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WOMEN IN THE LABOR FORCE: THE IMPACT OF EDUCATION ON EMPLOYMENT PATTERNS AND WAGES

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נשים בשוק העבודה: השפעת ההשכלה על דפוסי התעסוקה ועל השכר

חיה שטייר ואפרת הרצברג

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Women in the Labor Force

The Impact of Education on Employment Patterns and Wages

Haya Stier and Efrat Herzberg*

Abstract

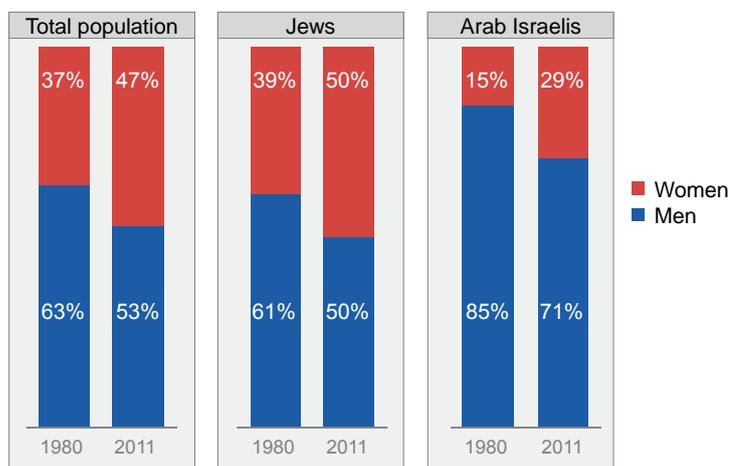
This chapter looks at changes that have taken place in Israel's female labor force over the past 30 years, with a focus on education and its impact on women's labor force involvement. Education plays a major role in explaining women's labor force participation patterns as well as the changes that have occurred both in women's economic activity and in the composition of the labor force. Although there has been a rise in the total female labor force participation rate, the economic activity of less-educated women is declining. This situation is leading to polarization between highly-skilled women – who enjoy many employment opportunities and suitable working conditions – and women of lower skill levels. At the same time, a significant rise in higher education rates has not necessarily created new employment opportunities. Some academic-educated women have managed to enter traditionally male professional and administrative occupations that offer good working conditions, opportunities for advancement, and a high relative wage. However, the growth rate of higher education appears to be exceeding that of demand for professional occupations, and many highly-educated women are settling for occupations that formerly required lower levels of skill.

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In recent decades, the Western world's female labor force, including that of Israel, has been trending upward. Currently, 54 percent of all Israeli women aged 15 and over participate in the labor force, compared with 29 percent at the beginning of the 1970s. Jewish women exhibit an even higher participation rate (58 percent). Men's participation rates are higher, but when attention is focused on Jews of prime working age (25 to 54) one finds that the difference is miniscule: 83 percent of all women and 84 percent of all men take part in the labor force. These changes are generally attributed to a significant rise in women's education levels, increased demand for female labor reflecting expansion in the service and white-collar sectors, and a concomitant rise in the wages offered to them (Kimhi, 2011). Yet another factor is the changes that have occurred in the family sphere, in terms of age at first marriage and, in particular, at birth of first child, as well as in terms of gender related division of labor between paid and unpaid work. Most of those who are currently joining the labor force are married women and mothers of young children. In most Israeli families, as well as families in the majority of industrialized countries, both partners participate in the labor force (Stier, 2010).

The rise in women's labor force participation rates has significance both in terms of labor force composition and in terms of the attributes of women in the labor force. The large-scale influx of women into the labor force changed the gender composition of the labor force in a significant way: from a minority group that constituted only one-third of the labor force 30 years ago, women have come to account for almost half of today's labor force, as shown in Figure 1 – that is, the labor force has become more balanced in terms of its gender breakdown. Within the Jewish population, whose female participation rates are higher, the labor force is fully balanced in terms of gender, while among Arab Israeli workers, despite an increase in women's relative labor-market share, women are still a minority (29 percent).

Figure 1
Israeli labor force, by gender
1980-2011



Source: Haya Stier and Efrat Herzberg, Taub Center

Data: Central Bureau of Statistics, *Labor Force Survey*

1. Changes in Women's Employment Over Time

As noted, women's labor force participation rates in recent decades have risen significantly. Figure 2 presents participation rates by sector for the female population during the period 1980-2011.

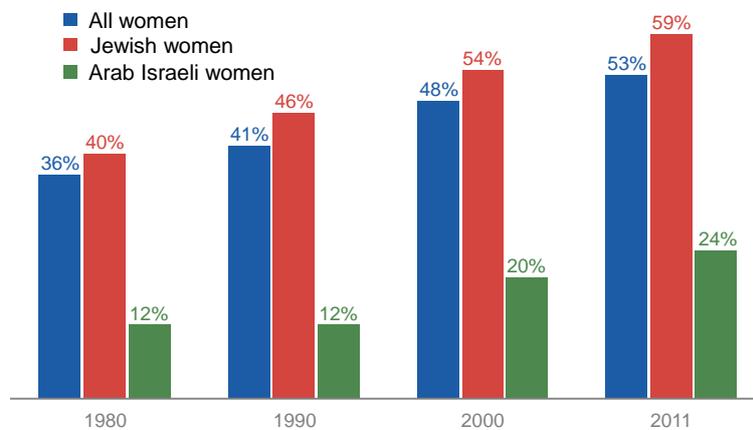
Figure 2 shows that, over the period in question, labor force participation rates of all women aged 15 and over increased: while one-third of all women participated in the labor force in 1980, 53 percent are in the labor force today. When the figures for Jewish and Arab Israeli women are compared, there is a very significant disparity throughout the period: in 1980,

40 percent of all Jewish women participated in the labor force, versus 12 percent of Arab Israeli women – a gap of 28 percentage points. Despite the increase experienced by both groups – the Arab Israeli women’s participation rate has actually doubled over the past 30 years – the gaps have continued to widen, reaching 34 percentage points in 2000 and 35 percentage points in 2011.

Figure 2

Female labor force participation rates by sector

as a percent of all women* in each population group, 1980-2011



* All women aged 15 and over

Source: Haya Stier and Efrat Herzberg, Taub Center

Data: Central Bureau of Statistics, *Labor Force Survey*

As noted, despite the differences between the two groups, the rise in labor force participation characterizes Israel’s entire female population. It is related to changes in the composition of women’s human capital (especially the rise in education levels), but also to structural changes in the labor force, in household organization, in the economic situation and in gender-role norms (Stier, 2010). The most obvious change is the rise in women’s

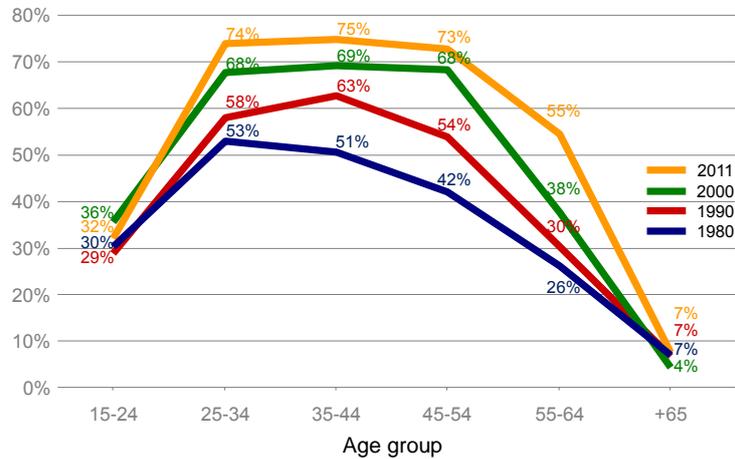
education levels, especially their entry at high rates into the higher education system (Shavit and Bronstein, 2011). At the same time there have been changes in the structure of the industrial sector: growth in the social service and white-collar sectors, as well as a transition to high-tech industries, has increased demand for skilled female labor (Stier, 2006). These processes have emerged in most industrialized countries, alongside legislation and institutional arrangements, particularly ones aimed at increasing gender equity and improving the labor force's accessibility to mothers. The increased demand for female labor, as well as the rise in education levels and in the number of opportunities open to women, explain not only the rise in women's labor force participation, but also the pattern of their lifetime labor force participation.

Nevertheless, women's employment patterns are still influenced by family constraints, particularly the presence of children. These constraints are reflected both in the pattern of women's labor force involvement over the course of their lives and in the intensity of that involvement.

Figure 3 presents labor force participation rates of different age groups throughout the period under examination – inasmuch as age is closely related to the family's life stage, and especially to the presence of young children. Age is also an important attribute in the measurement of women's employment stability throughout their lives. In the past, many women exited the labor force after their children were born. The rise in education levels and economic opportunity, as well as employment-supportive policies embraced by most industrialized countries, has made it more worthwhile for women to join the labor force even when their children are young. As employment stability is increasing for women throughout the Western world, most return to the labor force a short time after their children are born.

Figure 3 reflects an upward trend in the labor force participation of all female age cohorts, and especially those of prime working age (25-54). Since 2000, the participation rates of the three age groups between 25 and 54 have remained steady, indicating women's willingness and ability to be a part of the labor force throughout their prime working years.

Figure 3
Female labor force participation rates by age
 as a percent of all women in each age group, 1980-2011

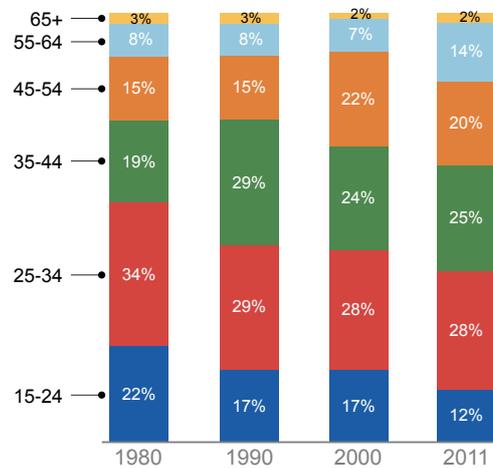


Source: Haya Stier and Efrat Herzberg, Taub Center

Data: Central Bureau of Statistics, *Labor Force Survey*

When the female labor force's age distribution is examined (Figure 4), it shows that the labor force is aging: the proportion of young women in the labor force (aged 15-24) dropped from 22 percent to 12 percent – due, apparently, to an increased share of those enrolled in institutions of higher learning and to the deferred labor force entry that characterizes the entire labor force (men and women). There has also been a decline in the relative share of women aged 25-35 (from 34 percent to 28 percent), while the 35-64 age group increased its share.

Figure 4
Distribution of female labor force by age, 1980-2011



Source: Haya Stier and Efrat Herzberg, Taub Center

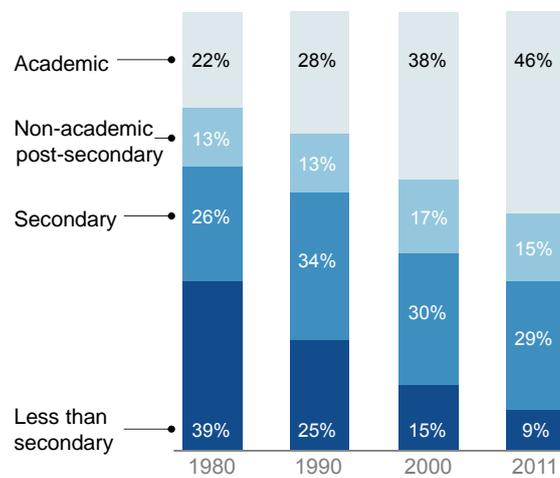
Data: Central Bureau of Statistics, *Labor Force Survey*

2. Women's Employment and Education

Education is of great importance as it is linked to entry into the labor force, to employment intensity, and to the quality of the economic opportunities that are open to women. While the influence of age on women's labor force participation rates since 2000 has been exceedingly stable, this is not the case with regard to education level. As noted previously, Israeli women's education levels rose significantly over the period in question. A particularly steep rise occurred in the percentage of those studying in institutions of higher education since the early 1990s, a period characterized by an overall expansion of the higher education system (Addi-Raccah and Mcdossi, 2009; Shavit and Bronstein, 2011). These trends are also reflected

in the female labor force's educational composition, as shown in Figure 5. In 1980, 39 percent of all women in the labor force had less than a secondary education, while today this group accounts for only 9 percent of the female labor force. The percentage of those with an academic education rose from 22 percent to 46 percent between the two points in time. The relative proportion of the two in-between groups – those with full secondary education and those with non-academic post-secondary education – changed very little between 1980 and 2011.

Figure 5
Distribution of female labor force by education, 1980-2011



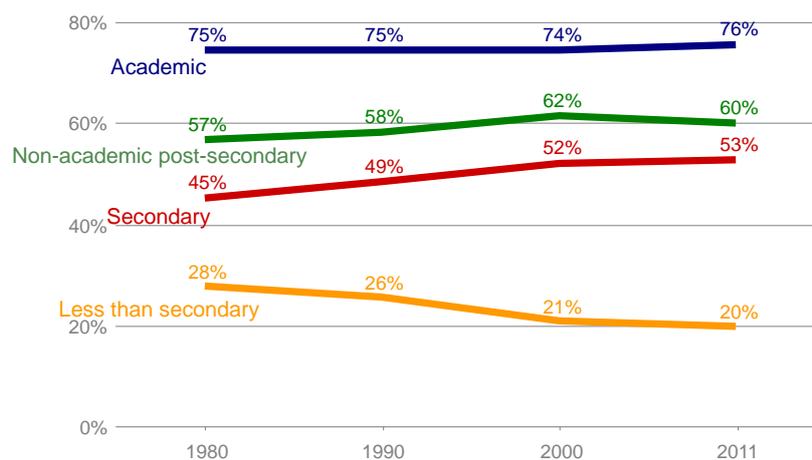
Source: Haya Stier and Efrat Herzberg, Taub Center

Data: Central Bureau of Statistics, *Labor Force Survey*

Although the change in the labor force's educational composition reflects the overall rise in Israeli higher education rates, it also stems from differences in women's participation rates across education-level groups. Education, particularly for women, is the main factor that explains the

degree of labor force involvement. Higher education is linked to relatively higher wage levels. Women, due to their role in the household and as primary childcare providers, weigh the advantages of paid work against the cost of alternative care for children and home (family or center-based child care, paid housework help, etc.). For women with higher education and high labor force wages, it is more feasible to participate in the labor force, as their earnings exceed the costs of domestic help and alternative childcare. Moreover, as noted, structural changes that have taken place in the labor force have enhanced the opportunities enjoyed by women with higher education to an even greater degree and, by contrast, limited the opportunities available to women with lower education levels – to the point that today there is not much demand for their labor. The participation rates of women with various levels of education can be seen in Figure 6.

Figure 6
Female labor force participation rates by education, 1980-2011



Source: Haya Stier and Efrat Herzberg, Taub Center

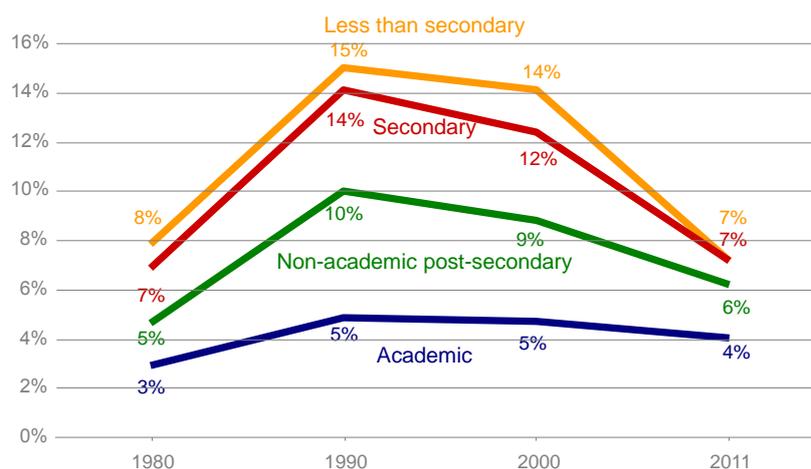
Data: Central Bureau of Statistics, *Labor Force Survey*

The data presented in Figure 6 indicate interesting differences between the groups from a long-term perspective. As may have been anticipated, throughout the period in question the labor force participation rate of women with a secondary education and higher increased, while the participation rate of less-educated women declined. Moreover, there was a change in the degree of the disparities between women in the different education-level groups. Throughout the period under study, more-educated women participated in the labor force at higher rates than did less-educated women. For example, during the 1980s three-fourths of all women with an academic education participated in the labor force, versus 28 percent of all women with less than a secondary education and 45 percent of all women with a secondary education. Over time, the gap narrowed between women with a secondary education and those with a post-secondary education: in 2011, 53 percent of women with a secondary education, 60 percent of women with non-academic post-secondary education, and 76 percent of women with higher education participated in the labor force. By contrast, the participation rate of less-educated women dropped; at present, only one-fifth of women with less than a secondary education are part of the workforce. In other words, the economic activity of women of different education levels has undergone a polarization, the main disparity being between women who have completed at least 12 years of schooling and those who have not.

It should be remembered that not all women who wish to do so manage to find work. It is possible that as demand for unskilled labor drops, less-educated women will face greater employment difficulties. Figure 7 presents unemployment rates by education level over the period in question. It can be seen that, throughout this time period, the unemployment rate of women with higher education is very low: 3 percent for those with an academic education and 5 percent for those with post-secondary education at the beginning of the period (1980). During the 1990s, unemployment rates rose, particularly among women with post-secondary education (10 percent in 1990). As unemployment declined in the economy as a whole, the unemployment rates of women in this group dropped as well, to 6 percent in 2011 (and to 4 percent for those with academic education). This pattern

shows that women with academic backgrounds, who enjoy high demand in the labor force, have been less affected than other workers by economic changes and fluctuations in the total unemployment level.

Figure 7
Female unemployment rates by education, 1980-2011



Source: Haya Stier and Efrat Herzberg, Taub Center

Data: Central Bureau of Statistics, *Labor Force*

This conclusion is reinforced when unemployment rates of women with a secondary education and less are examined. At the beginning of the period in question, the unemployment rates of both groups were similar and relatively high – 7 percent for women with secondary education and 8 percent for women with less than secondary education in 1980. In 1990, unemployment rose sharply to 14 percent among those with a secondary education and to 15 percent among those with less than a secondary education. By the end of the first decade of the 2000s, however, there had been a dramatic decline in unemployment – in that year 7 percent of both

those with less than a secondary education and those with a secondary education were unemployed.

In summary, education level has a significant influence on levels of economic vulnerability. The demand for female workers with secondary education or less is highly sensitive to fluctuations in the economy as a whole, hinting at lower stability and lower levels of occupational security. During periods of economic growth and overall decline in unemployment, the gaps between the various groups of women become smaller, but when the total unemployment rate rises, the gaps widen.

3. The Impact of Family on Women's Employment

Women's labor force participation rates are affected by family constraints, particularly the presence of young children. A lack of suitable day care centers and their high cost, along with the need to invest time in intensive childcare, all affect parental employment patterns, and particularly those of women. In Western countries, it is women who engage in caregiving activity; dozens of studies that examined time allocation within families (e.g., Bianchi et al., 2007) showed that women are the ones who shoulder the burden of childcare and housework. The presence of young children limits women's ability to work, and explains, to a large degree, why women's employment rates are still lower than those of men and why women's part-time employment rates are still exceedingly high. In this context, it is interesting to consider how the family influences women of differing skill levels, and whether the impact exerted by the presence of young children has changed over the period in question.

As noted previously, skills can mitigate the impact of family with regard to opportunity costs for childcare or housework. It is possible that less-educated women, who earn lower wages and whose employment opportunities are limited, will be less inclined to participate in the labor force or will allocate fewer work-hours to the market, inasmuch as the cost of care for young children outside the home often exceeds these women's

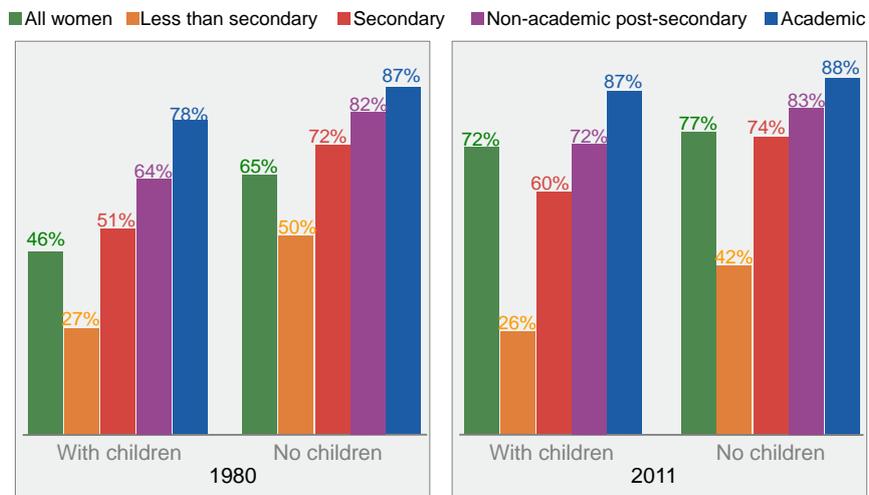
earnings. By contrast, highly skilled women with opportunities for developing lucrative careers will be less affected by the presence of children, as their relatively high wages and expectations of increased future wages enable them to purchase care for their children.

Accordingly, the participation rates of two groups of women aged 25-45 were examined: those with children aged 4 and under and those with no children under age 4. Figure 8 presents the participation rates of these groups within the total population and for four education-level groups: less than secondary, secondary, non-academic post-secondary, and academic. Two main conclusions may be drawn from Figure 8. Firstly, as might have been expected, the impact of children on mothers' employment status is linked to education level. In 1980, only 27 percent of less-educated women who were mothers of young children participated in the labor force, compared with 50 percent of women at the same education level who did not have young children. Among women with a secondary education, the gap between those with and without young children was significant as well – half of women with young children versus 72 percent of women without young children participated in the labor force. A similar disparity was found among women with a non-academic post-secondary education: 64 percent of mothers with young children participated in the labor force versus 82 percent of women without young children. The gap was smaller among academically-educated women – 78 percent of women with and 87 percent of women without young children participated in the labor force. That is to say, the impact of education on labor force participation intensifies for women with young children, and larger education-related employment disparities are found among mothers of young children. These gaps grew even wider in 2011, when, as noted, labor force participation rates increased for the population as a whole. Among all mothers of young children, participation rates rose from 46 percent to 72 percent, while for women without young children, rates increased from 65 percent in 1980 to 77 percent in 2011. As such, the gap between mothers of young children and other women narrowed greatly in 2011, nearly to the point of disappearing. However, the participation rates of the entire female

population conceal considerable variation by education level. The participation rate of less-educated women with young children remained as low as it was in 1980; only 26 percent of the women in this group participated in the labor force. By contrast, the corresponding figure for less-educated women without young children was 42 percent.

Figure 8
**Female labor participation rates by presence of children
 in the home* and education**

as a percent of women aged 25-44, 1980 and 2011



* Children under the age of 4 in the home

Source: Haya Stier and Efrat Herzberg, Taub Center

Data: Central Bureau of Statistics, *Labor Force Survey*

The data show that children do, indeed, have less of an impact on labor force participation the higher the mother's education level is: among women with secondary schooling, the gap between the two groups was smaller than

it was among less educated women (60 percent versus 74 percent for those with and without young children, respectively). Among women with a post-secondary non-academic education, the gap narrowed to 11 percent (72 percent versus 83 percent for those with and without young children, respectively), while among women with an academic education the gap all but disappeared – 87 percent of women with young children and 88 percent of those without participated in the labor force.

To conclude the discussion of this topic: although the presence of young children exerts an influence on women's labor force participation, education moderates this influence. The participation rate disparity and employment rate stability over time among less-educated women (and, in certain cases, the decline in those rates) underscores the fact that these women are doubly disadvantaged: firstly, their opportunity cost of non-participation is lower from the outset and they work less than their more-educated counterparts. Furthermore, this negative effect has intensified over time: it is now harder for them to combine work and family than it was in the past, whether due to the nature of occupations available to them or to the low wage they earn.

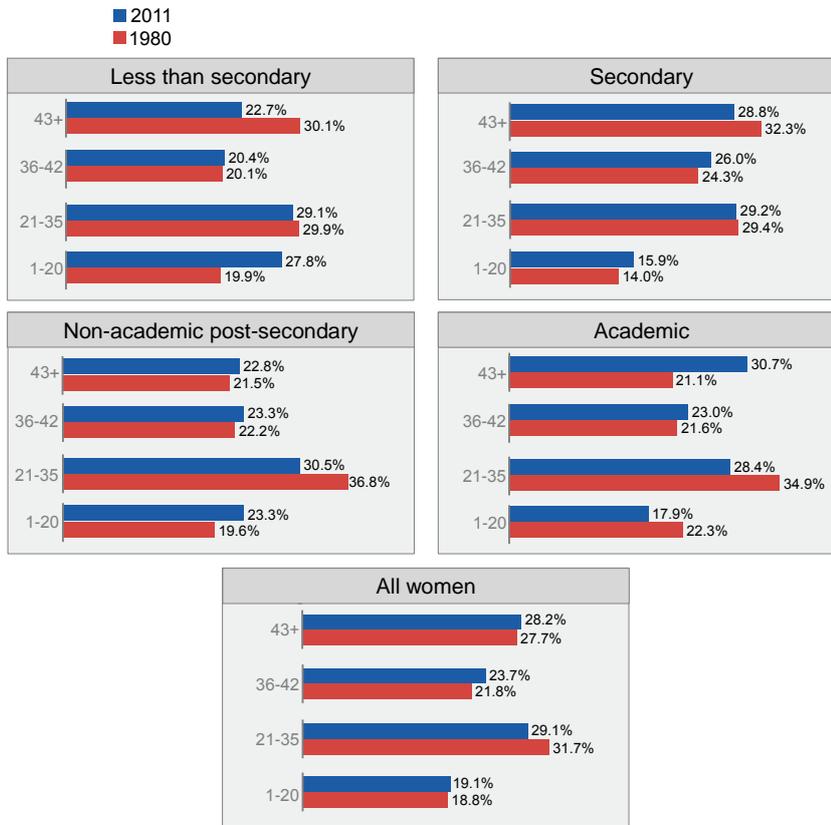
4. The Impact of Education on Women's Employment

Education is linked not only to entry into the labor force, but also to employment patterns, employment intensity and the types of employment in which women engage. The following section of this chapter will examine these issues exclusively with regard to employed women (unless indicated).

Women's work-hours remained quite stable throughout the study period, as may be seen in Figure 9. In 1980, half of all women (51 percent) worked fewer than 36 hours per week, (a level generally regarded as part-time). Since then, there has been a slight drop in the percentage of women employed part-time, to 48 percent in 2011. It is important to note that among those jobs defined as part-time (similar to those defined as full-time) there is considerable variance. Twenty percent of all employed women worked jobs that were very distinctly part-time in nature (fewer than

21 work-hours), and this pattern of limited labor force involvement remained markedly stable. By contrast, at the other end of the spectrum, 28 percent of all women worked long hours (more than 43 hours per week). The proportion of this group within the entire group of employed women also remained stable throughout the period in question.

Figure 9
Distribution of women’s weekly work-hours
 by education, among working women, 1980 and 2011



Source: Haya Stier and Efrat Herzberg, Taub Center
Data: Central Bureau of Statistics, *Labor Force Survey*

Does this picture of relative stability in labor force participation level change when women of differing education levels are examined? This is an important question for understanding inequity among women, inasmuch as work-hours are linked to remuneration levels. Beyond the issue of wage, however, work-hours are also linked to occupation type, to the degree of compatibility between family and labor-market commitments, and to well-being in general, on both economic and personal dimensions. In fact, a comparison of the distribution of work-hours by education level yields several interesting findings for each group over the time period in question.

In 1980, the percentage of women employed in part-time jobs (fewer than 36 hours) was higher among those with higher education – 57 percent for both women with academic backgrounds and for those with non-academic post-secondary schooling. By contrast, only half of employed women with less than secondary schooling and 43 percent of those with a secondary education worked part-time jobs. In 2011, this picture is reversed: the percentage of women employed part-time dropped to 46 percent among the academically-educated and rose to 57 percent among those with less than a secondary education. Between these extremes, a small rise in part-time employment was observed among women with a secondary education, and a slight decline among those with post-secondary education.

Studies on part-time employment in Israel (Stier, 1995; Stier, 1998) note that existing part-time jobs are of high quality, both because many of them are in the public sector, where worker rights are safeguarded to a high degree, and because of “expansion orders” (a certain kind of labor regulation) that bring working conditions and employee benefits into conformity with the economy as a whole. A fair number of part-time jobs have become concentrated in “feminine” occupations such as teaching, nursing, and other service fields. These jobs offered shortened work-hours, although in some cases they have actually come to be defined as full-time jobs (as in the teaching field). These kinds of jobs were highly characteristic of the occupations that were once open to women with higher education (Stier, 1995). Today, however, demand for workers in these fields appears to have changed, or it may be that more educated women are less willing to

work in these occupations as they enter other occupations that pay better but which do not necessarily offer part-time work.

Nevertheless, as demonstrated earlier, the number of hours women work varies greatly even among jobs that are defined in the same way (full- or part-time) – and within this sphere as well there is variation between the different education-level groups. There has been a rise over the years in the percentage of women with low education who are employed in positions where very few hours are required (fewer than 21 hours per week) – from 20 percent to 28 percent. Among women with an academic education, in contrast, the percentage of those employed at this low level of intensity declined from 22 percent to just 18 percent by 2011. A small increase in the prevalence of this employment pattern, effectively signaling low-level involvement in the labor force, was also observed among women with a secondary education and non-academic post-secondary education.

And what about jobs that entail long hours? Here, as well, significant changes occurred over the course of the period in question (Figure 9). In 1980, about 30 percent of all women with secondary schooling or less worked in jobs characterized by long hours (over 43 hours per week), compared with about 20 percent of women whose education level was higher. Over the relevant time period the percentage of those employed in jobs requiring long hours declined among less-educated women: in 2011, only 23 percent of women with less than secondary schooling and 29 percent of women with secondary schooling worked these types of jobs. Among women with non-academic post-secondary schooling there was no meaningful change in the percentage of those working jobs requiring long hours: a rise from 22 percent in 1980 to 23 percent in 2011. By contrast, among women who had pursued higher education, an increase in the percentage of those working long hours was observed: in 2011, 31 percent of these women were employed in such jobs. In other words, the data on long-hour jobs point to a convergence of the first three groups and, conversely, to a significant change in the employment pattern of academic-educated women.

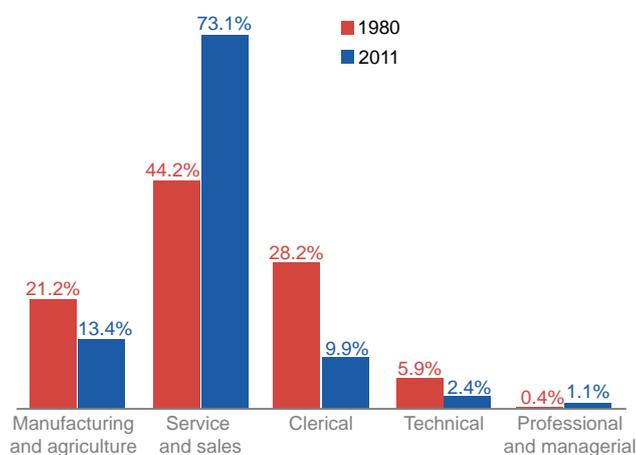
To what may these changes be attributed? One possible explanation relates to the type of occupations in which women of the various groups are employed. Consider, for instance, the influx of women with an academic education into professional and managerial occupations where women were sparsely represented in the past: this phenomenon may well explain the rise in number of work-hours inasmuch as these fields require longer hours than do occupations such as teaching and nursing that are regarded as “feminine” (and that are associated with women who have post-secondary schooling). On the other hand, the migration from manufacturing jobs to service occupations – such as cleaning and cooking, which generally offer few work-hours per day and a work-week that is not always full – may explain the increased percentage of lower-educated women employed in part-time jobs, which are particularly characteristic of this group.

Figures 10A-D present the employment distribution of women in the four education-level groups (less than secondary, secondary, non-academic post-secondary and academic) across the main female occupational sectors at two points in time – 1980 and 2011.

Figure 10A

**Occupational distribution for working women
with less than a secondary education**

in percent, 1980 and 2011



Source: Haya Stier and Efrat Herzberg, Taub Center

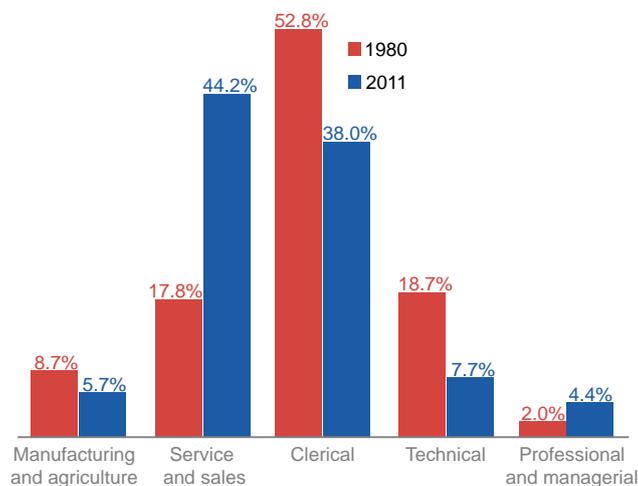
Data: Central Bureau of Statistics, *Labor Force Survey*

An examination of the occupations in which women with low education levels (less than secondary) engaged in points to significant changes in the type of occupations open to them (Figure 10A). Over the course of the period in question, most of these women were employed in the service and sales occupations – 44 percent during the 1980s and over 70 percent at the end of the first decade of the 21st century. These service occupations comprised, mainly, domestic service work (cleaners, cooks, caregivers, etc.). In addition to service jobs, low-skilled women were notably employed during the 1980s in manufacturing and agriculture – particularly in the textile field (one-fifth of all less-educated women), as well as in clerical occupations (28 percent of women in this group). By contrast, over the past decade the number of less-educated women employed in these two fields declined considerably: in 2011, only 10 percent of the women in this group were employed in clerical occupations, and just 13 percent in manufacturing. The major change that took place in clerical occupations was due primarily to a demand for higher skill levels in these fields – and as will be seen later, this demand is now being met to an ever-greater degree by women with higher education levels. The steep decline in demand for manufacturing workers was due to a contraction that occurred in the manufacturing sector – particularly in areas that were formerly characterized by a female-intensive labor force, such as the textile industry.

The manufacturing sector offered full-time jobs, and most women employed in it were union members whose rights were safeguarded. The clerical field also offered better working conditions than the occupations currently open to unskilled female workers in the labor force. In contrast, service occupations, to which most less-educated women have moved, are characterized by more difficult work conditions, a lack of protections and legislated benefits, low wages, short work-hours, and occupational instability.

Similar changes (though of a somewhat different character) also took place among women with a secondary education (Figure 10B). During the 1980s, the majority of these women were employed in clerical jobs (over 50 percent), while a minority worked in fields defined as “technical” (semi-professional) or in service and sales occupations.

Figure 10B
**Occupational distribution for working women
with a secondary education**
in percent, 1980 and 2011



Source: Haya Stier and Efrat Herzberg, Taub Center

Data: Central Bureau of Statistics, *Labor Force Survey*

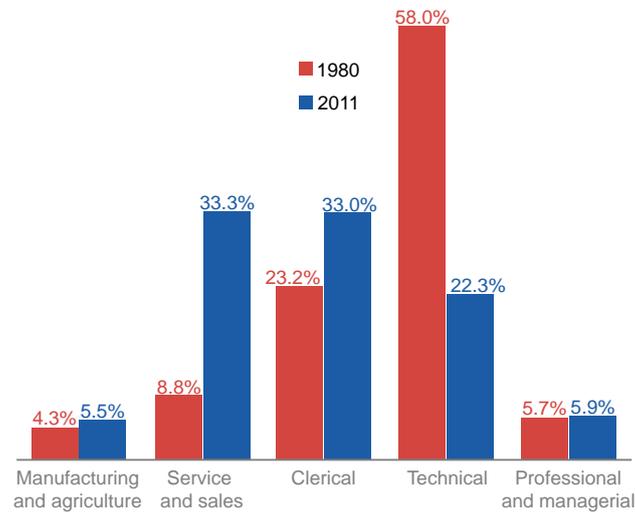
The growing demand for high skill levels, which characterizes the Israeli labor force as a whole, hurt this group of women as well. Firstly, their representation in technical occupations declined considerably. These occupations (that include teaching, preschool teaching, and nursing) underwent professionalization and most of them now require higher

education levels than in the past. At the same time, the percentage of women with secondary schooling employed in the clerical field declined as well, from 53 percent in 1980 to 38 percent in 2011. Today, 44 percent of women in this education-level group are employed in service and sales (compared with 18 percent in the past), indicating a significant drop in demand for women with a secondary education who formerly filled white-collar occupations, and who are now unable to work in them.

And what is happening with women of higher education levels? As noted previously, the share of these women in the labor force (especially academic-educated women) has grown over the years. They now account for over half of the female labor force (compared with one-fifth in the 1980s). Did new opportunities open up for these women, or did they enter existing occupations, thereby replacing women with lower skill levels? In the past, women with non-academic post-secondary education were employed mainly in technical occupations, including traditionally feminine occupations such as teaching and nursing (Figure 10C).

As with the secondary-education group, the proportion of these women in teaching and in nursing declined significantly due to professionalization of the relevant occupations and more stringent training requirements; today only one-fifth of women in this group enter such fields. In the wake of this change, the non-academic post-secondary education group has become the province mainly of women who have not gone on to complete an academic degree, or whose training is in fields other than teaching, nursing, and related occupations. This group has experienced a rise in the percentage of those employed in clerical/office work (23 percent in 1980 versus 33 percent in 2011), but most (a third of the women in the group) find work in the service and sales occupations.

Figure 10C
**Occupational distribution for working women
with non-academic post-secondary education**
in percent, 1980 and 2011



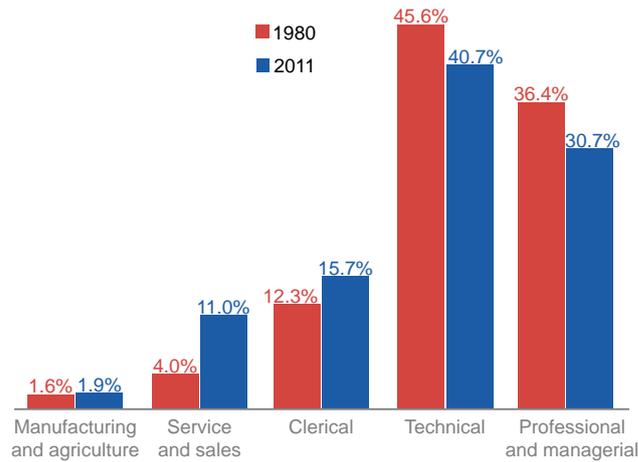
Source: Haya Stier and Efrat Herzberg, Taub Center

Data: Central Bureau of Statistics, *Labor Force Survey*

Figure 10D shows the employment distribution of women with an academic education. Most of the women in this category are employed in white-collar occupations that enjoy a measure of prestige – academic or technical fields. A comparison of the two years examined reveals a decline in the representation of academic-trained women in professional and managerial occupations: from 36 percent in 1980 to 31 percent in 2011. An in-depth look at the specific occupations in which professional women engage (not presented in the figure) shows that women have been entering law and managerial occupations at high rates, and that they have also substantially increased their representation in engineering. By contrast, their relative representation in teaching and in humanities-oriented occupations

requiring academic education has declined. Their representation in technical occupations has also dropped to a notable degree: from 46 percent of academic-trained women in the 1980s to 41 percent today. This figure may indicate that, in addition to the professionalization undergone by these occupations, the percentage of women employed in them is declining over time. This change helps explain the increase in women's work-hours, inasmuch as these occupations traditionally offered women shorter hours and part-time jobs (Stier, 1995), while professional occupations that have been attracting academic-educated women, particularly those in the managerial sphere, require many more work-hours.

Figure 10D
**Occupational distribution for working women
 with an academic education**
 in percent, 1980 and 2011



Source: Haya Stier and Efrat Herzberg, Taub Center

Data: Central Bureau of Statistics, *Labor Force Survey*

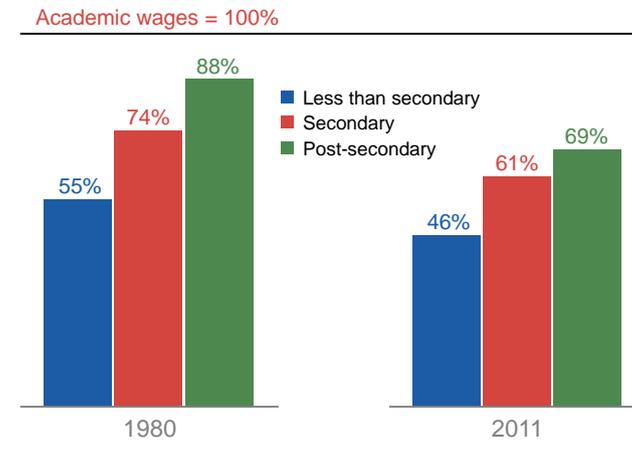
Because the percentage of women with higher education has risen greatly, but without a corresponding rise in the percentage of such women who are employed in the professional occupations, many academically-trained women have entered occupations that formerly required lower levels of skill – clerical and office work. At present, 16 percent of women with an academic education are employed in clerical occupations, and another 11 percent in service and sales occupations. These patterns may indicate that both technical and professional occupations have become saturated, meaning that women with higher education are forced to seek work that is not commensurate with their skills, or that formerly would have required lower skill levels.

In summation, two conclusions may be drawn from the data in Figures 10A-D. Firstly, supply and demand have had a significant impact on the type of occupations in which women are employed. Rising education levels have, to a great degree, caused academic-trained female workers to run in place, since this rise was accompanied by higher entry requirements for occupations that previously had been suited to women with lower skill levels. Whether due to substantive changes in occupational requirements, employer preference for better-educated workers (who are also more productive), or a lack of other opportunities for academic-educated women, the rise in education levels had only a limited impact in terms of creating new opportunities for women. Secondly, the forces of supply and demand also led to a growing polarization between the different groups of women. On the one hand, women with higher education have opportunities in more prestigious and lucrative occupations. It is also likely that wages in other occupations that these women have entered have risen in accordance with the women's skills. On the other hand, because the significant increase in higher education outstrips demand for professional occupations, the overall rise in skill levels has pushed women with less than an academic education out of white-collar occupations in which they were formerly employed and into the lower end of the employment scale – the service occupations.

In order to understand how changes in education level and occupational distribution have affected wages, and to determine whether there has been a polarization in this area as well, the ratio of the wage earned by academic to non-academic-educated women in 1980 and in 2011 was examined (Figure 11). The wage levels and the changes in wage that took place over the years also reflect the type of occupations in which women were employed, as well as their employment intensity; as shown previously, academic-educated women increased their work-hours more than did other women. Some higher-educated women have successfully entered in more prestigious and highly-remunerated occupations, while lower-educated women tend to work fewer hours and in less desirable occupations than they had formerly.

In 1980, women with less than a secondary education earned, on average, 55 percent of the wage earned by higher-educated women, while in 2011, they earned less than half of the academic wage (46 percent). An even more significant decline in this indicator was experienced by women with secondary education for whom, as noted, many employment opportunities that were previously available became closed due to the demand for higher skills. In 1980, women in this group earned, on average, 74 percent of the wage earned by women with an academic education, while in 2011, this figure dropped to just 61 percent. The wage earned by women with non-academic post-secondary schooling, which in the past had been quite close to that of academic-educated women (88 percent in 1980), is now only 69 percent of the wage earned by women with higher education. It should be noted that the wage gaps among all three groups of non-academic-educated women (a calculation that is not presented here) remained at past levels or narrowed slightly.

Figure 11
Working women's wages as a percent of academic wages
by education level, 1980 and 2011



Source: Haya Stier and Efrat Herzberg, Taub Center

Data: Central Bureau of Statistics, *Income Survey*

Figure 11 points clearly to a growing wage disparity between women with and without an academic education. From this perspective it may be concluded that there is indeed a growing polarization of wages in the labor force based on education.

To conclude, the processes that have taken place in the Israeli labor force, as in the entire Western world, are reflected in women's changing employment characteristics. The transition to knowledge-intensive industries raised demand for skilled labor in a variety of occupations; by contrast, there was a drop in demand for low-skilled manpower. Even occupations that in the past did not require higher education have now adapted to market demands, meaning that the demand for academic-educated women in these occupations is rising as well. These changes are expressed in the financial remuneration that women receive for their education level; women with an academic education enjoy higher wages

than do women in the other groups inasmuch as they are more productive and possess required skills that align with the directions in which the labor force is developing.

5. Summary and Discussion

This chapter surveyed changes in the female labor force over the past thirty years, with a focus on education and its impact on women's involvement in the labor force. As earlier studies had shown (Kimhi, 2012), education plays a central role in explaining women's labor force participation and the changes observed both in women's economic activity and in the composition of the labor force. Although there has been an overall rise in women's labor force participation rates, the economic activity of women with lower education levels is contracting and they are becoming a small minority of the total female labor force. This group also reduced the intensity of its involvement in the labor force in terms of work-hours, and was pushed into service occupations with a particular emphasis on domestic service – cleaning, childcare, and cooking. As in many countries, less-educated Israeli women previously worked not only in the domestic service sphere, but also in manufacturing. However, following a contraction in the labor-intensive industrial sectors where demand for female manpower was high (e.g., the textile industries), low-skilled women now have few occupational prospects. In general, they provide services to better-educated women who allocate more of their time to the labor force. From this point of view, the labor force offers women with low education levels jobs that are less stable than in the past, characterized by fewer work-hours and low wages.

This situation is leading to a polarization of the labor force between highly-skilled women – who enjoy many employment opportunities and suitable working conditions, especially in the public sector – and women of lesser skills. However, the female labor-force picture appears to harbor even greater complexity: rising higher-education rates caused an increase in

women's labor force participation rates, but without necessarily creating new employment opportunities. On the one hand, some academic-educated women have succeeded in penetrating traditionally male, professional and managerial occupations from which they were formerly absent. These occupations offer good working conditions, opportunities for advancement and a high relative wage. On the other hand, the rate of increase in higher education is outpacing that of demand for professional occupations, and many highly-educated women are settling for occupations that in the past required lower levels of skill. Academic-educated women have, accordingly, been entering clerical occupations that formerly employed women with secondary schooling. It is very likely that these occupations changed in character alongside changes in the knowledge-intensive labor force, and now require workers with higher levels of skill and productivity – meaning that wages paid to academic-educated women employed in such occupations is higher as well. However, it may also be that the female labor force is now suffering from inadequate employment, reflected in over-qualification for the occupations available. From this perspective, Israeli women's human capital is not being effectively utilized and women are not obtaining suitable positions in the labor force. This situation may also explain why the income gaps between men and women have not narrowed over time, as a number of studies have shown (Kimhi, 2012). Also, inasmuch as academic-educated women are taking jobs that were previously filled by women with secondary education, the latter are experiencing even greater marginalization and dwindling available opportunities.

The lack of opportunities that lower-educated women face is also leading to greater inequality among the various education-level groups. The great emphasis that is placed on the pursuit of higher education is not necessarily producing a reduction in social disparities or education-appropriate positions in the labor force. It is particularly worth noting that higher education in and of itself does not confer access to all professional occupations, and one may hypothesize that the "seepage" of highly-educated women into office jobs is due to occupational segregation within the labor force, and to the difficulties that women still experience in establishing themselves in various

professions. These problems are rooted in the type of occupations that women tend to train for within the higher education system, and also in the difficulty of balancing family and work. Women, as their families' primary caregivers, are still often obliged to work part-time and fewer hours than men, which keeps them from entering occupations characterized by long hours. In the absence of any meaningful structural change in either the higher-education system or the labor force – change that would increase gender parity in terms of the occupations men and women train for within the higher-education system while also easing the family-work balance for both sexes – it will be difficult to effectively utilize women's growing human capital and to improve their status within the labor force.

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