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Policy Brief

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Education in Israel from an international and demographic perspective

Dan Ben-David and Ayal Kimhi*

Abstract

Israeli children's average level of knowledge in mathematics, science and reading is below that of every developed country – and this is not due to the country's Haredi (ultra-Orthodox Jewish) children, most of whom do not even study the material and do not participate in exams. Roughly half of Israel's children currently receive an education at third world levels, and they belong the country's fastest growing population groups. Manifestations of this process have already begun to surface – most recently in Israel's recent elections – while the long-term implications for Israel's future, if left unchanged, will be existential.

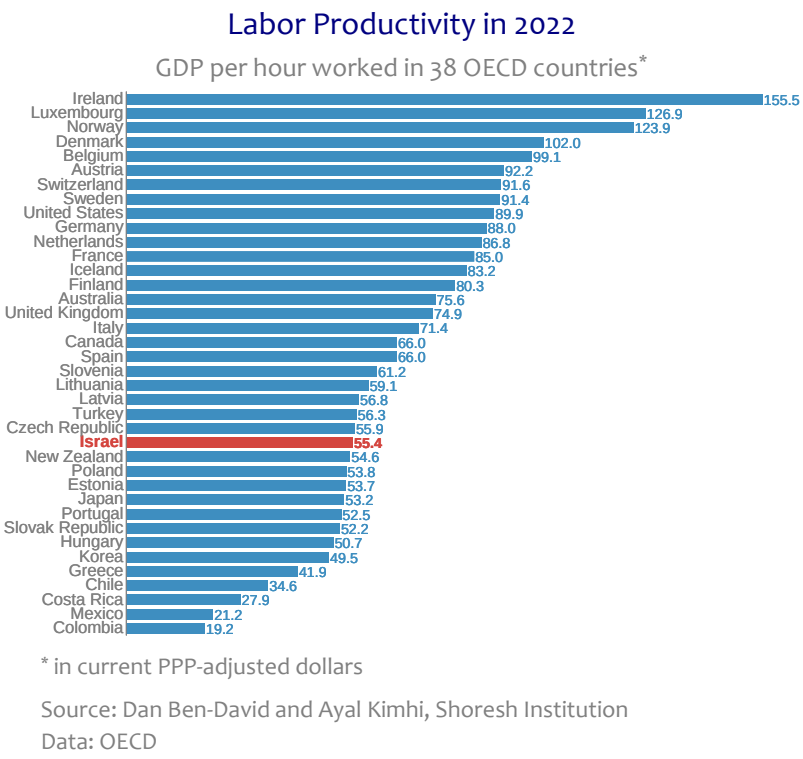
1. Introduction

Despite being home to one of the world's most innovative hi-tech sectors, Israel's labor productivity falls far below the OECD average. While value added per worker in Israel's hi-tech sector in 2018 was 25% higher than average OECD business sector productivity, the vast remainder of Israel's business sector exhibited 40% lower productivity – resulting in 32% lower productivity for Israel's business sector as a whole (OECD 2023). Overall, labor productivity (as

* Prof. Dan Ben-David is the President of the Shoresh Institution for Socioeconomic Research and a faculty member of the Department of Public Policy at Tel Aviv University. Prof. Ayal Kimhi is the Vice President of the Shoresh Institution and a faculty member of the Department of Environmental Economics and Management at the Hebrew University. A version of this paper is forthcoming in a Centre for Economic Policy Reseach (CEPR) eBook scheduled to be released in 2024.

measured by GDP per hour worked) in Israel falls below nearly two-thirds of the OECD countries (Figure 1).

Figure 1



Education plays a key role in determining labor productivity. Ostensibly, Israel has one of the OECD's most educated populations: the share of Israelis with an academic education is among the highest in the developed world, as is the average number of years of schooling per Israeli (Ben-David, 2017). The problem, as Hanushek and Kimko (2000), Hanushek and Woessmann (2015), Ben-David and Kimhi (2021) and many others have shown, is that what matters most when it comes to growth and wages is not the quantity of education but the quality.

2. The level of education in Israel

PISA exams administered every three years in core subjects – math, science and reading – illustrate just how low the quality of education provided in Israel actually is. Savin, Kimhi and Ben-David (2023) conducted a comparison of all 51 countries who participated in at least 14 of the 15 PISA exams (administered to 15-year-olds) held in the years 2006-2018. The average Israeli score on these exams is below 36 of the 50 remaining countries – essentially below the average level of every developed country participating in these exams (Figure 2).

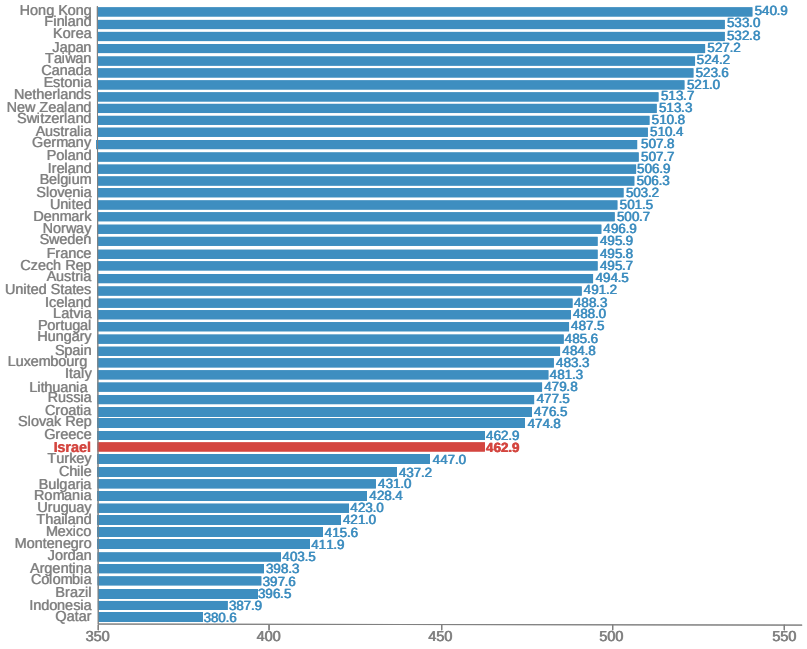
What amplifies the severity of this outcome is the very rudimentary level of education received by Israel's ultra-Orthodox Jews (Haredim), most of whom do not study the material and do not take the exams. While the girls study a partial core curriculum through high school, the situation among the boys is considerably worse. Even the very partial core curriculum that they

do receive is terminated in eighth grade. Given the large number of Haredi pupils and the very poor core education that they receive (more on this below), it is conceivable that had they participated in the exams, the Israeli national average would have been even lower than what is shown in Figure 2.

Figure 2

Multiyear national average of PISA score in all exams

all 51 countries participating in at least 14 of the 15 exams, 2006-2018*



* Average scores in math, science and reading

Source: Savin, Kimhi and Ben-David, Shoresh Institution (2023)
Data: PISA

In addition to the Haredi education stream, Israel's education system is divided into three additional broad streams: the non-religious Jewish stream, the religious (not Haredi) Jewish stream, and the Arab-Israeli stream. Ben-David and Kimhi (2021) have shown that in the most recent PISA exam, administered in 2018, the average score on the three core subjects by the non-religious Jewish stream placed them slightly above half of the developed countries. The average score of the religious stream was considerably lower – below 80% of the developed countries. The Arab-Israeli pupils scored below many third world countries. In fact, they placed below nine of the ten predominantly Muslim countries that participated in the 2018 exam.

The impact of families on their children's scholastic achievements has been well documented for many years (e.g. Coleman, Campbell, Hobson, McPartland, Mood, Weinfeld and York, 1966; Levy, Boukay and Karni, 2021; the Central Bureau of Statistics, 2019). While the relationship between parental education and their children's achievements cannot be entirely eliminated, some countries' education systems have been more effective at reducing this relationship.

Continuing with the examination of the 51 countries mentioned above, Savin, Kimhi and Ben-David (2023) created a benchmark group of the five countries that perennially attained the highest scores in the 15 exams.[1] The pupils in these countries and in Israel were divided into four groups on the basis of their parents' education:[2]

- Level 1: pupils whose parents do not have an academic degree and did not finish high school.
- Level 2: pupils whose parents do not have an academic degree and at least one of them graduated from high school.
- Level 3: pupils who have one parent with an academic degree.
- Level 4: pupils whose parents each have an academic degree.

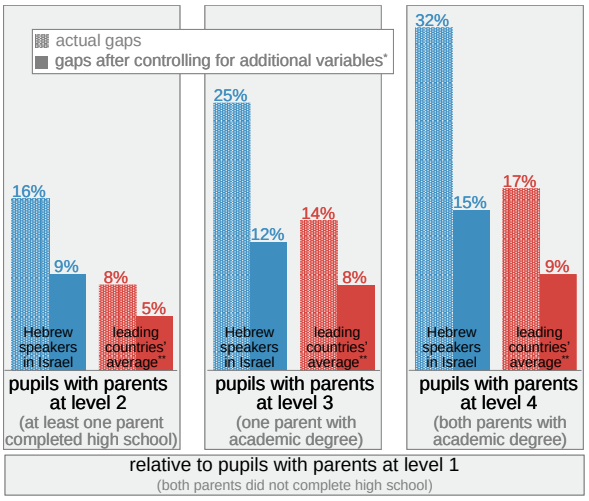
Figure 3 shows the achievement gaps between pupils in levels 2, 3 and 4 versus those in level 1. In general, the higher the level of parental education, the larger the gap in scores vis-à-vis the level 1 base group. While this is true in the leading countries as well, the gaps there are half, or just over half, of the gaps among Israeli pupils.

Characteristics of the pupils' family and home environment are strongly correlated with parental education. As shown in Figure 3, statistically controlling for these attributes accounts for a substantial share of the gap in

Figure 3

Gaps in scores between children with at least one parent with high school education and up, and children with two parents who did not complete high school

PISA exams, 2006-2018



* Control variables include gender, presence of various items in home, native born, and fixed effects. Results significant at the 1% level.

** Finland, Japan, Taiwan, Canada and Estonia.

Source: Savin, Kimhi and Ben-David, Shoresh Institution (2023)
Data: PISA

[1] The leading countries are Finland, Japan, Taiwan, Canada and Estonia.

[2] Parental education was determined on the basis of the pupils' self-reporting. While this was found to be relatively accurate in general, there were considerable discrepancies between what Arabic-speaking pupils in Israel reported and actual education levels as reported by the Central Bureau of Statistics. Therefore, the analysis of Israel is based on the Hebrew-speaking Israeli pupils.

scores resulting from parental education. While this is true in both the benchmark group of leading countries and in Israel, the remaining link between parental education and their children's scores is considerably higher in Israel – highlighting the relative failure of Israel's education system. This failure in reducing the relationship between parental education and children's academic achievements has far reaching economic implications.

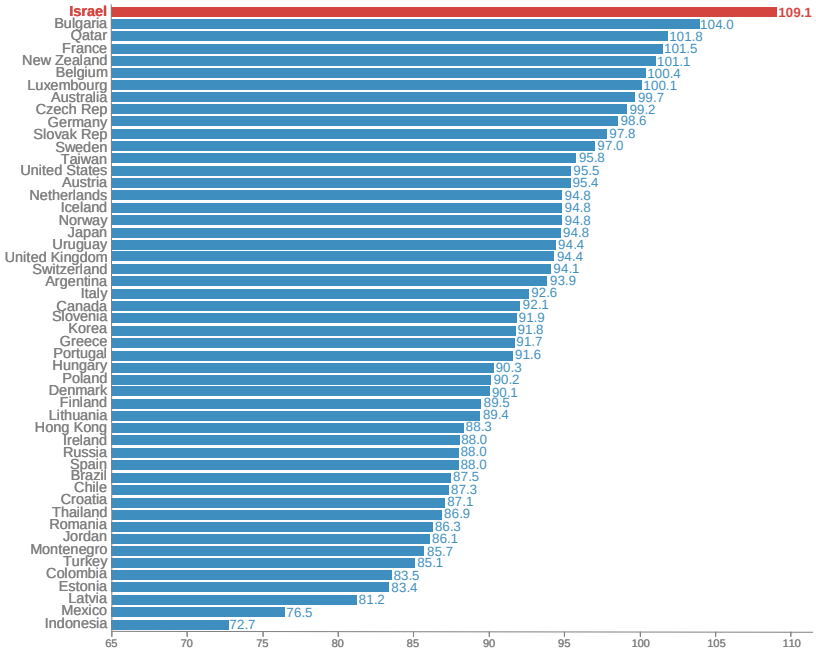
Chetty, Friedman, Hilger, Saez, Schanzenbach and Yagan (2011) note that their findings suggest that qualitative differences in education among schools perpetuate income inequality. Chetty and Friedman (2011) find that the intergenerational relationship in incomes would decline by a third if all American children were to study in schools of identical quality.

Thus, while average national scores provide an indication of how each country is preparing its children to compete with one another in the global economic marketplace, educational gaps within countries are suggestive of future domestic income inequality. As shown in Figure 4, the standard deviation in scores between Israeli pupils is the highest – by far – of all the 51 countries participating in at least 14 of the 15 exams from 2006 through 2018. Here too, it is important to point out that this outcome was attained without the general participation of Haredi pupils. In light of the fact that most Haredim do not study these core subjects, the actual educational gap between Israeli children is presumably even higher than what is reported in Figure 4.

Figure 4

Domestic gaps in PISA scores

Multiyear average in each of the 51 countries participating in at least 14 of the 15 exams, 2006-2018*



* Average standard deviations within countries in math, science and reading

Source: Savin, Kimhi and Ben-David, Shoresh Institution (2023)
Data: PISA

3. On the mechanics of Israeli education

Israel's education budget is its government's highest budgetary expenditure, surpassing even defense expenditures. National primary and secondary education expenditures, as a share of GDP, are the second highest in the OECD. In and of itself, this is neither an indication of a high prioritization of education in the national agenda, nor of relatively high levels of inefficiency. Rather, it is primarily a reflection of Israel's high fertility rates and the fact that the share of primary and secondary school pupils in the population is the third highest in the OECD.

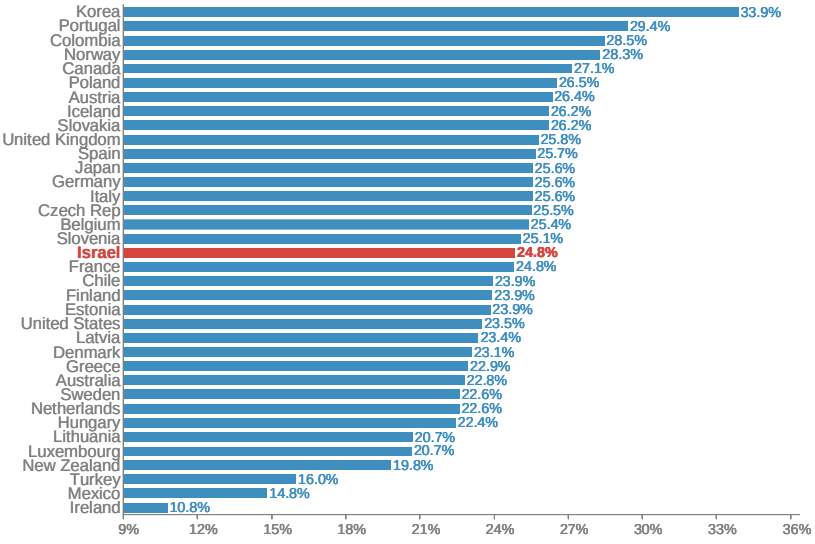
Discounting primary and secondary education expenditures as a share of GDP by the share of primary and secondary school pupils in the population is equivalent to discounting expenditures per pupil by GDP per capita (the common measure for national living standards). The resultant calculation indicates that Israeli expenditures on primary and secondary education are neither high nor low in comparison with the other OECD countries (Figure 5). In other words, Israel's education system does not lack resources when compared to the other OECD countries.

Crowded classrooms in Israel are often cited as a key reason for the poor scholastic performances. While average class sizes are indeed high (Figure 6), the number of pupils per full-time equivalent teacher in Israel is roughly the same as the OECD average in primary and lower secondary schools – and is considerably lower in upper secondary schools. In other words, a lack of resources in this realm does not appear to be the source of the problem.

Figure 5

National education expenditure per pupil

in primary and secondary schools, relative to GDP per capita, 2020



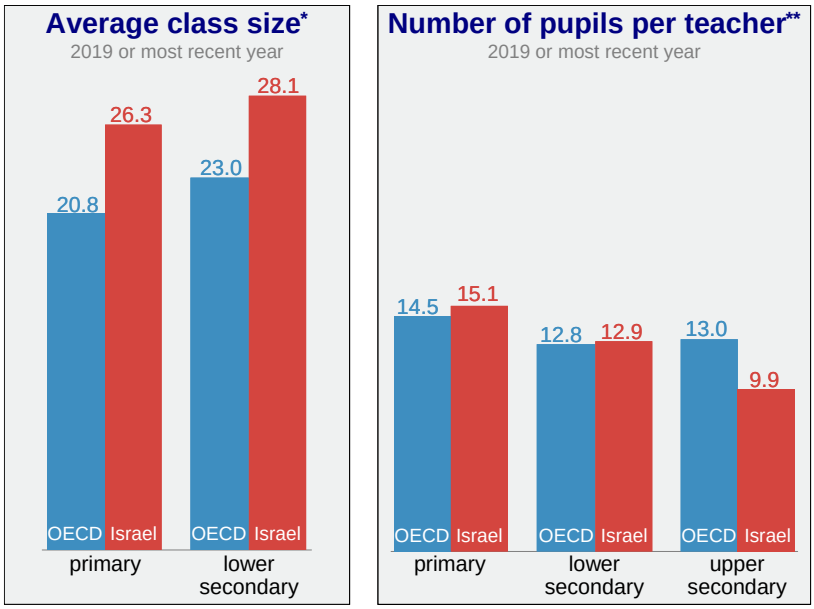
Source: Dan Ben-David and Ayal Kimhi, Shoresh Institution
Data: OECD

Israel is funding enough teachers, and yet its classrooms are severely congested in comparison with the OECD average.

The annual number of school days in Israel is substantially greater than in all other OECD countries. This is because Israeli schools operate six days a week. A more accurate comparison is of annual instruction hours. Figure 7 displays the number of instruction hours in developed countries relative to Israel. A large majority of countries teach less than Israel does. In each of these countries, average scores in math, science and reading in the PISA 2018 exam were higher than in Israel. Here too, a lack of resources does not appear to be the primary cause of the poor educational achievements in Israel.

Furthermore, there does not appear to be any relationship across countries between the number of instruction hours and achievement levels. There are countries with very few instruction hours and relatively high scores, while there are countries with many instruction hours that do not

Figure 6



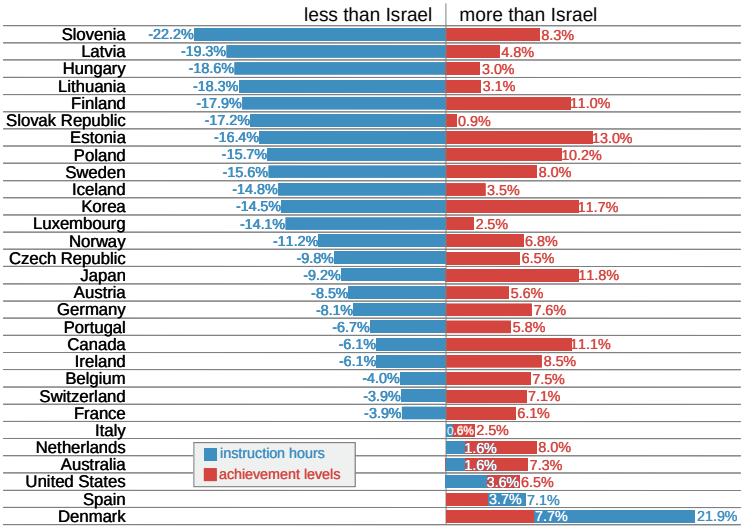
* number of pupils per class
** according to full-time equivalents

Source: Dan Ben-David, Shoresh Institution and Tel-Aviv University
Data: OECD

Figure 7

Instruction Hours and Achievement*

29 OECD countries relative to Israel



* Cumulative number of compulsory instruction hours in lower secondary schools in 2019 (US data for 2018) and average achievement levels in math, science and reading in PISA 2018.

Source: Dan Ben-David, Shoresh Institution and Tel-Aviv University
Data: OECD

exhibit better exceptional performance in the exams.

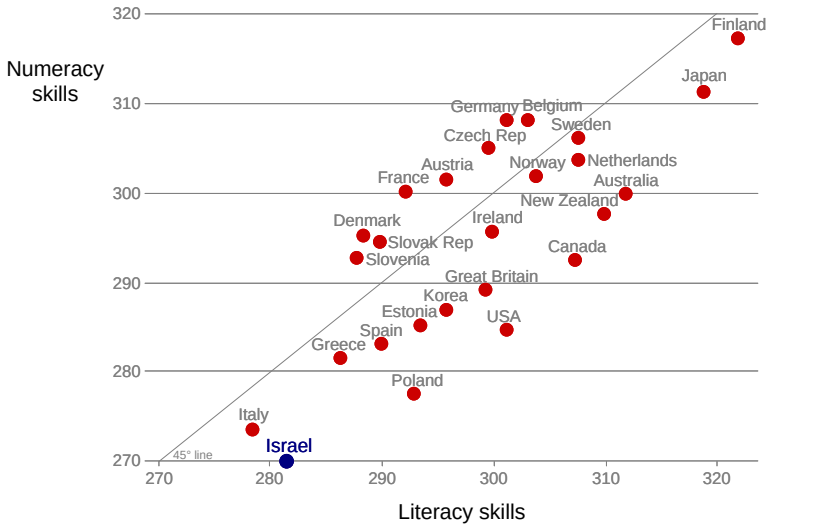
79% of all undergraduate education students study in teaching colleges. Another 17% study in general non-research colleges while the remaining 4% study education in the country's research universities. Israel's psychometric exams (which serve the same function as the American SATs to enable qualitative comparisons among applicants to higher education) provide an illuminating comparison between these teacher candidates and average first year students in the research universities. Students studying education in the universities score 9% below their fellow university students. Teaching college students score 23% below, while general college students studying education score 32% below the average university students.

When this is the relative level of incoming teachers, it should not come as a surprise that the general skill level of Israeli teachers is quite low. Hanushek, Piopiunik and Wiederhold (2018) find that among developed countries, the literacy and numeracy skills of Israeli teachers are near or at the bottom (Figure 8).

Figure 8

Skill levels of teachers in developed countries

Median achievement scores of teachers in PIAAC 2011/2012 and 2014/2015*



* excluding Chile and Turkey

Source: Hanushek, Piopiunik and Wiederhold, (2018)

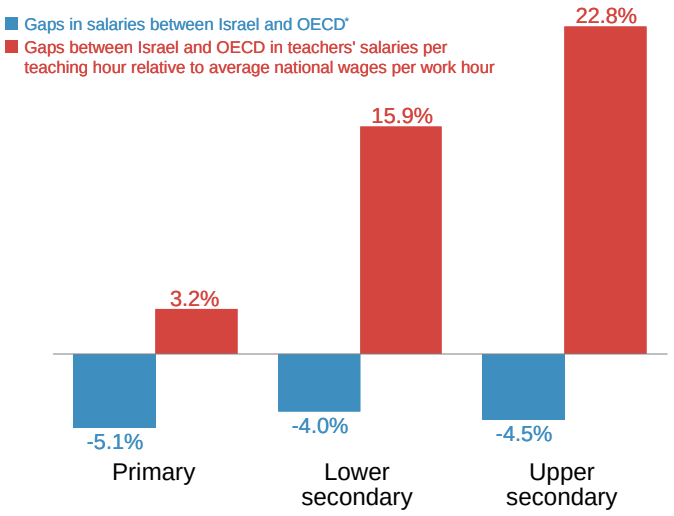
It is often argued that the quality of Israeli teachers is due to the low salaries that they receive. Depending on the level of the school – primary, lower secondary or upper secondary – Israeli teachers' monthly salaries are 4%-5% lower than the OECD average (Figure 9). However, this only reflects what is given to teachers and does not take into account what is received from them. A comparison of teachers' salaries per teaching hour relative to average national wages per work hour in Israel to the OECD does not

support the contention that Israeli teachers' wages are low. They are higher at each level of school, reaching a gap of 23% above the OECD average in upper secondary schools.

Figure 9

Teachers' salaries in Israel relative to OECD

Percent gap in teachers' average actual salaries, 2019



* comparisons using purchasing power parities

Source: Dan Ben-David, Shoresh Institution and Tel-Aviv University
Data: OECD

4. Haredim

The Haredim's considerable political power enables them to avoid taking any of the national or international exams, making it that much more difficult to gauge the severity of the problem. Lipiner and Zussman (2021) provide an interesting glimpse into the deterioration in educational and economic outcomes of pupils studying in Haredi schools founded by the Shas political party. As this party grew and evolved towards the end of the 20th century, it developed a Haredi school network that began to attract many children in Israel's geographic-social-economic periphery belonging to families along the religious spectrum who were not necessarily Haredim at the time.

Lipiner and Zussman's study focused on boys reaching first grade in the years 1992-2003. It compared boys studying in the Shas network to boys with similar characteristics who studied in other streams of Hebrew education, after controlling for additional variables (this included comparisons between siblings, where the older ones studied in non-Haredi schools and the younger ones studyied in the Haredi Shas schools). Among their findings are that the boys studying in the Haredi network exhibited a 10% higher high school dropout rate, with 15% fewer pupils attaining a matriculation (bagrut) certificate. Subsequent employment of the Shas pupils was 14% below the comparison group while their gross annual wages were 19% lower.

In general, the Haredim are one of Israel's poorest population groups. A huge majority of their children study in schools run by the political parties that intentionally deprive them of an

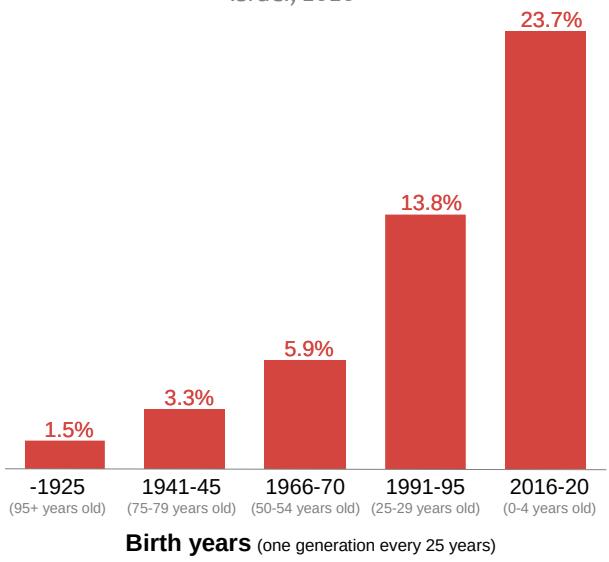
education that could offer them opportunities as adults. Consequently, Haredi schools ensure that their former students remain financially dependent in perpetuity on government benefits secured by the politically powerful Haredi parties.

The Haredim are not an inconsequential group in Israeli society. Their share in the population is doubling every 25 years – i.e. every generation (Figure 10). While they only comprise 6% of the fifty-year-olds, they make up nearly one-quarter (24%) of the infants. At this exponentially increasing pace, almost one-half of Israel's infants will be Haredim in just 25 years.

Figure 10

Share of Haredim in each generation

Israel, 2020



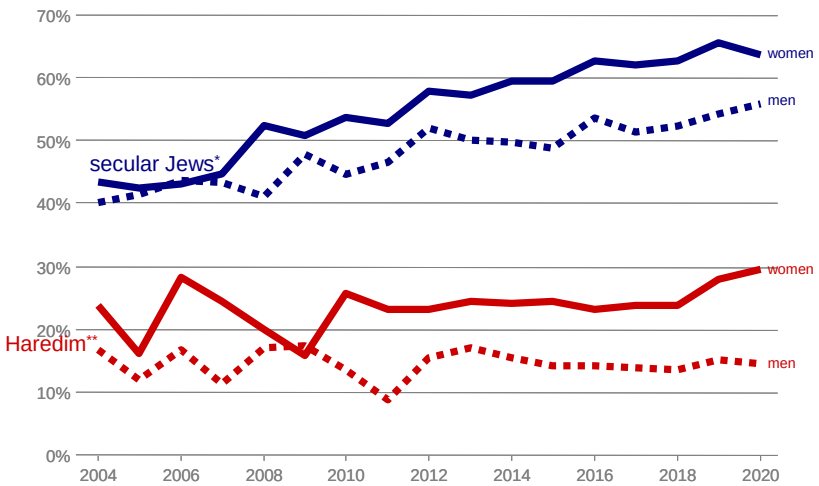
Source: Dan Ben-David, Shoresh Institution and Tel-Aviv University
Data: Israel Democracy Institute (2020)

While a small, but growing, number of Haredim try to overcome their lack of a core education by attempting to enter the academic track – from the pre-academic (mechina) courses through academia – as young adults, the majority have experienced what turn out to be insurmountable hurdles. According to Israel's State Comptroller (2019), over half (53%) of the women and over three-quarters (76%) of the men dropped out of the higher education tracks, despite the very low academic levels of the colleges that most attended. Consequently, as shown in Figure 11, the share of Haredim aged 35-54 with an academic degree has remained very low and relatively unchanged for nearly two decades

Figure 11

Share of prime working age Israelis with academic degrees

ages 35-54, 2004-2020



* non-religious Jews
** ultra-Orthodox Jews

Source: Dan Ben-David, Shoresh Institution and Tel-Aviv University
Data: Central Bureau of Statistics

(with a slight increase among women in the last two years of the sample). It is simply not possible for most individuals to skip necessary core subjects in school and then hope to attain an academic degree at a later age.

5. Conclusion

Israeli children's average level of knowledge in mathematics, science and reading is one of the lowest among all countries consistently taking the PISA exam since 2006. At the same time, education gaps among Israeli children are by far the highest in comparison with all of these countries. Both of these dismal results are not due to the country's Haredi children, most of whom do not even study the material and do not participate in exams. Had these children been tested, the Israel's outcomes would probably be even worse than those reported here.

The reason for the poor showing by Israeli pupils does not appear to be due to a lack of resources. After discounting differences in living standards, as measured by GDP per capita, national education budgets per pupil are average in comparison with the OECD. The number of pupils per FTE teacher is roughly the same, or lower, than the OECD average (depending on the school level),. Teacher quality is relatively low, despite hourly wages above the OECD average (after discounting domestic hourly wages). The primary problem appears to be an overly bureaucratic and severely inefficient education system.

In 2022, 23% of Israel's first graders were Arab-Israelis, whose performance at a later age in the PISA exams, was below that in many third world countries – including nine of the ten predominantly Muslim countries participating in the most recent 2018 PISA exams. Another 21% of first graders studied in Haredi schools, where the majority do not even study the complete core curriculum. In addition to these two groups are many pupils in the non-religious and religious Jewish streams from Israel's social and geographic peripheries who also receive a very low level of education in the core subjects. This means that roughly half of Israel's children currently receive an education at third world levels, and they belong to the country's fastest growing population groups. As adults, they will only be able to maintain a third world economy, which will be unable

to support first world healthcare and welfare systems, not to mention first world defensive capabilities in the world's most dangerous region.

The Haredi and religious parties – representing the two fastest growing population groups in Israel, with over six children per Haredi family and over four children per religious Jewish family – have excessive influence on their respective sectors' education streams. This is reflected not only in the low level of knowledge in subjects vital for subsequent work as adults in a competitive global economy, but also in extremely low understanding of the fundamental tenets underlying liberal democracies.

Manifestations of this demographic-educational mix have already begun to surface – most recently in the outcomes of the November 1, 2022 elections that resulted in the most extreme Israeli government in history. Because the prime minister is on trial on corruption charges, the only political parties willing to form a government with him were the two Haredi parties and the three religious Jewish supremacist parties. The current demographics, if left unchanged, will enable future representatives of these groups to create a government without needing a prime minister on trial – with all of the long term existential implications that this portends for Israel's future.

The key to changing Israel's current demographic course lies in a complete overhaul of the country's education system alongside an overhaul in the country's benefits system that enables non-work lifestyle choices. While these are not sufficient conditions for ensuring a change in the demographic trends, they are certainly necessary conditions.

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