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**Testing Self-Selection in Migration:
Evidence from the Israeli Kibbutz**

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Testing Self-Selection in Migration: Evidence from the Israeli Kibbutz

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Abstract

I use a longitudinal dataset of individuals entering and exiting Israeli kibbutzim, communities that engage in equal sharing of output, to test the mobility patterns induced by redistribution. I find evidence of negative selection in entry to kibbutzim and positive selection in exit. Entrants were negatively selected in their pre-entry earnings compared with non-entrants, especially among the more educated. Compared with stayers, individuals who left kibbutzim were positively selected in their observable skills such as education. Less educated kibbutz leavers were also positively selected on their *ex ante*-unobservable skills (measured by post-exit wage). Finally, the selection patterns into kibbutzim differed substantially from the selection patterns into other rural locations that did not engage in intensive redistribution. At the broader level, these findings also provide micro-level empirical support for Borjas' hypothesis that migrants' self-selection depends on the difference in returns to skills between the origin and the destination.

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1 Introduction

A key insight in public economics is that mobility limits redistribution because individuals move between states (or local government regions) to take advantage of or avoid redistributive policies (e.g., Epple and Romer (1991), Feldstein and Wrobel (1998) and Cremer and Pestieau (2004)). This paper contributes to this literature by providing a test of the migration patterns induced by the intensive redistribution practiced by Israeli kibbutzim (plural of kibbutz), which are communities that offer their members equal sharing of output.

Specifically, I analyze a novel panel data set of individuals linked across population censuses to test for selection in both exit from and entry to kibbutzim. I test the hypotheses that kibbutz-to-city migrants are positively selected and city-to-kibbutz migrants are negatively selected. The findings suggest that redistribution encourages exit of more productive individuals and entry of less productive ones.¹ Individuals who leave a kibbutz are more educated and skilled than stayers and they earn higher wages upon exit than observably similar individuals already living outside. In contrast, entrants to a kibbutz earn lower wages prior to entry than similar individuals who do not enter.

Besides testing selection patterns on observables, the data also allow me to test for selection on *ex ante*-unobservable measures of ability. Specifically, I compare the wages of kibbutz movers outside the kibbutz with those of non-kibbutz individuals who did not move. Similarly, I compare the pre-entry wages of entrants into the kibbutz with those of non-entrants. I show that selection patterns vary across education levels. In exit from kibbutzim, I find that, whereas less-educated kibbutz-to-city movers earn higher wages upon exit than the average less-educated worker, more-educated movers do not earn higher wages than the average more-educated worker. In entry, more-educated entrants earned lower wages prior to entry than observably similar non-entrants, but less-educated entrants did not earn lower wages than the average less-educated.

¹In a companion paper, I show that indeed kibbutzim eventually shifted away from equal sharing to avoid this brain drain (Abramitzky (2008)).

I show that the selection patterns into and out of kibbutzim differ substantially from the selection patterns into and out of other rural locations that do not engage in intensive redistribution. Members of kibbutzim with higher observable abilities are more likely to move than high-ability individuals in other rural areas. Members of kibbutzim are also more positively selected on unobservable abilities than other rural-to-urban migrants. Specifically, while kibbutz-to-city migrants earn higher wages upon exit than city natives, other rural-to-city migrants do not earn such a wage premium. Moreover, kibbutz-to-other rural migrants are positively selected in both their observable and unobservable abilities, suggesting that the skill bias in exit from kibbutz reflects a selection away from equal sharing, rather than preferences of more skilled individuals to live in urban places. In contrast, individuals who earn lower wages in the city are more likely to enter a kibbutz, but they are not more likely to move to other rural areas.

This paper also contributes to contract theory, which predicts that equal sharing, or team-based pay, encourages free-riding (the incentive effect) and discourages participation of high-ability individuals (the selection effect).² For example, in professional partnerships such as law firms, which are often based on revenue-sharing, high-ability partners may exit to earn a wage premium for their ability outside of the partnership. Yet, there is little empirical work on the selection effect, mainly because of data limitations.³ This paper contributes to the literature by empirically addressing the question of whether, and to what extent, equal sharing discourages participation of high-ability individuals. Specifically, I address the questions of whether individuals who leave equal-sharing arrangements are positively selected, and whether entrants to equal-sharing arrangements are negatively selected. Moreover, following the approach developed in Finkelstein and McGarry (2006)

²A classic reference for the incentive effect of equal-sharing is Holmstrom (1982). Lazear (1986, 2000a, 2000b) highlights the selection effect of pay schemes.

³The (scant) evidence provides a mixed answer to this question. Weiss (1987) finds that, in the context of workers in a pharmaceutical company, both high-ability and low-ability workers are more likely to leave than medium-ability workers. Lazear (2000a) finds that the average quality of workers in an auto glass company increased after the introduction of piece-rate pay. See also Prendergast (1999) for a survey of the literature on the provision of incentives in firms.

and Finkelstein and Poterba (2006), I rely on observable characteristics that were not used by the kibbutz in the application process, namely individuals' pre-entry wages. I then document the presence of adverse selection that may be partially attributable to asymmetric information between the applicant and the kibbutz.

Finally, this paper contributes to the migration literature by addressing some of its main questions. Are migrants positively or negatively selected from their source country? How do migrants perform in terms of their earnings as compared with the native population? Although this paper analyzes internal migration rather than international migration⁴, a fact that limits the generality of the results, it is among the first to test a well-known and much-disputed hypothesis, according to which positive self-selection of migrants is expected when the place of origin has lower returns to skill than the destination, while negative self-selection is expected when the place of origin has higher returns to skill. This model of self-selection originated with Roy (1951) and was first explicitly applied to migration by Borjas (1987, 1991, 1994).⁵

However, the empirical relevance of Borjas' conjecture has been questioned (Chiswick (1999), Chiswick (2000), Liebig and Sousa-Poza (2003), and Chiquiar and Hanson (2005)). First, migrants are observed only at the destination, but to measure self-selection migrants should be compared with non-migrants in their place of origin.⁶ Second, the measures of income inequality often used "may be poorly related to relative skill differentials" (Chiswick 1999, p. 184). Third, few studies have found evidence of the negative selection of migrants,

⁴Gabriel and Schmitz (1995) also study internal migration where individuals do not face migration restrictions. Their study, however, only observes individuals at one point in time.

⁵The classical Roy self-selection model has also served as the framework of studying other labor market choices (see Heckman and Honore (1990)). Examples include women's labor force participation (Gronau (1974), Heckman (1974)), self-selection of workers into unions (Lee (1978)), selection of schooling levels (Willis and Rosen (1979)), and self-selection across industries and occupations (Heckman and Sedlacek (1990)). Other migration studies that use the Roy framework include Robinson and Tomes (1982), Ferrie (1999) and Abramitzky and Braggion (2006).

⁶Chiswick (1978), Carliner (1980), Borjas (1987), Chiquiar and Hanson (2005), and the surveys by Borjas (1994), Chiswick (1999), Burda, Härdle, Müller, and Werwatz (1998) and Liebig and Sousa-Poza (2003) overcome these limitations by employing data on the intention to migrate.

regardless of whether the migrants come from countries with high or low income inequality.

The longitudinal data allow me to test Borjas' hypothesis directly while avoiding the above-mentioned critiques. First, I observe migrants in both the origin and the destination and thus can compare them both to non-migrants and to the population of the destination. Second, in the period of study (1983-1995), kibbutzim offered equal sharing and, as such, they offered lower skill premia than did Israeli cities. Thus, kibbutz-to-city migrants were moving from an origin with low return to skills to a destination with high return to skills, and city-to kibbutz migrants were moving from a high return to skills origin to a low return to skills destination. This paper provides empirical support- at the individual level- for Borjas' hypothesis. However, the findings suggest that selection patterns are not uniform and vary across education levels.

Section 2 provides a brief theoretical framework. The environment and data sources used in the analysis are described in Section 3. Section 4 tests the hypothesis that kibbutz-to-city migrants are positively selected compared with non-migrants in their observable skills. Section 5 tests for positive selection of kibbutz-leavers on *ex ante*-unobservable skills. Section 6 tests the hypothesis that entrants to the kibbutzim are negatively selected compared with non-entrants in terms of their pre-entry earnings. Section 7 concludes.

2 Theoretical Framework

The simple theoretical framework in this section is intended to illustrate the migration responses that are expected to be induced by intensive redistribution schemes. It is worth noting that this insight is used in the context of the selection of migrants to and from origins with different returns to skills (e.g. Chiquiar and Hanson (2005)). Migrants from origins with low returns to skill are expected to be positively selected, i.e. have higher-than-average skill; migrants from origins with high returns to skill are negatively selected, i.e. they have lower-than-average skill. Equal sharing is a limit case where return to skills are zero. To illustrate, assume that individuals from the kibbutz (indexed by 0) choose

whether to migrate to an Israeli city (indexed by 1). The wage of a kibbutz member is:

$$\ln(w_0) = \mu_0 \tag{1}$$

where w_0 is the wage in the kibbutz and μ_0 is a constant. If a kibbutz member with skill s were to migrate to the city, he would earn a wage w_1 defined by

$$\ln(w_1) = \mu_1 + \delta_1 s \tag{2}$$

where μ_1 is the base wage in the city, and δ_1 is the return to skill in the city. A kibbutz member will migrate to the city if

$$I = \ln(w_1) - \ln(w_0 + C) \approx \mu_1 + \delta_1 s - \mu_0 - c > 0 \tag{3}$$

where C represents migration costs and $c = \frac{C}{w_0}$ represents the “time equivalent” measure of the cost of migrating from the kibbutz to the city. The cost of migrating from the kibbutz includes both direct costs and indirect costs attributable to the fact that migrants cannot take with them all their physical assets (e.g., their house and their share of the public goods). Equation 3 defines a cutoff skill level above which kibbutz members will migrate to the city, and below which they will stay in their kibbutz. That is, we expect kibbutz-to-city migrants to be positively selected from the kibbutz population.⁷

The city-to-kibbutz migration can be described similarly. Because the kibbutz offers lower returns to skill, we expect city-to-kibbutz migrants to be negatively selected from the city population.

⁷Chiquiar and Hanson (2005) show that the above-mentioned type of selection might change when migration costs vary with skill. However, because the wage in the kibbutz is not a function of skills, $\mu_1 + \delta_1 s - c$ and μ_0 will only cross once, regardless of whether c is constant or decreasing in the level of skill, s . This result only holds for a constant $\ln(w_0)$; it is a special case of Chiquiar and Hanson (2005).

3 Data

In the period of study, kibbutzim were communities based on full income-sharing across members.⁸ Between 80% and 95% of kibbutz members worked inside their kibbutz in the period of study (1983–1995).⁹ Each member was paid an equal wage, regardless of the contribution to the collective. Kibbutz members who worked outside their kibbutz brought their salaries in, and they were split equally among members.

Each kibbutz member could leave the kibbutz and earn a premium for ability and effort outside the kibbutz, but the movers could not take with them their share of the kibbutz assets (house, plants, public goods). This made moving costly. Most kibbutz members who wished to stay were allowed to do so.¹⁰ Individuals from outside the kibbutz could apply for membership, and had to go through a rigorous screening process.

The data set used here is a random representative sample of individuals linked between the 1983 and the 1995 Israeli Censuses of Population (the link was done by the Israeli Central Bureau of Statistics). The data include all Israeli citizens who answered the “extensive questionnaire” in both years: at each census, this questionnaire was given to 20% of households in a way that adequately represented the entire population. Thus, the matched sample accounts for a representative 4% of the Israeli population (including a representative 4% of kibbutz members). The data identify individuals who live in “a cooperative rural settlement, in which production, marketing, and consumption are organized in a cooperative manner.” This uniquely defines kibbutz members. For this study, I employ three main sub-samples:

- (1) 1983 kibbutz members also observed in 1995. This sample allows me to compare

⁸While kibbutzim had equal sharing with respect to income, there were probably still some non-monetary returns to skills, such as being appreciated and serving in leadership positions.

⁹See the Central Bureau of Statistics (2000).

¹⁰Before the 1950s, a main source of population growth was net migration to the kibbutz through youth movements from Israel and abroad. Since then, however, the main source of population growth has been internal, i.e. kibbutz-born individuals who have stayed in their kibbutz. This implies that a kibbutz’s ability to retain its members is critical to its stability and population growth.

kibbutz-to-city migrants with kibbutz members who stayed in the kibbutz.

(2) Outside-of-kibbutz residents observed in 1995, including individuals who migrated from the kibbutz between 1983 and 1995. This sample allows me to analyze the earnings of kibbutz-to-city migrants in the city labor market compared with earnings of city natives.

(3) Outside-of-kibbutz residents observed in 1983, including individuals who would later migrate to the kibbutz between 1983 and 1995. This sample allows me to compare the pre-entry earnings of city-to-kibbutz migrants with the earnings of non-entrants.

To make these comparisons meaningful, I concentrate on Jewish individuals who were between the ages of 21 and 54 in 1983 (and thus between the ages of 33 and 66 in 1995). A total of 343 out of the 1577 individuals in the sample who lived in a kibbutz in 1983 left the kibbutz between 1983 and 1995, over 20%. A total of 90 out of 16,789 individuals in the sample who lived outside of kibbutzim in 1983 (with non-missing earnings) entered a kibbutz in this period, about 0.5%. Entry is low in part because kibbutzim are well aware of the tendency of low-ability individuals to apply; they engage in centralized screening to mitigate adverse selection. Note that this makes it more difficult to document negative selection in entry, and my results probably provide a lower bound for the negative selection in entry.

An important shortcoming of the data is that, because of confidentiality concerns of the Israeli Central Bureau of Statistics, I cannot identify the name of the kibbutz (I can only control for the location of the kibbutz). A second shortcoming is that wages inside the kibbutz are not recorded in my data, and they anyway do not reflect rewards for personal characteristics. Thus, when examining kibbutz-to-city migrants, I must compare movers to stayers in their education and skills rather than in their wages.

4 Positive selection on observables: higher ability kibbutz members are more likely to exit

To compare movers from kibbutzim to stayers and to test whether they are positively selected, I examine individuals who lived in a kibbutz in 1983 and either stayed or left by 1995. I compare the education and skills of movers vs. stayers. The two panels of Figure 1 illustrate the key result: more educated and more skilled individuals were more likely to exit, suggesting a positive selection away from equal sharing. The rest of this section subjects these basic patterns to regression analyses.

The regressions employ three proxies for ability: education; the level of skill of the individual's occupation; and predicted log of earnings upon moving, which is the 1995 outside-of-kibbutz log of earnings expected by a mover with certain 1983 observable characteristics (obtained from an OLS regression of 1995 outside-of-kibbutz log of earnings on education, high and low skill occupations, and controls).¹¹ I run a logit regression that takes the value 1 if the individual left the kibbutz between 1983 and 1995, and I test whether higher ability individuals are more likely to exit.

The first three columns of Table 1 show the mean characteristics of individuals who stayed in their kibbutz, left their kibbutz for a city, and left their kibbutz for another rural location, respectively. The table shows that movers are more educated (over 61.5% of kibbutz movers have at least a high school diploma compared with 50% of stayers), more likely to work in a high-skill occupation (9.9% as compared with 8.4%), and less likely to work in a low-skill occupation (less than 14.9% as compared with 22.6%). Also, the average kibbutz mover in 1983 (before migration) is younger (less than 30 years old) than the average stayer (33 years old).

¹¹The coefficients of interest from this regression are: 0.352 on education, 0.36 on high-skill, and 0.216 on low-skill. This suggests that having at least a high school diploma increases predicted outside-of-kibbutz earnings by 35.2%; having a high-skill occupation increases expected earnings by 36.0%, and having a low-skill occupation decreases expected earnings by 21.6%. The controls are the same as those used in the logit regression.

Table 2, the first column of which is also presented in Abramitzky (2008), suggests that kibbutz leavers are more educated, more skilled, and have higher expected earnings upon exit than stayers. The first two columns present the results from alternative specifications of the logit regression. In column 1, the coefficient on having at least a high school diploma is 0.656, suggesting that having at least a high school education increases the probability of exit by 9.4 percentage points, which is more than 50% of the average probability of exit, 17.5%. Members with high-skill occupations are over 8.2 percentage points more likely to exit than members with medium-skill occupations, and low-skill members are 8.7 percentage points less likely to exit.¹² The second column shows that the coefficient on predicted log of earnings is 1.92, suggesting that kibbutz members with a standard deviation higher log of expected earnings (which, at the mean, corresponds to 2,400 Shekels) are 12 percentage points more likely to exit.¹³

Since kibbutzim are located in rural areas, a possible concern is that kibbutz movers are positively selected because rural-to-urban migrants tend to be positively selected rather than because of the intensive redistribution in kibbutzim. To account for this possibility, I test whether kibbutz members who move to other rural locations that do not engage in intensive redistribution are also positively selected on observable characteristics. Specifically, I run a multinomial logit regression that allows individuals to stay in their kibbutz, move to a city, or move to another rural location. Columns 3 and 4 of Table 2 suggest that kibbutz members with higher abilities are more likely to exit, both to cities and to rural locations where earnings are not based on equal sharing. As a robustness check, to account for the possibility that non-kibbutz rural areas also include rural communities that

¹²When the regression uses either education or high/low-skill occupations (but not both), the coefficients on education and skill are even larger in magnitude. When the regression uses the eight occupation categories provided by the census instead of dummies for high, low and medim-skill occupations, the regression shows that kibbutz members with academic occupations are the most likely to exit and that unskilled industrial workers are the least likely to exit. Finally, results are similar when using a BA degree instead of a high school diploma as the measure of education.

¹³A coefficient of 1.92 corresponds to a marginal probability of 0.279. An increase in a standard deviation in predicted log of earnings (which is 0.425) thus correponds to 0.279×0.425 , which is 0.12.

might be more similar to suburbs of major cities than to rural areas, I also redefine such rural communities as cities rather than as rural areas. Column 5 shows that results remain the same under this specification. These findings support the idea that equal sharing, rather than preferences of productive individuals for living in the city, discourages kibbutz participation among productive individuals.

Another possible concern is that more educated and skilled individuals are more likely to move simply because they are more mobile. Next, I test whether kibbutz members with higher observable ability are more likely to move than high ability individuals from other rural locations that do not engage in intensive redistribution. Specifically, I examine individuals who lived in either a kibbutz or other rural area in 1983 and either stayed or left by 1995. I run a logit regression where the dependent variable takes the value 1 if the individual moved between 1983 and 1995, and include as explanatory variables an interaction term of whether the individual lived in a kibbutz in 1983 and was of high ability, dummies for living in a kibbutz in 1983 and being of high ability, and other controls.

Column 6 of Table 2 presents the regression results. The regression suggests that kibbutz members with higher skills are more likely to move than are high-skill people living in other rural areas. The coefficient on the interaction term in the logit regression is 0.413, suggesting that kibbutz members whose expected log earnings upon moving are a standard deviation higher are 12 percentage points more likely to exit than their lower-earning counterparts; this difference is only 9 percentage points for similar non-kibbutz individuals. The difference between the effect of expected earnings on the exit probabilities of kibbutz members and of non-kibbutz individuals is statistically significant at the 10% level, and amounts to 15% of the average predicted probability of moving, 21%.¹⁴

As a robustness check, I restrict the sample of other rural areas to only include individuals who in 1983 lived in rural areas outside of metropolitan areas. Column 7 of Table 2

¹⁴A coefficient of 0.413 corresponds to a marginal probability of 0.069. An increase in a standard deviation in predicted log of earnings (which is 0.425) thus corresponds to 0.069×0.425 , which is 0.03.

suggests that results are similar when looking at this comparison group. The next section suggests large differences also exist in *ex ante*-unobservable ability between kibbutz leavers and other rural-to-urban migrants.

The results of positive selection corroborate the observation made by a secretary of kibbutz Givat Brenner in 2001. He summarizes the process that has taken place in his kibbutz during the last two decades:¹⁵

I don't want to shout it out loud, but there is a negative selection process at work here. We have lost some of the best and brightest of our young adults....We do not have enough members in the twenty-five to forty age group, and frankly, those who have stayed are not the best.

5 Positive selection on ex-ante unobservable ability: kibbutz leavers earn higher wages in the outside labor market

The previous section provided evidence of positive selection on observable ability of kibbutz-to-city migrants compared with members who stayed in the kibbutz. This section tests whether kibbutz-to-city migrants are positively selected in their *ex ante*-unobservable ability by comparing the earnings of kibbutz-leavers with that of the Israeli labor force outside the kibbutz. Specifically, I evaluate how former kibbutz members who left their kibbutz between 1983 and 1995 perform, in terms of their earnings, outside the kibbutz in 1995 relative to similar individuals already in the city.¹⁶

I test how the selection patterns over unobserved abilities (measured by post-exit wage) vary by education. Less-educated members of kibbutzim who exit are expected to be productive compared with other less-educated individuals, otherwise they could stay and enjoy the redistribution. More-educated individuals, on the other hand, are not expected

¹⁵Gavron (2000, p. 68)

¹⁶A similar regression model was analyzed in the work of Chiswick (1978) and Carliner (1980).

to be more productive than average more-educated individuals because all more-educated individuals are expected to move away from intensive redistribution.

The analysis in this section is related to an important issue in migration, namely the extent to which positive selection with respect to the population of origin implies positive selection with respect to the population at the destination. Specifically, I examine both the selection of movers vs. stayers at the origin (previous section), and how these movers perform in terms of their earnings compared with the population at the destination (this section).

To test how kibbutz-to-city migrants perform in the city labor market, I run the following OLS regression of 1995 earnings on characteristics in 1983 and dummy variables for whether the individual exited from a kibbutz, and whether he exited with a high level of education:

$$\ln(Wage_i^{95}) = \alpha + X_i^{83}\beta + \delta_1 KibbutzMigrant_i + \delta_2 EducatedKibbutzMigrant_i + \varepsilon_i \quad (4)$$

where $Wage_i^{95}$ is the 1995 wage of individual i in the city; X_i^{83} is individual i 's characteristics in 1983 that are expected to affect her wage; $KibbutzMigrant_i$ is a dummy variable that equals 1 if individual i left her kibbutz between 1983 and 1995; and $EducatedKibbutzMigrant_i$ is a dummy variable that equals 1 if individual i left her kibbutz between 1983 and 1995 and had at least a high school diploma in 1983. The coefficients of interest are δ_1 and δ_2 , which test whether kibbutz-to-city migrants have unobservable (to the researcher) characteristics that are associated with higher wages once in the city.

I consider three different subsamples of 1995 outside-of-kibbutzim locations: either rural or city (to consider kibbutz-to-outside-of-kibbutz), city (to consider kibbutz-to-city migration), and rural (to consider kibbutz-to-rural migration). The first three columns of Table 3 present the OLS regression results of 1995 earnings of the various subsamples of outside-of-kibbutz individuals on 1983 (pre-moving) characteristics. The regressions suggest that the average kibbutz mover earns higher wages than both city natives and

rural natives, indicating that kibbutz leavers have unobservable characteristics that are associated with higher wages in the outside labor market. Kibbutz members without high school diplomas who moved to cities earned 18% more than others with their education level living in the city; such kibbutz members who moved to rural areas earned 37% more than their non-kibbutz equivalents. In both cases these differences are highly statistically significant. On the other hand, educated kibbutz leavers who moved to rural areas earned a smaller (but statistically insignificant) premium, and those who moved to cities did not earn a wage premium at all over similar non-kibbutz people.

Another way of illustrating that kibbutz leavers are positively selected on unobservable abilities, especially among the less-educated, is to compare the density of the OLS residuals from the regression of 1995 earnings on skill level of occupation, education, and other controls for kibbutz-leavers with the density for the rest of the population (along the lines of Dinardo John and Lemieux (1996)). Figure 2 shows that the kernel density of the residuals for more-educated kibbutz leavers largely overlaps with the density for others, while the density for less-educated kibbutz-leavers is shifted to the right of the density of others.

These results are consistent with the selection hypothesis because less-educated workers who were willing to leave the kibbutz and forgo sharing their income with more-educated workers are expected to be more talented than average less-educated workers. Following the same logic, more-educated workers who leave the kibbutz are not expected to earn more than average higher-skill workers. These results also suggest that selection patterns over unobservables might vary across education levels.

Next, I test whether other rural-to-urban migrants are also positively selected on unobservable abilities, i.e. whether the wages of other rural-to-city migrants show similar patterns. One concern is that rural-to-city migrants, including kibbutz movers, are always positively selected and that positive selection occurs regardless of the equal sharing in the kibbutz. Specifically, I test whether migrants who leave rural locations that do not en-

gage in redistribution also earned wage premia compared with city natives, and whether the wage premia vary with education. To evaluate this claim, I compare the selection of kibbutz-to-city migrants with other rural-to-city migrants. I run the following regression:

$$\left\{ \begin{array}{l} \ln(Wage_i^{95}) = \alpha + X_i^{83}\beta + \delta_1(KibbutzMigrant)_i + \delta_2(EducatedKibbutzMigrant)_i \\ + \delta_3(RuralMigrant)_i + \delta_4(EducatedRuralMigrant)_i + \varepsilon_i \end{array} \right\} \quad (5)$$

where $Wage_i^{95}$ is the 1995 wage of individual i in the city; X_i^{83} is individual i 's 1983 characteristics expected to affect her wage; $(KibbutzMigrant)_i$ is a dummy variable that equals 1 if individual i left her kibbutz between 1983 and 1995; $(EducatedKibbutzMigrant)_i$ is a dummy variable that equals 1 if individual i left her kibbutz between 1983 and 1995, and had at least a high school diploma in 1983; $(RuralMigrant)_i$ is a dummy variable that equals 1 if individual i left a rural location not based on equal sharing between 1983 and 1995; and $(EducatedRuralMigrant)_i$ is a dummy variable that equals 1 if individual i left a rural location not based on equal sharing in the same period and had at least a high school diploma in 1983.

The first comparison of interest in this regression is between δ_1 and δ_3 , which tells us whether less-educated kibbutz-to-city migrants have unobservable (to the researcher) characteristics that are associated with higher wages once in the city than do less-educated rural-to-city migrants. The second comparison of interest is between $\delta_1 + \delta_2$ and $\delta_3 + \delta_4$, which answers the same question for more-educated migrants.

The OLS regression results are shown in column 4 of Table 3. The regression shows that while less-educated kibbutz-to-city migrants earn higher wages than city natives, less-educated other rural-to-urban migrants earn similar wages to those of city natives. The F statistic for the test that the wage premia for these two groups are the same is 3.95, with a p-value of 0.05, thus we reject the hypothesis that less-educated other rural-to-city migrants earn the same wage premium as kibbutz-to-city migrants. As previously stated, this positive selection result is absent from more-educated kibbutz-to-city migrants

who earn wages insignificantly different to those of similar other rural-to-city migrants or city natives. Column 5 shows that these results are robust when comparing kibbutz-to-city movers to individuals who moved to a city from other rural areas located outside of metropolitan areas.

6 Entrants to Kibbutzim Are Adversely Selected Compared with Non-Entrants

In this section, I test whether entrants to kibbutzim are negatively selected compared with non-entrants. Figure 3 illustrates the key point: individuals with lower wages are more likely to enter a kibbutz. The rest of this section subjects this simple pattern to regression analysis.

Even if kibbutz officials are well aware of this tendency, adverse selection might still transpire because individuals who seek to enter may have private information regarding their productivity. The census data contain information on individuals' pre-entry wages. However, wage was not used as a criterion in the application process and thus these data allow me to test for adverse selection. One reason why wages are not used is that they might be difficult to verify, but another possible reason is that kibbutzim may care more about entrants' skills and education than their wages. Note that whether or not the negative selection documented here can be interpreted literally as adverse selection due to asymmetric information depends on which is the true reason.

A central body in the country, the kibbutz's Department of Absorption and Demographic Growth, coordinates the screening process of individual applicants to most kibbutzim and imposes strict rules on entry.¹⁷ Kibbutzim prefer applicants who are between twenty and fifty years old, have finished high school, have served in the army, and have an occupation that will allow them to "find a job within the kibbutz or its area immediately."

¹⁷This section draws on the application forms and interviews with the members of the Kibbutz's Department of Absorption and Demographic Growth conducted in 2002. I am grateful to them, especially to Theo Kaminer, for sharing their data and ideas with me.

Moreover, applicants have to go through a lengthy interview, to fill out forms about their and their children's physical and mental health, and to write a Curriculum Vitae, which is tested by a graphologist. They also have to answer a long questionnaire meant to check whether the individual is personally suited to living in a kibbutz.

Only about one third of the kibbutzim absorbed new members from the outside during the period of study. These kibbutzim are typically neither rich nor poor, and they are more likely to be located in Israel's far south or far north.¹⁸ Some kibbutzim require an entry fee, but this can often be recovered in part upon leaving. Applicants can list their preferences to join particular kibbutzim, but the decision takes into account both applicants' preferences and kibbutzim's needs.

Columns 4-6 of Table 1 present the mean characteristics of individuals who lived in the city in both 1983 and 1995, city-to-kibbutz movers, and city-to-other rural location movers, respectively. Note that the average individual who entered a kibbutz earned a wage that is substantially lower than that of non-entrants (25,877 Shekels vs. 32,120 Shekels). In contrast, Table 1 shows that city-to-other rural migrants earned a similar wage to city natives who did not move (31,211 Shekels). The average individual who entered a kibbutz was also younger than the average Israeli who did not move (26.5 vs. 33.3 years old) and was more likely to have at least a high school diploma than non-movers (64% vs. 51% in the general population). He or she is less likely to work in a high-skill occupation than the average city worker, and is somewhat less likely to work in a low-skill occupation.

I first test the hypothesis that entrants to the kibbutz are adversely selected in terms of their pre-entry wage. More specifically, I conduct a logit regression analysis of entry to the kibbutz in the period 1983-1995, in which I evaluate whether individuals who earned

¹⁸Poor kibbutzim often cannot absorb outsiders because they lack the resources to build new apartments for children who decide to stay - still the main source of population growth. Poor kibbutzim also face unemployment, which prevents them from absorbing new individuals from the outside. Rich kibbutzim often also do not accept outsiders, as they face high demand for apartments by their own children. Kibbutzim in the center of Israel and those close to the sea are crowded with members and often do not have room for new housing.

lower wages were more likely to enter, controlling for their observable characteristics (age, gender, family size, education, occupation, marital status, previous residence (rural/urban, south/north)).

The logit regression results of entering a kibbutz are presented in columns 1 and 2 of Table 4. The regressions provide no evidence of negative selection over characteristics that were observable to the kibbutz. In fact, more-educated individuals were more likely to enter kibbutzim than were less-educated individuals. At the same time, the regressions provide evidence of adverse selection. Specifically, individuals with lower wages were more likely to enter. The negative coefficient on wage declines somewhat in magnitude but remains significant when controls are added for individual characteristics that are observable to the kibbutz, such as education and age. The table in the Appendix shows how the magnitude of the wage coefficient changes with different subsets of the control variables. The magnitude of the wage coefficient does not decrease when controlling for the level of education, but is halved when age and marital status are added. The reason for this is that younger and single individuals are more likely to enter, but also earn lower wages. This is natural and does not imply adverse selection, which is small but significant after adding such observable controls.

I test whether this negative selection on wage holds for migrants from the city to other rural locations that do not engage in redistribution. Specifically, I run a multinomial logit that allows individuals who lived in the city in 1983 to stay in the city, move to a kibbutz, or move to another rural location. The results are presented in column 3 (without controls) and column 4 (with controls) of Table 4. The regressions suggest that although individuals who earned lower wages were more likely to enter a kibbutz, similar individuals were not more likely to move to non-kibbutz rural localities, although the multinomial results with controls are not measured precisely.

As an alternative test for negative selection in entry, parallel to the test for positive selection conducted in section 5, I run an OLS regression of 1983 earnings on 1983 charac-

teristics and dummy variables for whether the individual subsequently entered a kibbutz (between 1983 and 1995) and whether she entered with a high level of education. Entrants to a kibbutz, *ceteris paribus*, are expected to earn lower wages than non-entrants prior to entry. Specifically, I use three alternative specifications and conduct the following regression analyses:

$$\ln(Wage_i^{83}) = \alpha + X_i^{83}\beta + \delta_1 (KibbutzEntrant)_i + \varepsilon_i \quad (6)$$

$$\ln(Wage_i^{83}) = \alpha + X_i^{83}\beta + \delta_1 (EducatedKibbutzEntrant)_i + \delta_2 (UneducatedKibbutzEntrant)_i + \varepsilon_i \quad (7)$$

$$\left\{ \begin{array}{l} \ln(Wage_i^{83}) = \alpha + X_i^{83}\beta + \delta_1 (EducatedKibbutzEntrant)_i + \delta_2 (UneducatedKibbutzEntrant)_i \\ \quad + \delta_3 (EducatedRuralEntrant)_i + \delta_4 (UneducatedRuralEntrant)_i + \varepsilon_i \end{array} \right\} \quad (8)$$

where $Wage_i^{83}$ is the individual's wage earned outside the kibbutz in 1983; X_i^{83} is a vector of characteristics believed to affect wages and including age, age squared, gender, a dummy for Israeli born, education, and occupation; $(KibbutzEntrant)_i$ is a dummy indicating whether the individual entered a kibbutz between 1983 and 1995; $(EducatedKibbutzEntrant)_i$ is a dummy that equals 1 if individual i entered a kibbutz between 1983 and 1995 with at least a high school diploma (in 1983); $(UneducatedKibbutzEntrant)_i$ is a dummy that equals 1 if individual i entered a kibbutz between 1983 and 1995 with less than a high school diploma (in 1983); $(EducatedRuralEntrant)_i$ is a dummy that equals 1 if individual i entered a rural location not based on equal sharing with at least a high school diploma in 1983; and $(UneducatedRuralEntrant)_i$ is a dummy that equals 1 if individual i entered a rural location not based on equal sharing with less than a high school diploma in 1983. If equal sharing discourages participation of high earners, then I expect δ_1 and/or δ_2 to be negative. If rural environment is a driving force behind this negative selection, then δ_3 and/or δ_4 are expected to be negative as well.

Table 5 presents the main results of selection in entry to the kibbutz. The regression results suggest that city-to-kibbutz migrants are negatively selected. Columns 1 and 2

present the results of the regression corresponding to equation (6), with and without controls. The coefficient on the entry variable (δ_1) is negative, large and significant, suggesting that entrants to the kibbutz earn lower wages prior to entry than non-entrants. The results from the regressions corresponding to equation (7), presented in columns 3 and 4, reveal that the negative selection is coming from the more-educated entrants (δ_1 is close to zero and δ_2 is negative and large). In particular, individuals who entered a kibbutz with at least a high school diploma earn lower wages prior to entry than similar non-entrants. The results from the regressions corresponding to equation (8), presented in columns 5 and 6, suggest that city-to-kibbutz migrants are more negatively selected than city-to-other rural migrants. In fact, city-to-other rural migrants without high school diplomas may actually earn a wage premium over similar individuals who remain in the city. City-to-other rural migrants with high school diplomas are negatively selected, but the F statistics for "at least high school diploma" groups, presented at the bottom of Table 5, show the degree of negative selection is significantly less than for city-to-kibbutz migrants with the same level of education.

As with exit, another way of illustrating that educated entrants to kibbutzim are negatively selected in their pre-entry wages is to compare the density of their residuals from an OLS regression of earnings on education, skill level and controls with the density for non-entrants. Figure 4 shows that the kernel density of the residuals for highly educated entrants to kibbutzim is shifted to the left of the density of others, whereas the residuals of less-educated entrants to kibbutzim lie to the right of the density for others.

Clearly I only observe individuals who actually entered, rather than all applicants. However, this should make it harder to document negative selection, because it includes only applicants who were accepted by the kibbutz. Hence, my results are likely to provide a lower bound on the negative selection of people who wish to enter kibbutzim. Although I find significant evidence of negative selection in entry, it should be noted that the size of the sample of entrants is very small.

The negative selection into kibbutzim supports the idea that redistribution schemes may attract low ability individuals. The negative selection result also supports Borjas' hypothesis. According to Borjas, migrants tend to come from the "lower tail of the home country's income distribution" (Borjas 1987, p. 534) if the place of origin has a more unequal income distribution (resulting from higher returns to skill) than the destination.

On the contrary, much of the literature postulates that migrants always will be positively selected regardless of income distribution of origin and destination. The positive selection hypothesis has it that migrants are "more able and more highly motivated" than natives (Chiswick 1978, p. 900). If motivation and ability are positively correlated with both propensity to migrate and labor market outcome, then one expects to observe that potential migrants *ceteris paribus* earn more than individuals who do not migrate. This paper does not support this claim in the context of entering kibbutzim.

7 Conclusion

This paper provides a case study of how redistribution affects mobility patterns. Specifically, I use a unique data set of individuals entering and exiting Israeli kibbutzim to test whether and to what extent the intensive redistribution reflected in equal sharing discourages participation of productive individuals.

I find strong positive selection in exit and negative selection in entry. More than 20% of kibbutz members left their kibbutz between 1983 and 1995. Movers were more educated and skilled than stayers and they earned higher wages upon exit than observably similar individuals. Entrants to kibbutzim earned lower wages than observably identical individuals who did not enter, despite the screening process. These findings support the idea that redistribution encourages exit of productive individuals and entry of less productive ones.

The redistribution in kibbutzim is more intensive than in other states and local governments. Members of kibbutzim in the period of this study essentially faced a 100% income tax. In this sense, the findings of this paper probably present an upper bound on the neg-

ative selection expected to result from redistributive schemes. Nevertheless, it illustrates that mobility and selection may be important factors to take into account when designing tax policy.

The selection effect also forms the basis for Borjas' hypothesis that selection of migrants (either positive or negative) depends on the relative returns to skills of the origin and destination. This paper provides empirical support for the selection hypothesis.

At the same time, the results reveal the limitations of looking for a uniform pattern of selection. This is particularly important in the migration literature, which often looks at the aggregate distribution of earnings. I find, first, that selection varies across education levels. Whereas less-educated kibbutz-to-city movers earned higher wages upon exit than the average less-educated individuals, more-educated movers did not earn such a wage premium. In contrast, more-educated entrants earned lower wages prior to entry than observably similar non-entrants, but less-educated entrants did not.

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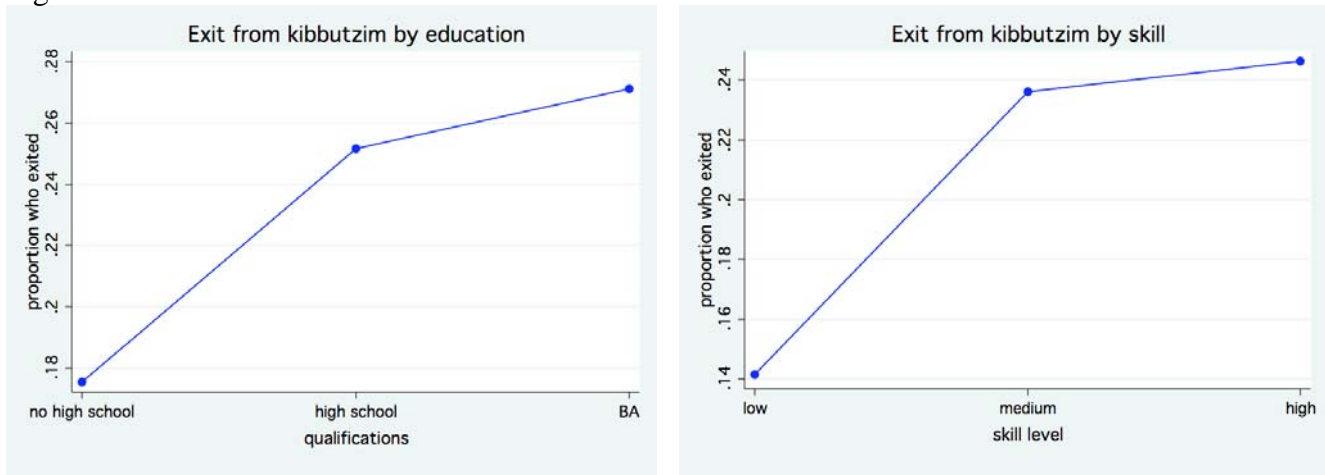
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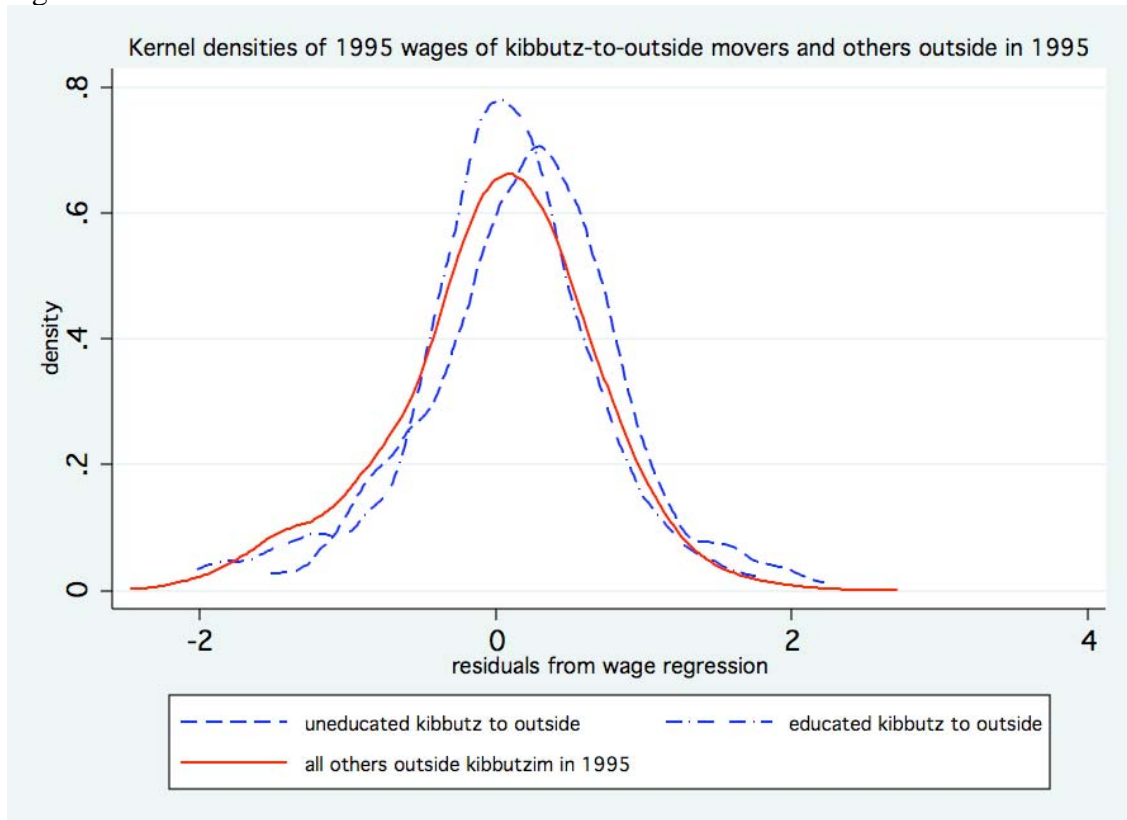
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Figure 1



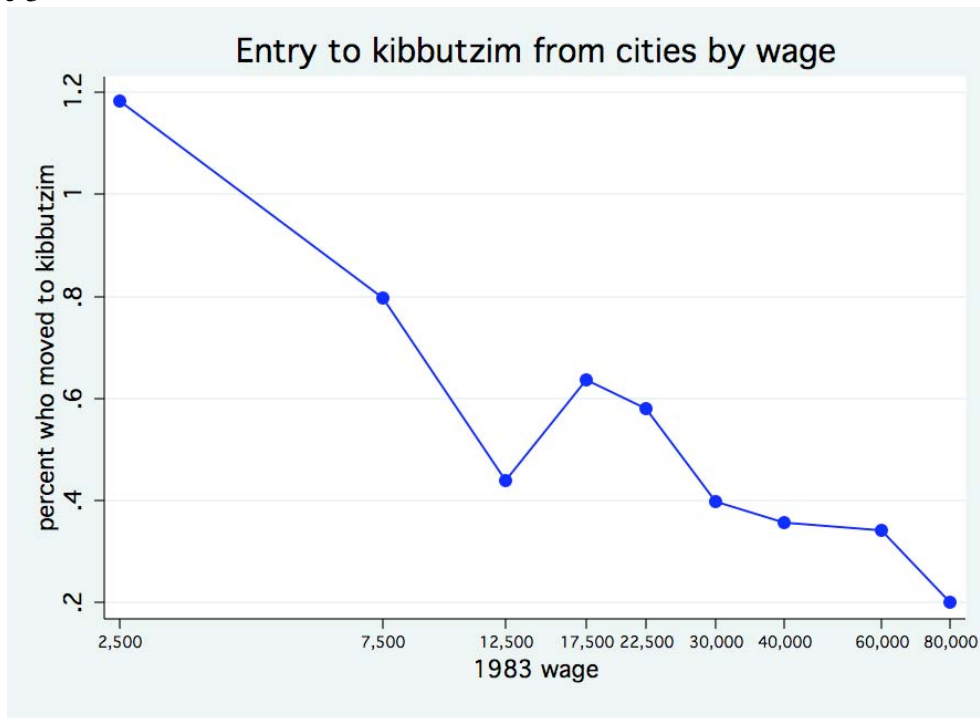
Notes: The left hand panel shows the proportion of kibbutz members who exited their kibbutz between 1983 and 1995 by level of qualifications in 1983. The right hand panel shows the same, but broken down by the skill level of the member's occupation in 1983.

Figure 2



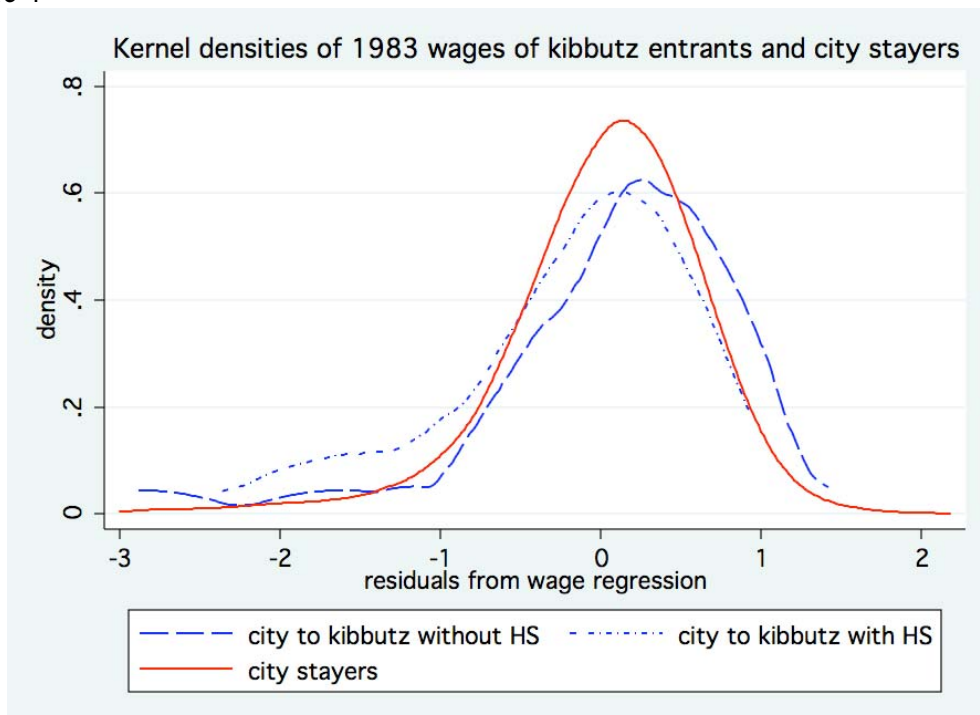
Notes: This figure plots kernel densities of residuals from an OLS regression of log earnings in 1995 on a dummy variable for having at least a high school diploma, dummies for having a high-skill or low-skill occupation, age and age squared, dummies for being male and for being born in Israel, and region dummies. The sample is Jewish people living outside kibbutzim in 1995. All explanatory variables are measured in 1983. The line *uneducated kibbutz to outside* is for people without high school diplomas who exited a kibbutz between 1983 and 1995. The line *educated kibbutz to outside* is for people with at least high school diplomas who exited a kibbutz between 1983 and 1995. The line *all others outside kibbutzim in 1995* is for Jewish individuals who lived outside kibbutzim in both 1983 and 1995.

Figure 3



Notes: This figure shows the proportion of people living in cities in 1983 who entered kibbutzim between 1983 and 1995, broken down by wage categories in 1983.

Figure 4



Notes: This figure plots kernel densities of residuals from an OLS regression of log earnings in 1983 on a dummy variable for having at least a high school diploma, dummies for having a high-skill or low-skill occupation, age and age squared, dummies for being male and for being born in Israel, and region dummies. The sample is Jewish individuals living in cities in 1983. All explanatory variables are measured in 1983. The line *city to kibbutz without HS* is for people without high school diplomas who moved to a kibbutz between 1983 and 1995. The line *city to kibbutz with HS* is for people with at least high school diplomas who moved to a kibbutz between 1983 and 1995. The line *city stayers* is for people who were still living in a city in 1995.

TABLE 1
Summary statistics

Variable	(1) Stayed in Kibbutz	(2) Kibbutz-to-city migrants	(3) Kibbutz-to-other rural migrants	(4) City natives	(5) City-to-kibbutz migrants	(6) City-to-other rural migrants
1983 monthly earnings	-	-	-	32,120 (20,276)	25,877 (18,168)	31,211 (20,111)
At least high school diploma	0.500 (0.500)	0.615 (0.488)	0.630 (0.486)	0.507 (0.500)	0.642 (0.481)	0.692 (0.462)
High-skill	0.084 (0.278)	0.099 (0.300)	0.099 (0.300)	0.141 (0.348)	0.066 (0.250)	0.149 (0.357)
Low-skill	0.226 (0.418)	0.149 (0.357)	0.086 (0.283)	0.084 (0.277)	0.073 (0.261)	0.061 (0.239)
Age	36.295 (8.719)	29.500 (7.900)	29.963 (7.279)	33.327 (8.719)	26.570 (5.998)	28.434 (6.574)
Age squared	1393.3 (648.8)	932.4 (532.0)	950.1 (477.6)	1186.7 (618.1)	741.7 (363.4)	851.7 (423.5)
Male	0.494 (0.500)	0.550 (0.498)	0.543 (0.501)	0.576 (0.494)	0.556 (0.498)	0.533 (0.499)
Married	0.796 (0.403)	0.523 (0.500)	0.704 (0.459)	0.743 (0.437)	0.344 (0.477)	0.641 (0.480)
Family Size	3.570 (1.627)	2.576 (1.663)	3.136 (1.730)	4.068 (1.506)	3.311 (1.588)	3.687 (1.528)
Born in Israel	0.669 (0.471)	0.752 (0.433)	0.654 (0.479)	0.538 (0.499)	0.775 (0.419)	0.731 (0.444)
Israel's north region	0.524 (0.500)	0.508 (0.501)	0.568 (0.498)	0.072 (0.259)	0.066 (0.250)	0.105 (0.307)
Israel's south region	0.199 (0.400)	0.256 (0.437)	0.259 (0.441)	0.118 (0.323)	0.139 (0.347)	0.105 (0.307)
<i>Observations</i>	1,234	262	81	20,617	151	610

Notes: This table presents the means of the explanatory variables for different groups of individuals. All variables are measured in 1983, i.e. prior to exit/entry. "High-skill" are individuals working in either academic or managerial occupations. "Low-skill" are individuals working in either unskilled occupations in industry or as service workers. A third omitted group contains all other occupations. "Israel's North Region" includes the following districts: Sefad, Kinneret, Yizrael, Akko and Golan. "Israel's South region" includes Ashkelon and Beer-Sheva districts. A third omitted group contains all other regions. The numbers of observations for 1983 monthly earnings are fewer than for the other variables: 15,456 observations in column (4); 77 in (5); and 415 in (6). Standard errors are given in parentheses.

TABLE 2
Exit from kibbutzim and other rural areas (logit and multinomial logit regressions), 1983-1995

Variable	(1)	(2)	(3)		(4)			(5)	(6)		(7)
	Logit of exit from kibbutz		city	other rural	Multinomial logit of exit from kibbutz to:			other non-metropolitan rural	Logit of mobility of kibbutz members relative to residents of:		other non-metropolitan rural
					city	other rural	city or metropolitan rural	other non-metropolitan rural	other rural areas	other non-metropolitan rural	
At least high school diploma	0.656*** (0.144)		0.677*** (0.159)	0.580** (0.258)							
High-skill	0.502** (0.233)		0.550** (0.257)	0.348 (0.417)							
Low-skill	-0.682*** (0.197)		-0.527** (0.213)	-1.292*** (0.427)							
Predicted 1995 log earnings		1.922*** (0.284)			1.900*** (0.314)	1.986*** (0.500)	1.945*** (0.304)	1.826*** (0.583)	1.306*** (0.222)	1.238*** (0.232)	
Kibbutz*Predicted 1995 log earnings									0.413* (0.223)	0.461** (0.229)	
Kibbutz									-3.602* (1.900)	-3.920** (1.954)	
Age (/10)	-2.416*** (0.744)	-3.901*** (0.797)	-2.361*** (0.804)	-2.786* (1.472)	-3.843*** (0.865)	-4.224*** (1.550)	-3.764*** (0.842)	-5.055*** (1.828)	-3.095*** (0.517)	-3.035*** (0.536)	
Age squared (/100)	0.201* (0.103)	0.410*** (0.110)	0.206* (0.112)	0.209 (0.208)	0.413*** (0.120)	0.414* (0.218)	0.398*** (0.117)	0.529** (0.254)	0.329*** (0.073)	0.311*** (0.076)	
Male	0.137 (0.144)	-0.980*** (0.224)	0.150 (0.160)	0.099 (0.254)	-0.982*** (0.247)	-0.958** (0.399)	-1.023*** (0.239)	-0.758 (0.469)	-0.894*** (0.146)	-0.854*** (0.149)	
Married	-0.391* (0.228)	-0.478** (0.229)	-0.527** (0.252)	0.159 (0.407)	-0.608** (0.253)	0.035 (0.410)	-0.571** (0.245)	0.230 (0.486)	-0.753*** (0.124)	-0.760*** (0.126)	
Family Size	-0.002 (0.071)	0.027 (0.071)	-0.031 (0.079)	0.099 (0.124)	-0.002 (0.079)	0.119 (0.124)	-0.009 (0.077)	0.201 (0.141)	0.041 (0.027)	0.051* (0.027)	
Born in Israel	-0.297* (0.157)	-0.492*** (0.160)	-0.186 (0.176)	-0.620** (0.264)	-0.382** (0.180)	-0.798*** (0.268)	-0.420** (0.174)	-0.798*** (0.310)	-0.506*** (0.112)	-0.494*** (0.116)	
Region dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
<i>Predicted Probability</i>	0.175	0.176	0.134	0.037	0.134	0.039	0.145	0.026	0.212	0.202	
<i>Observations</i>	1,577	1,577	1,577		1,577		1,577		3,091	3,044	

Notes: Columns 1 and 2 present logit regressions on the sample of kibbutz members where the dependent variable is equal to 1 if the individual left his kibbutz between 1983 and 1995. Columns 3 to 5 present multinomial logit regressions on the sample of kibbutz members, where the base category is remained in the kibbutz, and the other options are moved to a city or moved to another rural area. Columns 6 and 7 present logits of moving to another area using the sample of individuals living in a kibbutz or other rural area in 1983. All explanatory variables are measured in 1983, i.e. prior to exit. "High-skill" are individuals working in either academic or managerial occupations. "Low-skill" are individuals working in either unskilled occupations in industry or as service workers. A third omitted group contains all other occupations. "Region dummies" include dummy variables for Israel's north region and Israel's south region, and a third omitted group that contains all other regions. Standard errors are given in parentheses. Asterisks indicate the coefficient is significant at: ***1% **5% *10%.

TABLE 3
Earnings in 1995 of kibbutz-to-city migrants vs. others living outside kibbutzim (OLS regression)

Variable	(1)	(2)	(3)	(4)	(5)
	Residents of cities and rural areas in 1995	Residents of cities in 1995	Residents of rural areas in 1995	Residents of cities in 1995, comparing other migrants who: moved from other rural areas moved from other non-metropolitan rural areas	
Kibbutz migrant	0.222*** (0.060)	0.181*** (0.068)	0.372*** (0.139)	0.181*** (0.068)	0.181*** (0.068)
Kibbutz migrant*At least high school diploma	-0.192** (0.076)	-0.184** (0.086)	-0.207 (0.174)	-0.186** (0.086)	-0.186** (0.086)
Other-rural-to-city migrant				0.011 (0.054)	0.012 (0.055)
Other-rural-to-city migrant*At least high school diploma				-0.073 (0.071)	-0.099 (0.073)
At least high school diploma	0.356*** (0.010)	0.359*** (0.010)	0.332*** (0.039)	0.361*** (0.010)	0.362*** (0.010)
High-skill	0.364*** (0.014)	0.362*** (0.015)	0.369*** (0.055)	0.362*** (0.015)	0.362*** (0.015)
Low-skill	-0.225*** (0.017)	-0.226*** (0.017)	-0.218*** (0.067)	-0.226*** (0.017)	-0.226*** (0.017)
Age (/10)	0.870*** (0.041)	0.871*** (0.042)	0.901*** (0.168)	0.871*** (0.042)	0.871*** (0.042)
Age squared (/100)	-0.121*** (0.006)	-0.121*** (0.006)	-0.128*** (0.024)	-0.121*** (0.006)	-0.121*** (0.006)
Male	0.599*** (0.009)	0.600*** (0.010)	0.592*** (0.037)	0.601*** (0.010)	0.601*** (0.010)
Born in Israel	0.105*** (0.010)	0.113*** (0.010)	0.064 (0.041)	0.113*** (0.010)	0.113*** (0.010)
Region dummies	Yes	Yes	Yes	Yes	Yes
R^2	0.260	0.264	0.222	0.265	0.265
Observations	22,948	21,150	1,798	21,132	21,132
<i>F statistic for kibbutz migrants with at least high school diploma</i>	0.40	0.00	2.33	0.01	0.01
<i>F statistic for "no high school diploma" groups</i>				3.95**	3.81*
<i>F statistic for "at least high school diploma" groups</i>				0.67	1.29

Notes: Each column in this table presents an OLS regression of log earnings in 1995 for individuals living in a specified type of area outside kibbutzim at the time. "Kibbutz migrant" is a dummy variable for individuals who lived in a kibbutz in 1983. "Kibbutz migrant*At least high school diploma" is a dummy variable for people who lived in a kibbutz and had at least a high school diploma in 1983. "Other-rural-to-city migrant" is a dummy variable for people who lived in a non-kibbutz rural area in 1983, and lived in a city in 1995. "Other-rural-to-city migrant*At least high school diploma" is the interaction of the previous variable with a dummy for having at least a high school diploma in 1983. All the other explanatory variables are measured in 1983 (before exit). "High-skill" are individuals who worked in either academic or managerial occupations. "Low-skill" are individuals who worked in either unskilled occupations in industry or as service workers. A third omitted group contains all other occupations. "Region dummies" include dummy variables for Israel's north region and Israel's south region, and a third omitted group that contains all other regions. Standard errors are given in parentheses.

The *F statistic for kibbutz migrants with at least high school diplomas* tests whether the coefficient on "Kibbutz migrant" and that on "Kibbutz migrant*At least high school diploma" sum to zero. The *F statistic for "no high school diploma" groups* tests whether the coefficient on "Kibbutz migrant" is equal to the coefficient on "Other-rural-to-city migrant". The *F statistic for "at least high school diploma" groups* tests whether the sum of the coefficients on "Kibbutz migrant" and "Kibbutz migrant*At least high school diploma" is equal to the sum of the coefficients on "Other-rural-to-city migrant" and "Other-rural-to-city migrant*At least high school diploma". Asterisks indicate significance at: ***1% **5% *10%.

TABLE 4
Entry to kibbutz vs. moving from city to other rural areas (logit and multinomial logit regressions), 1983-1995

Variable	(1)	(2)	(3)				(4)	
	Logit of moving to kibbutz from either city or other rural area		Multinomial logit of moving from city to:					
			kibbutz	other rural area	kibbutz	other rural area		
Pre-entry (1983) log wage (/10)	-4.285*** (1.241)	-2.678* (1.381)	-4.240*** (1.335)	-0.941 (0.649)	-2.073 (1.506)	0.215 (0.769)		
At least high school diploma		0.842*** (0.246)			0.692*** (0.265)	0.785*** (0.118)		
High-skill		-0.556 (0.373)			-0.396 (0.379)	0.151 (0.140)		
Low-skill		0.164 (0.362)			0.181 (0.386)	0.002 (0.198)		
Age (/10)		2.406* (1.436)			2.614 (1.626)	-0.584 (0.605)		
Age squared (/100)		-0.410* (0.221)			-0.466* (0.253)	-0.027 (0.089)		
Male		0.363 (0.225)			0.209 (0.241)	0.173 (0.110)		
Married		-0.891*** (0.244)			-0.855*** (0.264)	0.214* (0.128)		
Family size		-0.205*** (0.074)			-0.245*** (0.083)	-0.107*** (0.038)		
Born in Israel		1.010*** (0.288)			0.866*** (0.300)	0.377*** (0.116)		
Region dummies	No	Yes	No	No	Yes	Yes		
<i>Predicted Probability</i>	0.005	0.003	0.005	0.026	0.002	0.019		
<i>Observations</i>	16,789	16,789		15,948		15,948		
<i>Chi-squared for same effect of wage</i>				5.00**		1.87		

Notes: Columns 1 and 2 present logit regressions on the sample of people living outside kibbutzim in 1983, where the dependent variable is equal to 1 if the individual moved to a kibbutz between 1983 and 1995. Columns 3 and 4 present multinomial logit regressions on the sample of people living in the city in 1983, where the base category is remained in the city, and the other options are moved to a kibbutz or moved to another rural area. All explanatory variables are measured in 1983, i.e. prior to exit. "High-skill" are individuals working in either academic or managerial occupations. "Low-skill" are individuals working in either unskilled occupations in industry or as service workers. A third omitted group contains all other occupations. "Region dummies" include dummy variables for Israel's north region and Israel's south region, and a third omitted group that contains all other regions. Standard errors are given in parentheses. The row *chi-squared for same effect of wage* reports the chi-squared from the test that the coefficient on wage in the equation predicting moving to a kibbutz is the same as in the equation predicting moving to another rural area. Asterisks indicate significance at: ***1% **5% *10%.

TABLE 5
Pre-entry earnings of city-to-kibbutz migrants, city-to-other rural migrants, and non-migrants (OLS regression), 1983

Variable	(1)	(2)	(3)	(4)	(5)	(6)
	Kibbutz entrants from cities and rural areas vs. non-entrants			City-to-kibbutz migrants and city-to-other rural migrants vs. city stayers		
Entered kibbutz	-0.027*** (0.009)	-0.016** (0.007)				
Entered kibbutz * No high school diploma			-0.011 (0.015)	0.003 (0.013)	-0.011 (0.015)	0.003 (0.013)
Entered kibbutz * At least high school diploma			-0.039*** (0.010)	-0.025*** (0.009)	-0.040*** (0.010)	-0.025*** (0.009)
Entered rural * No high school diploma					0.010 (0.007)	0.019*** (0.006)
Entered rural * At least high school diploma					-0.018*** (0.004)	-0.009** (0.004)
At least high school diploma		0.021*** (0.001)	0.022*** (0.001)	0.021*** (0.001)	0.022*** (0.001)	0.021*** (0.001)
High-skill		0.028*** (0.001)		0.028*** (0.001)		0.028*** (0.001)
Low-skill		-0.027*** (0.002)		-0.027*** (0.002)		-0.027*** (0.002)
Age		0.112*** (0.005)		0.112*** (0.005)		0.112*** (0.005)
Age squared		-0.013*** (0.001)		-0.013*** (0.001)		-0.013*** (0.001)
Male		0.054*** (0.001)		0.054*** (0.001)		0.054*** (0.001)
Born in Israel		0.007*** (0.001)		0.007*** (0.001)		0.007*** (0.001)
Region dummies	No	Yes	No	Yes	No	Yes
<i>R</i> ²	0.001	0.279	0.022	0.279	0.023	0.280
<i>Observations</i>	15,948	15,948	15,948	15,948	15,948	15,948
<i>F</i> statistic for "no high school diploma" groups					1.60	1.34
<i>F</i> statistic for "at least high school diploma" groups					4.10**	3.11*

Notes: Each column in this table presents an OLS regression of the log of earnings in 1983 (scaled by 1/10) for individuals living in a specified type of area outside kibbutzim at the time. "Entered kibbutz" is a dummy variable that equals 1 if the individual moved to a kibbutz between 1983 and 1995. "Entered kibbutz*No high school diploma" is the interaction of the previous variable and a dummy variable that equals 1 if the individual did not have a high school diploma in 1983. "Entered kibbutz*At least high school diploma" is the interaction of "Entered kibbutz" with a dummy variable that equals 1 if the individual had at least a high school diploma in 1983. "Entered rural" is a dummy variable that equals 1 if the individual moved from a city to a rural location not based on equal sharing between 1983 and 1995. "Entered rural*No high school diploma" is the interaction of "Entered rural" and a dummy variable that equals 1 if the individual did not have a high school diploma in 1983. "Entered rural*At least high school diploma" is the interaction of "Entered rural" and a dummy variable that equals 1 if the individual had at least a high school diploma in 1983. All other explanatory variables are measured in 1983 (before exit).

"High-skill" are individuals who worked in either academic or managerial occupations. "Low-skill" are individuals who worked in either unskilled occupations in industry or as service workers. A third omitted group contains all other occupations. "Region dummies" include dummy variables for Israel's north region and Israel's south region, and a third omitted group that contains all other regions. Standard errors are given in parentheses. The *F* statistic for "no high school diploma" groups tests whether the coefficient on "Entered kibbutz*No high school diploma" is the same as that on "Entered rural*No high school diploma". The *F* statistic for "at least high school diploma" groups tests whether the coefficient on "Entered kibbutz*At least high school diploma" is the same as that on "Entered rural*At least high school diploma". Asterisks indicate significance at: ***1% **5% *10%.

APPENDIX TABLE
Entry to kibbutz (logit), 1983-1995

Variable	(1)	(2)	(3)	(4)	(5)
	Logit of entering kibbutz from city or other rural area				
Pre-entry (1983) log wage (/10)	-4.285*** (1.241)	-4.760*** (1.205)	-4.189*** (1.263)	-4.014*** (1.286)	-2.678* (1.381)
At least high school diploma		0.852*** (0.232)	0.959*** (0.239)	0.894*** (0.246)	0.842*** (0.246)
High-skill			-0.630* (0.366)	-0.676* (0.368)	-0.556 (0.373)
Low-skill			0.146 (0.364)	0.211 (0.362)	0.164 (0.362)
Age (/10)					2.406* (1.436)
Age squared (/100)					-0.410* (0.221)
Male				0.460** (0.226)	0.363 (0.225)
Married					-0.891*** (0.244)
Family size				-0.295*** (0.079)	-0.205*** (0.074)
Born in Israel				1.275*** (0.276)	1.010*** (0.288)
Israel's north region				0.467 (0.361)	0.457 (0.363)
Israel's south region				0.870*** (0.287)	0.863*** (0.291)
<i>Predicted Probability</i>	0.005	0.005	0.005	0.003	0.003
<i>Observations</i>	16,789	16,789	16,789	16,789	16,789

Notes: Each column in this table presents a logit regression on the sample of people living outside kibbutzim in 1983, where the dependent variable is equal to 1 if the individual moved to a kibbutz between 1983 and 1995. All explanatory variables are measured in 1983, i.e. prior to exit. "High-skill" are individuals working in either academic or managerial occupations. "Low-skill" are individuals working in either unskilled occupations in industry or as service workers. A third omitted group contains all other occupations. "Israel's North Region" includes the following districts: Sefad, Kinneret, Yizrael, Akko and Golan. "Israel's South region" includes Ashkelon and Beer-Sheva districts. A third omitted group that contains all other regions. Standard errors are given in parentheses. Asterisks indicate the coefficient is significant at: ***1% **5% *10%.