SHORESH
Institution for Socioeconomic Research

Shoresh Research Paper

editor: Dan Ben-David

March 2022

Gender Wage Gaps in Israel
What Causes Them and How Can They Be Reduced?

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Abstract

Israel's gender wage gap is substantially larger than the OECD average, and it has been trending upward over the past decade. This study finds that the gender gap in monthly wages of employees at the outset of their careers, a stage when people are also forming and expanding their families, reaches 33%. The lion's share of this disparity can be attributed to family attributes. Marriage and the birth of children greatly widen the gender wage gap, as they reinforce the tendency toward specialization within the household, with the mother taking more responsibility of housework and most of the breadwinning burden falling on the father. Consequently, women tend to choose employment that is less remunerative but more conducive to integrating career and family life – a choice that may also impact earlier decisions on fields of study in school, which then limit career options downstream. A relatively small share of the disparity, 4.5 percentage points, can be explained by gender differences in fields of study and employment sectors. Although the issue is not one of lower abilities among girls, female pupils study math and science – fields that lead to relatively higher-wage employment – at lower

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levels in upper secondary schools than their male counterparts, which reduces their subsequent likelihood to study these subjects at the academic level. Women are more likely to be employed in the service industries than in the manufacturing and infrastructure industries, where wages are higher. To the extent that women's choice of study subjects arises from normative biases transmitted to them by their parents, teachers, and society at large, it is important that this issue be understood and rectified. Girls should be encouraged to study math and science at higher levels, both in secondary school and in higher education. This needs to be supplemented by a major improvement in Israel's early childhood education system – first and foremost for the children, but also in terms of availability and cost for mothers wanting to work more hours. It is also recommended that paternity leave be instituted, and that tax benefits and the "work grant" (also commonly known as the negative income tax) for young mothers be increased.

1. Introduction

While women have made considerable progress in the labor market over the past few decades, their employment rates are still lower than those of men, they tend to work fewer hours than do men, and their pay is lower on average (Kunze, 2018). The fact that many women do not fulfill their earning potential has negative consequences for women's status within the family, for intra-household resource allocation (Lundberg and Pollak, 1996) and, in general, for economic growth at the national level (Hsieh et al., 2019).

Over the years, the narrowing of the gender wage gap paralleled a reduction in the gender education disparity (Goldin, 2014). However, studies show that the existing wage gap is only weakly related to quantitative measures of human capital such as years of schooling and academic degrees, and is explained primarily by male-female differences in occupation and employment sector (Blau and Kahn, 2017). By contrast, other studies suggest that the wage gap is closely connected to the choice of academic study field (Sloane, Hurst, and Black, 2019). This finding is not surprising, as it is now well known that the quality of human capital, measurable in terms of main fields of study and the caliber of the educational institution, is much more important for labor market achievement than the quantity of human capital (see, for example, Ben-David and Kimhi, 2020). Furthermore, a relationship has been found between the gender wage gap and gender disparities in mathematical skills (Tverdostup and Paas, 2019).

If women do indeed choose study tracks, occupations, and employment sectors that lead to lower wages than those of men, the question is why they do so. The research literature provides many possible explanations. One is based on the fact that women's careers are expected to be interrupted by the birth of children. These breaks hamper women's advancement at work, and generally reduce the cumulative return on their human capital. When the return on human capital is lower, the motivation to choose challenging study programs is lower as well, and consequently, the chance of finding one's way into a prestigious occupation is smaller (Blau and Kahn, 2020). It has also been found that the return to certain work skills is lower for women even within a given occupation (Jensen, 2020). Women who pursue courses in science, technology and math (STEM) do not succeed in closing the wage gap between them and men who study the same subjects (Aguirre, Matta and Montoya, 2020). Moreover, women tend to retire at younger ages, among other things in order to help care for their grandchildren (Frimmel et al., forthcoming). This also lowers the anticipated return on their human capital in the labor market, and may reduce their willingness to invest in human capital with a higher return.

Women's decisions regarding human capital investment also depend on culture, social norms, and the social environment (Giuliano, 2020). It has been found, for instance, that teacher biases with regard to women's scholastic abilities affect their female pupils' study track choices (Lavy and Megalokonomou, 2019). Female pupils have a greater tendency to choose scientific study tracks when there are more girls in their classes who excel at mathematics (Mouganie and Wang, 2020). It has been found that support and tutoring in math at the upper secondary level strengthens the tendency of men to pursue post-secondary scientific studies and to be employed in STEM occupations, but that such support has no impact on women – indicating that there may be cultural, social, or psychological barriers at play (Biewen and Schwerter, 2019). Women's integration in the labor market is greater among daughters of working mothers, which attests to the intergenerational transmission of employment norms (Binder, 2021).

Women's greater commitment to household responsibilities and especially to childrearing also affects their career decisions. It has been found, in particular, that women attach greater importance than men do to distance from the home as a factor in the choice of workplace, and are therefore willing to work for lower pay in workplaces that are closer to their homes (Le Barbanchon, Rathelot, and Roulet, 2021). Semyonov and Lewin-Epstein (1991) identified similar behavior patterns among women in Israel. Another study found that wage increases resulting from change of workplace are lower for mothers, indicating that pay is a less important consideration in mothers' employment decisions (Reshid, 2019). It has also been found that the negative impact of children on mothers' careers is amplified over time (Kleven, Landais, and Søgaard, 2019). Women in general, and not just mothers, have a lower tendency to switch jobs, even with the same employer, and this is a major determinant of the gender wage gap (Morchio and Moser, 2019). On the other hand, the availability of a cheap labor force for housekeeping spurs women, especially those of high potential, to invest in remunerative careers, thereby helping to reduce the gender wage disparity (Cortés and Pan, 2019).

Other explanations for the wage gaps between men and women, supported by research findings, include:

- Lower returns to women's social skills relative to men's (Flinn, Todd and Zhang, 2020);
- Less determination among women to negotiate employment terms, especially when the employer is male (Biasi and Sarsons, 2020);
- Women's tendency to undervalue their skills (Exley and Kessler, 2019);
- Women's tendency to prefer stable and secure pay over high wages (Zambre, 2018);
- Women's lack of desire or ability to strive in a competitive environment, especially when they are competing with men (Bertrand, 2018);
- Women's tendency to prefer working with people or at jobs with social value such as helping others – work that tends to be less remunerative (Gicheva, 2020; Lordan and Pischke, 2022);

- Gender discrimination on the part of employers, even if the discrimination is statistical, i.e., stemming from employer uncertainty regarding worker skills (Gayle and Golan, 2012).

Figure 1 shows that the gender wage gap among employees working full-time in OECD countries has been trending steadily downward over the past two decades. The gender wage gap in Israel is markedly larger than the OECD average. Although it fell during the first decade of the millennium,[1] this trend reversed in 2011. The narrowing of Israel's gender wage gap until a decade ago can be explained primarily by the rising share of women with academic degrees and their growing integration in occupations previously regarded as predominantly male (Stier and Herzberg-Druker, 2017). It is unclear, based on these explanations, why the trend toward smaller gender wage gaps reversed itself. In international comparison, Israel's gender wage gap is among the largest in the developed world (Figure 2).

Figure 1

Women's wages as percent of men's wages

Relative median wages of women to men*, 2001-2018

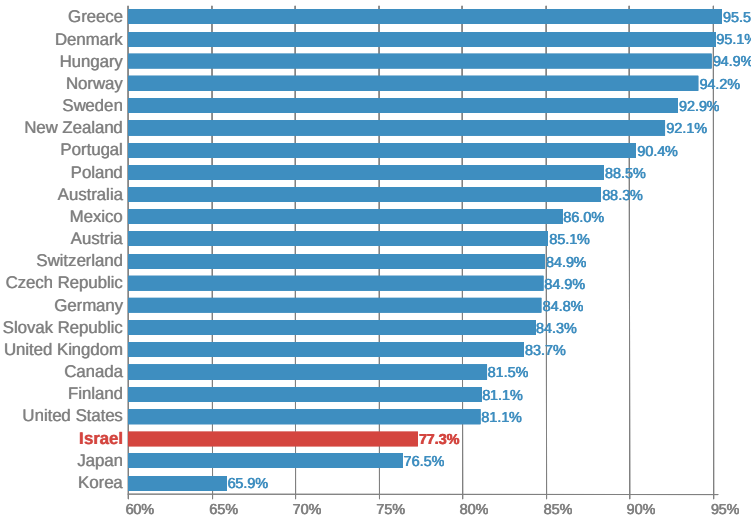
* Monthly wages of full-time employees.

Source: Ayal Kimhi, Shoresh Institution and Hebrew University
Data: OECD

Figure 2

Women's wages as percent of men's wages in OECD

Relative median wages of women to men*, 2018



* Monthly wages of full-time employees.

Source: Ayal Kimhi, Shoresh Institution and Hebrew University
Data: OECD

[1] Klinov (2004) showed that the downward trend in the gender wage gap had started at least a decade earlier.

Recent empirical analyses suggest that Israeli wage gaps between men and women have risen mainly from work-hour differences between them, and from the distribution of their occupations and employment sectors (Geva, 2015; Fuchs, 2016; Herzberg, Druker and Stier, 2017). Another study (Gafni and Siniver, 2015) found that part of the gender wage gap can be attributed to women's tendency, once they have children, to move to public sector positions and to jobs that allow them a more flexible schedule – even though these jobs pay lower wages.

Mazar (2017) found that the gender wage gap is driven by a gap in quantitative skills and in the return on skills. An earlier paper by Mazar (2008) shows that, in past decades, women earned less than men at the time they were hired for jobs in the Israeli public sector. However, this initial gender wage gap among public sector employees disappeared completely over the years as a result of (a) women's rising education levels relative to men, and (b) men's declining returns on human capital relative to women. Kimhi and Hanuka-Taflia (2019) also found that Israeli men's and women's hourly wage distributions converged between 1995 and 2008, thanks in particular to growth in women's cumulative employment experience. Azari-Wiesel and Ben-David (2016) found that the narrowing of the monthly wage gap between men and women over the years had also resulted from a rise in the share of women employed full-time relative to those employed part-time.

The goal of this study is to examine the main characteristics underlying gender wage gaps in Israel, with an emphasis on distinguishing between quantity and quality of human capital. This is made possible through the analysis of a unique dataset merging administrative and survey data. Such evidence-based findings provide vital foundations for drafting policy recommendations aimed at narrowing the gap. Some suggestions along this vein are listed below.

Section 2 describes the study's dataset. Section 3 presents descriptive statistics highlighting relationships between some of the main variables and wages. Section 4 presents the results of a statistical estimation that makes it possible to identify the partial effect of each variable on the

wage by controlling for each of the other variables. Section 5 offers concluding remarks and policy recommendations.

2. Data

The study is based on a file containing anonymous administrative data for all Israeli citizens born between 1978 and 1985 and covers about a million individuals. These data were collected by the Central Bureau of Statistics (CBS) from various sources, including the Ministry of Education, the National Institute for Testing and Evaluation, the Population Registry, and the Israel Tax Authority. The file contains data on upper secondary pupils and their matriculation exam information, academic degree holders by type of institution and field of study, place of residence and family composition, demographic and socioeconomic data on the pupils' parents, and wage data for the years 2012-2016. The Population Registry data include the individual's place of residence in 2015, his/her family status, number of children, and the age at which his/her first child was born. With the help of CBS municipality files, each individual was assigned a peripherality ranking for the locality in which s/he resided in 2015.[2]

The Ministry of Education pupil data contain background data on the pupils' families, including parents' continent of birth and family status, the age of the parents when the pupil was born, and the number of siblings of each pupil.[3] The files also contain information on the municipalities where the pupils reside, the school's educational stream (state, state religious, independent), and the pupil's study track (academic or vocational).

[2] The peripherality score for each local authority is computed as a simple average of two components. One is the potential accessibility index, calculated in terms of the local authority's proximity to each of the local authorities in Israel and their population sizes, while the other is proximity to the Tel Aviv district boundary. The potential accessibility index A_i of local authority i is calculated as $A_i = \sum_{j=1}^{J} P_j / d_{ij}^{1.19}$, where P_j is the population of local authority j, J is the number of local authorities, and D_{ij} is the distance in kilometers between the center of local authority i and the center of local authority j, where d_{ii}=3 (Tsibel 2009).

[3] Neither the pupil data nor the matriculation exam data include information on 7% of the relevant cohorts who immigrated to Israel after completing their secondary school studies. In instances where use was made of pupil and matriculation data, these observations were excluded from the analysis.

The matriculation exam data include the number of study units for each of 34 matriculation subjects, and the aggregate exam score.[4] The academic degree data include primary and secondary fields of study, and type of academic institution (university or college).

Income data include the annual income of salaried employees as reported in tax authority records, the number of months worked per year, and the sector in which the individual was employed during the largest number of months. Once the wage data were translated into fixed 2016 prices per the Consumer Price Index, the average monthly wage was calculated for 2012-2016.[5] Wage data exist for three-quarters of the relevant population, 80% of whom were employed continuously throughout the period. Data also exist on the wage percentile of each individual's parents within the general wage distribution (by gender), for the year in which the individual was 17 years old.

3. The gender wage gap by various attributes

Worker wages are influenced by many different types of skills, personal traits, and other worker characteristics. While Section 4 analyzes the joint impact of all factors on wages, isolating the unique contribution of each factor by means of a statistical test, this section offers a descriptive discussion of the relationship between wages and each of the central factors, separately. Since such a descriptive relationship can reflect either a direct or indirect effect of each factor on wages, the findings presented in this section serve mainly to identify the potential main determinants. The summary conclusions however, will be based on the findings from the much more precise statistical analysis.

[4] It should be noted that one of the main disadvantages of using matriculation exam data is that these exams are not calibrated over time. In other words, the 5-unit exam in mathematics in a given year cannot necessarily be compared with the same exam from another year.

[5] The average monthly income was obtained by dividing the total cumulative income from wage over five years by the total cumulative months of work over the same five years.

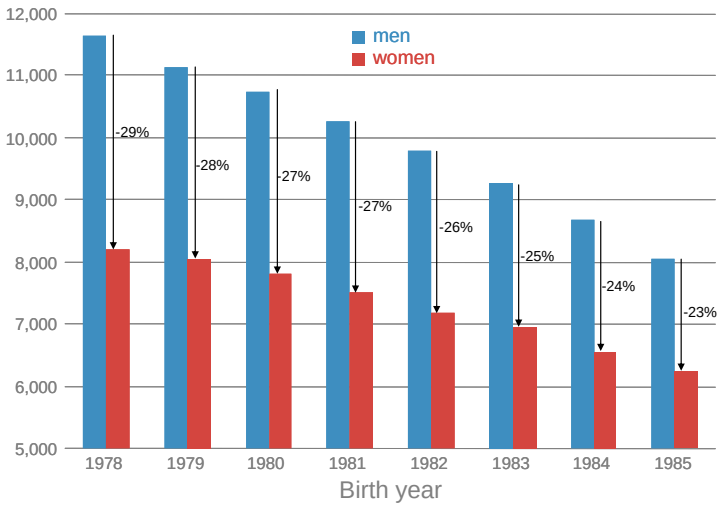
3.1 The gender wage gap grows with work seniority

Figure 3 displays the average monthly wage of women and men by year of birth. The more recent the age cohort, the less work experience they have, on average – which, in turn, yields lower wages. Nevertheless, the gaps between the cohorts are smaller among women. The wage gap between those born in 1978 and those born in 1985 is 32% for women, and 45% for men. This indicates that the gender wage gap widens with seniority.[6] The disparity is 23% among those born in 1985, and grows to 29% for those born in 1978.

Figure 3

Average monthly wage of employees

by birth year



Source: Ayal Kimhi, Shoresh Institution and Hebrew University
Data: Central Bureau of Statistics

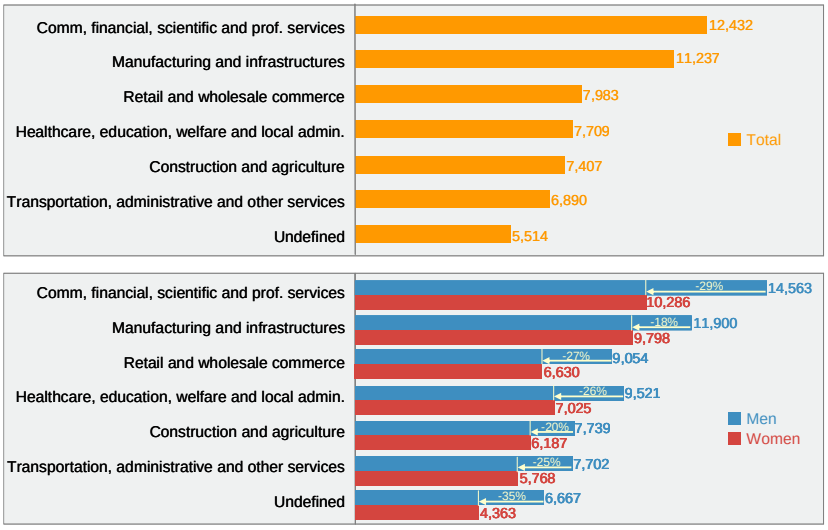
3.2 The importance of employment sector choice

Figure 4 shows women's and men's wages by employment sector (grouped into six main clusters). The upper insert indicates two sector clusters in particular that are conspicuous for their relatively high wages. One is the communication and financial, professional, and scientific services cluster, while the other is manufacturing and infrastructures (water, electricity, etc.).

Figure 4

Average monthly wage

by gender and economic sector*



* Average monthly wage in 2012-2016 for employees born in 1978-1985.

Source: Ayal Kimhi, Shoresh Institution and Hebrew University
Data: Central Bureau of Statistics

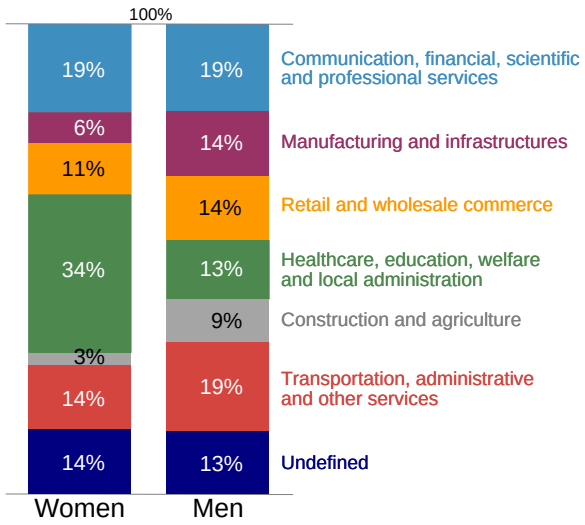
[6] Another possibility is that the gender wage gap does not widen with seniority, but is lower to start with among the younger cohorts.

Most of the high-tech sectors are included in the manufacturing cluster, which helps explain the cluster's relatively high wages. Because the cluster also includes traditional industrial sectors characterized by lower wages, its average wage is not the highest.

The figure's lower insert shows that the percentage gaps between men's and women's average wages are high both in high-wage sectors and in low-wage sectors. However, the sectoral distribution of employees by gender (Figure 5) suggests that while the share of women employed in the communication and professional services cluster is identical to the share of men employed in that cluster, the share of women employed in the manufacturing and infrastructures sectors is less than half that of men. Thus, the employment sectors' contribution to the gender wage gap stems at least in part from a lower concentration of women in some of the high-wage sectors, such as manufacturing and infrastructures. And, perhaps even more importantly, gender wage gaps exist within each sector.[7]

Figure 5

Distribution of employment by economic sector*



* Employment in main economic sectors during 2012-2016 for individuals born in 1978-1985.

Source: Ayal Kimhi, Shoresh Institution and Hebrew University
Data: Central Bureau of Statistics

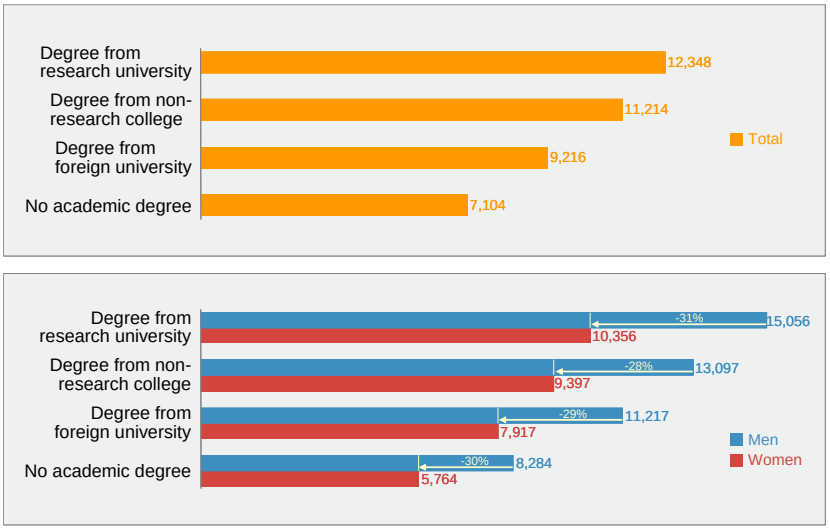
[7] The dataset upon which this study is based does not provide detailed information on occupations. Since wage gaps within sectors are largely attributable to the fact that within each sector there are employees who practice different and diverse occupations, then it is likely that at least part of the gender wage gap within a given sector stems from differing occupational breakdowns among the men and women employed in it. However, earlier studies (Geva, 2015; Kimhi and Hanuka-Taflia, 2019) showed that gender wage gaps also exist within sectors for workers of similar occupations.

3.3 Higher education is a springboard into the labor market – the importance of institution type and field of study

Figure 6

Average monthly wage

by gender and academic degree*



* Average monthly wage in 2012-2016 for employees born in 1978-1985.

Source: Ayal Kimhi, Shoresh Institution and Hebrew University
Data: Central Bureau of Statistics

One avenue toward gaining a foothold in a high-wage sector is via an academic degree that imparts relevant skills. Beyond the skills acquired over the course of academic study, academic degrees also serve in a signaling capacity for employers providing an indication of prospective employees' cognitive abilities. As such, the type of academic institution providing the degree plays an important role as a springboard into the labor market. Figure 6 displays the wage ranking of academic degree holders by type of institution. The figure's upper insert shows that academic degree holders from any higher education institution earn more than do those without academic degrees. Degree holders from research universities earn more, on average, than do graduates of Israeli non-research academic colleges. Holders of degrees from foreign academic institutions earn, on average, the lowest wages of all degree holders. These findings are consistent with those of earlier studies (e.g., Achdut et al., 2018; Shwed and Shavit, 2006).

The figure's lower insert indicates a 30% gender wage gap in each of the worker groups defined by type of academic degree. The reason why this disparity is larger than the overall wage gap within the study population can be found in Figure 7. Women have a greater tendency to hold academic degrees in general (29% versus 23% for men), and degrees from research universities in particular (17% versus 12% for men). Assuming that skill distributions within the male and female populations are similar, and that university degrees reflect relatively higher skill levels, then there

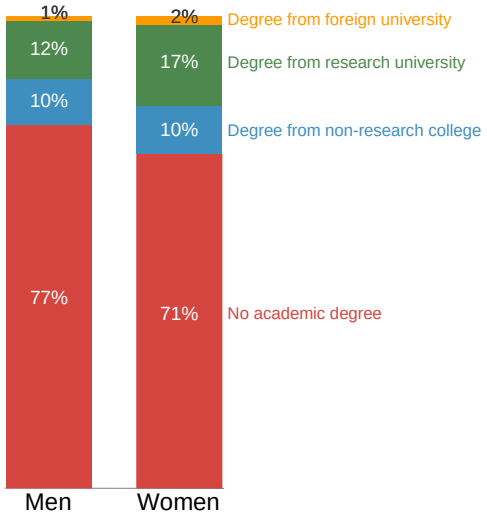
is a greater concentration of men with university degrees in the upper portion of the skills distribution than of women. Consequently, the gender wage gap among workers with academic degrees from the same type of institution is larger than among the entire employee population.

An academic degree does not, on its own, necessarily attest to the acquisition of skills relevant to better-paying employment. Earlier studies have already shown the close relationship between field of academic study and future wages (Klinov, 1980; Ayalon and Yogev, 2005; Zussman et al., 2009; Krill, Geva and Aloni, 2019; Ben-David and Kimhi, 2020, 2021). The upper insert in Figure 8 shows that the academic fields whose graduates earn relatively high wages are engineering, mathematics, statistics and computers – and, to a lesser extent, medicine, economics/business administration, physical science, and law.

Figure 7

Distribution of academic degrees

by type of academic institution and gender*

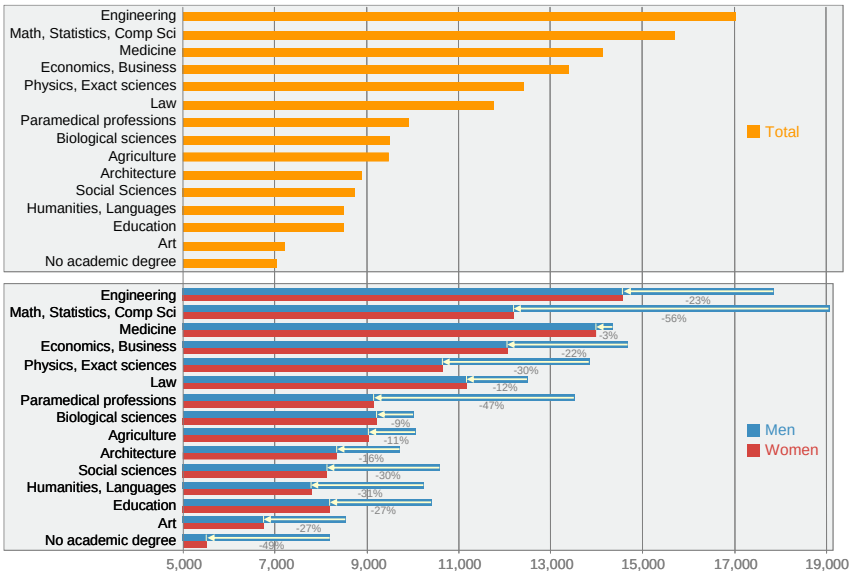


* For persons born in 1978-1985.

Source: Ayal Kimhi, Shoresh Institution and Hebrew University
Data: Central Bureau of Statistics

Figure 8

Average monthly wage by gender and academic field of study*



* Average monthly wage in 2012-2016 for employees born in 1978-1985.

Source: Ayal Kimhi, Shoresh Institution and Hebrew University
Data: Central Bureau of Statistics

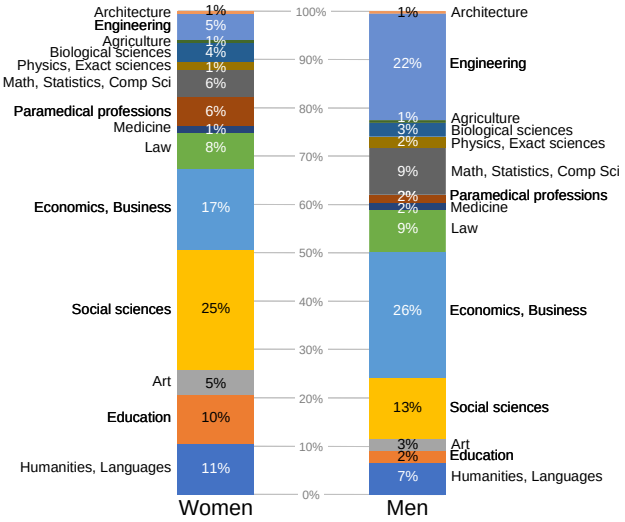
The figure's lower insert indicates that gender wage gaps exist within each of the academic fields, with the smallest disparity appearing among graduates in medicine (3%), biological sciences (8%), and agriculture (10%). The largest gender wage gap is among graduates in math, statistics, and computers (36%), and the paramedical professions (32%). A previous study (Krill and Mazoz Harpaz, 2017) showed that the tendency to work in high tech is lower among women with academic degrees in computers and engineering than among men with similar degrees. This explanation may also apply to other fields of study, as found in the United States (Jiang, 2021).

Figure 9 shows that substantial differences exist between the academic fields of study chosen by men and women. 70% of men with academic degrees studied in one of the tracks that lead to relatively high wages: engineering, mathematics, statistics and computers, medicine, economics and business administration, physical science, and law. By contrast, only 38% of women pursued studies in one of those fields. The gap is particularly marked in the field that leads to the highest pay, engineering. Only 5% of women with academic degrees specialized in engineering, compared with 22% of men. Women's choice of academic fields that leads to relatively low wages is a factor that contributes to the gender wage gap.

Figure 9

Distribution of academic degrees

by gender and primary academic field of study*



* For persons born in 1978-1985.

Source: Ayal Kimhi, Shoresh Institution and Hebrew University
Data: Central Bureau of Statistics

3.4 Drilling down: high-school education is the springboard to higher education

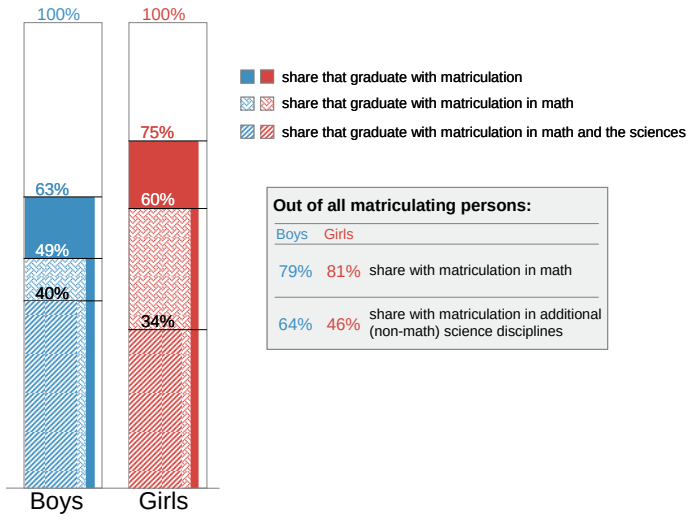
In Israel, the various academic study programs have different admission standards, meaning that the choice of an academic discipline is not open to all. It is dependent on a person's

matriculation exam achievements and psychometric exam score. This is particularly true with regard to fields of study that lead to relatively high wages, such as engineering. This also raises the question of whether men's and women's very different academic study field distributions stem from their preferences, or from their admission qualifications.

Figure 10

High school graduates with matriculation (bagrut)

as share of age group*



* For persons born in 1978-1985 in Israel or immigrated by the age of 17.

Source: Ayal Kimhi, Shoresh Institution and Hebrew University
Data: Central Bureau of Statistics

Figure 10 shows that three-quarters of female secondary school pupils took the matriculation exams, while less than two-thirds of male secondary school pupils did so. Out of all those who took the exams, a similar share (80%) of males and females were tested in math (49% of the 63% of male pupils, and 60% of the 75% of female pupils), which is a condition for receipt of the matriculation certificate. However, nearly two-thirds of the boys who took the matriculation exams were tested in at least one other scientific subject (40% of the 63%), while less than half of the girls who took the matriculation exams did so (34% of the 75%).

Matriculation exams in STEM subjects other than mathematics are not mandatory. As such, it is possible that girls consciously chose to forgo the option of pursuing an academic study track that would lead to higher future wages. The validity of this conjecture can be examined with data on the level of math study for which pupils were tested on the matriculation exams. Higher-level math matriculation studies are a prerequisite for admission to academic study programs that lead to high wages.

Figure 11 displays the distribution of the levels of the English and math matriculation exams by gender. While the shares of boys and girls taking the English exam at higher levels are

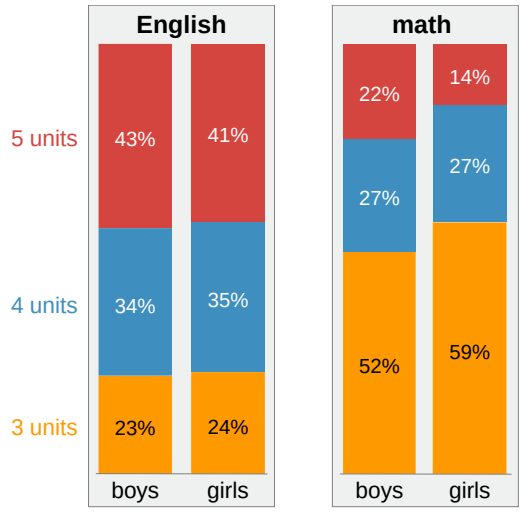
relatively similar, the share of boys tested in math at the five-unit level is over 50% greater than the share of girls. At the 4-unit math level however, the share of girls tested in math is similar to that of boys. Here the question again arises of whether girls deliberately choose to avoid the effort involved in studying for the five-unit math matriculation exam, or whether they are less prepared – in terms of skills acquired in the lower grades – for math study at the highest level, due to built-in tracking in the education system, or other reasons.

Figure 12 shows that the distribution of exam scores among those tested in math at the five-unit level is similar for boys and girls. On the other hand, girls' scores were higher – with a substantially greater share excelling – among those tested in math at levels lower than five units. This suggests that gender gaps in ability are not the main reason why girls are less likely to choose higher-level math study. It appears that boys and girls have different employment aspirations, and that their study choices differ accordingly. It would be interesting to know whether these study choices are indeed made in conscious awareness of their future employment career consequences.

Figure 11

Distribution of English and math matriculation*

among all persons matriculating with at least 3 units, by gender and level of difficulty**



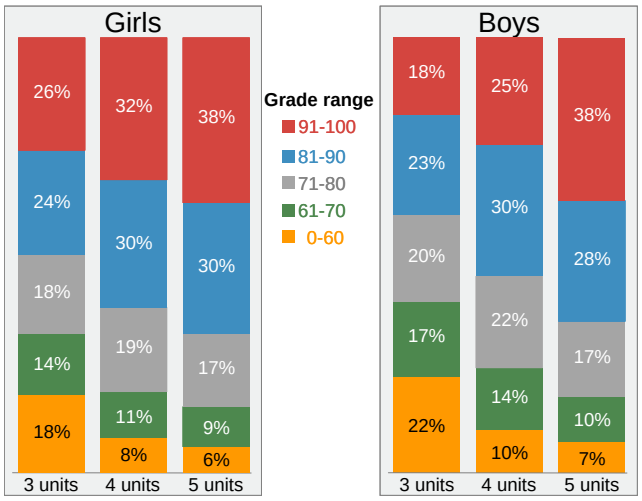
* For persons born in 1978-1985 in Israel or immigrated by the age of 17.
** 5 is the highest level of difficulty.

Source: Ayal Kimhi, Shoresh Institution and Hebrew University
Data: Central Bureau of Statistics

Figure 12

Distribution of math matriculation grades*

by gender and level of difficulty**



* For persons born in 1978-1985 in Israel or immigrated by the age of 17. Percentages do not necessarily sum to 100% because of rounding to whole numbers.
** 5 is the highest level of difficulty.

Source: Ayal Kimhi, Shoresh Institution and Hebrew University
Data: Central Bureau of Statistics

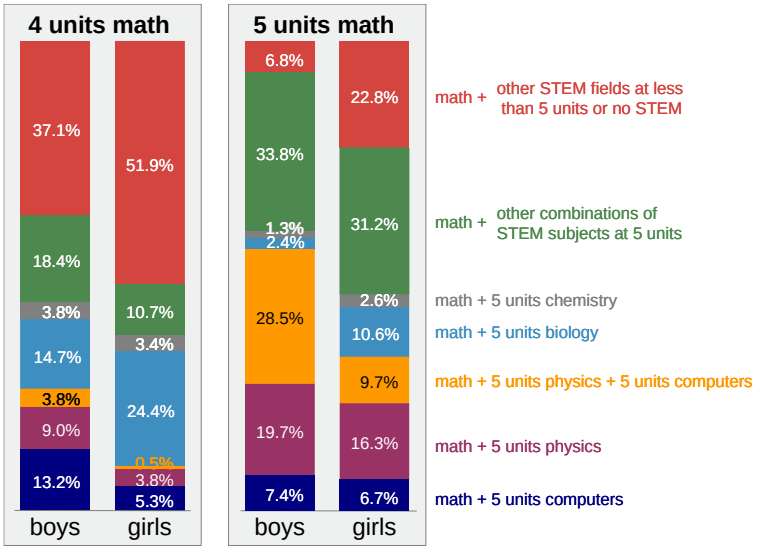
Figure 13 displays the distribution of various combinations of science fields at the highest level (5) together with math at the 4- and 5-unit levels. Those who studied math at the 5-unit level had a much higher tendency to study other scientific subjects at the 5-unit level, compared to those who studied math at the 4-unit level.[8] Gender gaps in studying science at the highest level are considerable among those who took math at both the 4-unit and 5-unit levels. There is a greater tendency for boys to study a science field at the highest level. For example, the fraction of boys studying math, physics and computers at the 5-unit level is almost three times larger than the fraction of girls. The only science field that girls tended to take at the highest level more than boys is biology, a field that often does not lead to a high wage.

Higher-level matriculation studies in math and science do not, of course, necessarily ensure high-wage employment, but they are the primary path toward an academic education in fields that lead to high-wage employment. Figure 14 shows the share

Figure 13

Distribution of STEM matriculation*

combinations of math and other stem fields at 5 units**

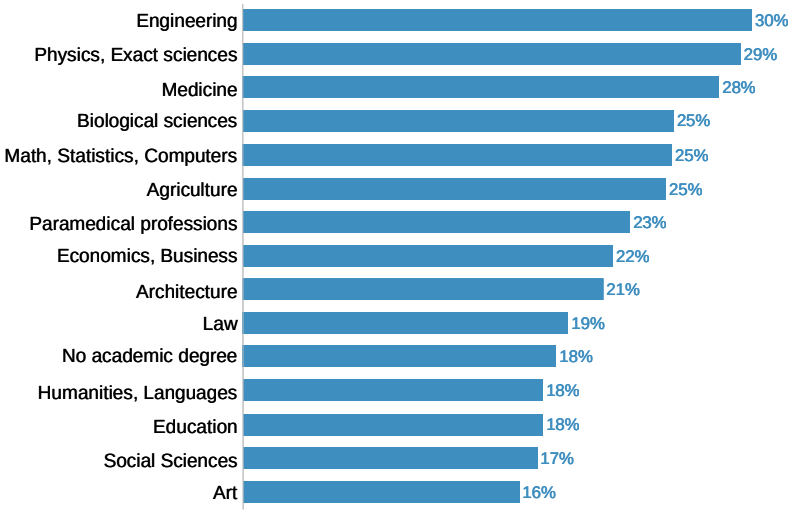


* For persons born in 1978-1985 in Israel or immigrated by the age of 17.
** 5 is the highest level of difficulty.

Source: Ayal Kimhi, Shoresh Institution and Hebrew University
Data: Central Bureau of Statistics

Figure 14

STEM courses as share of total matriculation, by academic field of study*



* For persons born in 1978-1985 in Israel or immigrated by the age of 17.

Source: Ayal Kimhi, Shoresh Institution and Hebrew University
Data: Central Bureau of Statistics

[8] Very few of those who took math at levels below 4 units also took a science field at the 5-unit level.

of math, science, and technology out of all of the pupils' matriculation exam units, by field of academic study. Those choosing academic study in fields leading to high-paying occupations were those who placed a relatively greater emphasis on STEM subjects in high school.

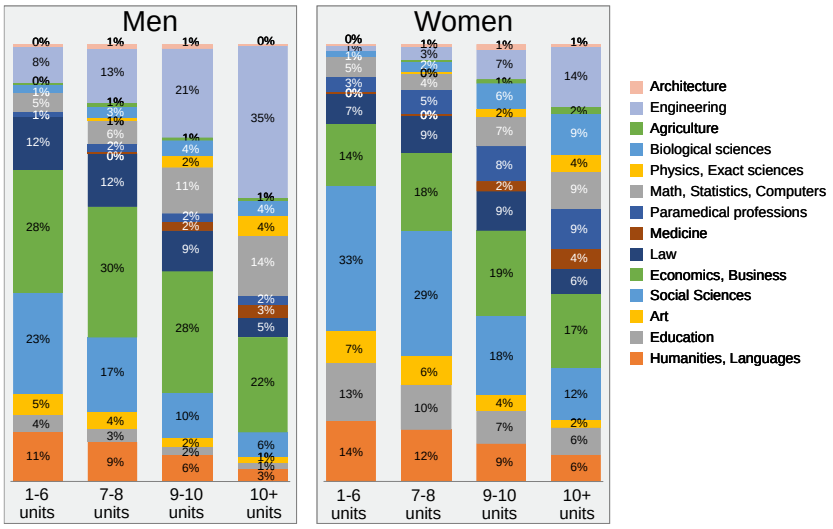
Figure 15 provides the flip side of the picture. An academic education in fields leading to higher wages like engineering, math, computers, and the sciences is more common among those who studied math and science at higher levels in high school – for both men and women. The gender difference is particularly marked in men's greater tendency to study engineering, the field that leads to the highest wages, and it is substantial at all levels of math and science matriculation study.

Figure 16 shows that there is a similar relationship between average matriculation exam score and field of academic study, among those who completed academic studies. Those with higher-than-average scores, both men and

Figure 15

Distribution of academic study fields

by gender and total matriculation levels in STEM courses*



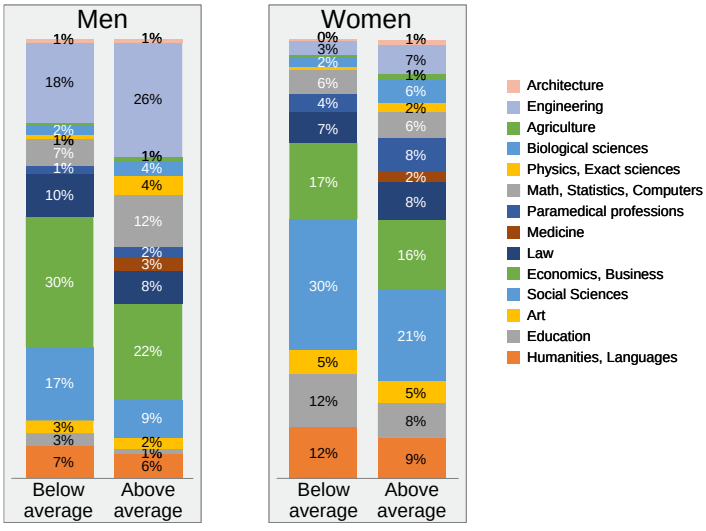
* For persons born in 1978-1985 in Israel or immigrated by the age of 17.

Source: Ayal Kimhi, Shoresh Institution and Hebrew University
Data: Central Bureau of Statistics

Figure 16

Distribution of academic study fields

by gender and average matriculation grade*



* For persons born in 1978-1985 in Israel or immigrated by the age of 17.

Source: Ayal Kimhi, Shoresh Institution and Hebrew University
Data: Central Bureau of Statistics

women, exhibited a greater tendency to study engineering, math, computers, and science – which, as noted, are the fields that lead to employment at relatively high wages.

3.5 Family composition and gender differences between Jews and Arab Israelis

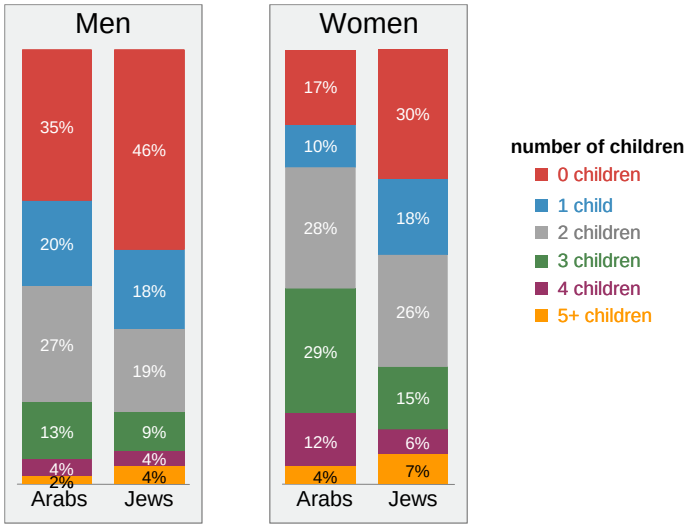
The literature points clearly to family structure as a significant factor underlying gender gaps in the labor market. This is due to the fact that women traditionally combined employment/career with household responsibilities. For many, this meant that household tasks come, at least to some degree, at the expense of career.

Family structure differences exist between the Jewish population and the Arab Israeli populations. For example, there are differences in marriage rates within the sample's age group. The share of married men is 61% for Jews and 74% for Arab Israelis, while the share of married women is 72% for Jews and 85% for Arab Israelis.[9] There are also differences in the age at which the first child is born, which is 27 and 28 for Arab Israeli and Jewish men, respectively, and 23 and 26 for Arab Israeli and Jewish women, respectively. These differences may be related to the lower Arab Israeli marriage age.

Differences in number of children exist as well, as shown in Figure 17. Arab Israelis have more children than do Jews and the difference is more pronounced among women. This is likely related to the fact that Arab Israeli society is more traditional, and to the lower age of Arab Israelis when their first

Figure 17

Distribution of children by gender and sector*



* For persons born in 1978-1985.

Source: Ayal Kimhi, Shoresh Institution and Hebrew University
Data: Central Bureau of Statistics

[9] Assuming that the share of cohabiting couples (unmarried but living together) in the Jewish population is higher than in the Arab Israeli population, which tends to be more traditional, the true gaps between Jews and Arab Israelis are likely smaller.

children are born.[10] The share of those with five or more children is actually higher among Jews, due, apparently, to the high birth rates among religious families.

4. Multivariate analysis

The descriptive analysis of the gender wage gaps reported in the previous section highlighted specific factors individually. As noted however, many of these factors are themselves related to one another, e.g., a substantial proportion of the relationship between wage and employment sector lies in the fact that certain employment sectors mainly employ workers with academic education in specific fields. The multivariate statistical analysis employed here is based on multiple linear regressions that isolate the association between the wage and each of the relevant characteristics, while controlling for all of the other characteristics. In other words, the findings of this analysis show how much the wage would change if just one of the explanatory variables changes while all of the others remain constant. In the case of employment sectors, for example, this analysis allows one to answer questions such as what the wage gaps between employees in different sectors would be if all other employee attributes were identical.

The dependent variable in the statistical analysis is the average monthly wage.[11] It is explained by about 80 different attributes, including educational characteristics, employment sector, the demographic-socioeconomic background of the worker and his/her parents, and area of residence as represented by peripherality level (Table 1in the Appendix contains a detailed list of the explanatory variables). The analysis was conducted separately for men and women.

The variables taken from the pupil files (school educational stream, study track, parental characteristics, and number of siblings) were not complete, leading to the exclusion of many observations. However, a parallel analysis performed without these variables indicated that excluding these observations did not substantially change the results. Ultimately, the analysis was

[10] It should be recalled that, due to the relatively young age of the study population, many of the subjects may not have finished having children.

[11] For practical purposes, the dependent variable in the statistical analysis is the natural logarithm of the average monthly wage.

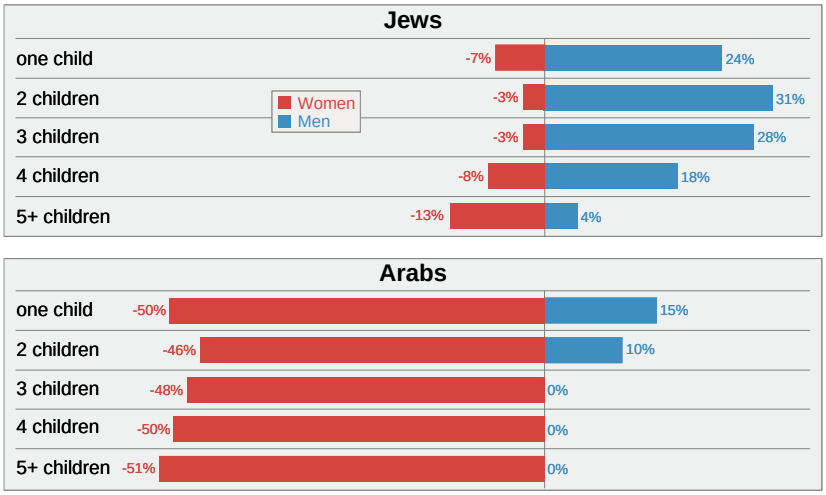
performed for nearly half a million (459,159) observations: 207,016 men and 252,143 women. The variable averages and regression coefficients appear in Appendix Table 2.

The regression results suggest that the gender wage gaps are strongly related to family attributes. This relationship differs greatly between Jews and Arab Israelis. The difference is due partly to the different family-building patterns of Jews and Arab Israelis, and partly to the fact that Jews and Arab Israelis change their labor supply differently as a response to changes in marital status and in family composition (having children).

Figure 18 shows the relationship between monthly wage and workers' number of children, after controlling for the other characteristics included in the regression. The comparison is with workers who do not have children. Overall, the wages of men with children are higher than those of men without children, while the wages of women with children are lower than those of women without children. This can be explained by the fact that, once children are born, gender specialization within the family often increases. That is, mothers tend to devote more time to childcare and other household tasks, and less time to the labor market, while fathers specialize more intensively in paid work so that they can meet the living expenses that increase with family size.[12] When fathers increase the amount of paid work that they do, this almost necessarily increases their monthly

Figure 18

Wage increment for employees with children relative to wages of employees without children*



* Regression results, after controlling for the other attributes affecting wages. For persons born in 1978-1985 in Israel or immigrated by the age of 17.

Source: Ayal Kimhi, Shoresh Institution and Hebrew University
Data: Central Bureau of Statistics

[12] This explanation is, of course, relevant only in the case of two-parent families. Single-parent families constitute a small minority within the study population.

wage. By contrast, when mothers reduce their work-hours, this almost necessarily lowers their monthly earnings, thereby widening the gender wage gap.

However, the large differences between Jews and Arab Israelis likely testify to cultural differences between the two population groups. Earlier studies have shown the relationship between women's employment after giving birth, and cultural norms (Moriconi and Rodriguez-Planas, 2021). Arab Israeli women's wages drop by about half after the first child is born. This wage gap between women with children and those without children remains relatively stable with the births of additional children. By comparison, Jewish women's wages decline by just 6% with the birth of the first child, with an additional 6% drop only after the birth of the fifth child.

Major differences can also be seen among men. Jewish men's wages climb by nearly a quarter with the birth of the first child, increase again with the second child's birth, and decline with the third and subsequent births. This latter decline may be due to the fact that the number of children is higher among less-educated men – who, in turn, tend to have lower wages. Arab Israeli men's wages rise by 15% with the birth of the first child, drop by 5 percentage points with the second child's birth, and return to their pre-fatherhood levels for those with three or more children.

Overall, wage gaps resulting from family status are observed both between Jews and Arab Israelis, and between men and women. Among the age group covered by this study, Arab Israelis have more children than do Jews, and their wages generally decline with the number of children to a greater degree than do the wages of Jews. Similarly, the women included in the study have more children than do the men, and their earnings fall with the births of their children while men's earnings rise.

A simulation based on the regression results indicates that the differences in number of children between men and women, and the gender differences in wage changes due to children, are responsible for about 20 percentage points of the gender wage gap. To this may be added the gender gap in marriage-related wage changes. The regression results show that, among people without children, married Jewish males earn nearly 17% more than unmarried Jewish males, while

married Jewish females earn only 4.5% more than unmarried Jewish females. A simulation shows that this difference is responsible for about 7 percentage points of the gender wage gap. A similar gender gap in the return on marriage also exists among Arab Israelis, and is responsible for 1.3 percentage points of the gender wage gap. Thus, the total contribution of family status to the gender wage gap amounts to 28 percentage points, or about 85% of the total gap.

Figure 5 showed that women's employment in manufacturing and infrastructures, sectors characterized by high pay, is significantly lower than men's employment in those sectors. However, the regression results indicate that those women who are employed in these sectors gain a higher return for work than do the men. For example, women employed in the manufacturing and infrastructures sectors earn 36% more than do women employed in the transportation, communication, and accommodation sectors, while the corresponding gap for men is only 31%. A simulation based on the results shows that had the women's distribution across employment sectors been similar to that of the men, the gender wage gap would shrink by nearly two percentage points.

Isolating the effect of academic education from all other wage-influencing factors shows that academic degrees from universities contribute 7% more to men's wages than do academic degrees from colleges, while university degrees contribute only 1.7% more to women's wages than do college degrees. Women have a greater tendency than men to study at universities rather than colleges (Figure 7). Had this not been the case, the gender wage gap would be even wider. However, women's and men's academic study fields differ greatly (Figure 9), and women tend to be concentrated precisely in those fields that do not lead to high wages, such as education, the humanities, and the social sciences (excluding economics).

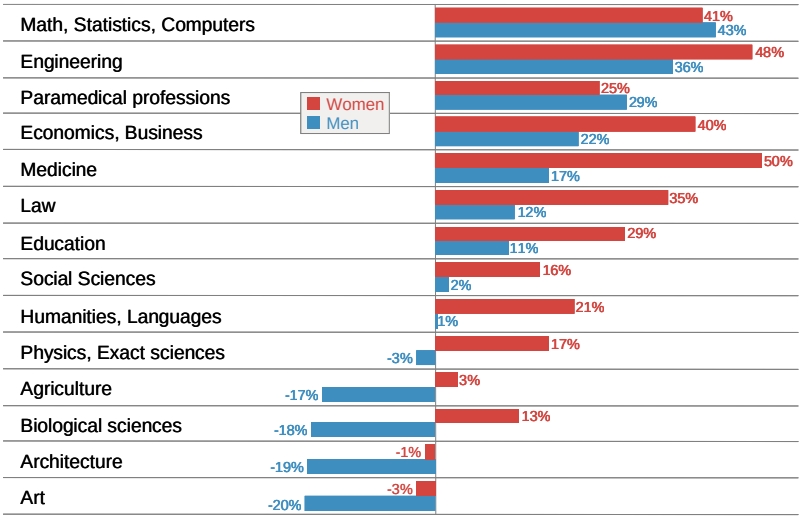
The regression results indicate that the academic study fields leading to particularly high wages for men (relative to men without academic degrees) are engineering, mathematics, statistics, and computers (Figure 19). Women who study these subjects also attain high wages compared to women without academic degrees. As Figure 9 shows, the share of men who studied engineering, math, statistics and computers is substantially higher than the share of women who pursued such

studies. Among women, degrees in medicine, economics, and business administration also garner relatively high wages, while the share of women who study economics and business administration is considerably lower than the share of men. Simulations of the findings suggest that the gender wage gap would fall by about 1.5 percentage points if women were to choose academic study fields similar to those of men.

Figure 20 presents the wage premium resulting from taking the English matriculation exam at various levels. While among boys there were no differences between those who were tested at the 3-, 4-, and 5-unit levels (recall this is after controlling for all other variables), girls have higher premiums for studying English at the 4- and 5-unit levels compared to the 3-unit level. In addition, girls' return on studying English at higher levels is much higher than boys'. This difference may be related to the fact that boys who study English at higher levels tend (more than girls) to also study STEM

Figure 19

Wage increment by type of academic degree relative to wages of persons without academic degree*

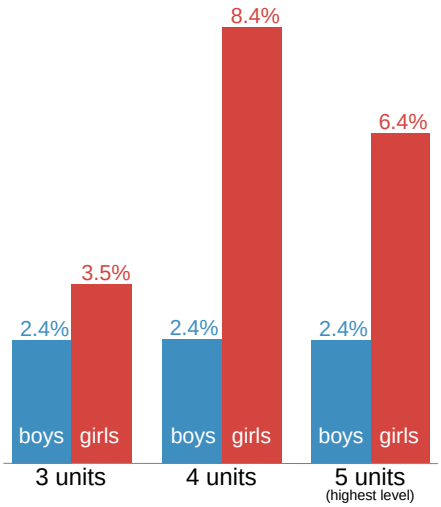


* Regression results, after controlling for the other attributes affecting wages. For persons born in 1978-1985 in Israel or immigrated by the age of 17.

Source: Ayal Kimhi, Shoresh Institution and Hebrew University
Data: Central Bureau of Statistics

Figure 20

Wage increments by matriculation units in English relative to individuals with no English matriculation*



* Regression results, after controlling for the other attributes affecting wages. For persons born in 1978-1985 either in Israel or immigrated by age 17.

Source: Ayal Kimhi, Shoresh Institution and Hebrew University
Data: Central Bureau of Statistics

subjects that lead to higher wages (details about these appear below), which makes the contribution of English to boys' future wage seem less important.

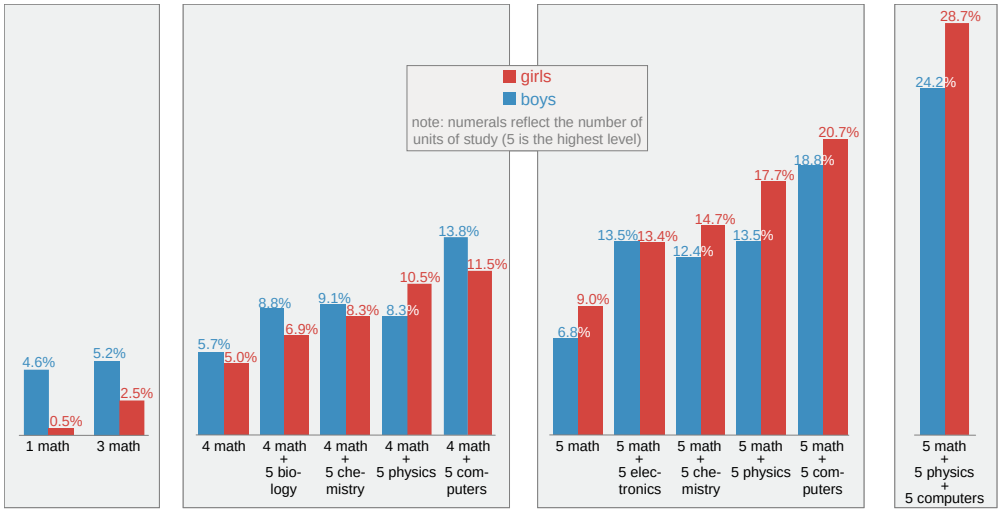
For obvious reasons, math and science matriculation studies are very helpful in terms of admission to, and success in, academic studies related to STEM subjects. After statistically controlling for all of the other variables (i.e., isolating the effect of mathematics and sciences after neutralizing the effects of the remaining variables), matriculation in math and sciences at higher levels is shown to contribute to future wages. The larger the number of units, the greater the contribution. Studying math at the 4-or 5-unit level, together with an additional STEM subject at the 5-unit level, yield the highest return in terms of wages. Figure 21 illustrates this.

Studying math at the 4-unit level without any other 5-unit STEM subject generates a wage increase of 5.7% for boys and 5% for girls, relative to those who did not study math. Adding

Figure 21

Wage increments resulting from combinations of STEM

relative to individuals with no math matriculation*



* Regression results, after controlling for the other attributes affecting wages. For persons born in 1978-1985 either in Israel or immigrated by age 17.

Source: Ayal Kimhi, Shoresh Institution and Hebrew University
Data: Central Bureau of Statistics

another 5-unit STEM subject increases these wage premiums, up to 13.8% for boys and 11.5% for girls for those who studied computers at the 5-unit level.

Math at the 5-unit level produces even higher wage premiums for those who did not study another 5-unit STEM subject: 6.8% more for boys and 9% more for girls, compared to those who did not take the math matriculation exam. Here, too, these returns increase considerably when adding another 5-unit STEM subject. Studying computers at the 5-unit level, in addition to 5-unit math, increases the wage returns to 18.8% for boys and 20.7% for girls. There is a non-negligible group of pupils (mostly boys) who study math, physics and computers at the 5-unit level. The future wage of those is higher by 24.2% (for boys) and 28.7% (for girls) than that of those who did not take the math matriculation exam.

The contribution of math to future wages at the 4-unit level is greater for boys than for girls (except for the combination of 4 units math with 5 units physics). The picture is reversed with regard to math at the 5-unit level (except for the combination of 5 units math with 5 units electronics). Furthermore, math at the 5-unit level entails a considerable wage premium compared to math at the 4-unit level, and this premium is especially large for girls. As shown in Figure 11, boys tend to study math at higher levels than girls, and tend to add another 5-unit STEM subject more than girls (with the exception of biology, which was not found to be contributing to future wages over and above the contribution of mathematics). Thus, had there been equal shares of boys and girls studying math and another STEM subject at the 5-unit level, the gender wage disparity would have been smaller. Moreover, since the return to studying math at the 5-unit level is higher for girls, even an increase in equal proportions (for boys and girls) of the fraction of pupils taking the math exam at the 5-unit level could further reduce the wage gap.

5. Summary and conclusions

The gender wage gap among full-time employees was over 22% in 2018, far beyond the OECD average – and it has been trending upward since the beginning of the past decade. This

study focuses on the gender wage gap for the period 2012-2016 among employees at the beginning of their careers, a stage when they are also founding and enlarging their families. The monthly wage gap between men and women in this case reaches 33% (including part-time workers). This study finds that the lion's share of the disparity is attributable to family attributes. More women than men at the relevant ages are married, and the number of children is greater for women than for men. The marriage premium (the monthly wage gap between married and non-married persons) for men is considerably higher than for women. The monthly wage of men with children is higher than that of men without children, whereas for women the opposite is true. The monthly wage decline following the birth of children is particularly large among Arab Israeli women. The birth of the first child appears to result in greater specialization within the household, with the mother takeing more responsibility of housework and most of the breadwinning burden falling on the father. Due to mothers' work-hour reductions and fathers' work-hour increases, monthly wages decline among the former and rise among the latter. This indicates that the wage disparity between relatively young men and women widens substantially with the birth of their children.[13]

Among the other factors underlying the gender wage gap are the facts that women have a lower tendency (a) to study math at the 5-unit level, (b) to study other science fields, (c) to pursue academic study in fields that lead to high wages such as engineering, mathematics, and computers, and (d) to be employed in high-paying sectors such as manufacturing and infrastructures. Equalization of men's and women's education and employment sector distribution could reduce the gender wage gap by about 4.5 percentage points. This is not a negligible figure, although it amounts to just a small fraction of the present gender wage gap.

One of the limitations of the dataset used in this study is that it does not provide information on work-hours. As a result, it is not possible to distinguish between those who earn a high average monthly wage due to special skills, and those who earn high wages because they work more hours. One may assume that the large gender wage gap among young married people, and especially

[13] Yakin (2021) found that about half of the gender wage gap is explained by parenthood.

among young married people with children, is due to work-hour disparities, and not to work-skill gaps between the men and the women. However, one cannot rule out the possibility that those young women who marry at earlier ages and become mothers at earlier ages are also those whose work skills are lower and who therefore have lower earning ability. To the extent that this might be true, then the skill disparities between men and women are responsible for at least part of the gender wage gap arising from employment-pattern changes due to marriage and the birth of children – meaning that the skills gap, and especially the subjects in which higher-level matriculation and academic studies are pursued, bear greater importance than is directly attributed to them in this study. Another limitation is the lack of occupational information in the dataset. Earlier research showed that occupation is a mediating factor between field of academic study and labor market achievements (Sloane, Hurst, and Black, 2021).

The policy recommendations that emerge from this study involve two issues, parallel to the empirical conclusions: the skills gap, and specialization within the household. It may be true that girls' lower tendency to study subjects that lead to high-wage employment stems precisely from the fact that they expect to devote more of their time to household tasks later on, making the investment required in those fields of study less worthwhile for them than for men. However, this tendency may also arise from normative biases transmitted to them by their parents, teachers, and society as a whole. Thus, ways should be found, and resources dedicated, to encouraging girls to expand their math and science studies, both in upper secondary school and in higher education.

The kind of policy required to reduce women's tendency to specialize in household tasks once they marry and, in particular, once they have children, is multi-layered. The first layer is taxation. Increasing tax benefits for working women would likely encourage women to work more hours and aspire to better-paying employment. Another potential means of helping those women who have not reached taxable wage levels is to increase what is referred to in Israel as the "work grant" (also commonly known as the negative income tax) paid to low wage earners in accordance with family status criteria. This policy change may also increase women's labor market

participation (a topic not addressed by this study), which would likely lead to better-paying employment later on in their employment career. Many researchers (Ben-David, 2010; Flug, 2015; Achdut and Stravchinsky, 2016) have noted that Israel's work grant is considerably smaller than that paid in the United States (referred to there as the Earned Income Tax Credit), evidently making it less effective. Reducing the gender wage gap constitutes yet another reason to increase the work grant, since such an increase would benefit women more than men (there are more women who earn low wages than men).

The second layer is that of creating better conditions for mothers interested in working a substantial number of hours. The main obstacle in this regard is Israel's early childhood education system, where there is much room for improvement in terms of availability, level of service, and cost. Much has been written about the importance of early childhood education for children's development and future (e.g., Heckman, 2006; Shavit et al., 2018). However, this importance is also due to the fact that it allows women to fulfill their labor market potential. For example, extending early childhood frameworks into the afternoon hours would likely enable many women to increase their work-hours. This is, of course, also true for other educational frameworks. If primary schools were to switch from a schedule of six short days per week to one of five longer days, this would similarly help mothers realize their abilities in the labor market.

An objective of making day care subsidization conditional on both parents' employment (for two-parent families) would be a step in this direction. An additional policy mechanism is paternity leave. Israel gives fathers the option of six consecutive vacation days following the birth of a child, in part at the expense of sick days, and in part at the expense of annual vacation. In many other countries, paternity leave is more generous and more common (Koslowsky et al., 2021). Beyond the fact that paternity leave provides young mothers with relief in real time, studies show that it causes fathers to forge deeper connections with their children and to be more involved in household tasks in the long term – which makes it easier for their wives to realize their earning potential (e.g., Cornejo et al., 2018).

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Appendix Table 1

Explanatory variables in the wage regression

Educational characteristics
Number of English matriculation units[1]
3
4
5
Number of Math matriculation units[2]
1-2
3
4
5
4 math units + 5 physics units
4 math units + 5 chemistry units
4 math units + 5 biology units
4 math units + 5 computers units
5 math units + 5 computers units
5 math units + 5 physics units
5 math units + 5 physics units + 5 computers units
5 math units + 5 chemistry units
5 math units + 5 electronics units
5 math units + 5 biology units
Number of STEM matriculation units
Number of non-STEM matriculation units[3]
Matriculation grade[4]
Passing matriculation
School stream
National (base group)
National-religious
Non-national[5]
School track
Non-vocational (base group)
Vocational
Unknown
Psychometric grade
Type of academic institution
Non-research college (base group)
Research university
Academic field
Humanities and languages
Education
Art
Social sciences
Economics and business administration
Law
Medicine
Paramedical occupations
Mathematics, statistics and computer sciences
Physical sciences
Natural sciences
Agriculture
Engineering
Architecture
Work characteristics
Primary employment sector
Agriculture, forestry and fishery
Manufacturing, mining, water and electricity
Construction
Trade

(continued on next page)

Appendix Table 1 (continued)

Explanatory variables in the wage regression

Primary employment sector (continued)
Transportation, communication and hospitality
Financial, professional, scientific and technical services
Administration, health, education and welfare
unknown sector (base group)
Demographic characteristics
Birth year
Nationality
Jews and others (base group)
Arabs
Dummy variable for immigrants who went to school in Israel[6]
Number of years in Israel (for immigrants)
Family characteristics (as of 2015)
Arab with 1 child
Arab with 2 children
Arab with 3 children
Arab with 4 children
Arab with 5+ children
Jewish with 1 child
Jewish with 2 children
Jewish with 3 children
Jewish with 4 children
Jewish with 5+ children
Age when first child was born - Arab
Age when first child was born - Jewish
Married - Arab
Married - Jewish
Peripheriality index[7] as of 2015
Parental characteristics
Mother's country of birth
Asia (excluding former USSR)
Africa
Europe (excluding former USSR)
North America or Oceania
Central or Southern America
former USSR
Age of mother when pupil was born
Age of father when pupil was born
Number of siblings when the pupil was in 12th grade
Years of education - father
Years of education - mother
Father's income percentile when the pupil was 17
Mother's income percentile when the pupil was 17

[1] English studies of less than 3 units did not have a statistically significant relationship with wages.

[2] The emphasis is on the matriculation examination in mathematics since previous research has shown that it is the examination that best predicts future wages (Ben-David and Kimhi, 2020). The examinees at 2 units were merged with those examined at one unit since they were so few in number.

[3] Excluding English.

The score on each exam was reported according to scores ranges and converted to a numerical value equaling the midpoint of each range.

[5] Includes mainly ultra-Orthodox schools.

[6] Those who studied in schools abroad were not included in the analysis since school characteristics did not exist for them.

[7] reflects the extent to which its location is central in terms of distance from Tel Aviv and in terms of population concentration (Tsibel, 2009).

Appendix Table 2

Variable means and regression coefficients

Variable	Variable means		Regression coefficients	
	Females	Males	Females	Males
3 English units	0.1679	0.1498	0.0345 ***	0.0237 ***
4 English units	0.2870	0.2512	0.0836 ***	0.0238 ***
5 English units	0.3475	0.3349	0.0636 ***	0.0237 ***
1-2 math units	0.0463	0.0576	0.0050	0.0462 ***
3 math units	0.4193	0.3323	0.0245 ***	0.0524 ***
4 math units	0.2115	0.1826	0.0498 ***	0.0575 ***
5 math units	0.1101	0.1551	0.0905 ***	0.0680 ***
4 math units + 5 physics units	0.0079	0.0275	0.0552 ***	0.0258 ***
4 math units + 5 chemistry units	0.0419	0.0292	0.0330 ***	0.0334 ***
4 math units + 5 biology units	0.0713	0.0435	0.0197 ***	0.0308 ***
4 math units + 5 computers units	0.0157	0.0391	0.0651 ***	0.0805 ***
5 math units + 5 computers units	0.0145	0.0225	0.1165 ***	0.1201 ***
5 math units + 5 physics units	0.0291	0.0568	0.0864 ***	0.0671 ***
5 math units + 5 physics units + 5 computers units	0.0104	0.0445	0.1969 ***	0.1737 ***
5 math units + 5 chemistry units	0.0393	0.0347	0.0561 ***	0.0559 ***
5 math units + 5 electronics units	0.0038	0.0126	0.0437 **	0.0672 ***
5 math units + 5 biology units	3.4777	4.1154	0.0054 ***	0.0029 ***
Number matriculation units excluding math and sciences	13.3407	11.3627	-0.0014 **	-0.0012 **
Matriculation grade	73.7675	66.5442	0.0009 ***	0.0008 ***
Passing matriculation	0.6187	0.5157	0.0379 ***	0.0084 **
National-religious school stream	0.1470	0.1440	-0.0533 ***	-0.1187 ***
Non-national school stream	0.0767	0.0527	0.0537 ***	-0.3521 ***
Unknown school track	0.0076	0.0224	-0.0130	-0.0393 **
Vocational school track	0.2504	0.3315	-0.0201 ***	0.0229 ***
Psychometric grade	294.5465	281.1682	0.0001 ***	0.0000
University degree	0.2740	0.2171	0.0170 ***	0.0698 ***
Humanities and languages	0.0507	0.0243	0.2112 ***	0.0141
Education	0.0500	0.0088	0.2852 ***	0.1148 ***
Art	0.0236	0.0095	-0.0260 *	-0.1893 ***
Social sciences	0.1232	0.0478	0.1600 ***	0.0303 ***
Business administration	0.0805	0.1004	0.3932 ***	0.2213 ***
Law	0.0382	0.0338	0.3537 ***	0.1293 ***
Medicine	0.0071	0.0067	0.4934 ***	0.1778 ***
paramedical occupations	0.0290	0.0074	0.2519 ***	0.2982 ***
Mathematics, statistics and computer sciences	0.0288	0.0335	0.3910 ***	0.4153 ***
Physical sciences	0.0060	0.0089	0.1608 ***	-0.0345
Natural sciences	0.0196	0.0118	0.1356 ***	-0.1741 ***
Agriculture	0.0033	0.0029	0.0416 *	-0.1534 ***
Engineering	0.0248	0.0773	0.4660 ***	0.3554 ***
Architecture	0.0032	0.0025	-0.0116	-0.1848 ***
Agriculture, forestry and fishery	0.0097	0.0129	0.3561 ***	0.3234 ***
Manufacturing, mining, water and electricity	0.0617	0.1216	0.7277 ***	0.5781 ***
Construction	0.0157	0.0547	0.5345 ***	0.3547 ***
Trade	0.0997	0.1230	0.5164 ***	0.4239 ***
Transportation, communication and hospitality	0.1265	0.1710	0.3641 ***	0.2674 ***
Financial, professional, scientific and technical services	0.2125	0.2424	0.6672 ***	0.5870 ***
Administration, health, education and welfare	0.3627	0.1579	0.4411 ***	0.3369 ***

(continued on next page)

* coefficient significant at the 10% level
** coefficient significant at the 5% level
*** coefficient significant at the 1% level

Appendix Table 2 (continued)

Variable means and regression coefficients

Variable	Variable means		Regression coefficients	
	Females	Males	Females	Males
Born in 1979	0.1147	0.1141	-0.0310 ***	-0.0504 ***
Born in 1980	0.1246	0.1250	-0.0609 ***	-0.0838 ***
Born in 1981	0.1170	0.1186	-0.1079 ***	-0.1220 ***
Born in 1982	0.1348	0.1336	-0.1341 ***	-0.1663 ***
Born in 1983	0.1333	0.1341	-0.1769 ***	-0.2060 ***
Born in 1984	0.1317	0.1318	-0.2210 ***	-0.2528 ***
Born in 1985	0.1356	0.1374	-0.2671 ***	-0.3011 ***
Arab	0.1377	0.1565	-0.1078 ***	0.0338 ***
Immigrant who studied in Israel	0.0985	0.0870	-0.0293 *	0.0581 ***
Immigrant's years in Israel	2.6805	2.3579	0.0011 **	-0.0013 *
Arab with 1 child	0.0139	0.0310	-0.4753 ***	0.1545 ***
Arab with 2 children	0.0386	0.0416	-0.4361 ***	0.1091 **
Arab with 3 children	0.0397	0.0203	-0.4521 ***	0.0538
Arab with 4 children	0.0164	0.0061	-0.4682 ***	-0.0087
Arab with 5+ children	0.0056	0.0029	-0.4844 ***	-0.0644
Jewish with 1 child	0.1517	0.1542	-0.0633 ***	0.2366 ***
Jewish with 2 children	0.2207	0.1628	-0.0225	0.3061 ***
Jewish with 3 children	0.1264	0.0728	-0.0238	0.2806 ***
Jewish with 4 children	0.0511	0.0321	-0.0737 ***	0.1777 ***
Jewish with 5+ children	0.0565	0.0342	-0.1243 ***	0.0434
Age when first child was born - Arab	2.7526	2.8699	0.0165 ***	-0.0053 ***
Age when first child was born - Jewish	16.3381	13.0198	0.0014 *	-0.0047 ***
Married - Arab	0.1163	0.1156	-0.0062	0.1061 ***
Married - Jewish	0.6166	0.5162	0.0455 ***	0.1664 ***
Peripheriality index as of 2015	1.5322	1.5360	0.0316 ***	0.0163 **
Mother born in Asia	0.0610	0.0566	0.0073	-0.0094 *
Mother born in Africa	0.1174	0.1062	0.0430 ***	0.0439 ***
Mother born in Europe	0.0537	0.0573	-0.0018	0.0006
Mother born in North America or Oceania	0.0127	0.0132	-0.0176 *	-0.0406 ***
Mother born in Central or Southern America	0.0115	0.0122	-0.0227 **	-0.0418 ***
Mother born in the former USSR	0.0358	0.0339	-0.0185 ***	-0.0135 **
Age of mother when pupil was born	27.5630	27.6294	-0.0031 ***	-0.0027 ***
Age of father when pupil was born	30.9350	31.0050	0.0007 **	0.0006 *
Number of siblings when the pupil was in 12th grade	2.9826	2.8678	0.0007	-0.0009
Years of education - father	12.3763	12.4787	0.0017 ***	-0.0028 ***
Years of education - mother	12.0262	12.0894	-0.0011 *	0.0002
Father's income percentile when the child was 17	40.5275	42.6553	0.0002 ***	0.0007 ***
Mother's income percentile when the child was 17	36.0401	36.8772	0.0007 ***	0.0002 ***
Intercept	1	1	8.0756 ***	8.5308 ***
R squared			0.3975	0.3716
Number of observations			252,143	207,016

* coefficient significant at the 10% level
** coefficient significant at the 5% level
*** coefficient significant at the 1% level