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Self-selection and return migration: Israeli-born Jews returning home from the United States during the 1980s

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Abstract. This paper analyzes self-selection of returning immigrants. We propose an empirical model for this purpose, and apply it to Israeli-born immigrants who arrived in the United States during 1970–79 and returned to Israel during 1980–89. The results, based on analyses of the 5 per cent Public Use Microdata Samples (PUMS) of the 1980 and 1990 United States censuses, suggest that those who return from the United States to Israel have reached a higher level at school than those who remain in the United States. However, the income analysis suggests that, at each schooling level, those who returned to Israel would have been less successful in the United States labour market than Israelis of similar schooling (and other measured characteristics) who remained in the United States. These results were corroborated using Israeli census data that include information on returning Israelis.

One of the main debates in the immigration literature since the mid-1980s focuses on immigrants' self-selection and socioeconomic assimilation. Many studies attempt to estimate self-selection and rates of assimilation in a variety of destination countries, at different periods, of different immigrant cohorts, originating in different countries (Chiswick 1978; Massey 1987; Simon 1989; Borjas 1987, 1990, 1994, 1995; Bloom and Gunderson 1990; Portes and Rumbaut 1990; Funkhouser and Trejo 1995; Cohen, Zach, and Chiswick 1997; Smith and Edmonston 1997). Estimates of socioeconomic assimilation rates are derived by using one or more cross-sectional data sets. Such data include, in addition to standard demographic and labour market information, a variable measuring time spent in the host country. This variable is added to a standard earnings function, and its coefficient serves as the estimated rate of immigrants' assimilation. This coefficient is necessary for estimating the number of years (if at all) it takes various immigrant groups to achieve complete or 'perfect' assimilation, defined as earnings parity between immigrants and natives with similar measured characteristics.

Common to most of these studies is the implicit assumption that return migration from host to origin country is random with respect to immigrants' skills (Chiswick 1978; Simon 1989; Borjas 1987, 1990; Bloom and Gunderson 1990; Portes and Rumbaut 1990; Funkhouser and Trejo 1995; Cohen, Zach, and Chiswick 1997). Put differently, whether one cross-sectional survey or pooled data from successive surveys are used, these studies assume that a random sample of immigrants at any time is representative of all past immigrants. This is not necessarily the case. It is quite possible that emigrants are drawn from either tail of the skill distribution of all past immigrants. If so, then immigrants who remain in the destination country and are thus included in the various samples used by researchers may not be representative of all past immigrants. In short, if return migration is not random, estimated assimilation rates are biased. For example, if the less skilled tend to emigrate back to their country of birth, assimilation studies would find a positive rate of assimilation, even in a situation where no assimilation had occurred. That is why examining the characteristics of returning immigrants is crucial for understanding immigrants' economic assimilation in the country of destination. This issue was the basis of one of Jasso and Rosenzweig's (1990) conceptual critiques of Borjas's (1987) conclusions about the declining skills of immigrants to the United States (US) during the 1970s. Neglecting to take into account positive selectivity in emigration, they claim, could arguably result in underestimating immigrants' skills and economic assimilation. Yet, for a variety of reasons, from data availability to difficulties in estimation, the assumption of random return migration has hardly been tested empirically.

This paper examines the nature of return migration among Israeli-born Jewish immigrants in the US. The first section discusses theoretical perspectives of selective return migration and applies them to the Israeli case. The second section presents the data – 5 per cent Public Use Microdata Samples (PUMS) of the 1980 and 1990 US censuses.

The third section presents an empirical framework for detecting the nature of self-selection using analyses based on the PUMS. The findings suggest that returning Israelis are positively self-selected on their schooling, but negatively selected on their unmeasured traits determining income. The final section discusses these results and presents independent analyses, based on Israeli census data, which corroborate the findings.

1. SELECTIVITY IN RETURN MIGRATION

In most migration streams, significant proportions of immigrants return to their countries of origin after spending a relatively short time in the host countries. In the US, about one third of all legal immigrants arriving between 1908 and 1957 subsequently emigrated, and the overall rates appear to have risen to as much as 50 per cent since then (Warren and Peck 1980; Jasso and Rosenzweig 1982; 1990a; Borjas and Bratsberg 1996). Rates of outmigration vary by country of origin. In general, rates are lower among immigrant groups originating in countries that are poor, located a large distance from the US, and are undemocratic. Thus, rates of return were found to be higher among immigrants coming from Europe and the Americas, and lower among Asian immigrants (Jasso and Rosenzweig 1982; 1990a; Borjas and Bratsberg 1996). Refugees, whether or not granted such status by the Immigration and Naturalization Service, also experienced low rates of return migration, since they feared returning to their own countries. This was the case, for example, with refugees from Laos, Cambodia, and Vietnam during the 1980s.

Israeli immigrants in the US are thus expected to experience relatively high rates of return migration, given that Israel scores relatively high on measures of both economic development and democracy. Previous research has reported that over one third of Israeli Jews who had been residing in the US for less than 5 years returned to Israel (Cohen and Haberfeld 1997). Jews, however, comprised only about two thirds of the estimated 70,000 and 120,000 Israeli-born who were enumerated by the 1980 and 1990 US censuses respectively (Cohen and Haberfeld 1997). The others comprised two groups of Palestinian Arabs: Israeli citizens (known in Israel as 'Israeli Arabs') and Palestinians who resided in the Israeli-occupied West Bank and Gaza Strip before emigrating to the US. Rates of return migration for Palestinian Arabs are very low (less than 10 per cent, data not shown). The proportion of Jewish returnees is much higher than that of Palestinian-Arabs because the latter have benefited only marginally from the processes of democratization and economic development in Israel enjoyed by their Jewish counterparts over the past two decades (Lewin Epstein and Semyonov 1993). Since this paper is aimed at analyzing selectivity among returnees, among whom only a very small proportion are Palestinian-Arabs, we will focus on Jews in the remainder of this paper.

Three theories have been adopted by analysts attempting to determine whether emigrants are disproportionately drawn from the highly skilled or less skilled of their arriving immigrant cohort. The first relies on intertemporal substitution models that tend to treat immigration as a planned move, aimed at taking advantage of temporary opportunities (e.g., Stark and Bloom 1986). According to this view, returning immigrants are the more skilled and successful, especially if their immigration had been planned to be short term. If immigration from Israel to the US had been planned to be short-term, for a specific purpose such as accumulating human or material capital, then the Israelis who succeeded in these purposes would be expected to return to Israel subsequently. Indeed, this expectation was confirmed by the findings reported by Ritterband (1978) in his study of return intentions among Israeli students in the US, as well as by Toren's (1976; 1978) studies of returning Israelis (many of whom were students) who registered with Israel's Ministry of Absorption (the official name of the ministry in charge of new and returning immigrants). But it is not clear whether these findings apply to the bulk of Israeli Jews who went to the US for purposes other than schooling.

According to the second theory (e.g., Lam 1986), those who return are those who failed in the country of destination, and return migration is viewed as a 'correction' made in the light of better information (DaVanzo and Morrison 1981). People's expectations, or more precisely, their unfulfilled expectations, are central to this approach, which has been used successfully to explain emigration of Jewish immigrants from Israel. Blejer and Goldberg (1980) and Beenstock (1996), using different longitudinal data sets and focusing on different immigrant groups in Israel, found that the propensity of Jewish immigrants in Israel to emigrate was related, among other things, to unfulfilled expectations in the labour market. Borjas (1989), using longitudinal data, reports a similar finding for returning migrants among immigrant scientists and engineers in the US. By contrast, Jasso and Rosenzweig (1990), using data

drawn from US censuses, found high education to be a selection factor among returning immigrant men from the Eastern Hemisphere, and no selectivity in return migration among Western Hemisphere men. Bloom and Gunderson (1990) found no selectivity in return migration among cohorts of immigrants drawn from Canadian censuses. Applied to Israeli immigrants in the US, this theoretical framework would expect those failing socioeconomically in the US to realize they had made a 'mistake' and to 'correct' it by returning to Israel.

The third theory for understanding selectivity in return migration is the best articulated. It expands Borjas' (1987; 1990) model of immigrant self-selection to include return migration (Ramos, 1992; Borjas and Bratsberg, 1996). In his original model, Borjas (1987; 1990) demonstrated that immigrants' skills depend, in part, on returns to skills offered both in countries of origin and of destination. Positive selection of more skilled immigrants occurs when relatively egalitarian countries do not reward their skilled workers as much as host countries. But from countries of high income inequality, where skills are generously compensated, the selection of immigrants is negative: it is the unskilled who seek to improve their economic lot by migrating to a more egalitarian country, where they expect to be protected by a net of social services. Ramos (1992) extended the model to the return migration of Puerto Rican immigrants in the US. Since returns to skills were lower in the US than in Puerto Rico, the less skilled emigrated from Puerto Rico to the US, and subsequently the more skilled among them returned home. In this model the prediction is straightforward: if the initial migration selects the unskilled, then, *ceteris paribus*, return migration selects the more skilled, and vice versa. In other words, the process of return migration is expected to accentuate the selectivity of the initial step. Borjas and Bratsberg (1996) follow the logical conclusions of the model: Since recent cohorts of US immigrants are selective of the less skilled, they argue, return migration is likely to be selective of the more skilled, thus lowering further the skill levels of immigrants who remain in the host country. Applied to specific immigrant groups, the prediction of this model depends on the nature of the initial migration step. Since skill level was a positive selection factor for immigrants from Israel to the US in the 1960s, 1970s and 1980s (Cohen, 1989,1996), and since returns to skills have been higher in the US than in Israel (Gottschalk and Smeeding 1997), the less skilled and less successful among Israelis in the US had a stronger incentive to return to Israel during the 1980s. In short, Borjas' model predicts that skill level will be a negative selection factor among Israelis returning from the US to Israel.

Of course, the three theories discussed above are not mutually exclusive. It is possible that returning immigrants from a specific country are drawn from both tails of the skill distribution. Successful immigrants who achieve their aims in the host country may return home to reap the benefits of their success (Massey 1987), whereas unsuccessful immigrants may emigrate back to correct the mistake they had made. In the case of Israelis, for example, it is possible that those who go to the US as students return after obtaining a qualification, whereas those failing economically also return as they realize that their migration has not fulfilled their expectations. Moreover, in the Israeli case, Borjas' model predicts that low skill level will encourage return migration, much like the theory of unfulfilled expectations. This paper, however, is not designed to decide between the theories. Rather, theoretical considerations have been discussed in order to illuminate the possible processes leading to selectivity in return migration, as well as to be suggestive of its direction in the Israeli case.

2. DATA

We use the 5 per cent PUMS of the 1990 and 1980 US censuses (US 1992). These large samples make it possible to study relatively small groups who resided in the US in the census year, such as the Israeli-born. Relevant information in the PUMS includes country of birth, period of immigration (grouped in 5-year periods), enrollment in an educational institution, language spoken at home, and reported ancestry. In addition, these samples include detailed schooling and labour market information for each individual.

We focus our analyses on all Israeli-born Jews (see Cohen and Haberfeld 1997 for the method by which Jews can be identified among the Israeli-born and Palestinian-born in the 1980 and 1990 PUMS) who entered the US between 1970 and 1979. We can thus trace two cohorts of Israeli-born immigrants in these data sets: those entering the US between 1970–74 and those who entered during 1975–79. Differences in the size and composition of these cohorts between the 1980 and 1990 PUMS could result from mortality, undercount, and emigration. We estimated mortality during the 10-year period using life tables for the Israeli population and the age/sex structure of these immigrant cohorts (Israel 1991), and found that mortality was negligible

because of the young ages of the immigrants. It is likely that only a few Israeli-born Jewish immigrants in the US emigrated to third countries. Studies of return migration normally assume that all emigrants return to their native countries, rather than emigrate to a third country. There is no known reason to expect Israeli-born immigrants in the US to behave differently. Finally, assuming that the census undercount among Israeli immigrants in the US was similar in both 1980 and 1990[1], we can use these data to trace differences in the characteristics of immigrants that are a result of selective return migration.

The main variables for testing labour market skills of returnees are education and annual income from work and self-employment. Education is considered to be the main *measured* characteristic of labour market quality. Two measures of education are used: years of schooling and the proportion having at least a college degree. A measure of earnings is used in migration studies as an indicator of individual productivity and skills. Earnings are considered to be a function of productivity (and of course labour supply), which is, in turn, determined by all relevant individual characteristics, measured and unmeasured, and is therefore used as the best indicator of immigrant labour market quality (Borjas 1990).

3. EMPIRICAL ESTIMATION

In the 1980 PUMS there were 4,020 Israeli men, 25–50 years old, who had entered the US during the preceding five years. By 1990, only 2,763 remained in the US. Thus, 31 per cent of men who entered in the late seventies and resided in the US in 1980, returned to Israel during the following 10 years. The corresponding figure for women is 32 per cent. Because of the universal inverse correlation between rates of return migration and years since migration, the rate of return migration among the earlier cohort (bottom panel of Table 1) are lower: 25 per cent for men, and 22 for women. It is important to note that these are underestimates as they exclude all Israeli-born immigrants who entered the US during 1970–79 and emigrated before the 1980 census date. Rather, these are estimates for immigrants who, in 1980, had resided in the US an average of 2.5 years (the cohort of 1975–79) , and 7.5 years (the cohort of 1970–74).

3.1 *Schooling*

To compare the schooling of returnees with that of immigrants who remained in the US, we limit the analyses to persons 25–50 years old in 1980 (35–60 years old in 1990) who entered the US during 1970–74 and during 1975–1979. Comparing the mean schooling of these cohorts will inform us if the returnees are better educated than those who remained in the US. Mean schooling level in 1990 should be equal to or higher than that in 1980 under conditions of zero return migration, randomly selected return migration, or selection of the less educated in return migration. If, in fact, mean schooling level in 1990 was significantly lower than the mean in 1980, it must be because the highly educated were more likely to return to Israel than the less educated.

Of course, even if mean schooling level in 1990 was similar to, or only slightly higher than, the level in 1980, it is still possible that the highly educated were more likely than others to return during the 1980s. This is because during 1980–90 there was some increase in schooling level among persons 25–50 years old in 1980 (Cohen et al. 1997). To estimate what would have been the mean schooling of this cohort in 1990 under the condition of zero return migration, we calculated the observed increase in schooling level during 1980–90 in a sample of white native-born Americans 25–50 years old in 1980 (drawn from the PUMS). Assuming that increase in schooling level among immigrants was similar to that of natives, we compared the 10-year increase experienced by both groups during 1980–90. (Another possible benchmark to which Israelis in the US can be compared is Israelis residing in Israel. Using Israeli labour force surveys, we also calculated the 10-year increase in schooling level of men and women 25–50 years old in 1980. The growth rates in their schooling [data not shown] are appreciably the same as those reported in Table 1 for native-born Americans.) The results of these comparisons can show if emigration selectivity among Israelis in the US, as indicated by schooling, has been positive, negative, or random.

Table 1 presents mean schooling level and percentage with at least a BA degree for the two cohorts of Jewish men and women by age group. Among members of the recent cohort (top panel) the mean schooling level of Jewish men and women (in all age groups) is larger in 1980 (column 1) than in 1990 (column 2). Mean schooling level of Israeli-born men declined by 0.4 years between 1980 and 1990 (column 3), while the mean schooling of natives of similar ages increased by 0.3 years during this period (column 4). This implies that the more educated among Israeli-born Jewish men emigrated from the US between 1980 and 1990. Because of the

Table 1. *Mean years of education and per cent with at least a BA degree among Israeli-born Jewish immigrants arriving in the US in 1970–80: 1980 and 1990 census by cohort, sex, and age[a] group*

Variable:	Years of education				Per cent with at least BA			
Group:	Israeli immigrants			Natives	Israeli immigrants			Natives
Year:	1980	1990	90-80[b]	90-80[b]	1980	1990	90–80[b]	90–80[b]
Column:	1	2	3	4	5	6	7	8
Immigrants arriving to the US in 1975-79								
A. Men (N 1980,1990)[c]								
25-50 (4020, 2763)	14.9	14.5	–0.4	+0.3	46.8	40.5	–6.3	+2.7
25–35 (3180, 2210)	14.9	14.5	–0.4	+0.3	45.9	39.6	–6.3	+2.6
25–35[d] (2020, 2210)	14.3	14.5	+0.2	+0.4	44.6	39.6	–5.0	+4.6
36–50 (840, 553)	15.2	14.0	–1.2	+0.4	50.0	43.9	–6.1	+2.5
B. Women								
25–50 (3440, 2325)	14.3	13.8	–0.5	+0.2	39.0	28.8	–10.2	+3.4
25–35 (2960, 1801)	14.5	14.1	–0.4	+0.5	41.2	33.8	–7.4	+5.7
25–35[d] (2,360, 1801)	13.9	14.1	+0.2	+0.6	33.6	33.8	+0.2	+6.5
36–50 (480, 524)	13.2	12.7	–0.5	0.0	25.0	11.5	–13.5	+1.0
Immigrants arriving to the US in 1970–74								
A. Men								
25–50 (3260, 2433)	14.0	13.8	–0.2	+0.3	36.2	33.3	–2.9	+2.7
25–35 (2580, 2017)	13.9	13.6	–0.3	+0.3	35.7	29.6	–6.1	+2.6
25–35[d] (2,260, 2017)	13.8	13.6	–0.2	+0.4	33.6	29.6	–4.0	+4.6
36–50 (680, 416)	14.1	15.1	+1.0	+0.4	38.2	51.0	+12.8	+2.5
B. Women								
25–50 (1960, 1594)	13.7	13.5	–0.2	+0.2	28.6	28.7	+0.1	+3.4
25–35 (1600, 1221)	13.8	13.6	–0.2	+0.5	30.0	25.9	–4.1	+4.7
25–35[d] (1,500, 1221)	13.8	13.6	–0.2	+0.6	30.7	25.9	–4.8	+6.5
36–50 (360, 373)	13.0	13.1	+0.1	0.0	22.2	37.8	+15.6	+1.0

[a] Age in 1980. Age in 1990 is 10 years older.
[b] Mean year of schooling (per cent with at least BA) for 1990 minus mean schooling (per cent BA) for 1980.
[c] Number of cases are population estimates obtained by using the individual weights available in the 1990 PUMS (the data in the 1980 PUMS are self-weighted). The actual number of cases is about one twentieth of the population estimates. The descriptive statistics presented in this Table are based on the weighted data. The results are essentially the same with and without weights.
[d] Excluding students in 1980.

small number of cases, none of the differences in educational levels of Israelis (columns 3 and 7) is statistically significant. The differences among natives (columns 4 and 8) are all statistically significant. Taken together, we can conclude that there are probably differences between the changes in educational levels of Israeli immigrants and natives.

The decline in schooling among those 25–35 years old is of particular interest, as in 1980 nearly one third of them were students whose rate of return migration is known to be higher than that of other immigrants (Bratsberg 1995). When Israelis who were students in 1980 were excluded from the analysis (third row), we observe an increase of 0.2 years between 1980 and 1990, compared to a decline of 0.4 years for this entire age group (second row). Among natives, the schooling of this age group increased by 0.4 years (without students) and by 0.3 years (with students). It thus appears that returning students were responsible for a major part of the decline in the level of schooling of Israeli-born men between 1980 and 1990. However, the fact that when students are excluded, natives' schooling rises faster than that of Israeli immigrants, implies that the overall decline in years of schooling of Israeli-born men could probably not be attributed solely to returning students.

The right-hand panel of Table 1, where percentages of college graduates are presented, points to the same general conclusion: those with college degrees tend to leave the US more than those with less than college education, and the results with and without students are appreciably the same. There is a 6.3 percentage point decline in the proportion of Israeli-born men with a BA

degree between 1980 and 1990, compared with an increase of 2.7 percentage points among natives in the same age group. The declines are similar for both age groups, and are appreciably the same when students are excluded.

The results for Jewish women are similar, and even stronger than the results for men. Israeli women who immigrated to the US during 1975–79 had 0.5 fewer years of schooling in 1990 than in 1980, compared to an increase of 0.2 years among white native women of similar ages. Among younger women, the decline was 0.4 years, compared to an increase of 0.5 years among native women. The proportion of Israeli women with a BA degree declined by over 10 percentage points, compared to an increase of 3.4 percentage points among native women. Similarly to men, returning students were responsible for a major part of the decline in schooling levels of Israeli women in the US during the 1980s. When students in 1980 are excluded from the analysis, Israeli women increased their schooling, but not as much as native women in the same age groups. As is the case among men, this implies that the return of highly educated students could probably not explain the entire decline in the schooling of Israeli women in the US in 1980–90.

The bottom panel of Table 1 replicates the results for the earlier cohort of Israelis, those entering the US in 1970–74. Among the vast majority of immigrants – those aged 25–35 in 1980 – the results are similar to those observed for the more recent cohort: those who return appear to be more highly educated than those who stay, and this holds for both gender groups, with and without students. Among older immigrants – those aged 35–50 in 1980 – schooling level in 1990 was much higher than expected given the schooling increase among natives during this period. This implies that the schooling level of the small number of emigrants of this age group was lower than that of those who remained in the US. It is important to emphasize, however, that results for the older age group of both cohorts are based on relatively small numbers of returnees, and should be treated with more caution than the results for the younger age group, which contains over 75 per cent of Israeli immigrants in the US.

Taken together, the schooling levels presented in Table 1 suggest that education has a selective effect on Israeli emigration from the US, for both men and women. In part this is because those who go to the US for the purpose of studying tend to have both a higher schooling level and a greater propensity to return to Israel than other Israeli immigrants. However, even when students are excluded from the analyses, the schooling levels of Israelis in the US decline (among the cohort of 1970–74) or rise at a slower rate than that of comparable natives (the cohort of 1975–79). This being the case, we may conclude that among Israeli men and women who go to the US for reasons other than schooling, the more successful are more likely to return, although not to the same extent as when students are included in the analysis.

3.2 *Income*

One method for detecting selectivity in return migration (but not in its direction) is to examine data on income dispersion. Random return migration would mean either no change or a rise in income dispersion among immigrants. A decline in the variance in the incomes of immigrants (relative to natives) over time reflects a situation in which returnees are drawn from one or both tails of the income distribution (Bloom and Gunderson 1990). By contrast, a growth in income dispersion among immigrants may be the result of several factors that are not necessarily related to selectivity in return migration. For example, rising income dispersion among immigrants could be the result of employers becoming better informed about the productivity levels of the newcomers (Stark 1991), or it might reflect better transferability of immigrants' skills in 1990 than in 1980. We therefore examine below changes in income dispersion among natives and Israeli immigrants.

A second method of detecting selectivity using income data for returnees follows the logic of the schooling analysis, though the estimation of immigrants' earnings is more problematic than that of their schooling level. The gap between average immigrants' earnings in 1980 and 1990 could be the result of one or more of four different factors. First is the period effect: earnings in 1990 and 1980 could be different owing to changes in overall market conditions. Secondly, they could be different as a result of one component of the period effect – the rise in returns to education (especially higher education) in the US (Gottschalk and Smeeding 1997). Third, there is the ageing effect – the possible growth in the earnings of immigrants as a result of their assimilation in the labour market. In their first 10 to 15 years in the new country, immigrants learn the language and become familiar with the local labour market, and their earnings can then rise above and beyond those of natives (Chiswick 1978; Borjas 1994). Finally, a difference between the immigrants' average earnings in 1980 and 1990 could result from a non-random return migration. This portion of the gap needs to be estimated to

reveal selectivity in return migration. To this end, we pooled the 1980 and 1990 PUMS for the Israeli-born Jews and for a benchmark sample of white native-born Americans. First, we estimate the following model for Israeli-born immigrants who arrived in the US during 1970–80:

$$\ln(y) = X'B + b_1(\text{schooling}) + b_2(\text{ba}) + b_3(1990) + b_4(\text{schooling} * 1990) + b_5(\text{ba}*1990) + b_6(\text{ysm}) + b_7(\text{ysm}^2) \quad (1)$$

where y denotes annual income of the i^{th} immigrant at time j (j = 1980; 1990); X is a vector of earnings determinants and B is a vector of their coefficients; schooling is measured in years; ba is a dummy variable coded '1' if respondent has a college degree. (We present b_1 and b_2 separately from $\underline{B}$ because of the evidence that returns to schooling changed during the 1980s while other earnings determinants did not change appreciably during that period.) 1990 is a dummy coded '1' if the observation is drawn from the 1990 census, and ysm is years since migration; b_3 is the period effect experienced by immigrants, and b_4 and b_5 are the growth in returns to education in the eighties; b_6 and b_7 are estimates of immigrants' assimilation rate. We allow for a curvilinear effect of assimilation on earnings by introducing ysm and its squared term into the model. The immigrant sample is composed of two cohorts: those arriving in 1975–79 and those arriving in 1970–74. The model assumes no changes in socioeconomic quality between the two cohorts, thus we do not control for cohort effect. Pooling the 1980 and 1990 data implies that the possible values of years since migration for the Israelis in our sample are 2.5, 7.5, 12.5, and 17.5 years.

Next, we use the pooled sample of white native-born Americans to derive estimates of the period effect and the growth in returns to college education between 1980 and 1990:

$$\ln(y) = X'C + c_1(\text{schooling}) + c_2(\text{ba}) + c_3(1990) + c_4(\text{schooling} * 1990) + c_5(\text{ba} * 1990) \quad (2)$$

where y denotes annual income of the i^{th} native-born American at time j (j = 1980; 1990); X is a vector of earnings determinants and C is a vector of their coefficients; c_1 and c_2 are the effects of years of schooling and of a college degree for natives; c_3 is the period effect experienced by natives, and c_4 and c_5 are growth in returns to natives' schooling and college degrees respectively between 1980 and 1990. If there is no selectivity in return migration from the US to Israel, c_3, c_4 and c_5 should be similar to the estimates of the corresponding effects (b_3, b_4 and b_5) among immigrants.

The most interesting effect for our purposes is b_3. This is the period effect on immigrants' earnings net of all other variables, including assimilation. It captures two different factors: period effect and changes in the skill composition of immigrants as a result of non-random return migration. In addition, the difference between immigrants and natives in growth in returns to years of schooling and college degrees $(b_4 + b_5)–(c_4 + c_5)$ also serves as an indication of non-random return migration among Israelis. Thus, the change in immigrants' skills (Δq) varies by level of education. It can be estimated for each level of education by:

$$(\Delta q) = (b_3 - c_3) + (b_4 - c_4) + (b_5 - c_5) \quad (3)$$

A positive Δq indicates that the labour market skills of those who remained in the US are higher than that of the returnees, and a negative Δq indicates the opposite.

There are two issues that should be mentioned at this point. First, if indeed return migration is not a random process, then b_7 might contain elements of the stayers' unique attributes. In this case, a positive Δq underestimates the skills of stayers, and a negative Δq overestimates the skills of stayers. A possible bias in b_6 is less of a problem because it captures the effect of ysm during the initial period of immigration, while b_7 captures the effect during the later stages of ysm.

Second, it is quite possible that return migration of immigrants belonging to the studied cohorts started before 1980. In this case, the 1980 sample is already censored. However, such a situation does not pose a serious threat to our results because the purpose of our analysis is to detect non-random return migration. As long as return migration does not stop, we can detect its nature in the post 1980 years.

We limited the analysis to men 25–50 years old in 1980 (35–60 in 1990), working at least four weeks, with annual income of at least $US1,000. We limited the income analysis to men because nearly one half of Israeli women in the US were out of the labour force in either 1980 or 1990. The upper bound of the age limit was selected because very few Israelis of the studied cohorts were over 50 years old in 1980. Moreover, including men over 60 years old in 1990, when both labour force participation rates and incomes tend to decline, might bias the results for the period effect. The choice of 50 as the upper bound for age largely solves this potential problem. (We have also run the analyses for men aged 25–45 in 1980. The results (not shown) are appreciably the same as those presented below for the age group 25–50).

The dependent variable is the natural logarithm of annual income from work and self-employment, expressed in 1989 US dollars (income in 1979 was multiplied by 1.708). We use income rather than earnings because, during the 10-year period, many Israeli immigrants changed their labour market status from salaried to self-employed and vice versa. The proportion self-employed among Israelis is very high – 22 per cent in their first decade in the US, and 35 per cent in their second decade (Table 2). If we were to exclude salaried immigrants in 1980 who had become self-employed by 1990, the model would force us to assume that they had emigrated, and thus bias the results much more than by including the self-employed in a standard earnings function.

A similar potential problem arises from the exclusion of the unemployed and those not in the labour force. Changes in labour force participation rates may bias the results if there is selectivity in participation rates among immigrants or natives or both. For example, if less skilled immigrants left the labour force between 1980 and 1990, our model forces us to assume that they had emigrated. Not surprisingly, however, participation rates among Israelis were higher in 1990 than in 1980. In 1980, 86.2 per cent of all Israeli-born men aged 25-50 satisfied the conditions imposed for entering the analysis – working for at least four weeks with annual income of at least $US1,000. By 1990, after spending an additional 10 years in the US, the proportion rose to 95.3 per cent. Among natives the proportion of those satisfying the conditions was higher in 1980 (94.0 per cent) than in 1990 (91.0 per cent). We checked for possible selectivity in being included in the analysis using Heckman's (1980) correction, and found that the results with and without the correction were substantially the same. We therefore present below the results without Heckman's correction.

Table 2 presents the means and standard deviations of all variables used in the analysis, for immigrants and natives, by year of survey. The standard deviation of income (Ln) among Israeli immigrants declined from 0.84 in 1980 to 0.82 in 1990 (Table 2). Although this decline is small and statistically insignificant, it is in contrast to a 10 per cent increase (from 0.72 to 0.79) in the standard deviation among natives during the same period. The rising income dispersion among natives reflects several processes (e.g., ageing, rising income inequality in the US between 1980 and 1990) that probably affected immigrants as well. Yet income dispersion among Israeli immigrants did not

Table 2. *Means (sd) of all variables used in the regressions: men aged 25–50 years old in 1980 by group and census year.*

	Group:	Israeli immigrants			Natives		
Variables[a]	Year:	Pooled	1980	1990	Pooled	1980	1990
Annual income (Ln)		10.17	9.97	10.46	10.21	10.18	10.25
		(0.87)	(0.84)	(0.82)	(0.76)	(0.72)	(0.79)
Age		35.95	31.87	41.68	40.32	35.70	45.14
		(7.24)	(5.20)	(5.64)	(8.68)	(7.40)	(7.16)
Annual hours of work		2067	1941	2245	2175	2142	2210
		(745)	(752)	(700)	(659)	(648)	(652)
Years of education		14.44	14.61	14.21	13.37	13.26	13.49
		(3.28)	(3.16)	(3.45)	(2.93)	(3.12)	(2.72)
BA or higher		0.41	0.44	0.38	0.28	0.28	0.30
Higher than BA		0.26	0.26	0.26	0.13	0.14	0.13
Salaried		0.73	0.78	0.65	0.85	0.87	0.84
Student		0.12	0.19	0.02	0.05	0.06	0.04
Non-South		0.92	0.93	0.91	0.75	0.74	0.75
Married		0.81	0.77	0.86	0.78	0.77	0.79
English		0.66	0.62	0.71			
Years since migration		9.51	5.47	15.17			
		(5.40)	(2.50)	(2.48)			
N of cases[b]		538	314	224	5316	2715	2601

[a] Definition of variables: income is measured by the natural logarithim of income from work and self-employment in the year preceding the census year. Age, years of education, and years since migration are measured in years. Labour supply is measured by annual hours of work. All other variables are binary variables coded '1' if the respondent is salaried, if married, if he has at least a BA degree, if he has any schooling beyong the BA degree, if he speaks English 'very well' or only English, if he is a student, and if he does not live in the South.

[b] The descriptive statistics in this table as well as the regression analyses presented in Table 3 are based on the unwieghted data. The results are essentially the same with and without weights.

increase during this period. This being the case, we conclude that the income dispersion data are consistent with a process of non-random return migration among Israelis.

Table 3 presents regression results aimed at detecting the type of selection among emigrants. The independent variables used in the equations are annual hours of work, age, age squared, years of schooling, years since migration, years since migration squared, and binary variables coded '1' if the respondent is salaried, if the observation was drawn from the 1990 census, if the respondent has at least a BA degree, if he speaks English 'very well' or only English, if he is a student, if he is married, and if he does not live in the South. Column 1 presents the results for all Israeli-born Jewish men and column 2 presents the results for white native-born American men.

The coefficients of interest in both regressions are those of the period effect for 1990 and the interaction effects between 1990 and the two measures of education. For both groups the interactions are positive, but only one of them is statistically significant (the interaction between

Table 3. *Regresions of Income (Ln): Israeli-born immigrants and native born men 25–50 years old in 1980 (standard errors in parentheses).*

Variables:	Immigrants	Natives	Immigrants	Natives
Age	0.074	0.073**	0.077*	0.075**
	(0.038)	(0.009)	(0.038)	(0.009)
Age squared[a]	–0.076	–0.073**	–0.080	–0.075**
	(0.100)	(0.000)	(0.100)	(0.000)
Annual hours of work[a]	0.048**	0.038**	0.048**	0.038**
	(0.000)	(0.000)	(0.000)	(0.000)
Years of education	0.023	0.050**	0.053**	0.059**
	(0.023)	(0.006)	(0.020)	(0.005)
BA or higher	0.088	0.032		
	(0.140)	(0.044)		
Higher than BA			–0.171	–0.071
			(0.137)	(0.048)
1990[b]	–0.256	–0.604**	0.171	–0.570**
	(0.436)	(0.128)	(0.403)	(0.107)
Years of education × 1990	0.014	0.036**	–0.021	0.033**
	(0.033)	(0.010)	(0.029)	(0.008)
BA × 1990	0.196	0.068		
	(0.244)	(0.066)		
Higher than BA × 1990			0.560*	0.167*
			(0.219)	(0.070)
Married	0.195*	0.279**	0.202*	0.276**
	(0.080)	(0.022)	(0.080)	(0.022)
Student	–0.038	–0.149**	–0.027	–0.146**
	(0.104)	(0.041)	(0.103)	(0.041)
Non–South	0.325**	0.138**	0.347**	0.138**
	(0.113)	(0.020)	(0.112)	(0.020)
Salaried	–0.019	0.141**	–0.030	0.141**
	(0.070)	(0.025)	(0.070)	(0.025)
English	0.051		–0.048	
	(0.067)		(0.067)	
Years since migration	0.072**		0.076**	
	(0.028)		(0.028)	
Years since migration squared	–0.003*		–0.003*	
	(0.001)		(0.001)	
Number of cases	538	5316	538	5316
Constant	6.330**	6.637**	5.906**	6.500**
F	21.69**	181.97**	22.10**	182.12**
R Squared (adjusted)	0.366	0.290	0.371	0.290

Source: 1980 and 1990 PUMS.

[a] Coefficient multiplied by 100.

[b] 1990 is a binary variable coded '1' if the observation was taken from the 1990 census.

See Table 2 for definition of other variables.

* $p < 0.05$.

** $p < 0.01$.

years of schooling and 1990 among natives). The positive interactions reflect the rise in returns to higher education experienced by highly educated workers in the US during the 1980s compared to the 1970s. However, the period effect for 1990 is negative and statistically significant among natives (–0.604), but smaller and not significant among Israeli immigrants (–0.256). The difference between the period effect for natives and Israelis is statistically significant. When applying equation (3), and not considering significance levels, the advantage in income growth of Israelis over natives (Δq) is thus 8.4 per cent for high school graduates and 12.4 per cent for college graduates (evaluated at 16 years of schooling). In other words, controlling for all measured characteristics (including years since migration and being a student), the incomes of Israeli-born high school and college graduates were 8.4 and 12.4 per cent higher, respectively, than the incomes of natives with similar characteristics.

Columns 3 and 4 present the results of similar regressions, with one change: the indicator variable for education is coded '1' only if the respondent has some formal schooling *beyond* the BA degree. This is done in the light of the finding above that the advantage of Israelis over natives is greater at the higher level of education. Moreover, evidence from previous research suggests that the increase in return to schooling in the 1980s was steeper at the highest levels of schooling. To the extent that this was so, we should observe a greater advantage among Israeli immigrants who studied beyond the BA level compared to those with a BA degree. The results support this hypothesis. Not surprisingly, most coefficients in columns 3 and 4 are similar to those presented in columns 1 and 2. However, unlike the first specification of the model (columns 1 and 2), the interaction effects between a high degree and 1990 are statistically significant for both immigrants (column 3) and natives (column 4) in the second specification. Moreover, the difference in the period effect between natives and Israeli immigrants is larger in the second specification than in the first. Taken together, according to equation (3), the advantage of Israelis over natives in the second specification is 9.3 per cent for high school graduates and 16.2 per cent for those with an MA degree (evaluated at 18 years of schooling).

In both specifications we controlled for all measured variables including years since migration. We also re-estimated the models without students as well as with interactions between 1990 and all independent variables (in addition to the interactions between 1990 and schooling variables), and the results were essentially the same. Therefore, the only process that could explain these results is negative selectivity in unmeasured characteristics among Israeli emigrants: those who would have earned less at a given level of characteristics left the US between 1980 and 1990. As a result, the remaining Israelis improved their income compared to demographically similar natives, whose composition was assumed not to change between 1980 and 1990.

4. DISCUSSION

The results presented above, on the type of selectivity among Israeli born emigrants from the US to Israel, appear to be mixed: On the one hand, among both men and women, the descriptive statistics of years of schooling and per cent college graduates show that highly educated Israelis tend to leave the US more than the less educated. Thus, we found that the key measured indicator of skills – education – had a positive selective effect on return migration. In large part this pattern of selection is a result of high rates of return migration among Israelis who went to the US for the purpose of studying. On the other hand, the income regressions suggest that income – the main summary indicator for measured and unmeasured skills – had a negative selective effect on return migration. Those whose incomes grew faster than expected (relative to natives' income growth) tend to stay in the US. In contrast to the case of schooling, returning students did not have a major impact on this finding. A possible explanation for these results is that those who earn less (i.e., the less productive) at each schooling level tend to return to Israel, whereas the high earners at each schooling level tend to remain in the US. At each schooling level, income is dispersed according to unmeasured traits. Apparently, the unmeasured traits of those who left were not as acceptable to the US labour market as the traits of those who remained in the US.

An independent test for this interpretation of the results is possible using a different data source. The 1983 Israeli census enables us to identify respondents who resided in Israel at the census date (1983), but resided abroad 5 years before the census date (1978). It is thus possible to identify and analyze the characteristics of persons returning to Israel during 1979–83. Since our analyses of the PUMS are of returnees of approximately the same period, the analysis of the 1983 Israeli data is particularly interesting. In fact, some of the returnees identified in the 1983 Israeli census represent those persons included in the 1980, but not the 1990, PUMS. Unfortunately, the Israeli census does not provide

information about the specific countries of residence abroad for such persons. We are therefore forced to assume that they all resided in the US. This is not a hazardous assumption as, in the 1980s, 50–60 per cent of Israeli-born emigrants were estimated to be residing in the US (Paltiel 1986).

The analysis of the Israeli data reveals that the schooling level of returnees is higher than that of Israeli immigrants in the US. For example, while 44 per cent of Israeli-born Jewish men in the US aged 25–50 years old had at least a BA degree in 1980 (Table 2), the proportion of college graduates among returning Israeli-born men of the same ages identified in the 1983 Israeli census was 62.9 per cent. Similarly, the average years of schooling among Israelis in the US was 14.4 years, compared to 16.1 among returnees represented in the Israeli census. These comparisons lead to the same conclusion reached using the PUMS: returning Israelis are of higher schooling than that of their counterparts who remained in the US in 1980.

Turning to the income analysis, Table 4 presents results of an earnings regression among Israeli-born Jewish men aged 25–50 in 1983. The dependent variable is the natural logarithm of annual income from work and self employment, expressed in the Israeli currency (NIS). The independent variables, too, are similar to those presented in Table 3 for native-born Americans: age, age squared, annual hours of work, years of schooling, and dummy variables coded '1' if the person holds at least a BA degree, if married, if salaried, and if he resided abroad in 1978. The coefficient of interest is that of the dummy variable indicating residence abroad in 1978. It is negative and statistically significant. Returning Israelis earned, on average, 8.3 per cent less than other Israeli men working the same number of hours, of the same schooling, age, marital status, and other measured characteristics. Taken together, these results point to an unequivocal conclusion: Returning Israelis are of higher educational level than Israelis in the US, but their income in Israel is less than expected given their high level of formal schooling. Apparently, the unobserved determinants of earnings of returning Israelis are not as positive in their effects as they are on those of other Israeli-born residents of similar observed characteristics.

Two processes could explain this finding: either the unobserved characteristics of all Israelis who left Israel are not as valuable as those of their counterparts who remained in Israel, or returning Israelis are negatively selected for their unobserved characteristics. The first possibility is unlikely. If it were the case, Israelis in the US would have earned less than demographically comparable native-born Americans. The empirical evidence suggests otherwise. With respect to income, it takes Israeli-born Jewish men in the US, 15–18 years to overtake native-born Americans of the same observed characteristics (data not shown). Consequently, we may conclude that Israeli immigrants in the US were positively selected from the Israeli population, not only on their observed characteristics, but also on their unobserved, income-determining traits. We are thus left with the second possibility, which is similar to the conclusion reached using the PUMS: returning Israelis are negatively selected for unobserved traits from the population of Israelis in the US. The unobserved (positive) characteristics of the surviving Israeli immigrants in the US are unknown. They may be any of the variables that were found to affect income in previous studies that had measures for such variables. For example, the

Table 4. *Regression of income (Ln): Israeli-born Jewish residents of Israel, 25–50 years old in 1983 (standard errors in parentheses).*

Variables:[a]	
Age	0.101**
	(0.006)
Age squared	–0.001**
	(0.000)
Annual hours of work[b]	0.020**
	(0.001)
Years of education	0.069**
	(0.002)
BA or higher	0.055**
	(0.013)
Married	0.185**
	(0.010)
Student	–0.243**
	(0.014)
Salaried	0.042
	(0.033)
Returned during last 5 years	–0.083**
	(0.029)
Number of cases	26,505
Constant	9.30**
F	1171.72**
R Squared (adjusted)	0.284

Source: 20 per cent sample of the 1983 Israeli census.

[a] Definition of variables: Income is measured as the natural logarithm of annual income from work and self employment in 1983. Age, age squared, and years of schooling are measured in years. Labour supply is measured by annual hours of work. All other independent variables are binary variables coded '1' if respondent has at least a BA degree, if married, if salaried, and if his place of residence in 1978 (5 years before the census year) was outside Israel.

[b] Coefficient multiplied by 100.

* $p < 0.05$.

** $p < 0.01$.

remaining immigrants may be those whose social ties were more developed than those who left the US. Quality of ties were found to affect income in the US (Granovetter 1995). But the unobserved traits may also be variables that are either inherently unmeasurable (e.g., general 'ability' however defined) or extremely difficult to measure (e.g. motivation, risk-taking). Unfortunately, the data do not enable us to assess the empirical status of these possibilities.

It is interesting to note that a similar pattern of migration selectivity was observed between the US and Canada. The schooling level of Americans who emigrate to Canada is relatively high. But an analysis of their earnings in the Canadian labour market reveals that they are not as successful as their schooling would appear to warrant (Borjas 1990). Apparently, it is the less productive among highly educated Americans who emigrate to Canada. On a broader level, the empirical results suggest that the implicit assumption of many immigrant assimilation studies – that return migration is random with respect to skills – is not warranted, and needs to be empirically investigated. Moreover, relying on schooling as the sole measure of immigrant skills, as done by some studies of return migration, may be misleading. As in some previous research (Toren 1976, 1978; Ritterband 1978), we found that returning Israelis tend to be highly educated. But when skills are inferred from income, it appears that, on average, the more skilled among highly educated Israelis in the US tend to remain there. The results of the present study suggest that at least part of the success of Israelis in the US, observed by virtually all previous research (Cohen 1996), is a consequence of the fact that the relatively unsuccessful Israelis are more likely to return to Israel.

Finally, our income results are consistent with the notion advanced by Borjas and Bratsberg (1996) that selectivity in return migration tends to accentuate selectivity of the first migration step. But the results are also consistent with the approach of 'unfulfilled expectations' in predicting that the less successful tend to emigrate. In order to decide between the empirical status of these two theoretical perspectives, additional immigrant groups need to be studied, especially those for which the initial migration step is selective of the less skilled.

NOTES

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[1] The 1990 undercount was 1.6–1.8 per cent compared to about 1.2 per cent in the 1980 census (Hogan 1993). However, it is likely that the undercount among the cohort of 1975–79 was higher in 1980, when it was the most recent immigrant cohort, than in 1990, 10–15 years after arriving in the US. Thus, although the overall undercount in 1990 was higher than in 1980, we do not believe this was the case among the immigrant cohorts under discussion.

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