

## **POLICY PAPER SERIES**

### **EDUCATIONAL OPPORTUNITY, EMPLOYMENT, AND INCOME: 1995-2008**

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### **שינויים בשוויון הזדמנויות בהשכלה, בתעסוקה ובכלכלה : 1995–2008**

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# *Educational Opportunity, Employment, and Income: 1995-2008*

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Eyal Bar-Haim, Carmel Blank, Yossi Shavit\*

## *Abstract*

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*This chapter examines educational opportunity and the changing relationship between education, employment, and income in Israel between 1995 and 2008. The following questions are addressed: Did the expansion of the Israeli education system during this period contribute to more equal educational opportunity among socioeconomic groups? And did the returns to education, in terms of income and occupational prestige, increase or decrease? The study is based on aggregate census data for two periods, 1983-1995 and 1995-2008. The sample included native-born young Israelis, both Jewish and Arab Israeli. The data show that despite considerable educational expansion, educational inequality among different socioeconomic groups increased significantly. Moreover, occupational prestige at all education levels except the very lowest decreased on average, especially at the highest levels of education. The latter change is explained by the fact that the demand for professional, academic, technical, and managerial workers grew only modestly leaving many newer graduates out of the field. A more encouraging finding is that the average income for young Israelis grew during the period. Much of this growth was due to the expansion of higher education, which increased the proportion of high-earning, highly educated individuals in the overall population. Nevertheless, the higher educated earn less today (relative to those without an education) than they did in 1995, that is, the economic returns to education have declined.*

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The 1990s were a turning point for secondary and post-secondary education in Israel. Reforms implemented early in the decade came to fruition in the mid-1990s, leading to impressive growth in education levels among Israelis. The Bagrut<sup>1</sup> (matriculation) Reform, known popularly as the “lottery reform,” took various forms since its inception in 1995, but its basic principle remained the same: a reduction in the content on which pupils taking the bagrut exams are tested. As Ayalon and Shavit (2004) have shown, the reform increased the overall percentage of pupils attaining the bagrut certificate and decreased the disparities in bagrut eligibility between pupils from different socioeconomic and ethnic groups. It did not, however, decrease the disparities in the likelihood of attaining a bagrut certificate of the level required for admission to university.

The Bagrut Reform coincided with the massive expansion of Israeli higher education. The latter consisted of the establishment and expansion of alternatives to the system of research universities, including public regional colleges, private colleges, foreign university extensions, and academically accredited teacher training colleges. The result was a significant increase in higher education enrollment, especially at the baccalaureate level. As Figure 1 shows, the number of students studying for a first degree at institutions of higher education more than doubled between 1992 and 2011.

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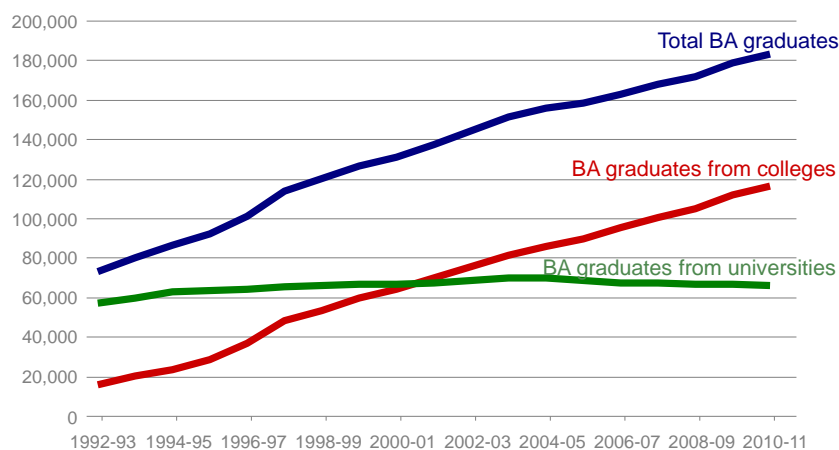
Education Policy Program; Department of Sociology and Anthropology, Tel Aviv University; President, Israeli Sociology Society. The authors thank Yasmin Alkalay for her helpful advice on the data analysis. The authors are also grateful to Michael Shalev, Dan Ben-David, Ayal Kimhi, and the entire staff of the Taub Center Education Policy Program for their helpful comments. This study was partly funded by a grant awarded to Michael Shalev and Yossi Shavit by the Israeli Ministry of Science and Technology. The authors would like to thank the staff of the Israeli Central Bureau of Statistics for preparing the data files used in this study.

<sup>1</sup> Bagrut or matriculation examinations assess knowledge on subjects studied in high school. They are frequently compared to the New York State Regents’ Exams and ETS Advanced Placement (AP) tests. Bagrut scores represent an average of the test score and the grade received on that subject in school. Subjects are tested at study unit levels ranging from 1 to 5 units, calculated by the number of class hours devoted to the subject.

Most of the expansion was in non-research-oriented colleges, while the number of university students remained fairly constant.

Figure 1

**Bachelor's degree graduates from higher education institutions**



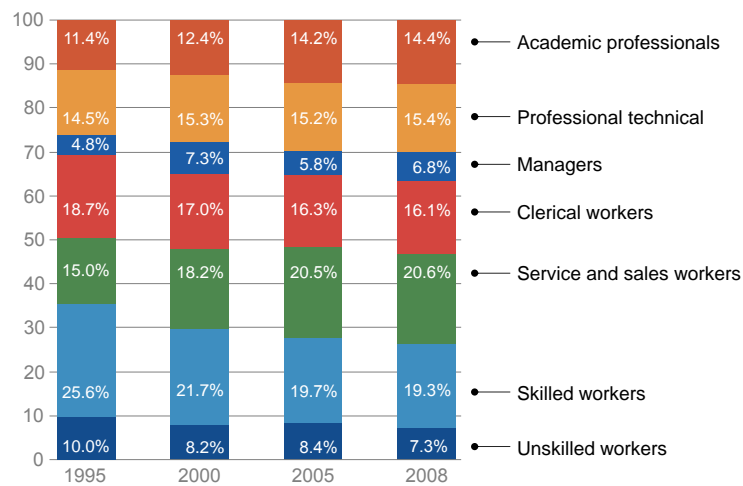
**Source:** Bar-Haim, Blank, and Shavit, Taub Center

**Data:** Council for Higher Education

Whereas the number of bagrut certificate and academic degree holders grew significantly over the years, the distribution of occupations in the Israeli labor force changed relatively little. As Figure 2 shows, professional and managerial employment – the occupations that employ most of those with a high education level – increased by only 6 percentage points between 1995 and 2008, suggesting that some of the newly highly educated went into non-professional (free occupations), non-managerial employment. This may be due partly to the fact that some occupations traditionally defined as non-professional (e.g., sales, administrative assistance, miscellaneous services) now require higher levels of training and education. However, it may also

be due to the failure of the labor market to expand sufficiently to admit the increasing numbers of highly educated candidates, forcing many to settle for lower-paying, lower prestige jobs.

Figure 2  
**Distribution of occupations in Israel**  
 1995-2008



**Source:** Bar-Haim, Blank, and Shavit, Taub Center

**Data:** Central Bureau of Statistics (authors' calculations)

### ***1. The Impact of Changes in Education and Employment on Equal Opportunity***

According to Bernardi and Ballarino (2012), massive educational expansion can impact the labor market and the economic value of education in three different ways. Which of the three becomes a reality largely depends on the

extent to which the labor market can absorb the new graduates of the expanding education system.

***Best-Off Scenario.*** Educational expansion decreases educational opportunity inequality, i.e., education becomes more accessible to previously excluded socioeconomic groups. The labor market concurrently expands sufficiently to admit all new graduates. As a result, the returns on education rise or remain constant.

***Trade-Off Scenario.*** In this scenario, educational expansion also serves to decrease disparities in educational opportunity. However, the supply of professional jobs stagnates, leading to an inflation of job candidates with higher education, which results in a decline in returns on education that serves to cancel out the gains from improved educational opportunities.

***Worst-Off Scenario.*** This scenario occurs when there is high demand for education amongst the stronger socioeconomic groups. The latter enjoy material, cultural, and cognitive resources which give them an advantage in benefiting from the newly expanded educational opportunities. As a result, inequality in educational opportunity remains stable or even grows. At the same time, the labor market does not grow sufficiently to admit all those with higher education. In this case, inequality of educational opportunities does not narrow, and the economic returns on education decline.

## ***2. Methodology***

### ***Research Questions***

The aim of this study is to find which of the above three scenarios occurred in Israel in the period between 1995 and 2008. To do this, three main research questions are posed:

- 1. Did educational inequality change between 1995 and 2008, and if so, how?*
- 2. In these years, was there a change in the contribution of education to occupational achievements in the labor market?*
- 3. Did the economic returns on education change over this period?*

### *Data*

The analysis is based on a data file generated specifically for the present study by the Israeli Central Bureau of Statistics. The file aggregates census data for 1983-1995 and 1995-2008. More specifically, the data are from a questionnaire distributed during each census to about one-fifth of the Israeli population aged 15 and over, with questions about education, occupation, income, and ethnic and religious origin. To learn about the respondents' socioeconomic family background, the 1995 data of individual respondents was linked to the household data from 1983. This allowed identification of respondents' parents and a measurement of their socioeconomic characteristics. In the same way, data for 2008 was linked to parental data from 1995.

The sample was limited to those aged 15-21 at the time of the 1983 and 1995 censuses. Those in the first group were 27-33 in 1995; those in the second were 28-34 in 2008 (the one-year age difference is due to the unequal intervals between censuses). The sample's lower age limit was chosen because by the age of 27 most Israeli students have completed or are near completion of their higher education studies (only 10 percent of 27- to 28 year-olds are currently studying). For those who are younger, it is difficult to predict what their educational attainments might be. The sample's upper age limit was chosen due to technical limitations: over the age of 21 the rate of young people leaving their parent's home rises and it becomes increasingly difficult to identify their families of origin. The sample was, therefore, limited to those who were no older than 21 in 1983 or 1995, i.e., no older than 33 or 34 in 1995 or 2008, respectively.

The sample excludes those not born in Israel, since social mobility among immigrants sometimes occurs prior to immigration and differs from social mobility patterns among native-born groups. This meant that the majority of immigrants from the former Soviet Union are not included in the analysis. The sample includes 9,969 respondents from the 1995 census and 17,630 respondents from the 2008 census.

### *Variables*

The main research variables are:

**Education.** Six categories of education are distinguished based on the highest level of education attained by the respondents: (1) primary education or lower; (2) secondary education (12 years, without the bagrut); (3) secondary education with the bagrut; (4) non-academic higher education; (5) bachelor's degree; (6) advanced degree (master's or higher). The analysis controlled for respondents still in school at the time of the censuses, who are mostly advanced degree students.

**Income.** Average monthly income from work for employees and the self-employed, adjusted to the September 2008 consumer price index.

**Occupation.** Respondents' occupation is represented by the International Social Economic Status Index (ISEI) (Ganzeboom and Treiman, 1996), an established tool in sociological labor market research. The index weighs education and median occupational income, with values ranging from 1 to 100. The ISEI is highly correlated with subjective measures of occupational prestige and has proven to be stable over time and across different countries (Hauser and Warren, 2008).

In addition to these variables, some of the analyses control for ethnic origin, labor market seniority, and gender. Ethnic origin is defined by the paternal grandfather's continent of origin. Categories include Asian/African; European/North American; third-generation Israeli; and Arab Israeli. Labor market seniority (an established variable in income equations) was not included in the censuses; it was therefore calculated based on



respondents' age and education, using the well-established Mincer Function (1974).<sup>2</sup> Gender is defined dichotomously.

### ***3. Changes in Educational Inequality and Occupational and Economic Achievement by Education***

As background to more complex analyses, Table 1 presents changes over the decade in the educational distribution of young people and their labor market achievements. The data reinforce earlier findings about educational expansion in Israel. Between 1995 and 2008, the percentage of native-born Israelis in the relevant age groups with secondary education or below fell from 48 to 33 percent; the percentage of those with the bagrut increased slightly; and the percentage of those with the bachelor's degree nearly doubled, as did the percentage of those with advanced degrees. Comparisons also show that the average occupational prestige among young people rose slightly over the years, and average real income increased by almost 25 percent.

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<sup>2</sup> The Mincer Function assumes that individuals begin school at age six and study without interruption until they enter the labor market. The model thus calculates labor market seniority as the difference between age and [the number of school years completed + 6]. The model is far from suitable to Israel, where many young adults serve in the military and very few study without interruption. It was, nevertheless, used to generate approximate estimates in the absence of more accurate data on labor market seniority patterns.

Table 1. **Educational distribution and average occupational prestige and salary, 1995 and 2008\***

	1995	2008
<b>Highest degree</b> (share of degree holders)		
Less than secondary	22.2%	16.0%
Secondary	25.7%	16.6%
Bagrut	21.3%	26.0%
Post-secondary non-academic	13.2%	11.6%
Bachelor's degree	14.3%	24.0%
Master's degree and higher	3.4%	5.7%
<b>Labor force achievement</b> (average)		
Occupational prestige (1-100)**	46.4	48.6
Income (in shekels per month)	5,440	6,765

\* Among the sample population

\*\* According to the ISEI scale, range 1-100 where 1 is the lowest prestige and 100 is the highest

**Source:** Bar-Haim, Blank, and Shavit, Taub Center

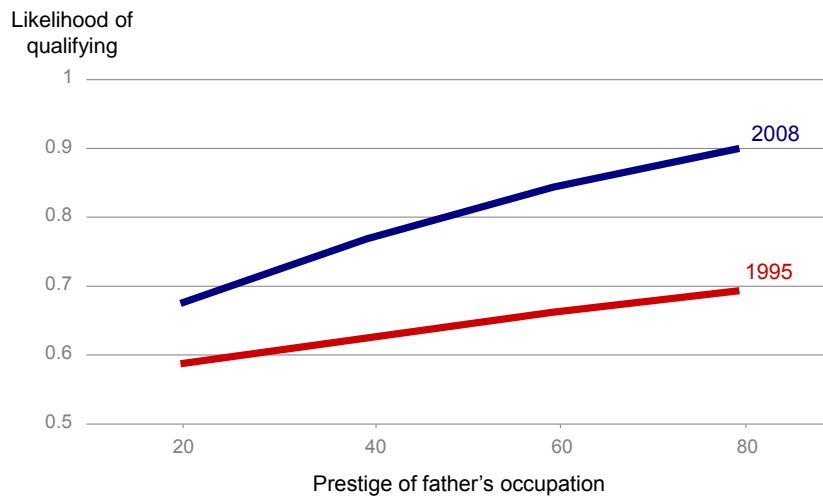
**Data:** Central Bureau of Statistics (authors' calculations)

### *Changes in Educational Inequality Among Socioeconomic Groups*

To see whether educational expansion impacted inequality in educational opportunity, the influence of father's occupation on the respondent's level of

education in 1995 and 2008 was examined.<sup>3</sup> Figure 3A presents the likelihood of someone who has been in secondary school attaining a bagrut certificate by prestige of father's occupation in each year (controlling for origin and gender).

Figure 3A  
**Likelihood of a secondary school pupil earning a bagrut certificate**  
 by prestige of father's occupation\*, 1995 and 2008



\* According to the ISEI scale, range 1-100 where 1 is the lowest prestige and 100 is the highest

**Source:** Bar-Haim, Blank, and Shavit, Taub Center

**Data:** Central Bureau of Statistics (authors' calculations)

<sup>3</sup> The analysis was done using a multinomial logit regression model to analyze the relationship between education levels and the father's occupation at the time of the census, controlling for ethnic origin and gender. The probabilities shown in Figures 3a-3c are for native-born, second-generation Jewish women, but similar patterns were found for men and individuals with other ethnic origins as well.

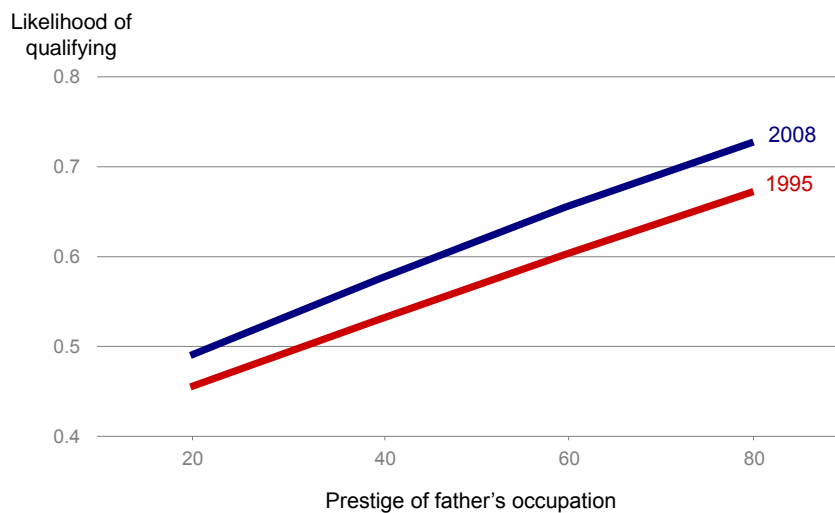
Between 1995 and 2008, the likelihood of someone obtaining a bagrut certificate grew, although this growth was primarily amongst the higher socioeconomic classes. The significance of this is that the rise in the rates of bagrut certification was accompanied by a substantial rise in inequality between socioeconomic groups.

Figure 3B shows the probability of a high school graduate with a bagrut certificate continuing to attain a bachelor's degree as the highest degree. Here as well, the probability increased over time, accompanied by a small increase in inequality in favor of the higher socioeconomic groups.

Figure 3B

**Likelihood of earning a bachelor's degree  
among bagrut certificate holders**

by prestige of father's occupation\*, 1995 and 2008



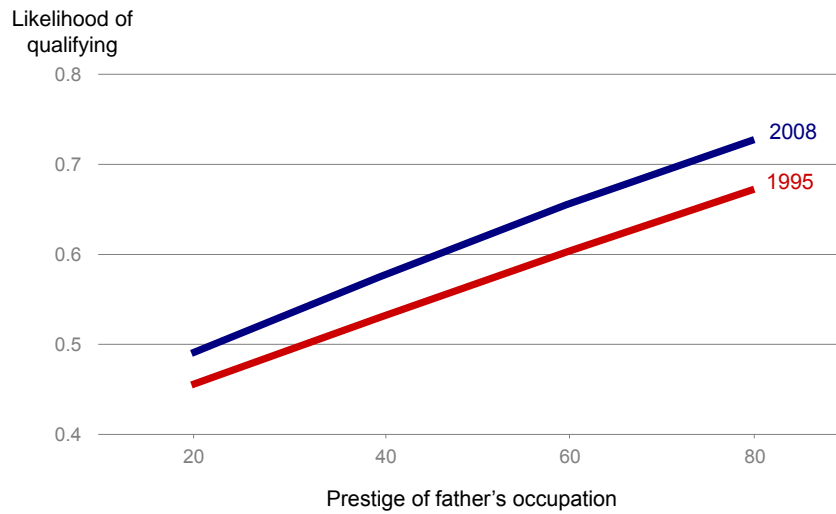
\* According to the ISEI scale, range 1-100, where 1 is the lowest prestige and 100 is the highest

**Source:** Bar-Haim, Blank, and Shavit, Taub Center

**Data:** Central Bureau of Statistics (authors' calculations)

Figure 3C shows the probability of a secondary school graduate with a bagrut certificate attaining an advanced degree (master's or higher). The data shows a substantial growth in this likelihood over time as well as in the growth of inequalities.

Figure 3C  
**Likelihood of earning a master's degree  
among bagrut certificate holders**  
by prestige of father's occupation\*, 1995 and 2008



\* According to the ISEI scale, range 1-100, where 1 is the lowest prestige and 100 is the highest

**Source:** Bar-Haim, Blank, and Shavit, Taub Center

**Data:** Central Bureau of Statistics (authors' calculations)

### *Changes in the Occupational and Economic Returns on Education*

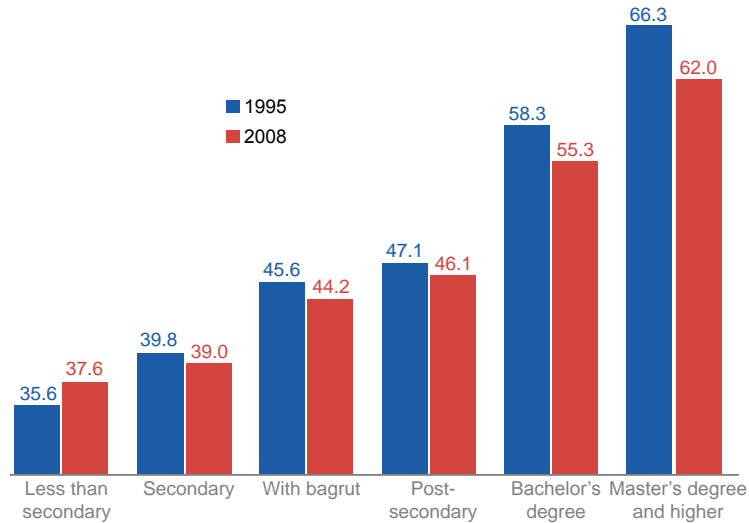
The research focuses on two central returns on education: occupational prestige and income. To examine returns on education, multivariate analysis was used to measure occupational prestige and income for individuals with different education levels in 1995 and in 2008.<sup>4</sup>

Figure 4 shows the positive correlation between education and occupational prestige. Between 1995 and 2008, occupational prestige fell for all education levels except the very lowest. The most drastic decline was experienced by the highly educated. This suggests that the expansion of higher education during this period exceeded the expansion of employment suitable for the highly educated. Thus in 2008, those with higher education were forced to settle for less prestigious jobs on average than those in the preceding decade. The overall increase in occupational prestige presented in Table 1 is due, therefore, to the increased share of the highly educated (within the total population), whose occupational prestige fell over the years but remained higher than that of the less highly educated.

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<sup>4</sup> The predicted values are based on two linear regressions, one to predict occupational prestige, the other to predict log income. Both regressions controlled for father's occupation, year of census, education level, gender, and school completion status (student or graduate). As in Mincer's Function, the income regression also controlled for labor market seniority and seniority squared. The relationship between education and census year, father's occupation and census year, and education and father's occupation were also examined.

Figure 4  
**Occupational prestige at different education levels\***  
 1995 and 2008



\* According to the ISEI scale, range 1-100, where 1 is the lowest prestige and 100 is the highest

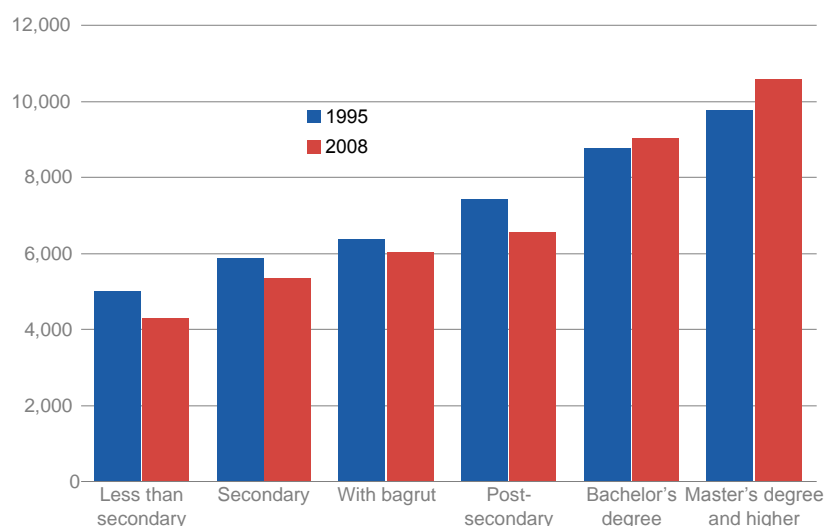
**Source:** Bar-Haim, Blank, and Shavit, Taub Center

**Data:** Central Bureau of Statistics (authors' calculations)

Figure 5 shows the average real incomes of those with different education levels in 2008 versus 1995. As expected, as education rises so does income. As opposed to the aggregate data in Table 1, which shows an almost 25 percent increase in average real income over the years, Figure 5 shows a decline in income among those with primary education, secondary education, a bagrut certification, and even among those with non-academic higher education. By contrast, those with a bachelor's degree saw modest increases, and those with advanced degrees enjoyed an increase of about 9 percent. These developments are typical of periods of economic growth

characterized by a growing demand for highly-educated, highly-skilled workers and a falling demand and lower wages for less highly educated workers (Goldin and Katz, 2008; for Israel, see Ben David, 2009; Kimhi, 2010). The impressive increase in average income shown in Table 1 seems to be largely due, however, not to the modest increase in income experienced by the highly educated, but to the rising share of the highly educated (among the total population), which almost doubled over the period in question (see Table 1).<sup>5</sup>

Figure 5  
**Gross monthly average income for different education levels,  
 1995 and 2008**  
 in 2008 shekels



**Source:** Bar-Haim, Blank, and Shavit, Taub Center

**Data:** Central Bureau of Statistics (authors' calculations)

<sup>5</sup> For simplicity, Figure 5 presents the raw data. These are similar, however, to the pattern indicated by the income regression.



## ***4. Summary and Conclusions***

On the basis of the findings, the research questions can be answered:

### ***Did educational opportunity inequality change between 1995 and 2008, and if so, how?***

The bagrut and higher education reforms of the 1990s and 2000s have resulted in significantly higher levels of education. However, they have been accompanied by rising inequalities in educational opportunity between socioeconomic groups. A declining share of the newly educated came from weaker socioeconomic groups. This is a familiar phenomenon in the sociological literature. Members of higher socioeconomic groups enjoy greater economic, cognitive, and cultural resources, and so are better able to take advantage of the new opportunities offered by an expanding education system. As a result, such expansion is associated with an increase in inequality (Bar-Haim and Shavit, 2013).

It is possible to conclude from this that educational expansion alone is not an effective tool in narrowing inequalities. The formal expansion of educational opportunity is not enough: it must be complemented by policy efforts to compensate for economic, cultural, and cognitive deficits that underlie educational inequality. Longer school days, financial aid, individual tutoring and support, small classes, and other programs may help level the educational playing field across different socioeconomic groups.

### ***Did the economic returns on education change over this period?***

Occupational prestige declined during the period in question for those at all education levels (except the very lowest) and especially for the highly educated. As Figure 2 shows, this is probably due to the fact that professional, academic, technical, and managerial employment grew only marginally during this period, not enough to provide for all highly educated job seekers; many of the latter, therefore, had to accept less prestigious employment. These developments appear to have followed Bernardi and

Ballarino's Worst-Off Scenario, in which rising educational inequality is coupled with declining occupational prestige for the highly educated.

The highly educated of 2008 must have been disappointed at the lack of sufficient growth in the Israeli labor market and by its failure to offer them the prestigious job opportunities enjoyed by the highly educated of earlier generations. This disappointment probably contributed to the middle-class unrest at the heart of the 2011 social protests in Israel. Israel is similar in this respect to other countries (Egypt, India, and Spain) where the status of the educated swelled while the economy failed to provide sufficient suitable employment. An expansion of education that is not accompanied by sufficient expansion of appropriate opportunities in the labor market is bound to result in disappointments.

***Did the economic returns on education change over this period?***

The most encouraging finding is that the average income of younger Israelis grew between 1995 and 2008. The growth was related to the expansion of higher education, which increased the percentage of educated individuals with high salaries relative to the overall population. The share of individuals with an academic degree doubled and reached some 30 percent of the country's native-born population in the age groups studied. Despite the increase in the number of those with a first degree, their incomes did not decline (unlike their occupational prestige). The income of those with advanced degrees rose slightly (around 9 percent); however, due to the group's small size, this growth has had little effect on Israel's overall income distribution.

It would be wrong to conclude without highlighting that from an economic standpoint, the main losers have been those excluded from higher education even after the recent expansion. In 2008, this group comprised no less than 70 percent of all native-born Israelis aged 28-34, the majority of whom originate in the lower socioeconomic strata. They have become worse-off economically, because their bargaining position in the labor market has become weaker relative to the increasing number of college and university graduates. Their fate underscores the rule: educational expansion

on its own is not an effective tool for narrowing gaps. Educational expansion may improve the lot of those lucky enough to enjoy its benefits, yet it often harms those who are not so fortunate. Furthermore, the economic and occupational returns to education may diminish even for those with higher education.

Thus, while educational expansion can contribute to productivity and economic growth, it is not an effective policy towards the reduction of inequality in either educational, occupational, or income attainment. For education to make a contribution in these regards, the association between social origins and educational attainment must be weakened. The association between origins and educational attainment is largely due to differences between social strata in economic condition (Duncan et al. 1998), cultural resources (Lareau and Weininger 2003) and the availability of quality education (Rumberger and Pallady 2005). Social policy that is targeted at the reduction of the association between social origins and educational attainment should aim to reduce inequalities between strata in these resources rather than hope that expansion will do the job.

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