Education and Unemployment in Israel, 1976-1994:

Reducing the Anomaly

by

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Abstract

In industrialized economies, unemployment rates are inversely related to education levels. Data from 1963 to 1994 show that Israel is an anomaly exhibiting an inverted U-shaped relationship. Workers with 9-12 years of schooling experienced the highest level of unemployment, in contrast to the 0-8 and 13 years of schooling groups that consistently had lower rates. Multivariate regression analysis of data for Israel, from 1976-1994, indicates that the inverted U-shaped relationship is moderating. The national unemployment rate and a time trend variable had positive and significant effects tending to strengthen the inverted U-shape relationship. However, an increase in the unemployment rate within the 0-8-education group relative to the 9-12 group and a decline in the labour force participation rate of the 0-8 group, overrode these factors, producing a move toward flattening the inverse relationship. The major factor responsible for the anomaly in the education-unemployment relationship in Israel appears to be the result of government policies intended to protect low-educated immigrants with large families. In recent years there has been a reduction in government support. This development seems to have reduced the extent of the inverted U-shaped relation, by gradually increasing the exposure of the least educated to labour market forces.

Human Capital theory suggests that in developed countries the level of education should be inversely related to the rate of unemployment. The rationale for this relationship is that the greater the amount of workers' human capital, the larger the relative number of job openings for them, and thereby their lower levels of unemployment (Filer, Hamermesh and Rees, 1996). Examination of data prepared by the ILO shows that in advanced industrialized countries, in general, the higher the level of education the lower the rate of unemployment (ILO, 1996). Against this pattern, the case of Israel stands out as an anomaly because, since at least 1963, Israel has experienced an inverted U-shaped relationship between education and unemployment (Meltz, 1978). In this paper we examine the continuation of this exceptional relationship for the period 1976-1994, and develop some explanations for this pattern. As well, we discuss the public policies that appear to be responsible for the lower than anticipated unemployment rates among the least educated.

The paper contains four parts. Part one sets out economic theory on the relationship between education and unemployment, and the description of the patterns that have been observed in Canada, the United States and Israel. Part two observes that Israel has consistently had a pattern of unemployment where the highest rates of unemployment were for those with middle levels of education, not those with the least education. It is also observed that this pattern is changing over time with an increase in the unemployment rate of the least educated in Israel relative to those with greater education. Part three provides a statistical analysis of the major factors that appear to be responsible for the inverted u-shaped relationship between unemployment in Israel. Part four explores the institutional factors underlying the statistical relationships and the public policies that influenced these factors. The concluding section summarizes the main findings and raises some general public policy issues beyond the experience in Israel where the least educated were not the most disadvantaged in the labour market.

ECONOMIC THEORY AND THE RELATIONSHIP BETWEEN EDUCATION AND UNEMPLOYMENT

It can be inferred from the economic literature that in developed countries there is an inverse relationship between education and unemployment. For example, McConnell and Brue (1989, p. 536 citing the study by Johnson 1979) state that:

> " ...higher levels of general education are associated with lower levels of structural unemployment. For instance, college graduates who are displaced from their existing employment because of changes in demand for technology have a wider range of job options and usually find retraining to be easier than persons who have little formal education".

Similarly, Filer, Hamermesh and Rees (1996, p. 321) observe that:

> " ... the stability of employment increases as workers become more educated. This fact reflects higher fixed costs leading to a much lower rate of inflow into unemployment among more skilled workers."

What we observe from the data on industrialized countries is consistent with this labour market economic theory. Using Canada and the United States as specific examples, and taking the same education grouping for the two countries, we see that in 1995, unemployment rates by broad education groups show a consistent inverse relationship (see

Figure 1: Unemployment Rate by Education Levels: United States, Canada, and Israel: 1995
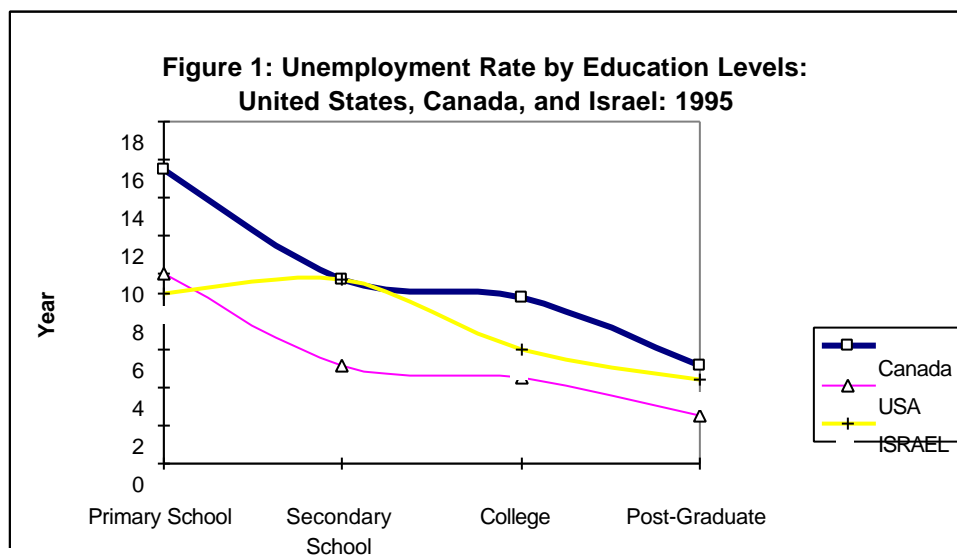
Figure 1). A similar pattern is observed for both countries for all education groups even though unemployment rates in Canada were higher than in the US.

Looking back over the period from 1988 to 1995 in the US, unemployment rates by education levels show a consistent inverse relationship even though the overall rates of unemployment vary significantly among the years (see Figure 2). In addition, the differences among the unemployment rates by education group are very similar. For Canada, when unemployment rates by education levels are grouped to be comparable to the US categories, there also is a consistent inverse relationship (Statistics Canada, 1988-1995).

Figure 2: Unemployment Rate by Education Levels: United States, 1988-1995
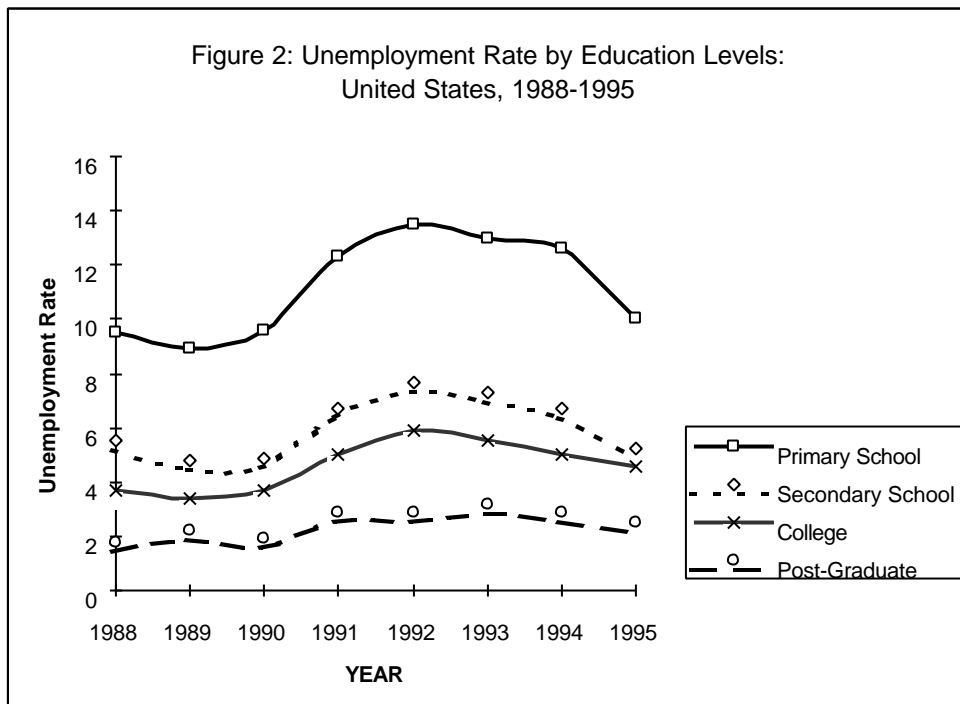
These observations, which are consistent with the predictions of economic theory, highlight the unexpected finding that Israel, a developed economy, hasn't experienced an inverse relationship between unemployment and education but rather an inverted U-shaped relationship (see Figure 1).

EDUCATION AND UNEMPLOYMENT IN ISRAEL

Israel's Central Bureau of Statistics (CBS) collects labour market data through a quarterly Labour Force Survey. The data presented in this paper are divided into two periods: the first, from 1963 to 1975, describe the relationship between education and unemployment which appeared after the establishment of the State of Israel (Meltz, 1978). The second period, from 1976 to 1994, is the focus of the detailed statistical analysis in this paper.

Figure 1 above shows the difference in 1995, in the relationship in Israel between unemployment and education, compared with that in Canada and the US. Whereas these North American countries have the expected inverse relationship, Israel presents an inverted nearly U-shape relationship. In both Canada and the US, using similar broad groupings of years of schooling, the higher the level of education the lower the rate of unemployment. In Israel, the rate of unemployment for the least educated is lower than for those who completed secondary school education, but higher than for those with undergraduate and postgraduate studies.

Meltz (1978) has documented a consistent pattern of an inverted U-shaped relationship, whether the national unemployment rate was low or high. Data in Table 1 confirm this pattern for the early years of the state (1963, 1967 and 1975) as well as for the more recent period 1976-1994. In 1963, when the unemployment rate was 3.5%, the lowest rate of unemployment was for those with 13 or more years of schooling at 1.6%, while the second lowest, at 2.2% was for those without any formal years of schooling.

In 1967, when unemployment had risen to 10.4%, the highest rate of unemployment was for the group of 5-8 years of schooling. In 1975, when the unemployment rate had dropped to 3.0%, the highest rate of unemployment was for those with 9 to 12 years of schooling. What

is most remarkable is that in 1975, persons with no formal schooling or 1-4 years of

schooling, each had a lower rate of unemployment than persons with 13 or more years of

schooling.

TABLE 1: Unemployment Rates in Israel by Years of Schooling:
Selected Years 1963 – 1994

| Years of Schooling	1963	1967	1975	1976	1986	1987	1994
Total	3.5	10.4	3.0	3.6	7.1	6.1	7.8
0 Years	2.2	9.1	1.5	*	*	*	*
1-4 Years	3.0	12.0	1.8	*	*	*	*
5-8 Years	4.8	14.2	3.3	*	*	*	*
0-8 Years	*	*	*	3.5	7.0	6.3	8.9
9-12 Years	3.3	8.8	3.4	4.2	9.1	7.5	9.7
13+ Years	1.6	5.0	2.6	2.9	4.1	*	*
13-15	*	*	*	*	*	4.4	6.0
16+	*	*	*	*	*	2.8	4.4

Source: For the years 1963, 1967 and 1975 - Meltz, (1978); for the years 1976, 1986,
1987 and 1994 – State of Israel (1977-1995).

* Data not published in these groupings.

To provide an overview from 1976 to 1994 of the patterns in the relationship of education

and unemployment, we have pooled the data into two periods as shown in Figure 3, to

produce the long-term average unemployment rates for each level of educational attainment.
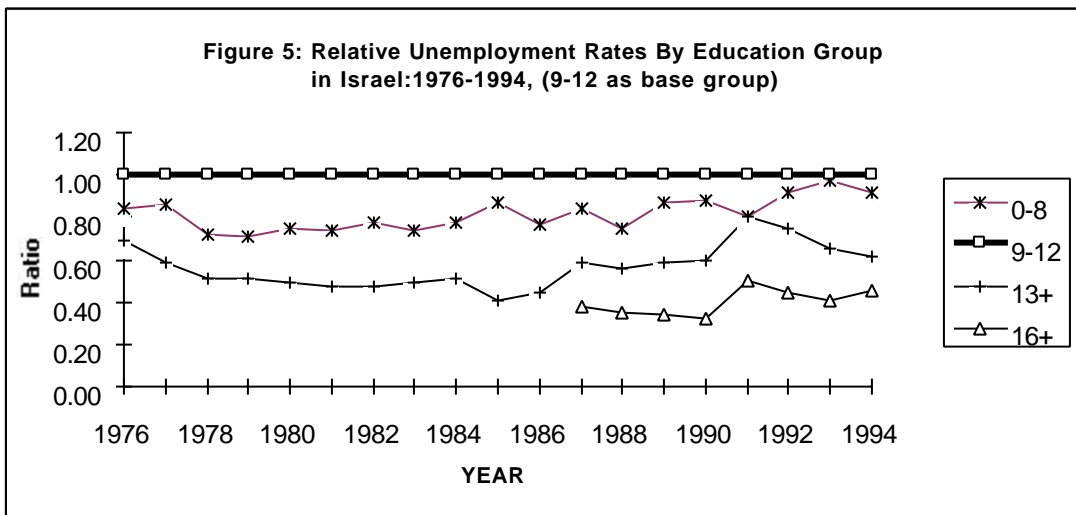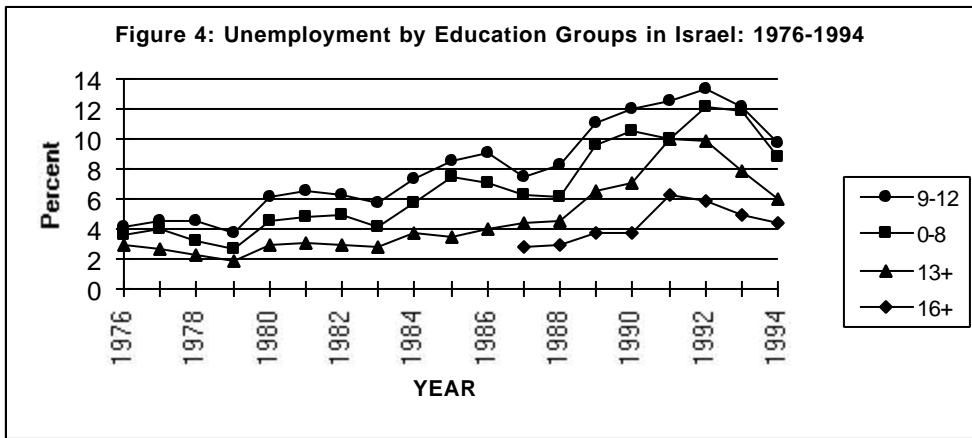
The first period, 1976-1986, contains three educational groups: 0-8, 9-12 and 13+ years of

schooling. The second period 1987-1994 contains four groups due to the availability of a breakdown of the 13+ grouping into 13-15 and 16+ years of schooling. In both cases persons with the least education (0-8 years), have a lower rate of unemployment than those with midlevel of education (9-12 years). The lowest rates of unemployment were for the groups of 13 and more years of schooling. Figure 3 also shows that the inverse relationship persists even with the higher rates of unemployment after 1986 (8.8%, compared with 4.8% in 1976 – 1986).

Figure 3: Unemployment Rate by Years of Schooling in Israel: Averages 1976-1986 and 1987-1994
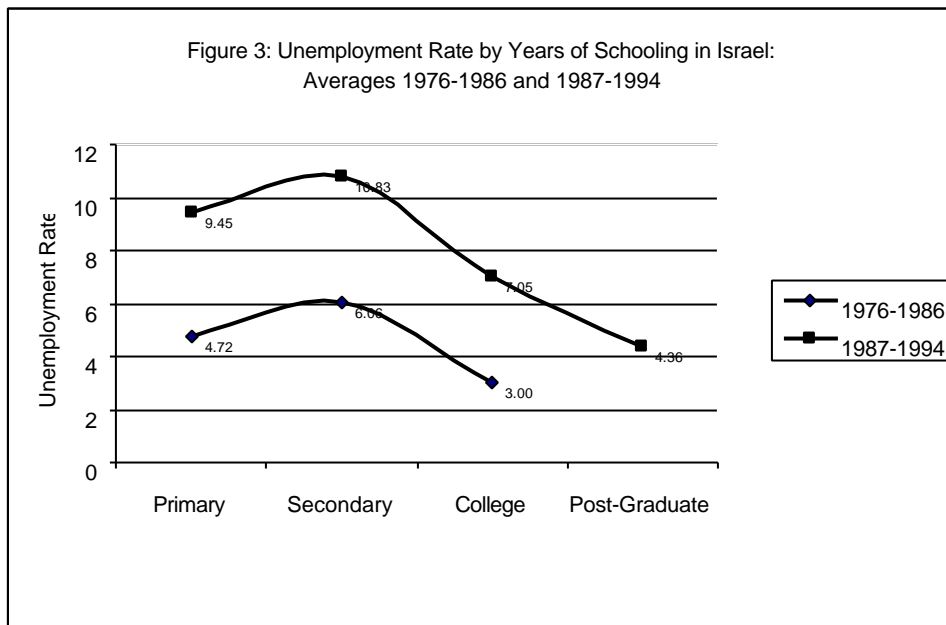
These patterns are illustrated more dramatically in Figures 4 and 5. Figure 4 shows the actual unemployment rates by levels of schooling for each year from 1976 to 1994, while Figure 5 shows the unemployment rates for each educational level relative to the rate for 9-12, which consistently has the highest level of unemployment. The later figure depicts the narrowing of the difference between the unemployment rates of the 0-8 and 9-12 groups.

Figure 4: Unemployment by Education Groups in Israel: 1976-1994

Percent

YEAR

- 9-12
- 0-8
- 13+
- 16+

Figure 5: Relative Unemployment Rates By Education Group in Israel:1976-1994, (9-12 as base group)

Ratio

YEAR

- 0-8
- 9-12
- 13+
- 16+

STATISTICAL ANALYSIS

Up to this point two main findings have been identified. First, there appears to be an inverted U-shaped relationship between unemployment and education in Israel. Second, there seems to be a trend toward moderating this relationship, as a result of an increase in the unemployment rates of the least educated in Israel, relative to the other schooling groups. In this section we will conduct three types of statistical analysis to go behind the trends that have been observed to test whether the changes are significant. The analysis includes: an examination of the relationship between unemployment and education; an examination of the

changes over time; and an assessment of the impact of selected labour market factors on the

relationship between unemployment and education over time.

The relationship between unemployment and education

In Figure 5 it appears that from 1976 to 1994, there are consistent differences in

unemployment among education groups in Israel. A Bonferoni test of significance was

applied to the data to determine whether these differences can be established statistically.

The Bonferoni test says that there is a significant difference between two means if the

following relationship holds:

$$MEAN(J)-MEAN(I) >= .4818*RANGE*SQRT(1/N(I) + 1/N(J))$$

A one-way Analysis of Variance, as shown in Table 2, indicates that the differences over

time between the four education groups are significant (F-Ratio = 178.31; and F-Probability

= .000). The highest level of unemployment is at the 9-12 level of education group, while the

0-8 and 13+ are lower, representing the nearly inverted U-shaped type.

TABLE 2: ANOVA of unemployment levels in Israel by education groups: 1976-

1994

Mean	Years of Schooling	16+	13-15	0-8	9-12
-4.4625	16+ Years				
-1.7947	13-15 Years	*			
.2158	0-8 Years	*	*		
1.5684	9-12 Years	*	*	*	

* Indicates a significant difference between two groups at p<. 05.

Changes over time in the relationship between education and unemployment

As observed in the earlier discussion of Figure 5, the ratio between the unemployment rates in the 0-8 and 9-12 years of schooling groups, appears to be moving towards a value of "1", which means that the gap between the two has been decreasing, particularly since 1987. The ratio of the unemployment rate of the 13+ group to that of the 9-12 education group has also been decreasing, but at a slower rate.

In order to substantiate these two trends over the entire 18 year period, a Pearson correlation analysis was applied showing that the relationship between unemployment in the 0-8 education group and unemployment in the 9-12 education group is positive and significant (r=. 644, p=. 002). Since this correlation uses the 9-12 years of education group as a base group, this means that unemployment for the 0-8 group is rising relative to the 9-12 group. For the 13+ education group in the relation to the 9-12 group, the correlation is also positive and significant (r= .567, p=. 011). This means that unemployment in 13+ group is rising relative to the 9-12 group.

The combination of these two findings indicates a flattening of the inverted U-shaped relationship between unemployment and education. Since the 0-8 years of education group has a stronger relationship (r=. 64) versus (r=. 56) for the 13+ group, the decrease in the gap is faster for the 0-8 than for the 13+ education group. These results clearly show that the Israeli labour market is moving away from the inverted U-shaped relationship between education and unemployment, towards an inverse relationship that tends to characterize other industrialized countries.

Assessment of the impact of selected labour market factors

In order to understand the changes in the gap[1] in Israel between the unemployment rate for persons with 0-8 years of schooling divided by 9-12 (model 1), and 13+ divided by 9-12 (model 2) that is indicated in Figure 5, we conduct a multivariate analysis using both ratios as dependent variables. For the period of 1976-1994, the following four factors are considered as independent variables: the unemployment rate within each education group; labour force participation rate for persons in each education group; the national unemployment rate; and a time trend variable, Year, as a control factor. The results of the regression analysis for these four variables are presented in Table 3 for both the 0-8 years of schooling group and for the 13+ years of schooling group. The results are significant for both groups of schooling. For the 0-8 education group we obtained 84% of the explained variance (F=26.25, Sig. F=.000), and for the 13+ group, 80% (F=19.78, Sig. F=.000).

Unemployment Rate within each Education Group

The first variable that we examined was the impact of the rate of unemployment within each education group in relation to its ratio over the 9-12 years of schooling group. We include this variable because we know that changes in government policies have tended to reduce the protection for persons with the least formal education in the society. This variable is intended to measure the cumulative impact over time of these changes in policies.

TABLE 3: Regression Analysis of the Change in the Unemployment Rate of the 0-8 and the 13+ Education Groups Relative to the 9-12 Years of Schooling Group

Education Groups	0-8 Education Group				13+ Education Group			
Variables	B	Beta	T	Sig.	B	Beta	T	Sig.
National level of unemployment	-0.059	-1.989	-2.866	0.012	-0.083	-2.094	-4.012	0.013
Unemployment in education group	0.081	3.169	4.673	0.000	0.132	2.617	6.348	0.000
Labour Force Participation Rate	-0.036	-1.673	-2.201	0.045	-0.010	-0.669	-0.566	0.580
Year (1976-1994)	-0.029	-2.135	-2.575	0.022	-0.003	0.162	0.587	0.566
Constant	59.79		2.599	0.021	-4.565		-.477	.640

*Dependent variable is defined as the ratio between unemployment rate in 0-8 education group and unemployment rate in 13+ education group, each divided by the unemployment rate in the 9-12 education group.

For both the 0-8 and 13+ education groups the impact is positive and significant (see Table 3). In the case of the 0-8 group, the ratio in relation to the 9-12 group is increasing and the gap is decreasing. This means that the impact of the change in the unemployment rate of the 0-8 years of schooling group has reduced the extent of the inverted U-shaped relationship between unemployment and education in Israel. In the case of the 13+ group, the ratio in relation to the 9-12 group is increasing and the gap is also decreasing. This tends to flatten the portion of the inverted U-shape relation above 9-12 years of schooling. However, the

amount of flattening is greater for the 0-8 group than for the 13+ group, as indicated by the larger Beta.

Labour Force Participation Rate (LFPR)

The data in Meltz (1978) suggest that a decrease in the labour force participation rate (LFPR) for the least educated in Israel, for the period 1963-1975, was associated with a flattening of the inverted U-shape relationship between unemployment and education. The LFPR variable was examined in order to determine whether, and to what extent, the same relationship occurs in the more recent period, 1976-1994. The LFPR for persons with 0-8 years of schooling declined substantially over this period, from 40.7% to 29.7%. By contrast, the LFPR with persons with 9-12 years of schooling increased from 47.6% in 1976 to 52.7% in 1994. There was virtually no change in the LFPR of those with the highest levels of education that remained at about 70%.

Insert Figure 6 about here

In Table 3, the results for LFPR for the 0-8 group are negative and significant (ß=-1.673; p=. 045). This means that a decrease in the LFPR contributes to an increase in the ratio between the 0-8 and 9-12 education groups; and thereby, a decrease in the gap between the unemployment rates of the two education groups. This produces a flattening in the inverted U-shaped relationship.

Figure 6 also shows that the participation rate for the 13+-education group rose between 1976 and 1994. The regression results in Table 3 for the 13+ group shows no significant relationship between LFPR within the 13+ group and the ratio of 13+ divided by 9-12 years of schooling. These results indicate that only the changes in labour force participation rates of

the 0-8-education group contributed to the flattening of the inverted U-shaped relation, but

not the 13+ group.

National Unemployment Rate

The third variable we examined was the impact of the interaction between the total

demand for and the total supply of labour in the Israeli market, with the national

unemployment rate as a proxy measure. In Table 1, data are presented for selected years at

the beginning, middle and at the end of the period 1976-1994. Two observations emerge:

first, that there was a large increase in the national unemployment rate which more than

doubled over the period; second, that the unemployment rates for the various education

groups tended to move in the same direction, but not to the same extent. We estimated the

impact of the change in the national unemployment rate on the ratio of each education group

divided by the 9-12 group, as shown in Table 3.

The national unemployment rate has a significant and negative effect, which means that when

the total unemployment rate increases, the ratio of the 0-8 group divided by the 9-12 group,

decreases. The 0-8 group is less vulnerable to the increase in the national unemployment rate

than the 9-12 group, because the gap is increasing. This finding implies that, ceteris paribus,

the general increase in the national unemployment rate would have enhanced the extent of

the inverted U-shaped relationship.

The results of the regression analysis for the 13+-education group are also shown in Table 3.

The total national unemployment rate has a significant and negative effect on the ratio of the

13+ group divided by the 9-12-education group. This too means that when there is an

increase in the national unemployment rate the ratio is decreasing and the gap between the

13+ and the 9-12 group is increasing. The 13+ group is therefore less vulnerable to

increasing unemployment than the 9-12 base group, and the negative relationship between

education and unemployment is exacerbated. This finding for the most highly educated is consistent with what we expected to occur, based on the experience of other industrialized countries.

Time Trend

As part of our analysis the final variable we include is a time trend to determine whether for each of the education groups there was a change resulting from the effect of time. The variable we used was Year, and the results are shown in Table 3 for the 0-8 group and for the 13+ group. For the 0-8 group we found a negative and significant impact of time (?= -2.135; p=. 022). The ratio of 0-8 divided by 9-12, ceteris paribus, is decreasing and the gap is increasing. Again this finding would tend to increase the extent of the inverted U-shape relationship. For the 13+ group we found no significant impact of time (?= .162; p=. 566) on the inverted U-shaped relationship.

These results indicate that the first two variables (the unemployment rate within each education group, and the labour force participation rate) tended to flatten (reduce) the inverted U-shaped relationship, while the other two variables (national unemployment rate, and the time trend) tended to make the inverted U-shaped more pronounced. The first two variables were dominant since the unemployment – education relationship in Israel has become less pronounced over time. Why this has happened and what this means for public policy is discussed next.

INSTITUTIONAL AND POLICY FACTORS UNDERLYING THE STATISTICAL RELATIONSHIPS

In order to explore the distinct relationship between unemployment and education in Israel we will first describe the major features of the Israeli labour market and then examine public

policies that were directed to the low educated groups and thereby contributed to this special relationship.

Major Features of the Israeli Labour Market

Population: Israel's population has grown by nearly 10 times from the 600,000 people in the country when it was established in May 1948 to nearly 6 million in 1998. Immigration was a major contributor to this increase, through the over 2.5 million people who moved to the country during this period. The state of Israel played a direct role in taking in hundreds of thousands of Jews from Europe after the Holocaust and similar numbers of Jews who emigrated from Arab countries after the creation of the state.

Immigrants' Skills: The types of immigrants to the Israeli labour market have varied significantly during the past half-century. The two largest waves of immigration were in the early 1950s and since the late 1980s. The first wave, which more than doubled the population within three years, was primarily of Jews from Arab and European countries, who were mainly unskilled or semi-skilled workers who experienced difficulties in being absorbed in the labour market. Since the late 1980s the second wave of immigration, in excess of 850,000, has largely come from the former Soviet Union. The later group on average had a much higher level of education than the first wave, with large numbers of skilled and professionals workers. This group was successfully integrated in the labour market after a short period of adjustment.

Labour Market Participation: The Labour Force Participation Rate (LFPR) in Israel has continued to increase, reaching 53.8% in 1998, close to the 54.7% average for

OECD European countries in 1997 (OECD 1998). Israel's labour market has also undergone a transformation in its gender structure, as have other industrialized countries. The female participation rate has increased over the past three decades, from 28.8% in 1968 to 46% in 1998. At the same time, the male participation rate decreased from 71.8% in 1968 to 61.0% in 1998.

Another change in the composition of labour force participation rates that is particularly relevant in our study is decline in the labour force participation rate of the least educated. This is trend that goes back that goes back at least to 1963 (Meltz 1978), and have continued through the period 1976-1994. As noted above, this decrease has contributed to the flattening of the education-unemployment relationship. The decline in this participation rate may be due to the influx of foreign workers and workers from the Palestinian Authority and from the administered territories. It is certain that there has been some substitution for Israeli unskilled labour by these workers. Due to the absence of complete data on the numbers and patterns of employment of non-Israeli labour, a separate statistical analysis which is beyond the scope of this paper is necessary to fully examine the extend of the substitution of non-Israeli labour for low educated/unskilled Israeli workers.

Investment in Education: From the outset, Israel has placed a high priority on education. While the early immigrants had low levels of formal education, the resources devoted to education have always been significant. To put this point in context, in 1995 Canada led OECD countries spending 7.3% of its GDP on education compared to 6.8% in the U.S. (OECD, 1996). In the same year Israel spent 9.8% of its GDP on education (State of Israel, 1996).

Economic Development: In spite of early economic problems associated with high immigration and the need to allocate a substantial portion of the government budget to defence, the Israeli economy has developed rapidly and now includes a world class high-tech sector. Per-capita income in 1997, approximately $17,500(US) has reached the general level of mid-European countries.

Unemployment: In the years immediately following the establishment of the State of Israel, the initially high unemployment rates peaked at 12.8% in 1966. The rate dropped sharply to 3%-4%, during the 1970s, even though after 1973 there was little growth in the economy. Unemployment subsequently increased sharply in the 1980s, reaching a peak of 11.2% in 1992; declined to 6.7% in 1996 (Meltz, 1996), but mounted in 1998 to 8.5%, and is anticipated to be close to 9% in 1999. As will be discussed later, these fluctuations were partly influenced by changes in government policies.

PUBLIC POLICIES: THE GOVERNMENT AND THE HISTADRUT

The pre-state Jewish leadership in Palestine envisioned a homeland for Jews from all over the world, especially for those who were being persecuted in the countries in which they lived. As a result there was a consensus in the new state after 1948 which emphasised that the state should facilitate the absorption of all immigrants, stressing the protection of those persons who faced difficulties in integrating into labour market and society. The specific result was a series of public policies and legislation designed to protect the most vulnerable in the society (Patinkin, 1959; Patinkin, 1965; Halevi and Klinov-Malul, 1968; and Ben-Porat, 1986).

The 1950s to the 1970s: Protecting the weak groups

Five major initiatives were undertaken by the Government to promote and protect employment among the low educated/low skilled group: employment creation; providing employment in government owned companies and in the civil service; preferential treatment by the Government employment service; Government subsidies to employers; and wage policy. The Histadrut (the Israel Trade Union Federation) co-operated with the government by recruiting workers into its corporations and by signing collective agreements that favoured wage increases for the economically weak groups.

Employment creation

The Government, in conjunction with non-government institutions e.g. Jewish Agency, Keren Kayemet, initiated "make work" projects including tree planting, irrigation and road building and other infrastructure programs that could employ large numbers of persons with limited formal education or skills.

Providing employment in government owned companies and in the civil service

A relatively strong segment of Israel's economy is employed in corporations owned by the government (State of Israel, 1997). In the early 1950s government corporations employed about 4.5% of the labour force. These companies were affected by government policies favouring the employment of new immigrants. Government also hired low skilled workers for various branches of the civil service.

Preferential treatment by the Government employment service

Employers recruiting non-professional workers were required by law (State of Israel, 1987) to report their job openings to the state employment service and to hire new employees through the employment service. The allocation of job seekers to these jobs was primarily on the basis of social needs that included size of family and duration of unemployment.

Government Subsidies to Employers

In the first wave of immigration in the 1950s -1960s, the Government adopted a population dispersion policy which settled the low educated in outlying areas. Employment was created in these areas for low-skilled workers relying heavily on government subsidies, for example, textile firms.

Wage policy

There were two mechanisms to protect the standard of living of low educated workers. First, the Government's wage policy was to raise the wages of this group via the collective agreements it signed and second the Minister of Labour was authorized to issue "Extension Orders" for those not covered by collective agreements.

Histadrut's Role in Public Policy

The Histadrut is a unique combination of a trade union movement and a co-operative economic organisation (Hevrat Ovdim) which played a major economic, political and social role before and after the creation of the state of Israel. The Histadrut, via its control over the Hevrat Ovdim group of companies which in the early 1950s -1960s employed over 20% of the Israeli work force, played an important role in recruiting new immigrants including those with the least education. This was congruent with the Government's policy because the

Histadrut was a major pillar of the Labour party, the largest party in the pre-state period and the party which formed the government of Israel from 1948 to 1977.

The second role played by the Histadrut was to support the Government's wage policy of maintaining the standard of leaving of those with the least education.

The 1980s and the 1990s: Reduction in Protection

The five major initiatives which were undertaken by the Government to promote and protect employment among the low educated group, which was discussed in the previous section, have almost all been substantially reduced during the 1980s-1990s. This was mainly due to a combination of factors: the development of the economy on the one hand and the reduction in the number of people needing protection on the other hand. The latter was a result of a shift in the educational background of the immigrants who came in since the late 1980s. In addition, the historic domination of the socialist labour party ended in 1977 with the election of a more free-market oriented Government.

Employment creation

There was a shift in the Government's employment creation programs, away from "make work" for unskilled immigrants, toward a "make work" for the immigrants who were not low educated but faced difficulties in getting employment due to the huge influx of workers. Associated with employment creation were government efforts to overcome language and adjustment problems new immigrants faced in being absorbed into the Israeli economy and society.

Providing employment in government owned companies and in the civil service

With respect to Government-owned companies, there was a sharp decline in their share in the Israel's developed economy. The decrease was from the 4.5% of the labour force in the early 1950s to 2.5% in 1997. This decrease was mainly due to Government's privatization policy that reduced the number of Government corporations from 180 in the 1970s to less than 100 in the late 1990s.

The number of positions in the civil service was reduced, in relative terms, due to a more stringent budget control.

Preferential treatment by the Government employment service

In 1991, Employment Service Law-1959 was changed removing the requirement that the employers report all job openings to the Government Employment Service. As a result of the substantial increase in the unemployment since 1980, Government Employment Centres were unable to assign job seekers to jobs. Even before 1991, private employment agencies were flourishing and competing with the Government Employment Centres. Since the private agencies operate on a profit basis and are able to be selective in who they place in jobs, they are better able to meet employer recruitment needs than the Government Employment Centres. The private centres did not adopt a policy of support for the weak groups in the labour market.

Government Subsidies to Employers

Because of the shift towards a market economy the Government reduced its subsidies to employers of low skilled workers located in areas remote from the main population centres. As a result many companies failed, increasing the unemployment rate of the low skilled/low educated workers and creating social problems in these areas. At the same time, the

government increased subsidies for start-up entrepreneurial ventures (incubators) for highly educated immigrant scientists.

Wage policy

The Government still has as an objective the protection of the standard of living of low wage earners. In 1987, a Minimum Wage Law was introduced which sets a minimum wage of close to 50% of the average wage in the economy. Collective bargaining is less of a tool to promote protection of the low educated workers because, aside from the public sector, there was a sharp decline in the proportion of workers represented by the Histadrut, from an estimated 80% to approximately 45%. Protection against inflation continues through a cost of leaving index in collective agreements and is broadened by an 'Extention Order" which favours low wage earners.

Histadrut's Role in Public Policy

The employment share of the Histadrut has been reduced substantially since the 1950s and 1960s. Trade union membership has declined significantly, especially with the separation of the health care system from the trade union prerequisite membership, and with the influx of many non-unionized companies both from abroad and from growth in Israel. Many of the Histadrut companies went bankrupt and were sold to private investors, thus the number of job opportunities within Histadrut companies was reduced dramatically. This ended the policy of Histadrut support of low educated workers.

SUMMARY AND CONCLUSIONS

From the earliest days of the creation of the state of Israel, there has been an anomalous relationship between education and unemployment. In virtually all industrialized countries, the higher the level of education, the lower the rate of unemployment. In the case of Israel, from the very beginning, those persons with the least education, and those with the most education had the lowest rates of unemployment. Those with high school education had, and still have, the highest rates of unemployment. This produced an inverted U-shaped relation as compared with the consistent inverse relation in other developed countries.

This paper has documented and analyzed the continued existence of the inverted U-shaped relation between education and unemployment in Israel, as well as the recent trend toward a moderation in this relationship. Public policies and institutional developments discussed in the paper appear to lie behind the virtually unique education-unemployment relationship. The activist role played by the government of Israel in giving preferences to those persons in the labour market who were economically and socially disadvantaged, was responsible for the relatively low levels of unemployment for the least educated workers.

The paper also conducted statistical analysis to determine the factors that have contributed to the weakening of the inverse U-shaped relationship since the early 1980s. Two factors were responsible for the flattening of the unemployment - education relationship: the increase in the unemployment rate within the group with 0-8 years of schooling and a decrease in the labour force participation rate in the 0-8 group. Two other factors, the increase in the national rate of unemployment and the time trend factor, contributed to maintaining the inverted U-shaped relation, but their impact was offset by the first two factors. The reasons for the dominance of the first two factors lie in political, social and institutional changes that have occurred in Israel since the late 1970s. These factors include: the reduction in employment creation geared to the least educated; less recruitment to government-owned companies; the removal of preferential treatment by the government employment service;

and a shift in government subsidies from the least educated toward highly-educated new immigrants in the form of start-up high-tech initiatives.

The question remains why is there still an inverted U-shaped relationship? It appears that social policies in Israel still retain significant elements of support for persons with low levels of education. For example, during the period of massive immigration after 1989, the government continued to fund many "make-work" projects in order to decrease unemployment among immigrants, regardless of their education level.

The implication for human capital theory is that determined public policies favouring the least educated may override market forces, even for a long period of time. Clearly this was a part of Israeli policy from the beginning of the state. For Israel, a new country whose population has come from over one hundred countries, with differing levels and types of education and skills social values, the absorption process into society was extremely difficult. Social tensions abounded and with the socialist ethos there was a desire by policy makers to reduce tensions caused by persons with large families and limited education. These people faced difficulties in adjusting to a new, and for the majority a modern society, which were painful enough not to be compounded by unemployment problems. Israel even established a Ministry of Absorption to deal with new immigrants.

The strengthening of market forces and the weakening of the socialist ethos appears to have moderated the extent of the inverted U-shaped relationship, moving it gradually toward the usual inverse relation. However, the fact that the inverted U-shape still prevails in Israel shows the continuing power of government social policy. How long this will persist is difficult to predict because of the uncertainty of future political priorities as well as future labour market developments.

REFERENCES

BEN-PORAT, Yoram. (1986). *The Israel Economy: Maturing through Crises*. Harvard University Press, Cambridge, Massachusetts and London, England.

FILER, R. K., HAMERMESH, D. S. and REES, A. E. (1996). *Economics of Work and Pay*. Sixth Edition, New York, HarperCollins.

HALEVI, Nadav and KLINOV-MALUL, Ruth (1968), *The Economic Development of Israel*. New York: Praeger, Special Studies in International Economics and Development.

INTERNATIONAL LABOUR OFFICE (1996). "Population Active Selon La Situation, Le Sexe Et Le Niveau D'Instruction Le Plus Eleve". Special Tabulation. Geneve, Switzerland, ILO.

JACOBS E. E. (1997). *Handbook of U.S. Labor Statistics: Employment, Earnings, Prices, Productivity, and Other Labor Data - First Edition*. Lanham, Md: Bernan Press.

JOHNSON, W. R. (1979). "The demand for general and specific education with occupational mobility," *Review of Economic Studies*, October pp. 695-705.

MCCONNELL C. R. and BRUE, S. L. (1989). *Contemporary Labor Economics*, Second Edition, New York, MacGraw-Hill International Edition.

MELTZ, Noah (1978). "The Relationship between Education and Unemployment in Israel: An Apparent Paradox", in *Proceedings of the Second Meeting of the Israel Economic Association,* December 1977, Halevi Nadav and Jacob Kop, editors. Jerusalem, Israel, Falk Institute for Economic Research in Israel, August 1978, pp. 195-206, (in Hebrew).

MELTZ, Noah, (1996) "Unemployment in Israel 1960-1994: its rise and recent decline", in *The Economic Quarterly*, vol. 43, no. 2, August 1996, pp. 357-372 (in Hebrew).

OECD, (1996). *OECD in Figures - 1997 Edition*, Published with *The OECD Observer,*

206, June/July. *Employment Outlook June 1998*

OECD, (1998). *Employment Outlook June 1998*. Paris: Organisation for Economic Co-

operation and Development.

PATINKIN, Don, (1959). "The Israeli Economy: The first Decade". In the *Fourth Report*

1957 and 1958. The Falk Project for Economic Research in Israel. Jerusalem.

PATINKIN, Don, (1965). *The Israeli Economy in the First Decade*. The Centre for

Economic Research in Israel. Jerusalem.

STATE OF ISRAEL, (1977-1995), *Statistical Abstract*. Central Bureau of Statistics,

Jerusalem.

STATE OF ISRAEL, (1987), *Labour Laws*. Ministry of Labour and Social Affairs,

Jerusalem.

STATE OF ISRAEL, (1996), *Statistical Abstract*. Central Bureau of Statistics, Jerusalem.

STATE OF ISRAEL, (1997), *Report on the Government Companies - 1996*, Report

No. 36, Government Companies Authority, Office of the Prime Minister, Jerusalem (in

Hebrew).

STATISTICS CANADA, (1996). *Labour Force Annual Averages*. 72-220-XPB,

Ottawa, Minister of Supply and Services.

STATISTICS CANADA, (1988-1995). *Labour Force Annual Averages*. 72-220-XPB,

Ottawa, Minister of Supply and Services, selected years.

TABLE 1: Unemployment Rates in Israel by Years of Schooling:
Selected Years 1963 – 1994

Years of Schooling	1963	1967	1975	1976	1986	1987	1994
Total	3.5	10.4	3.0	3.6	7.1	6.1	7.8
0 Years	2.2	9.1	1.5	*	*	*	*
1-4 Years	3.0	12.0	1.8	*	*	*	*
5-8 Years	4.8	14.2	3.3	*	*	*	*
0-8 Years	*	*	*	3.5	7.0	6.3	8.9
9-12 Years	3.3	8.8	3.4	4.2	9.1	7.5	9.7
13+ Years	1.6	5.0	2.6	2.9	4.1	*	*
13-15	*	*	*	*	*	4.4	6.0
16+	*	*	*	*	*	2.8	4.4

Source: For the years 1963, 1967 and 1975 - Meltz, (1978); for the years 1976, 1986, 1987 and 1994 – State of Israel (1977-1995).

* Data not published in these groupings.

TABLE 2: ANOVA of unemployment levels in Israel by education groups: 1976-1994

Mean	Years of Schooling	16+	13-15	0-8	9-12
-4.4625	16+ Years				
-1.7947	13-15 Years	*			
.2158	0-8 Years	*	*		
1.5684	9-12 Years	*	*	*	

* Indicates a significant difference between two groups at p<. 05.

TABLE 3: Regression Analysis of the Change in the Unemployment Rate of the 0-8 and the 13+ Education Groups Relative to the 9-12 Years of Schooling Group

Education Groups	0-8 Education Group				13+ Education Group			
Variables	B	Beta	T	Sig.	B	Beta	T	Sig.
National level of unemployment	-0.059	-1.989	-2.866	0.012	-0.083	-2.094	-4.012	0.013
Unemployment in education group	0.081	3.169	4.673	0.000	0.132	2.617	6.348	0.000
Labour Force Participation Rate	-0.036	-1.673	-2.201	0.045	-0.010	-0.669	-0.566	0.580
Year (1976-1994)	-0.029	-2.135	-2.575	0.022	-0.003	0.162	0.587	0.566
Constant	59.79		2.599	0.021	-4.565		-.477	.640

*Dependent variable is defined as the ratio between unemployment rate in 0-8 education group and unemployment rate in 13+ education group, each divided by the unemployment rate in the 9-12 education group.

Footnote:

[1] To clarify the relationship between the change in the ratio between 0-8 and 9-12 education groups and the change in the opposite direction in the gap between the unemployment rates of the two education groups, it may be helpful to refer to Figure 5. When the ratio of 0-8 over 9-12 is increasing, for example, from 1991 to 1993, this means that the unemployment rate of 0-8 group is rising relative to 9-12 group, specifically, from 0.80 to 0.98. The "mirror image" of this relationship is the difference between the ratio of the 0-8 group relative to the 9-12 group and the 9-12 group, which we term the "gap". For example, in 1991 the gap between the 0-8 and 9-12 was 0.20, and the gap in 1993 was 0.02.