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IMMIGRANT EARNINGS: THEORY  
AND APPLICATION**

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# MULTI-GENERATION MODEL OF IMMIGRANT EARNINGS: THEORY AND APPLICATION

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## **ABSTRACT**

### **Multi-Generation Model of Immigrant Earnings: Theory and Application\***

The literature, starting with Chiswick (1977, 1978) to Gang and Zimmermann (2000) more recently, focuses on the economic achievements and performance of first- and second-generation migrants. This Paper presents a three-generation migrant analysis, comparing relative economic performance of various migrant generations to one another and to the native population. We develop a theoretical model, which is then explored empirically using data from the 1995 Israeli Census. In both the theoretical and empirical analyses, the curve describing intergenerational immigrant earnings mobility is inversely U-shaped. The second generation earns relatively more than the first and third generations, while the third generation earns less than the second, but more than the first. Thus, assimilation of the third generation into the local population is far from clear.

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## NON-TECHNICAL SUMMARY

Most studies to date comparing the economic performance of immigrants, among other aspects, with that of the native-born population, have mainly focused on the first rather than the second generation of immigrants. This motivated researchers to carry out more extensive research on the diverse aspects of absorption in various host countries among the second generation of immigrants, compared to their parents and the native population.

Several studies on changes in the relative earnings and employment patterns of the second generation have been carried out in various countries. For example, the effect of foreign parentage in the United States in 1969 on earnings of native-born white male workers in the 25–64 age range. It was shown that earnings among second-generation immigrants were similar or slightly higher than among native white-born male Americans. Earnings were higher among immigrants with foreign- rather than native-born parents. Thus, any discrimination against second-generation Americans is apparently overcome by other factors.

More recently, there are Papers that have shown that ethnicity did not affect the educational achievements of second-generation immigrants compared to those of natives in the same age cohort, in a large German data set. While parental schooling did not play a role in the educational choices of children of foreign-born parents, contrary to the general findings in the literature, there is a statistically significant difference in favour of the father's over the mother's education in children of native-born German parents. Similar studies among Jewish immigrants of various ethnic origins in Israel have been carried out.

Since relations between immigrants and native populations in the host countries are extremely complex, however, it is difficult to project the well characterized economic behaviour of the first generation of immigrants and the relatively less well deciphered behaviour of the second generation into the third generation. Therefore, a multi-generation model comparing performance of immigrants and the native population in the host countries, particularly with respect to the labour market, is highly pertinent.

In this Paper, we develop a multi-generation model comparing labour market performance of immigrants and the native population, assuming that the latter is the appropriate reference group and not the home-country population. The model is based on the concept of bilateral altruism among immigrant generations, i.e. positive linkage of the father's and son's utilities *via* their earnings. Thus, if the father earns less than the native population, the son would maximize his own utility by investing time and effort in increasing his earnings to compensate also for his father's relatively low income. Thus, the second generation of immigrants would be expected to be in an advantaged position (at least with respect to the first generation). The third generation,

however, would revert to a disadvantaged status relative to the second generation, and possibly also to the native population.

We examined intergenerational mobility of relative earnings among immigrants to Israel, based on the 1995 Israeli Census of Population data. A two-fold comparative analysis over three generations was carried out on two levels: (1) among three generations of immigrants from Asian-African source countries; and (2) between immigrant and native Israeli populations.

In the 1995 Israeli Census of Population data, first-generation immigrants showed relatively lower earnings than the second generation, but this fell again in the third generation. This supports the hypothesis behind our multi-generation immigrant performance model. In addition, separating the wage differential into human capital and market evaluation components throws new light on the effects of the relative investment in education in these three generations.

By following immigrant economic behaviour over three generations, both in theoretical and empirical terms, our model enhances understanding of economic behaviour among immigrants in Israel, and may be projected onto other countries. Assimilation does not necessarily occur in the third generation, indicating that the two migrant generation case cannot be generalized for all further generations.

In an attempt to address these questions, we develop a three-generation migrant model. We propose a bilateral-altruistic two-generation model of immigrant earnings, in which the father's and son's utilities are linked positively through their earnings. According to the theoretical model, performance of the second generation is improved first, while that of the third generation falls below the second generation's but is better than that of the first.

We show that the empirical analysis coincides with the theoretical findings. An inverse U-shaped relationship of the migrant generation data to the migrant education level was found. A similar inverse U-shaped curve describes the behaviour of the intergenerational earnings mobility. The first generation has the lowest relative earnings, the second generation the highest relative earnings, and the third generation has earnings that are relatively higher than those of the first, but lower than those of the second-generation migrants. In conclusion, therefore, generalizations may not be drawn from the two-generation migrant model applying to the third migrant generation. These data illustrate a case in which the third generation does not assimilate into the local population.

## 1. Introduction

Most studies to date comparing the economic performance of immigrants, among other aspects, with that of the native-born population mainly focused on the first rather than the second generation of immigrants. This motivated researchers to carry out more extensive research on the diverse aspects of absorption in various host countries among the second generation of immigrants, as compared to their parents and the native population.

Several studies on changes in the relative earnings and employment patterns of the second generation have been carried out in various countries. Chiswick (1977, 1978), for example, in his early work, examined the effect of foreign parentage in the United States in 1969 on earnings of native-born white male workers in the 25-to-64 age range. He showed that earnings among second-generation immigrants were similar or slightly higher than among native white-born male Americans. Earnings were higher among immigrants with foreign- rather than native-born parents. Thus, according to Chiswick, any discrimination against second-generation Americans is apparently overcome by other factors.

More recently, Gang and Zimmermann (2000) and Gang (1999) showed that ethnicity did not affect the educational achievements of second-generation immigrants, compared to those of natives in the same age cohort, in a large German data set. While parental schooling did not play a role in the educational choices of children of foreign-born parents, contrary to the general findings in the literature, there is a statistically significant difference in favor of the father's over the mother's education in children of native-born German parents. Similar studies among Jewish immigrants of various ethnic origins in Israel have been carried out by Amir (1988), Benski, *et al* (1990), Lecker (1993) and Mark (1994), among others. The

intergenerational mobility in earnings and immigrant workers assimilation in the labor market was studied by Kossoudji (1989), Berman *et al* (1990), Borjas (1992) and Solon (1992), among others, in the United States; by Lillard (2000) in Germany and the United States; and by Corak *et al* (1997) in Canada. Schultz (1984) in the United States and Binder (1998) in Mexico, among others, conducted research on schooling and educational achievements of such populations.

However, since relations between immigrants and native populations in the host countries are extremely complex, it is difficult to project the well-characterized economic behavior of the first generation of immigrants and the relatively less well-deciphered behavior of the second generation into the third generation. Therefore, a multi-generation model comparing performance of immigrants and the native population in the host countries, particularly with respect to the labor market, is highly pertinent.

In this paper, we develop a multi-generation model comparing labor market performance of immigrants and the native population, assuming that the latter is the appropriate reference group and not the home-country population. The model is based on the concept of bilateral altruism among immigrant generations, i.e., positive linkage of the father's and son's utilities via their earnings. Thus, if the father earns less than the native population, the son, would maximize his own utility by investing time and effort in increasing his earnings to compensate also for his father's relatively low income. Thus, the second generation of immigrants would be expected to be in an advantaged position (at least with respect to the first generation). However, the third generation would revert to a disadvantaged status relative to the second generation, and possibly also to the native population.

We examined intergenerational mobility of relative earnings among immigrants to Israel, based on the 1995 Israeli Census of Population data. A two-fold comparative analysis over three generations was carried out on two levels: (1) among three generations of immigrants from Asian-African source countries; and (2) between immigrant and native Israeli populations.

In the 1995 Israeli Census of Population data, first-generation immigrants showed relatively lower earnings than the second generation, but this fell again in the third generation. This supports the hypothesis behind our multi-generation immigrant performance model. In addition, separating the wage differential into human capital and market evaluation components throws new light on the effects of the relative investment in education in these three generations.

By following immigrant economic behavior over three generations, both in theoretical and empirical terms, our model enhances understanding of economic behavior among immigrants in Israel, and may be projected to other countries. Assimilation does not necessarily occur in the third generation, indicating that the two migrant-generation case cannot be generalized to all further generations.

A bilateral-altruistic two-generation model of immigrant earnings is presented, which is then explored on 1995 Israeli Census data, and followed by a short summary and conclusions section.



## 2. The Model

Consider a bilateral-altruistic two-generation, model of immigrant earnings, in which the father's and son's utilities are positively linked through their earnings. Since they have no intention of returning "home," the immigrants' incomes are not given in absolute terms, but relative to those among the corresponding local native population.

Under a time constraint, an individual's earnings are determined by two consecutive decisions concerning: (1) the amount of time invested in education; and (2) the amount of time devoted to work. Note that the *quality* of education is positively related to *time* invested. To simplify, without loss of generality, we focus on the first decision: how to allocate time between education,  $e$ , and leisure,  $L$  under the time constraint,  $\bar{T}$ .

Simplifying further, the effect of the father's earnings on the son's *level* and *type* of education is ignored, focusing on the *time invested* by the son in education, which may also be considered as invested effort (measurable in time units).

Under our assumptions, the father's utility is defined as follows:

$$(1) \quad U_f = U_f(I_{Rf}, I_{Rs}(e))$$

where,  $I_{Rf}$  and  $I_{Rs}(e)$  are the father's and son's incomes, relative to those of the natives, respectively. It is assumed that  $\frac{\partial U_f(\cdot)}{\partial I_{Rf}} > 0$ ,  $\frac{\partial U_f(\cdot)}{\partial I_{Rs}} > 0$ ,  $\frac{\partial^2 U_f(\cdot)}{\partial I_{Rf}^2} < 0$ ,

$$\frac{\partial^2 U_f(\cdot)}{\partial I_{Rs}^2} < 0 \text{ and } \frac{\partial^2 U_f(\cdot)}{\partial I_{Rf} \partial I_{Rs}} < 0.$$

The son's utility, which is a function of his father's, may be expressed as follows:

$$(2) \quad U_s = U_s(L, I_{Rs}(e), U_f)$$

where it is assumed that  $\frac{\partial U_s(\cdot)}{\partial L} > 0$ ,  $\frac{\partial U_s(\cdot)}{\partial I_{Rs}} > 0$ ,  $\frac{\partial U_s(\cdot)}{\partial U_f} > 0$ ,  $\frac{\partial^2 U_s(\cdot)}{\partial L^2} < 0$ ,

$\frac{\partial^2 U_s(\cdot)}{\partial I_{Rs}^2} < 0$ ,  $\frac{\partial^2 U_s(\cdot)}{\partial U_f^2} < 0$  and  $\frac{\partial^2 U_s(\cdot)}{\partial U_f(\cdot) \partial I_{Rs}} < 0$ . In addition, we assume a direct

relationship between the time invested in education and the son's relative (expected) income,  $I_{Rs}(e)$ , i.e.,  $\frac{\partial I_{Rs}}{\partial e} > 0$  and  $\frac{\partial^2 I_{Rs}}{\partial e^2} < 0$ .

The son aims to maximize his utility by optimizing his level of investment in education,  $e$ , such that:

$$(3) \quad \max_e U_s(L, I_{Rs}(e), U_f)$$

$$\text{s.t. } L + e = \bar{T}$$

The first-order condition is given by:

$$(4) \quad \frac{dU_s(L, I_{Rs}(e), U_f)}{de} = -\frac{\partial U_s(\cdot)}{\partial L} + \frac{\partial U_s(\cdot)}{\partial I_{Rs}(e)} \frac{\partial I_{Rs}}{\partial e} + \frac{\partial U_s(\cdot)}{\partial U_f(\cdot)} \frac{\partial U_f(\cdot)}{\partial I_{Rs}} \frac{\partial I_{Rs}}{\partial e} = 0$$

or, alternatively:

$$(5) \quad \frac{\partial U_s(\cdot)}{\partial L} = \left( \frac{\partial U_s(\cdot)}{\partial I_{Rs}(e)} + \frac{\partial U_s(\cdot)}{\partial U_f(\cdot)} \frac{\partial U_f(\cdot)}{\partial I_{Rs}} \right) \frac{\partial I_{Rs}}{\partial e}$$

The son's utility function is assumed to satisfy the second-order condition:

(6)

$$\begin{aligned} \frac{d^2 U_s(\cdot)}{d e^2} &= \frac{\partial^2 U_s(\cdot)}{\partial L^2} + \frac{\partial^2 U_s(\cdot)}{\partial I_{Rs}^2} \left( \frac{\partial I_{Rs}}{\partial e} \right)^2 + \frac{\partial U_s(\cdot)}{\partial I_{Rs}} \frac{\partial^2 I_{Rs}}{\partial e^2} \\ &+ \frac{\partial^2 U_s(\cdot)}{\partial U_f(\cdot)^2} \left( \frac{\partial U_f(\cdot)}{\partial I_{Rs}} \frac{\partial I_{Rs}}{\partial e} \right)^2 + \frac{\partial U_s(\cdot)}{\partial U_f(\cdot)} \frac{\partial^2 U_f(\cdot)}{\partial I_{Rs}^2} \left( \frac{\partial I_{Rs}}{\partial e} \right)^2 + \frac{\partial U_s(\cdot)}{\partial U_f(\cdot)} \frac{\partial U_f(\cdot)}{\partial I_{Rs}} \frac{\partial^2 I_{Rs}}{\partial e^2} < 0 \end{aligned}$$

We now examine how changes in the father's relative earnings,  $I_{Rf}$ , affect his son's optimal effort,  $e^*$  (satisfying condition (5)). It is well known that

$$\frac{\partial e^*}{\partial I_{Rf}} = - \frac{\frac{d^2 U_s(\cdot)}{d e d I_{Rf}}}{\frac{d^2 U_s(\cdot)}{d e^2}}. \text{ Since } \frac{d^2 U_s(\cdot)}{d e^2} < 0, \text{ it follows that:}$$

$$(7) \quad \text{Sign} \left[ \frac{\partial e^*}{\partial I_{Rf}} \right] = \text{Sign} \left[ \frac{d^2 U_s(\cdot)}{d e d I_{Rf}} \right]$$

From (4):

$$(8) \quad \frac{d^2 U_s(\cdot)}{d e d I_{Rf}} = \frac{\partial I_{Rs}}{\partial e} \left[ \frac{\partial^2 U_s(\cdot)}{\partial U_f(\cdot) \partial I_{Rf}} \frac{\partial U_f(\cdot)}{\partial I_{Rs}} + \frac{\partial U_s(\cdot)}{\partial U_f(\cdot)} \frac{\partial^2 U_f(\cdot)}{\partial I_{Rs} \partial I_{Rf}} \right]$$

As stated above,  $\frac{\partial^2 U_f(\cdot)}{\partial I_{Rf} \partial I_{Rs}} < 0$ ,  $\frac{\partial U_s(\cdot)}{\partial U_f(\cdot)} > 0$ ,  $\frac{\partial U_f(\cdot)}{\partial I_{Rs}} > 0$ ,  $\frac{\partial^2 U_s(\cdot)}{\partial U_f(\cdot) \partial I_{Rf}} < 0$  and

$\frac{\partial I_{Rs}}{\partial e} > 0$  thus  $\frac{d^2 U_s(\cdot)}{d e d I_{Rf}} < 0$ . Therefore, we conclude:

$$(9) \quad \frac{\partial e^*}{\partial I_{Rf}} < 0$$

Note that the time invested, and not the type of education, were considered (clearly, the more the father earns, the higher the son's level of education). Given the

direct relationship between the son's relative earnings,  $I_{Rs}^*$ , and the optimal time devoted to education,  $e^*$ , i.e.,  $\frac{\partial I_{Rs}^*(e^*)}{\partial e^*} > 0$ , we obtain:

$$(10) \quad \frac{\partial I_{Rs}^*(e^*)}{\partial I_{Rf}} < 0 .$$

This result is summarized in the following proposition:

**Proposition:** The less the father earns, the more time and effort the son invests in increasing his earnings.

Recall that we do not consider the type of education but the time the son invests in education and at the work place with the aim of increasing his income (which is equivalent to an investment in effort, which is also measured in time units). Similar analysis would also apply to the son's investment in promotion and raising his income at work.

To gain better understanding of this proposition, let us consider the following: as a first generation migrant, the father is disadvantaged in labor market relative to the native population, due to discrimination, asymmetric information, linguistic problems, etc. The son, affected by his father's low income, invests time and effort in increasing his own earnings, and, thereby, in turn, his father's utility, to compensate for his relatively low income. Thus, the immigrant second generation would be expected to be in an advantaged position. In this case, the father's lower earnings motivate his son to invest more time and effort in education and the work place. Thus, the father's and son's earnings are inversely related, as described by the downward sloping curve AB in Fig. 1-a, in which relative incomes,  $re$ , are measured on both axis. The father's (first generation's) relatively low earnings,  $re1^{st}$ , (on the horizontal axis), and the

son's (second generation) relative earnings are given by point A,  $re2^{nd}$  (on the vertical axis). Since the  $re2^{nd}$ -values are above the  $45^0$ -line, they are higher than the first generation's relative earnings, and the second generation is in an advantaged position. However, since the second-generation migrant is relatively advantaged, the third-generation migrant, who no longer needs to compensate for his father's low utility by investing more effort in education and the work place, reverts to a disadvantaged status relative to the native population.

The  $45^0$ -line, the son's (second generation's) earnings are projected onto the horizontal axis and thus, the grandson's earnings, at point B,  $re3^{rd}$ , are less than  $re2^{nd}$ . Of course, his income would remain higher than his grandfather's (the first-generation migrant), but lower than his father's (second-generation migrant). These results are summarized in Fig. 1-b, where relative earnings are on the vertical axis and migrant generations on the horizontal axis. Thus, the intergenerational mobility in earnings follows an inverse U-shaped curve: the first generation has the lowest relative earnings, the second generation has the highest, and the third generation's are higher than the first but lower than the second.

### **3. The Statistical Analysis**

#### **3.1. Data**

The model is applied to the mass immigration to Israel after establishment of the state in 1948. Mass political immigration more than doubled the population of Israel between 1948 and 1952 - from 650,000 to 1.5 million. About 50% of these immigrants were from Islamic countries and the other 50% from Europe. However, since most of the absorbing (native) population in Israel at that time was from Europe, we focused on immigrants from the Islamic countries in Asia and Africa to avoid the effects of migration externalities.

The data for the empirical analysis were derived from the 1995 Israeli Census of Population (20% questionnaire), focusing on the male population. Three generations were defined according to their ages on immigration and their ages in the 1995 Census. Thus, the first generation are Jews who were older than 10 when they immigrated to Israel between 1948 and 1952 from Asian-African countries. The second generation were immigrants aged 10 or younger who came during the same period, and Israelis aged between 33 and 53 in 1995, with immigrant fathers. The third generation are Israelis younger than 33 in 1995 with immigrant fathers whose age on immigration was 10 or younger. The native Israeli population is defined as those born in Israel to Israeli-born fathers. The age ranges for the first, second and third generations are: 53 or older, between 33 and 53, and 33 or younger.

This model is explored by examining the wage differentials between the Jewish immigrants to Israel from Asian-African countries (A) and the Israeli native population (N) in the three generations defined above.

Table 1 presents the characteristics of groups N and A in the three generations in terms of education, years of schooling and six categories of the highest certificate, age and wages. Note that there may well be self-selection in *both* groups at this stage. The average ages of both groups are very similar in all the generations (see Table 1). The data are expressed as relative levels or percentages of the native (N) and immigrant (A) groups. However, to keep the interpretation consistent, education at the lower levels (without elementary or high school certificates) is calculated as the ratio between A and N, and at higher levels, as ratio between N and A. Thus, ratios greater than 1 favor group N and less than 1 favor A. Moreover, in **first-** and the **third-** generation migrants, the average wage and years of schooling are higher among the Israeli native (N) group than among the immigrants (A) whereas, in the **second**

generation, the opposite was found. In Fig. 2, the education ratio is greater than 1 for the first generation at all the levels of education, i.e., immigrants are less well educated than natives. The education ratios for the second generation is less than 1 (except for B.A., M.A. and Ph.D degrees in which the difference between N and A was greatly reduced relative to the first generation) i.e., in the immigrant second generation, the gap between their own and the native education levels closed. As in the first generation, the education levels were lower in the immigrant third generation than among the natives (except at the Ph.D. level).

These descriptive data coincide with the theoretical findings. On average, the second generation invests more time and effort in education than the first and third migrant generations. This trend is broken in immigrant third generation relative to the first. These findings indicate an increased investment in education by the migrant second generation, relative to the first, with a decrease in the third generation (note that the third generation's performance is inferior to the second's, but superior to that of the first).

### **3.2. The Empirical Analysis**

The empirical analysis explores the hypothesis behind the model: that the immigrant second generation's labor market performance is better than either their parent's or son's, and even exceeds that of the absorbing native population. Toward this end, the wages for 1995 were compared in two groups, Asian-African (A) immigrants and Israeli-born natives (N), over three generations in Israel.

Statistical analysis is carried out in two stages. (1) Wage equations are estimated in each immigrant generation and the native population. (2) The wage differentials are divided into two components over the three generations in Israel,

related to gaps in the human capital levels and differences in market evaluation of individual characteristics. The first component is then further decomposed into sub-components, according to observed individual characteristics, namely, education level and labor market experience.

The wage decomposition is carried out according to established methods (see, for example, Oaxaca, 1973; Blinder, 1973; Cotton, 1988; and Oaxaca *et al*, 1994). Let  $W_{ij}$  denotes the wage of individual  $i$  in group  $j$ . The equation may be expressed in logarithmic form as follows:

$$(11) \quad \ln W_{ij} = \sum_{ij} \beta_j X_{ij} + e_{ij},$$

where  $X_{ij}$  is a vector of the independently observed characteristics for individual  $i$  in group  $j$ . The term  $\beta_j$  denotes the vector of common coefficients for members of group  $j$ , but may vary across different groups (one of the coefficients is the intercept at which  $X_j = 1$ ), and  $e_{ij}$  is the error term.

The estimated average observed  $\ln W_j$  for group  $j$  is given by:

$$(12) \quad \overline{\ln W_j} = \sum \bar{\beta}_j \bar{X}_j,$$

where  $\bar{\beta}_j$  is a vector of the estimated least-squares regression coefficients and  $\bar{X}_j$  is a vector for the average observed characteristics of the individuals in group  $j$ . Based on Equation (12), the wage differential between two groups,  $a$  and  $b$ , is given by:

$$(13) \quad \overline{\ln W_a} - \overline{\ln W_b} = \sum \bar{\beta}_a \bar{X}_a - \sum \bar{\beta}_b \bar{X}_b.$$

The right hand side of Equation (13) can be decomposed to either:

$$(14) \quad \overline{\ln W_a} - \overline{\ln W_b} = \sum \bar{\beta}_a (\bar{X}_b - \bar{X}_a) + \sum \bar{X}_b (\bar{\beta}_b - \bar{\beta}_a)$$



or,

$$(15) \quad \overline{\ln W_a} - \overline{\ln W_b} = \sum \bar{\beta}_b (\bar{X}_b - \bar{X}_a) + \sum \bar{X}_a (\bar{\beta} - \bar{\beta}_a).$$

The terms on the right-hand side of Equations (14) and (15) are the two components of the wage differentials between the groups. The first and second terms describe the differences between the average characteristics of the groups, and market valuations, as manifested in the coefficients in the estimated equations, respectively. This probably reflects differences in the quality of the human capital between the two groups.

In this study, as with wage differentials, the human capital component takes into account the last school attended or the highest degree, years of education and experience in the labor market, which is measured as age minus years of schooling minus 6 years.

Table 3 presents the wage differentials and their decomposition in the three generations, based on the wage equations in Table 2. The figures in these tables clearly show that for the first and third generations, the wage differentials are higher for the Israeli native population whereas, in the second generation the opposite holds. According to the decomposition of wage differentials, the human-capital component of the wage differentials markedly decreases with the immigrant generations. In the first generation, about 70% of the gap in favor of the native population can be explained by the differences in the observed characteristics and the other 30% by market evaluations. In the second and the third generations, the entire wage differential is attributable to market evaluation, and is in favor of the immigrants in the second generation but of the native population in the third generation. The results of this decomposition is in line with the model, in which disadvantage of the immigrant first generation motivates the second generation to increase their labor market achievements via higher educational qualifications, as seen in Table 1.

However, the second generation's success in labor market leads to reversion to the disadvantaged status in the third generation relative to the native population.

As with the descriptive data, the wage differential analysis is also consistent with the theoretical results. Since descriptive data relating to years of schooling is embedded in the wage decomposition, the relationship between immigrant generations and their earnings and wages relative to one another and to the native population is an inversely U-shaped curve.

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

Starting with Chiswick (1977, 1978) to Gang and Zimmermann (2000) and Gang (1999), more recently, the literature focuses on first- and second- generation migrants, in terms of their earnings and economic performance in relation to one another and to the native population. However, the migrant third generation has been neglected in the literature. Thus, it remained unclear whether: (1) the two-generation relationship can be generalized to further generations; and (2) the migrant third generation assimilates into the general population.

In an attempt to address these questions, we developed a three-generation migrant model. We proposed a bilateral-altruistic two-generation model of immigrant earnings, in which the father's and son's utilities are positively linked through their earnings. According to the theoretical model, performance of the second generation is improved first, while that of third generation falls below the second generation's but is better than that of the first.

To explore this hypothesis, we analyzed the 1995 Israeli Census of Population, covering three generations of migrants to Israel. We showed that the empirical analysis coincides with the theoretical findings. An inverse U-shaped relationship of the migrant generation data to the migrant education level was found. A similar

inverse U-shaped curve describes the behavior of the intergenerational earnings mobility. The first generation has the lowest relative earnings, the second generation the highest relative earnings, and the third generation has earnings that are relatively higher than those of the first, but lower than those of the second-generation migrants. In conclusion, therefore, generalizations may not be drawn from the two-generation migrant model applying to the migrant third generation. These data illustrate a case in which the third generation does not assimilate into the local population.

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Figure 1: Relative Earnings (re) by Generation

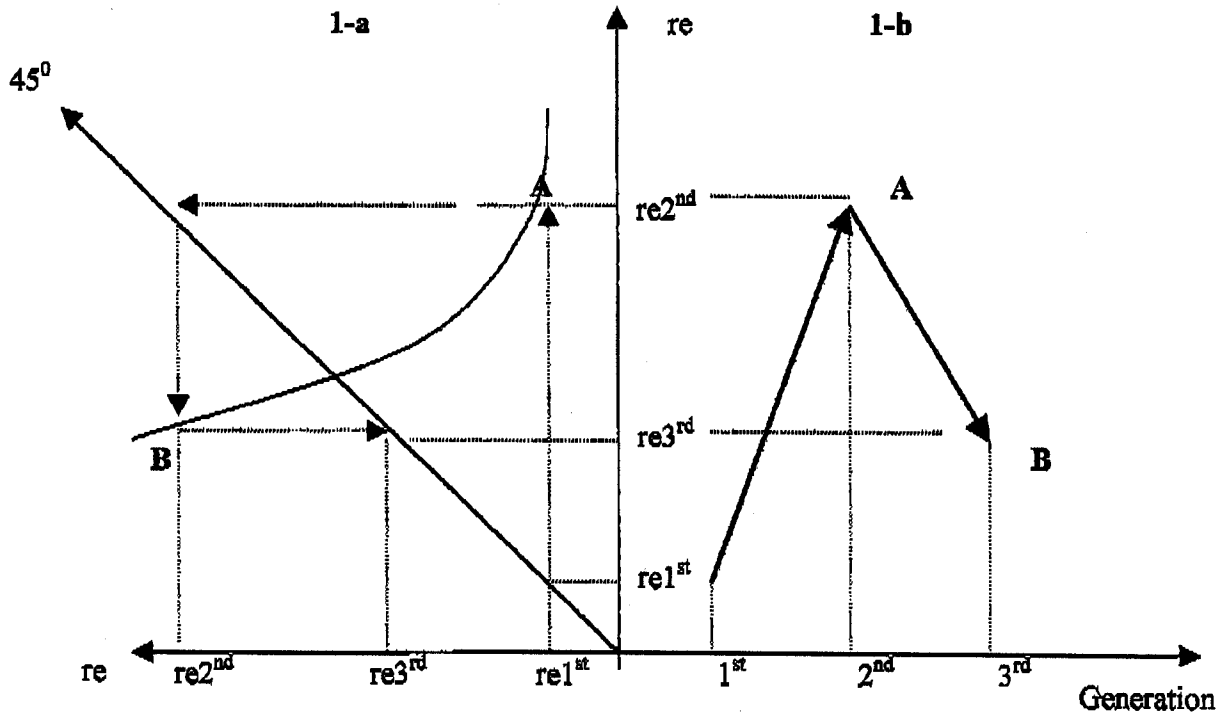


Table 1: Male sample characteristics (%) 1995\*

Variable	First generation			Second generation			Third generation		
	N	A	Ratio	N	A	ratio	N	A	ratio
Years of schooling	12.0 (4.6)	9.2 (4.2)	1.30	11.4 (4.2)	11.8 (3.0)	0.97	13.7 (2.6)	12.6 (2.7)	1.09
No certificate (%)	15.6	22.2	1.42	14.3	6.7	0.5	2.9	5.0	1.72
Elementary school (%)	19.3	30.0	1.55	30.0	25.2	0.8	6.5	11.7	1.80
High school (%)	25.8	29.0	1.12	24.1	44.6	0.54	48.2	49.7	1.03
Post-high school (%)	13.2	10.9	1.21	11.8	13.3	0.89	13.2	17.0	1.29
B.A. (%)	12.5	5.4	2.31	13.3	7.6	1.75	24.0	9.8	2.45
M.A./ Ph.D. (%)	13.6	2.5	5.44	6.5	2.6	2.5	5.5	6.8	0.81
Age	58.5	53.0	1.18	40.7	42.8	0.95	28.0	28.8	0.97
Wage	7,771 (3,313)	6,346 (3,156)	1.23	5,690 (2,876)	6,810 (3,050)	0.84	6,293 (2,876)	5,360 (2,275)	1.17
Sample size	4041	5406		8489	9489		2817	11348	

\* N and A are Israeli and Asian-African origins, respectively.

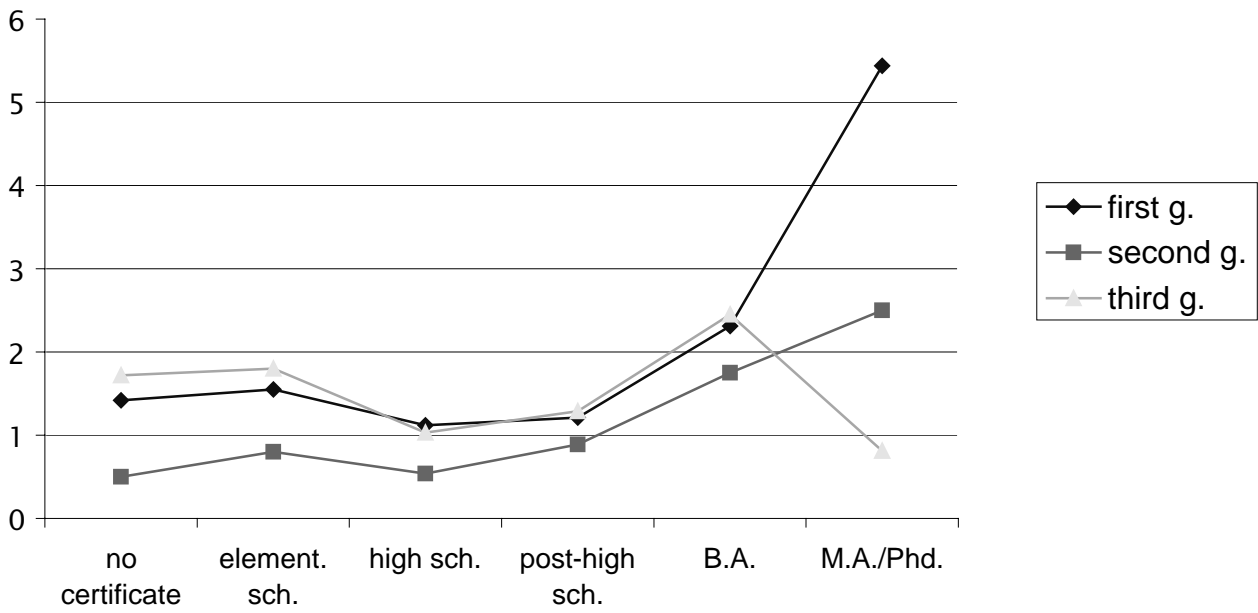
Ratios > 1 are in favor of the natives (N) and ratios < 1 are in favor of the immigrants (A).

Figures in parentheses are the standard deviations.

Wages are in Israeli shekels at the May 2000 rates.

Source: Israeli Census of Population, 1995.

Figure 2: Ratios of education of natives immigrants:  
comparison of three generations



Note: A ratio higher than 1 is in favor of the natives (N) and lower than 1 is in favor of the immigrants (A).



Table 2: Wage equations for male employees, 1995\*

Variable	First generation		Second generation		Third generation	
	N	A	N	A	N	A
Intercept	8.28 (26.9)	7.52 (76.7)	7.5 (103.1)	7.74 (85.3)	7.14 (96.0)	3.73 (80.3)
Years of experience	0.008 (0.6)	0.06 (6.9)	0.03 (5.8)	0.03 (4.0)	0.12 (11.9)	0.06 (9.5)
(Years of experience) <sup>2</sup>	-0.0003 (-2.1)	-0.001 (-9.3)	-0.0001 (-4.9)	-0.0005 (-3.0)	-0.004 (-6.8)	-0.003 (9.5)
Elementary school	0.17 (4.3)	0.03 (91.1)	0.1 (4.5)	0.01 (4.1)	0.16 (2.2)	0.12 (3.2)
High school	0.56 (14.6)	0.25 (9.6)	0.47 (19.3)	0.37 (15.6)	0.49 (7.6)	0.26 (6.9)
Post-high school	0.78 (16.9)	0.53 (15.8)	0.69 (24.5)	0.63 (22.9)	0.66 (9.7)	0.4 (10.0)
B.A.	0.99 (19.8)	0.8 (18.3)	0.92 (32.3)	0.89 (28.4)	0.9 (13.6)	0.66 (15.1)
M.A. and Ph.D.	1.13 (20.5)	0.93 (15.6)	1.12 (31.9)	1.01 (23.3)	1.05 (13.7)	0.6 (13.1)
R <sup>2</sup>	0.3131	0.2364	0.2422	0.1608	0.2218	0.0532
Adjusted R <sup>2</sup>	0.3119	0.2354	0.2416	0.1602	0.2198	0.0526
F value	262.6	283.7	387.3	259.5	114.4	91.0
Sample size	4041	5406	8489	9489	2817	11348

\* The natural logarithm of monthly gross wage is the dependent variable. Figures in parenthesis are t-statistics.

Table 3: Wage differentials their decomposition (standard Oaxaca), 1995\*

Wage differentials	First generation	Second generation	Third generation
Total wage (ln) differential	0.202 (22.5%)	-0.180 (-19.5%)	0.161 (17.4%)
Wage differential components:			
1. Human capital differences:	0.148 (73.3%)	-0.018 (-1.8%)	-0.002 (-1.2%)
1.1 Schooling	0.178 (93.6%)	-0.018 (-1.8%)	-0.010 (-6.2%)
1.2 Experience	- 0.03 (-20.3%)	- -	0.008 (5.0%)
2. Market evaluation	0.054 (26.7%)	-0.162 (-98.2%)	0.163 (101.2%)

\* The wage equation of the Israeli native population was used as the basis for the decomposition of wage differentials (the schooling component was calculated from the coefficients for five types of school and the experience component from the two coefficients relating to years of schooling). Thus, positive values indicate higher wage or contribution of the Israeli group, and negative values higher wage in the Asian-African origin group. The values in brackets (%) are the differences in the average estimated wages of the two groups or their relative shares of the decompositions of the wage differentials, respectively (thus, the sum of the latter is 100%).