SHORESH
Institution for Socioeconomic Research

Changing the paradigms

Executive Summary

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The Socioeconomic Effects of Education Quality versus Quantity

Lessons from Israel's extensive natural experiment in the 2000s

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Abstract

In 2002-2003, Israel entered into one of the most severe recessionary periods that the country has known. Sharp increases in the government deficit, national debt and exchange rate led to – among other outcomes – extraordinary policy measures that included sharp cuts in welfare spending. The policy changes led primarily to improvement in labor quantities (such as employment), but not in labor quality (specifically, on the level of human capital in the labor force).

This turned out to have been a natural experiment leading to unique socioeconomic outcomes that pushed Israel to developed world polar extremes – good and bad, simultaneously – in terms of living standards, income inequality and poverty. Whether or not it was the Israeli government's intention, the country underwent a rare socioeconomic experiment enabling the isolation of key determinants influencing Israel's economy and society. The findings highlight the necessity of a turnaround in policies affecting the country's level of human capital.

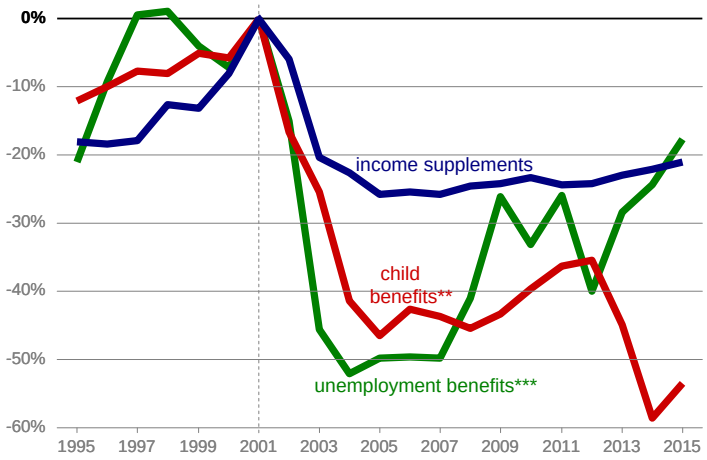
Main Points from Shoresh Research Paper

- The difficult recession at the beginning of the past decade caused significant increases in the government's budget deficits and in the public debt. Policies designed to halt these increases included substantial cuts in welfare payments. Figure 5 provides a first time look at the extent of these cuts *per recipient*. There was a sharp turnaround in three main types of benefits:
  - by 2005, average income maintenance per recipient fell by a quarter,
  - average child benefits per household fell by 46%,
  - average unemployment benefits fell by about one-half.

Figure 5

Welfare benefits per recipient, 1995-2015

relative to 2001*



* Changes in real terms (i.e. after discounting inflation).
** Total child benefits per household.
*** Average unemployment benefits per unemployed person (total expenditure on unemployment benefits divided by the number of unemployed persons.

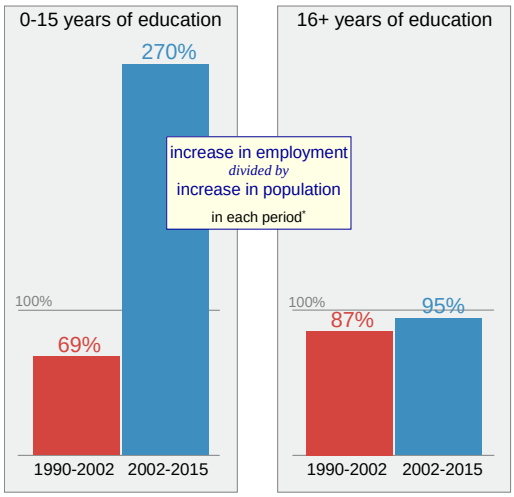
Source: Dan Ben-David, Shoresh Institution and Tel Aviv University
Data: National Insurance Institute

- The cuts in benefits led to substantial increases in employment – with a disproportionate increase among persons with a relatively poor education (Figure 7).
  - In 1990-2002, the dozen years preceding the recession's trough, each increase of 100 persons in the prime working age population with 16+ years of education (usually representing holders of academic degrees) was accompanied by an increase of 87 employed persons with a similar education. During this same period the increase in employed persons with 0-15 years of schooling was 69% of the increase in this population. These outcomes accord completely with the common link between education and employment. Not so in the years that followed.
  - From 2002 to 2015, the increase in employed persons with 16+ years of education was 95% of the increase in that group's population. But the big employment change following the recession was in the population with 0-15 years of schooling. For each 100 persons joining this group after the recession, there was an increase of 270 employed persons with similar education.

Figure 7

Relative employment increases* by years of education

before and after Israel's severest recession in decades



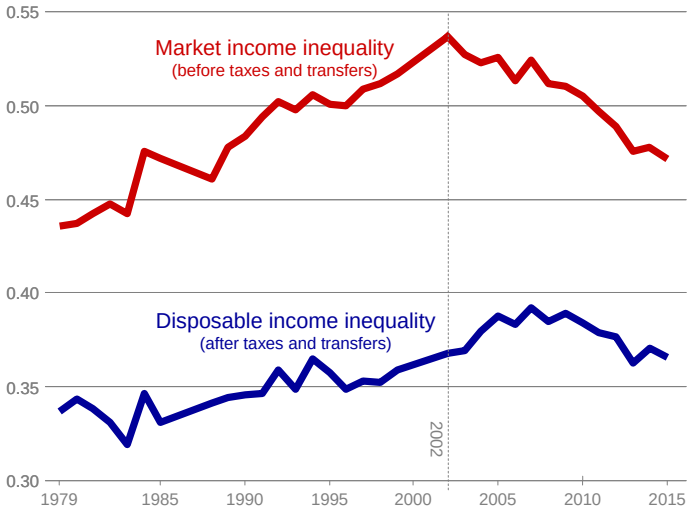
* Among 35-54 year-olds.

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

Figure 10

Income inequality in Israel over time*

Gini coefficient among households, 1979-2015



* Including East Jerusalem from 1997 and chained for period prior to 1997.

Source: Dan Ben-David, Shoresh Institution and Tel Aviv University
Data: National Insurance Institute

- The large-scale entry of new workers forced to replace benefits with wages led to a sharp – positive – turnaround in the market income (gross incomes) inquality trend (Figure 10). There was also a major turnaround in market income poverty rates.

  This is an important turnaround, but it only reflects a partial picture. Since the turnaround resulted primarily from the labor market entry of less educated and poorly skilled workers, the wages that they began receiving did not sufficiently compensate for the loss in benefits – which, in turn, did not translate into disposable income inequality below 2002 levels.

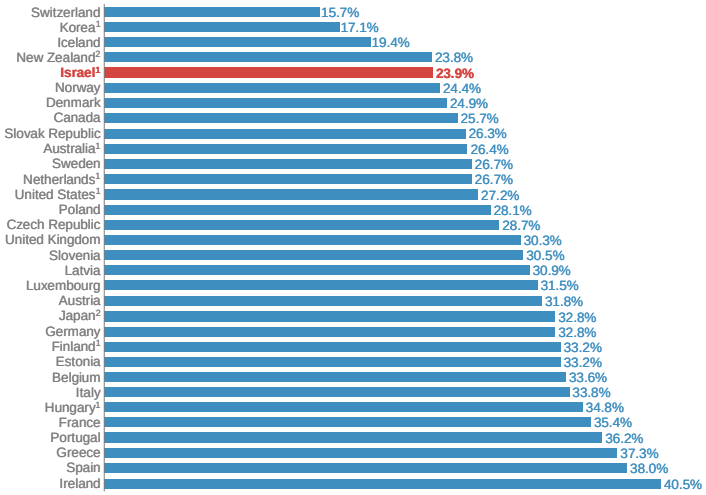
- The uniqueness of Israel's natural experiment is reflected in outcomes unseen in any other developed country.
  - Market income poverty levels in Israel are among the lowest in the OECD (Figure 13a). Israel rates are lower even than those in Sweden, Norway and Denmark.
  - At the same time, disposable income poverty rates in Israel are the highest in the OECD (Figure 13b) because the wages now received do not sufficiently compensate for benefits that were lost.

Poverty in the OECD

percent of households below poverty line, 2013

Figure 13a

Poverty in market incomes*

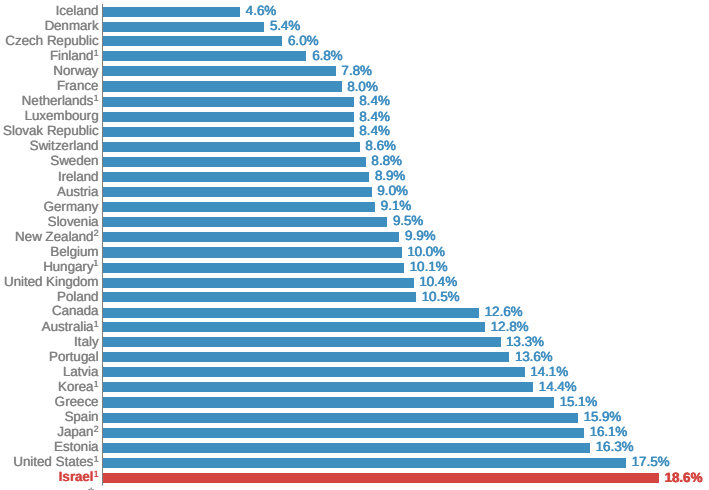


* Income before taxes and transfers. All OECD countries except Mexico and Hungary.

[1] 2014; [2] 2012

Figure 13b

Poverty in disposable incomes*



* Income after taxes and transfers. All OECD countries except Mexico, Chile and Turkey.

[1] 2014; [2] 2012

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

- While the cuts in welfare benefits induced large numbers of poorly skilled and educated to enter the labor force (thereby replacing benefits with wages), no effort was made to significantly upgrade the tools and conditions that would enable these new workers to successfully contend with a modern economy.

  Israel's public expenditure (as percent of GDP) on active labor market policies was about half of the OECD average in 2000, and today it is less than one-third of the OECD expenditure (Figure 14).

Figure 14

Active labor market programs in OECD and Israel

public expenditure as percent of GDP in 2000 and 2013

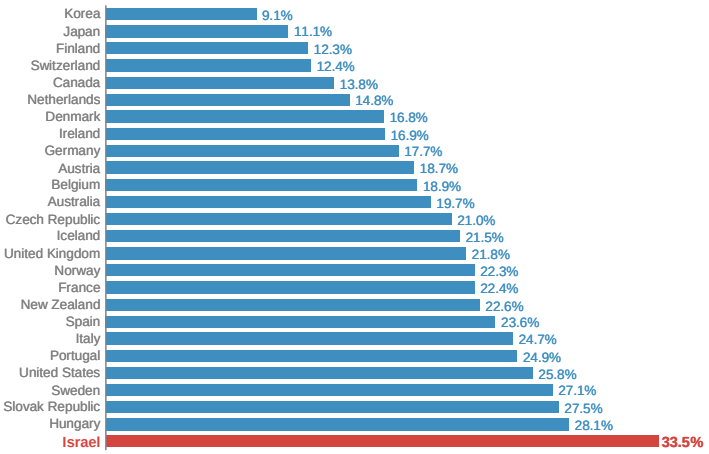
Source: Dan Ben-David, Shoresh Institution and Tel Aviv University
Data: OECD

- The minimal investment in upgrading adult skills is exacerbated by the fact that primary and secondary education in Israel is among the worst in the developed world. Approximately one-third of Israel's children attained a score below 420 in the recent PISA exam (Figure 15), a score that reflects a minimum basic level of knowledge needed for coping productively in a modern, competitive economy. This share of Israeli children considerably exceeds the percentage of weak students in each of the other 25 developed countries.

Figure 15

Share of pupils at the lowest math level

Percent of pupils scoring at or below level 1 (below 420 points) in mathematics, PISA 2012



* Israel examinees do not include Haredim (ultra-orthodox Jews)

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

- If Israel would concentrate only on raising the achievement levels of its weakest students to the minimal score of 420, the impact on the entire Israeli economy over the lifespan of these children would be enormous – far greater than "just" raising many of them above the poverty line as adults.

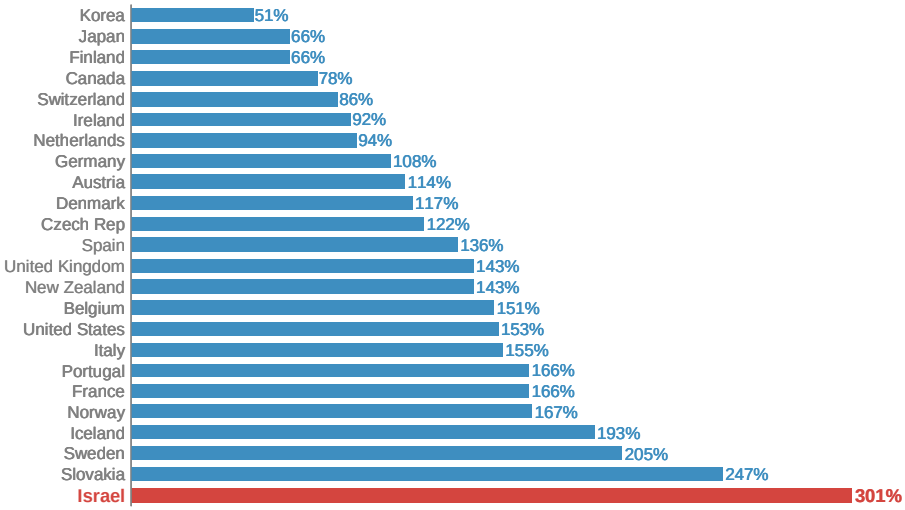
The addition to Israel's GDP over the next eight decades would be 301% of its current size (Figure 16). To put this economic achievement into perspective,

- this means an additional 3,462 billion shekels to Israel's GDP,
- while Israel's 2015 GDP was 1,150 billion shekels.
- For comparison purposes, the entire education ministry budget in 2015 was 51 billion shekels.

Figure 16

Increase in GDP resulting from raising education among the lowest achievers to top of bottom level

Present value of additions to future GDP as a percent of current GDP*



* Additions to GDP if every current student attains a minimum of 420 points in PISA exam.

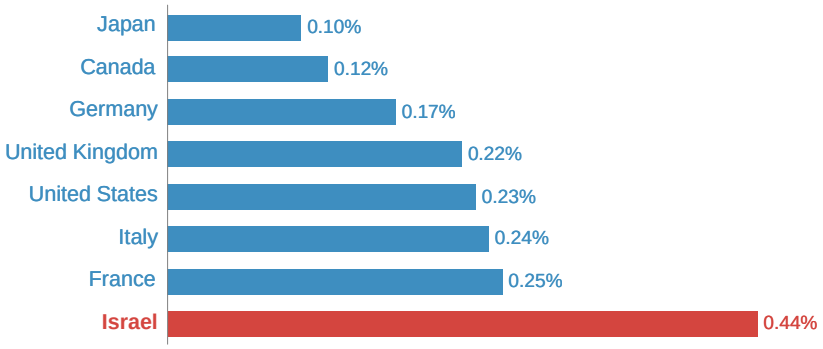
Source: Eric Hanushek and Ludger Woessmann, (2015)

- When this is the magnitude of the economic gains as a result of upgrading the education levels of just the weakest pupils, one can only imagine the kind of a turnaround that the Israeli economy would experience as a result of a reform that would upgrade the entire system. Even if the emphasis would be just on the weakest pupils. the increase in Israel's economic growth rates would range from about twice the increase in American growth rates to more than four times the Japanese increase (Figure 17).

Figure 17

Increase in economic growth rates

as a result of educational improvement among the lowest achievers in Israel and the G7 countries*



* percentage point increase in future annual growth rates if every current student acquires a minimum of 420 points in PISA exam.

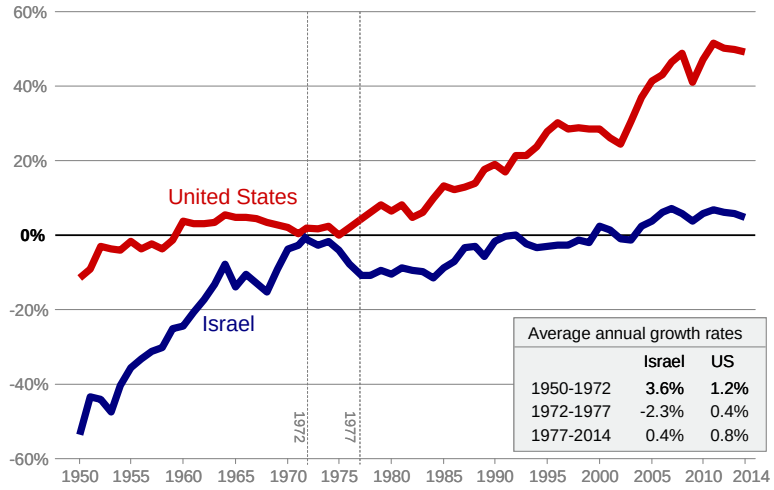
Source: Eric Hanushek and Ludger Woessmann, (2015)

- Figure 1 indicates how important a turnaround would be for Israel. The key determinant of economic growth is called total factor productivity.
  - In 1950, just two years after Israel became independent, American total factor productivity was 90% higher than Israel's total factor productivity.
  - By the mid-1970s, the productivity gap between the U.S. and Israel was reduced to only 2% as a result of Israeli prioritization of it human and physical infrastructures during the 1950s and 1960s.
  - Since 1977, the change in Israel's national priorities caused the country to steadily fall further and further behind the U.S. (in relative terms) with productivity gaps expanding to 42% by 2014.

Figure 1

Total factor productivity* in Israel and the US, 1950-2014

in constant prices, both countries relative to Israel in 1972**



* Total factor productivity (TFP) reflects the part of GDP growth not explained by increases in labor and capital inputs. TFP is considered to be the primary engine underlying the economic growth of nations.

** percent point difference between all observations for each country and Israel in 1972.

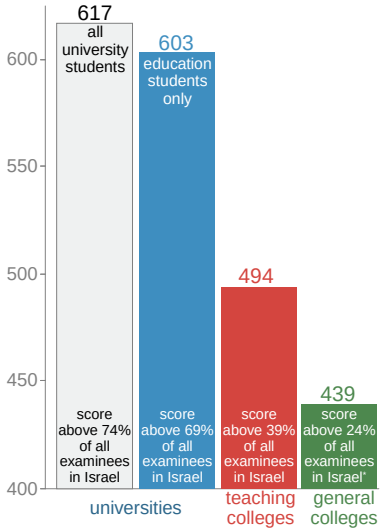
Source: Dan Ben-David, Shoresh Institution and Tel Aviv University
Data: Penn World Tables 9.0

- As long as Israel's education levels remain very low, the system's graduates will have difficulty remaining above the poverty line in the future, while the entire economy will find it difficult to stop the steady increases in the productivity gaps between the leading developed countries and itself. A systemic reform in the education system requires, among other things, a major change in the way that teachers are chosen, taught and compensated. Figures 18 and 19 reflect the magnitude and the severity of the problem with regard to Israel's teachers.
  - The average psychometric grade of first year education students in universities was 603 (these exams serve the same screening purposes as the American SATs). This score was above 69% of all first year students in academia.
  - Over three-quarters (79%) of all first year education students studied in teaching colleges. Their average psychometric grade was 494, a score below 61% of all those taking the exam.
  - The remaining first year education students (15%) studied in general colleges (which differ from country's research universities) and had an average grade of 439 – which was lower even than that of the teaching colleges average.

Figure 18

Average psychometric score

by type of institution, first year education students, 2014-2015



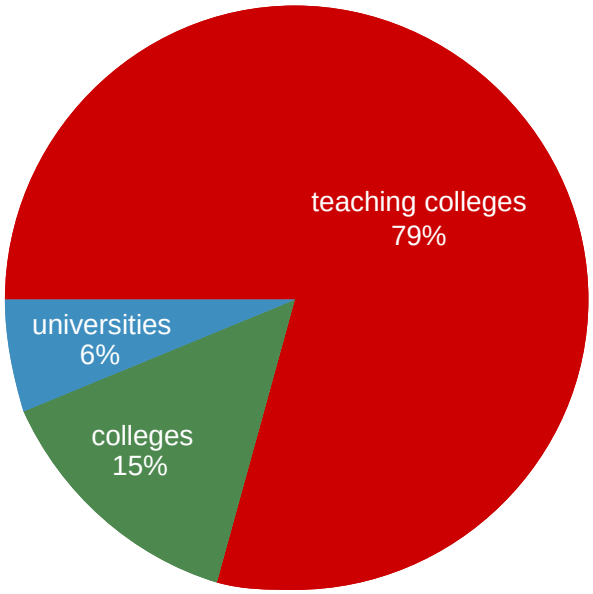
* The average psychometric score of all 1st year students in the general colleges was 529 (above 48% of all examinees in Israel).

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

Figure 19

Distribution of education students

by type of institution, first year undergraduate students, 2014-2015



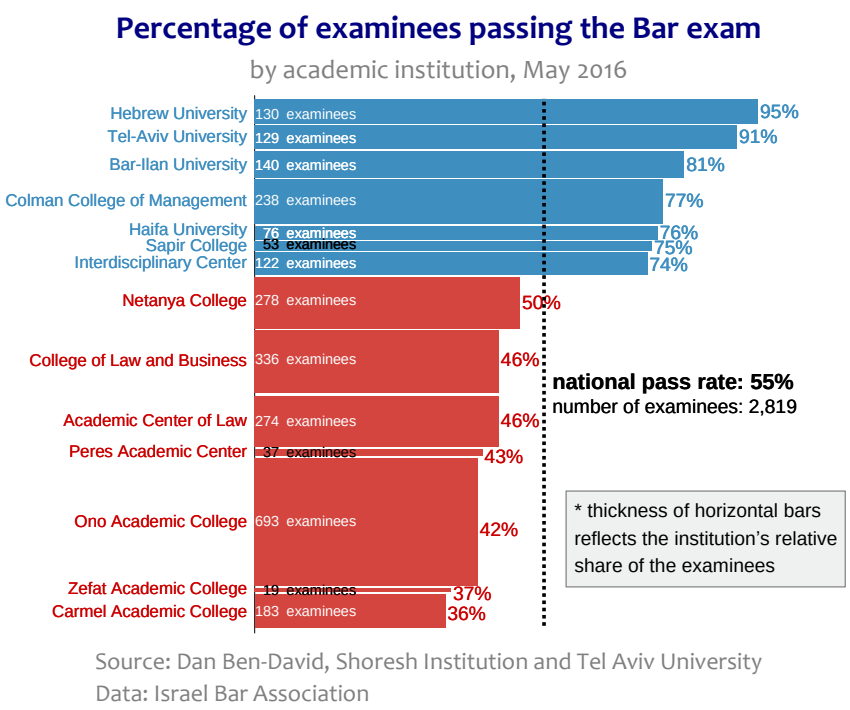
Source: Dan Ben-David, Shoresh Institution and Tel Aviv University
Data: Central Bureau of Statistics

- The very large gaps between the various types of academic institutions in Israel depicted in Figure 18 provide a glimpse of another issue that is insufficiently clear to many in the general public – and to too many among the policy makers. The quality of undergraduate degrees differs considerably among the various higher education institutions. In and of itself, this is not a problem but a virtue of a system that enables a large segment of the population to upgrade its education beyond the high school level. However, it is insufficient to focus only on increasing the number of students in higher education. It is vitally important to increase the number studying at the highest levels of academia.

  In lieu of any standardization, it is difficult to illustrate the extent of the enormous gaps that exist between institutions within the various fields. However, there are a few cases in which it is possible to make comparisons – and these are illuminating.

  - One very popular direction of academic study is law. This is a field that requires all who are employed in it to pass the Israeli bar exam.
  - Only 55% of those taking the exam in May 2016 passed it. On the face of it, this could appear to be a very low pass rate. But the outcomes vary greatly across academic institutions.
  - Over 90% of the students from the Hebrew University and Tel-Aviv University passed the bar exam (Figure 20). There were relatively high pass rates in other institutions as well.
  - But most of the law students in Israel studied in institutions where the majority of students failed in the exam – which is indicative of both the level of students who get accepted into these institutions and also of the level of teaching in them.

Figure 20



Source: Dan Ben-David, Shoresh Institution and Tel Aviv University
Data: Israel Bar Association

If one generalizes to additional fields in which it is not possible to conduct such a comparison, then it is possible to understand how poorly the primary and secondary education systems – which are the funnel to higher education – prepare the students and how substantial the teaching gaps are between the various institutions of higher education.

- In contrast to the prevailing conventional wisdom and public discourse, root treatment aimed at raising overall living standards – increasing the number of persons working and upgrading their tools and conditions – is identical to the root treatment required for reducing inequality and minimizing poverty.

  It is still possible for Israel to change direction. But in light of the fact that a large and growing share of its population is being educated at the level of Third World countries, the ability to implement the necessary changes is continuously declining while the time to do so is running out.