministry of Finance. According to the Capital Market Authority's model, all members receive designated bonds, so that those whose salary is double the minimum wage (10,000 NIS and 5,000 NIS, respectively) enjoy double the subsidies, those who earn four times minimum wage receive a subsidy of four times the rate, etc.

## Integrating the Income Dimension in the Allocation of Bonds in the Pension Fund: Analysis of Alternatives

As previously stated, the plan proposed by the Capital Market Authority (alternative Model A) does not take the income variable into account. In contrast, the alternatives we propose do combine this dimension. In order to determine how the inclusion of income affects monthly pension payments, we will present an analysis of the three alternatives, according to three income levels:

- a. Minimum wage earners: 5,000 NIS gross.
- b. Those earning double the minimum wage: 10,000 NIS gross.
- c. Wage earners with a salary of four times the minimum wage: 20,000 NIS, the approximate deposit ceiling for a new pension fund expected for 2017.

In analyzing the alternatives according to wages, whereby low wage earners receive a higher rate of designated bonds, we maintained the same level of risk as the Capital Market Authority's model - by adjusting other assets' risk levels in the portfolio. According to the Capital Market Authority's guidelines, young people up to the age of 50 with low wages do not receive any designated bonds. However, according to the outline that we suggest, they can get either 32% (unchanged interest rate) or 39.6% (if the interest rate is 4%), while the highest-paid young people would not receive designated bonds at all. From the age of 50 and over, low-wage earners would, in our proposal, receive 44% of designated bonds (unchanged interest rate) or 55% (if the interest rate is 4%), and high wage earners would receive only 24.3% and 18.3%, respectively.

## Methodology

We carried out our analysis using an advanced mathematical simulation tool that ran tens of thousands of statistical possibilities in a few minutes, taking into account an unlimited number of possibilities for combining financial assets and working assumptions in the investment portfolio, including various distributions for each component of the portfolio (corporate bonds, shares, assets abroad), and their correlations. To the best of our knowledge, such a model was not implemented by the Capital Market Authority. Our simulation was performed by running 10,000 scenarios for each of the three models presented, multiplied by three salary levels, with a total of 90,000 runs. For each model, we present the median probability (50%) for accumulation at retirement age and the possibility of a worse scenario of at a probability of 5%.

## Simulation Results

The following table shows the default pension allowances for a male. These are the expected monthly allowances, as of 2017, in accordance with the annuity coefficients as listed in the general plan. Variables include spouse's survivor's

pension, according to wage levels and various models (in NIS). Percentiles in the table reflect the distribution of benefits according to market performance. The 95 percentile reflects the optimal scenario in which a high pension is obtained, while the 5 percentile shows the worst case scenario.

Table 1 Expected Monthly Pension According to Model, Income Level and Scenario, in NIS

Monthly Wages in NIS	Model A: Capital Markets Outline			Model B: 4.86% Yield on Designated Bonds			Model C: 4% Return on Designated Bonds		
	5,000	10,000	20,000	5,000	10,000	20,000	5,000	10,000	20,000
95 Percentile	4,837	9,675	19,350	4,724	9,670	19,555	4,218	8,898	18,357
50 Percentile (median)	3,324	6,648	13,296	3,642	6,516	12,296	3,544	6,395	12,450
5 Percentile	2,299	4,598	9,195	2,835	4,447	7,862	2,773	4,647	8,545

Table 2 Expected Differences in Allowances between Alternatives B and C and Model A

Monthly Wages in NIS	Model B: 4.86% Return on Designated Bonds			Model C: 4% Return on Designated Bonds		
	5,000	10,000	20,000	5,000	10,000	20,000
95 Percentile	-113	-5	205	-619	-777	-993
50 Percentile (median)	318	-132	-1,000	220	-253	-846
5 Percentile	536	-151	-1,333	474	49	-650

The data show that if we adopt our proposed alternatives, the situation of low-wage earners will improve and inequality will be reduced.

According to Model B, in the median scenario, the average allowance of low-wage earners increases by 318 NIS or about 10%, compared to the Capital Market Authority's model. In the worst case scenario (5 percentile), where the anchor of designated bonds plays a central role (guaranteed return), the allowance rises by 536 NIS, or 23%, compared to the outline presented by the Capital Market Authority. According to Model C, in the median scenario, the average allowance of low-wage earners increases by 220 NIS, or about 7%, compared to the Capital Market Authority's plan.

In the worst-case scenario (5 percentile), the allowance rises by 474 NIS, or about 20%, compared with the Capital Market Authority's outline.

## Conclusions

The results of the simulations prove that the Capital Market Authority's policy is correct, though it can be improved. The outline decided upon by the Capital Market Authority does not take into account previous findings, nor does it incorporate advanced research methodologies and simulations so as to examine the effects of changes in designated bond distributions on future households' pension.

Moreover, while the gradual distribution of designated bonds over a period of time is appropriate, a uniform issuance for all salary levels is mistaken.

- a. Such a distribution scheme perpetuates the subsidizing of the highest decile households (from the 9<sup>th</sup> decile and up) and actually increases it, in comparison to low-income households. There is no apparent logic to distributing this allowance in such a manner.
- b. Such a division increases the chances that low income households will reach retirement age with low and even deficient pensions.
- c. There is a clear advantage to increasing the allocation's percentage of designated bonds, even if at a lower interest rate, especially for weak households. Thanks to the anchor, the increase in earmarked bonds would enable the pension fund to maintain the rest of the assets' portfolio, with supposedly risky assets (shares), without an increase in the overall risk.

## Recommendations

- a. To conduct a comprehensive study on the implications of the distribution of earmarked bonds.
- b. To introduce, either in legislation or regulations, the alternative approach of designated bonds allocation that takes into account the amount of wages, which would result in the optimal distribution of earmarked bonds.