Financial Distress, Human Capital Accumulation and Demographic Change: The Case of the Israeli Kibbutzim

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Short Lead: Financial Distress in Israeli Kibbutzim

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Financial Distress, Human Capital Accumulation and Demographic Change: The Case of the Israeli Kibbutzim

Abstract: Since the mid-1980’s, Israeli kibbutzim have experienced a severe financial crisis. This paper examines the impact of the crisis on kibbutz-financed university scholarships. According to the theory of financial fragility, distressed kibbutzim are expected to provide fewer scholarships for members than nondistressed kibbutzim, holding nonfinancial factors constant. This hypothesis is tested using a new panel of kibbutzim, spanning 1991-2001. It is found that kibbutz debt, and ability to service debt, are significant predictors of student support. The decline in student support led to higher rates of attrition among young members, and worsened the effects of the crisis.

Keywords: Kibbutz, Financial Fragility, Higher Education, Demographics
JEL Codes: P32, P34, P36
I. Introduction

This paper investigates the impact of negative economic shocks on communal institutions. How does financial distress lead to reductions in members' rights and prerogatives? How do these reductions influence members' decisions and in turn, affect the institution's ability to recover? There is an extensive literature on financial distress and its impact on the decisions of firms; for a survey, see Hubbard (1998). The channels through which economic adversity affects the interaction between communal institutions and their members, however, have received less attention. This paper looks to shed some light on this topic by focusing on the Israeli kibbutz, whose special social and economic structure makes it a natural test case for such an investigation.

The Israeli kibbutz is an economic and social unit that is guided by the ideal of equality in ownership and consumption. A kibbutz is a collective that runs its own industry and supplies its members with their needs. In order to achieve this goal, the kibbutz as a collective is responsible for making decisions concerning kibbutz property and industry, as well as members' employment and consumption. As a consequence, economic shocks that influence the kibbutz have a significant impact on the life of each kibbutz member, just as changes in income or employment opportunities affect a regular household.

Since the mid-1980’s, the kibbutzim (plural of kibbutz) have experienced a severe and protracted economic crisis, which has had major economic, ideological and social consequences. The kibbutzim suffer from a shortage of capital and credit, an accelerated process of defection, and a perception that they have lost their direction (Kahanowitz 1988 and Don 1996, 1998). Most scholars who studied the crisis in the
kibbutz have concentrated on either the economic or the social consequences. The relationships between the economic and social, ideological and demographic consequences therefore remain an almost unstudied black box. In order to look inside this box, this paper borrows ideas from the literature on the credit channel of monetary policy transmission (Bernanke and Gertler 1990, 1995, Gilchrist and Himmelberg 1995, Bernanke, Gertler and Gilchrist 1996, Kashyap and Stein 2000). This literature has shown that finance constraints have important implications for investment and production; this work demonstrates that in the special environment of the kibbutz, the effects of the credit channel spread into the realms of demography and ideology as well.

One important mechanism that played a part in transmitting the effects of the economic crisis to the level of the individual kibbutz member is a channel that may be named the higher education channel. Due to financial constraints, many kibbutzim had to make cuts in their higher education expenses. Since higher education is a type of investment, these cuts are similar to cuts in investment made by financially constrained firms. But for the kibbutzim, higher education is more than an ordinary investment. For the members, it is deeply connected with feelings of satisfaction, self image and welfare; for the kibbutz, it is a means of retaining young members and attracting new candidates for membership. As a consequence, the financial distress that forced the kibbutzim to reduce their investment in higher education also had implications for kibbutz society and ideology.

The paper is organized as follows: Section II briefly introduces the notions of financial fragility and financial accelerator, and explains why financial factors are important for kibbutz expenditures. Section III outlines the predicted relationship
between financial factors, higher education cuts and kibbutz demographics and ideology. Section IV presents the data. Section V and VI test the hypotheses developed in Section III. Section VII concludes

II. The financial crisis of the kibbutzim: causes and consequences

There is an extensive literature on the connection between macroeconomic crises and credit market imperfections. The credit market is seen in this literature as a conduit that transmits and amplifies the effect of various shocks. One prominent notion in this literature is that the credit channel is of special importance during periods in which an economy suffers from financial fragility. During such times,

"…potential borrowers (those with the greatest access to productive investment projects, or with the greatest entrepreneurial skills) have low wealth relative to the size of their projects. Such a situation… leads to high agency costs and thus to poor performance in the investment sector and the economy overall.” (Bernanke and Gertler, 1990: 88).

Financial fragility is the result of imperfect information in credit markets. When investors look to obtain credit in order to perform a project, lenders cannot know with certainty the quality of the planned project. As a consequence, lenders cannot predict the ability of borrowers to repay their debt from the income flow that would be generated by the project. This leads lenders to charge an external finance premium (Bernanke and Gertler 1995). Large firms can avoid the external finance premium by either pledging assets as collateral, or by appealing to their good reputation. Smaller firms that do not share those qualities must, however, pay this extra premium. Since the external finance premium is expected to be higher the lower is borrower net worth, small borrowers may
find themselves in a credit crunch when their net worth is low. At such times, they must
finance current losses by borrowing from the future (by reducing their investment,
employment, R&D, etc.). These cutbacks may be counterproductive; borrowing from the
future may actually make recovery more difficult.\textsuperscript{4} Moreover, when some of the smaller
firms in an economy are forced to reduce their activity due to financial constraints, this
has negative effects on the market as a whole. The result is a financial accelerator that
amplifies the effects of the crisis. Bernanke, Gertler and Gilchrist (1996) estimate that
financial factors are responsible for about one-third of the total reduction in activity
during economic contractions.

The notion of financial fragility is especially suitable for describing the situation
of the Israeli kibbutzim in the early 1980s. Because of ideological and practical reasons,
the kibbutzim financed most of their activity by short term loans from banks. Short term
unindexed credit was seen at the time as the cheapest source of finance because of the
high inflation rate that existed in Israel. In addition, the support of the government and a
mutual insurance system, by which the kibbutz movements\textsuperscript{5} guaranteed the debt of all
member kibbutzim, allowed each kibbutz to enjoy an almost unlimited credit line. Almost
all the kibbutzim used this credit line to accumulate debt that was much greater than the
value of their assets. The extent of the kibbutzim's financial fragility was revealed in mid-
1985, when the government introduced an anti-inflationary policy. This policy resulted in
a fall in the annual inflation rate from over 400\% to approximately 20\%, a sharp decrease
in the number of subsidized loans, and a sharp increase in the real interest rate. The debt
of the kibbutzim to the banks rose at an astronomical rate. Between 1982 and 1989, the
net debt of the kibbutzim rose by over 500%, bringing most kibbutzim to the brink of bankruptcy (see Table 1).  

The mutual guarantee system operated as a financial accelerator, pushing kibbutzim that were initially slightly affected by the crisis into the same situation as those that were severely affected. As a result of the deterioration in the situation of the kibbutzim, the banks lost their trust in mutual guarantees, and stopped new lending to the kibbutzim almost entirely. To prevent a total collapse, the government intervened and established a special agency, named The Administration of the Kibbutzim Agreement, whose function was to design a recovery plan for each kibbutz. Whereas prior to the crisis, the kibbutzim had enjoyed almost unlimited credit, after the crisis, each kibbutz stood alone, and had to negotiate its credit terms with the banks and with the new agency. During the late 1980s and 1990s, kibbutzim with low net value faced high interest rates and suffered from a credit crunch; this significantly reduced their ability to make necessary investments in industry and agriculture, which in turn hampered their ability to recover from the crisis (Leviathan 2001, Rosental and Trabelsi 2001). As shown below, the credit crunch also had negative implications for the higher education opportunities of kibbutz members.

III. The relationship between the financial crisis, higher education and the demographic crisis

This paper looks to establish the relationship between financial shocks, personal welfare and ability of the kibbutz to recover. This section therefore elaborates on the part higher education played in the kibbutz.
In the early 1970s, the kibbutzim adopted a policy of encouraging their members to obtain higher education. This policy was motivated by the need for highly educated personnel in agriculture, education, and the emerging kibbutz industries, and complemented the wish of kibbutz members to study in order to attain personal and job satisfaction. Subsidized higher education was also a means to convince the younger generation to remain within the kibbutz, and to attract young people to join (as new members)\(^7\).

The kibbutz took full responsibility for financing higher education; the individual student was free of any financial concerns. This caused members to place great trust in the kibbutz, and to feel secure in the knowledge that they could actualize their higher education privileges whenever they wished.

The financial crisis precipitated far-reaching changes in the attitude towards higher education.\(^8\) Many kibbutzim made cuts in their higher education budgets. Since the crisis, fewer members have been granted kibbutz-financed study leaves. In addition, the terms of kibbutz sponsorship have changed; today, in most cases, only tuition is funded, and each student must earn part of his scholarship through part-time work.\(^9\) As is shown below, these cutbacks are strongly related to the financial situation of the individual kibbutz. It seems that the kibbutzim, realizing that higher education was vital for their survival, tried to fund as many students as possible.\(^10\) However, many kibbutzim were financially distressed and unable to borrow. Consequently, their investment in higher education became dependent on income. When income declined, the kibbutz was forced to reduce the number of students, along with its investment in industry and agriculture.
The cutbacks in the number of students had a negative impact on the perception of the kibbutz by its members. In the past, young kibbutz members expected the kibbutz to provide for their education *in loco parentis*. This was critical, because kibbutz parents transferred all of their income to the kibbutz, and were therefore unable to save for their children’s education (as urban parents do). The cutbacks in the higher education budget made young kibbutz members realize that the kibbutz had other priorities, and could no longer be counted on to finance their higher education. Young members perceived this as a breach of trust by the kibbutz.\(^{11}\) The feeling of rejection by the kibbutz was made worse by the fact that whereas in the past the kibbutz guaranteed jobs to its members, today most kibbutzim leave their members to take care of their own employment (Getz 2003). Moreover, in many kibbutzim a member’s salary is no longer set according to his needs, but according to his job,\(^ {12}\) and therefore, ultimately, according to the skills he acquired by learning. This then increased the rate of attrition among young kibbutz members, who had to choose between remaining within the kibbutz and trying their luck elsewhere. The drop in higher education budgets has also influenced young families to leave the kibbutz, because the parents realized that the kibbutz could not guarantee the future of their children (see Figures 1 and 2).

This leads to the hypothesis that higher education might have been one of the transmission mechanisms in the black box that made the financial difficulties so damaging to the kibbutz social fabric. If the theoretical argument is correct, empirical evidence should reveal that (a) financial distress and the resulting inability to borrow made the higher education budget of kibbutzim dependent on their income; (b) fluctuations in the ability of the kibbutzim to sponsor students led (in turn) to an increase
in the rate of departure among young kibbutz members.\textsuperscript{13} It could also be anticipated that the rate of attrition was especially high among the younger and more able members, because they are more confident in their ability to succeed outside the kibbutz.\textsuperscript{14} The departure of able and young members, in turn, increased the difficulties of the kibbutz, because the kibbutz had to deal with the economic crisis with fewer able members. In addition, the high rate of attrition among the able and educated also had negative implications for the kibbutz’s social structure and ideology.\textsuperscript{15}

IV. Data

In order to obtain information on the number of students that went to study in every year in each kibbutz, survey forms were sent to over 150 kibbutzim requesting them to fill in the number of students that went to study in colleges and universities during the period 1990-2001. Kibbutzim that maintain a special program for young members\textsuperscript{16} were asked to separate the number of students in the fully sponsored program from the number of students in the youngsters’ course. In addition, part time students were counted according to the number of days they dedicated to studies (for example, a student who worked part time and studied three days a week was counted as half a student). Answers were obtained from 41 kibbutzim; their responses were based either on records of education committees taken from their archives, or on records kept in their personnel departments. Answers from kibbutzim that could not supply consistent data for all 11 years were dropped out.

Data on the financial situation of the sample kibbutzim during the relevant period was kindly supplied by The Administration of the Kibbutzim Agreement. As
mentioned above, The Administration of the Kibbutzim Agreement is an agency established to facilitate the implementation of the recovery plan of the kibbutzim. Since 1990, kibbutzim that are part of the recovery plan have been required to report to the Administration a full set of accounting data, plus some additional data (e.g. population figures). Kibbutzim that did not join the recovery plan were dropped out of the sample, due to lack of data. The kibbutzim that did not join the recovery plan are either financially strong members of the Takam movement or new kibbutzim that are financially supported by the Jewish National Fund (JNF). Kibbutzim belonging to the second group are not relevant to this study because they have only limited need to borrow from other sources. The final sample consists of 28 kibbutzim belonging to the two largest kibbutz movements (Takam and Haartzi movement). The sample therefore includes almost 15% of the non-JNF-supported kibbutzim. The kibbutzim in the sample vary widely by number of members, outstanding debt, income, and ability to repay debt. Therefore, the sample may be regarded as representative of the Haartzi and Takam kibbutzim that are not supported by the JNF.

Data on the population of each kibbutz was obtained from the annual statistical publications of the relevant movements. Data on the Israeli population as a whole was taken from the Israel Central Bureau of Statistics (CBS) annual publications. Summary statistics for the sample kibbutzim are shown in Table 2.

V. Empirical findings: the relationship between net worth and higher education

Sections II and III explain how higher education cuts served to amplify the effects of the economic crisis. Higher education cuts can be seen as one of the conduits that
transformed the economic crisis from an amorphous problem facing the kibbutz into a concrete problem facing each kibbutz member (especially the young). Cuts in the higher education budget encouraged young members who had been undecided about their futures to leave the kibbutz. The increased rate of attrition among working aged members had a negative effect on the demographic composition of the kibbutzim. This then worsened the economic situation. The demographic changes may have affected kibbutz ideology as well, since the departure of young members depleted the pool of potential future leaders.

In order to test whether higher education indeed played such a role, it is first necessary to test whether there is a correlation between the financial situation of each kibbutz and the number of students that it sponsored. It is customary in the credit channel literature to test for the effects of financial factors on firms by examining the correlation between the cash flow of firms and their investment in a given year. A positive correlation between the cash flow of firms and their investment implies that credit conditions indeed play a role in investment decisions (Bernanke, Gertler and Gilchrist 1996 and Hubbard 1998). This paper employs a similar method to measure the effect of credit constraints on kibbutz investment in higher education. For that purpose, the following variables are defined:

\textit{Stud\_kibbutz}: The number of sponsored students divided by total kibbutz population.\textsuperscript{19}

\textit{stud\_Israel}: The number of students in Israel divided by the Israeli population.

\textit{population}: Population of the kibbutz.

\textit{young}: The population of the cohort aged 23-35 divided by total kibbutz
the population.  

debt: Per capita debt of the kibbutz in thousands of 2002 New Israeli Shekels (NIS).  

ability: The per capita sum of money that the kibbutz could afford to repay, as calculated by the Administration of the Kibbutzim Agreement, in thousands of 2002 NIS. The ability figure is calculated by the Administration of the Kibbutzim Agreement on an annual basis by taking into account both the income flow of the kibbutz in a given year and the value of the assets the kibbutz possesses. 

age: Age of the kibbutz in 1990. 

year: A time trend. 

Takam: A dummy variable equal to one for kibbutzim affiliated with the Takam movement, and zero for kibbutzim belonging to the Haartzi movement. 

GDPgr: The growth rate of Israel’s per capita GDP. 

Using these variables, the following equation was estimated: 

\[ \text{stud}_{i,t} = \alpha + \beta_1 \text{population}_{i,t-1} + \beta_2 \text{young}_{i,t-1} + \beta_3 \text{Takam}_{i,t} + \beta_4 \text{Israel}_{i,t-1} + \beta_5 \text{year}_{i,t} + \beta_6 \text{age}_{i,t} + \beta_7 \text{GDPgr}_{i,t-1} + \beta_8 \text{ability}_{i,t-1} + \beta_9 (\text{ability}_{i,t-1} \times \text{debt}_{i,t-1}) + \epsilon_{i,t} \] (1) 

The \text{population}_{i,t-1} variable is included in the regression in order to capture the impact of kibbutz size on the number of students. The anticipated sign is negative, because the number of kibbutz jobs that require highly educated personnel is usually invariant to the size of the kibbutz. Thus, the larger the kibbutz, the smaller the proportion of highly skilled jobs, and the smaller the proportion of members that must receive scholarships in order to train for these jobs. Also, many kibbutzim have adopted a policy of maintaining a constant number of college and university students. An increase in the number of members therefore decreases the share of members who continue their
education at a college or university. The effect of $young_{i,t-1}$ is expected to be positive. Kibbutzim with a greater share of young members are expected to sponsor a greater share of their membership. $Takam_i$ is included in the regression in order to capture any systematic differences in the attitude towards higher education between the Takam and Haartzi movements. The attitude of the kibbutz movements' headquarters may be important, because the movements used to encourage kibbutzim to sponsor a minimum number of students. $age_i$ is included because kibbutzim with a long history tend to have a special pride and position at the headquarters of their movements. Members of such kibbutzim often tend to see themselves as "role models".

The variable $stud_{-Israel_i,t-1}$ is expected to have a positive sign; kibbutz members compare their status with that of their peers in general Israeli society. In recent years, there has been an increase in the number of students in Israel, as a result of an increase in the returns to higher education (Levzion 2001). Kibbutz' members want to enjoy those benefits as well, and therefore have increased their demand for higher education (Avrahami 1997, Avrahami and Dar 2004). The $year_i$ variable is a time trend, and is included in order to capture the influence of time-induced effects. The $GDP_{gr,t-1}$ variable is expected to have a positive sign; a high growth rate of (per capita) GDP tends to have a positive effect on expectations, and therefore on planned investment expenditures.

The variables $ability_{i,t-1}$ and $ability_{i,t-1} \times debt_{i,t-1}$ are the most interesting for our purposes. They capture the effects of financial constraints on investment in higher education. $ability_{i,t-1}$ is a (per capita) measure of net worth, a theoretical concept that is
used extensively in the credit literature (Gilchrist and Himmelberg 1995, Hubbard 1998). From the standpoint of the lender, the borrower’s value is his ability to repay, which is just what \( \text{ability}_{t-1} \) measures. It is anticipated that this variable should be a significant determinant of investment in higher education. That is, an increase in ability to repay allows a kibbutz to increase the number of students that it subsidizes. The (per capita) outstanding debt of a kibbutz is expected to have little direct effect on annual expenditure decisions, since in many cases outstanding debt is the result of the initial debt, and therefore does not vary much. At the same time, outstanding debt is expected to have a significant role in determining the extent of the finance constraints facing the kibbutz. A kibbutz with a large debt is expected to face greater difficulties in obtaining credit and is therefore expected to subsidize a smaller number of students. This effect is expected to be larger for kibbutzim with a greater ability to repay. Kibbutzim with a low ability to repay are able to subsidize only a small number of students, regardless of their per capita debt. However, for kibbutzim with high ability to repay, large outstanding debt is a significant constraint on their ability to use their cash flow to subsidize higher education. Therefore, we have chosen to include a multiplicative interaction term, \( \text{ability}_{i,t-1} \times \text{debt}_{i,t-1} \).

The explanatory variables enter the regression with one lag (except for the Takam dummy, age of the kibbutz and time trend), since decisions on higher education funding in period \( t \) are made in period \( t-1 \), based on the information available at \( t-1 \). The use of lagged variables also helps to avoid simultaneity bias.

A likelihood ratio test gives strong indication that there is heteroskedasticity in the data (\( \chi^2 (27) = 127.77, p < 0.0001 \)). Equation (1) is therefore estimated using pooled OLS with panel-corrected standard errors. The results are given in Table 3.
The results are consistent with the predictions made above. Demographic factors are significant determinants of the number of students per kibbutz. The results also indicate that kibbutzim affiliated with the Haartzi movement tended to encourage higher education more than kibbutzim affiliated with the Takam. The number of students in Israel as a whole is positively correlated with the number of kibbutz members that go to study. Most important for this paper, however, are the results obtained for the two variables that measure the effect of the finance constraints on the ability of kibbutzim to sponsor higher education. Both are significant and have the expected signs. We can conclude that in the absence of financial constraints, many kibbutzim would have sponsored more students.

To quantify the importance of finance constraints for investment in higher education, the regression results are used to predict the number of students in the average Takam kibbutz in the average year. This is the finance constraint-free benchmark (“benchmark kibbutz”). Increasing the debt by one standard deviation allows one to predict the number of students in a "high-debt kibbutz". For the benchmark kibbutz, the prediction is of 12.58 students. For the high-debt kibbutz, the predicted number of students is 7.61, which is almost 60% below the prediction for the benchmark kibbutz.²⁴

VI. The relationship between higher education and the rate of attrition

The theory proposed in this paper is that higher education served as a mechanism that made kibbutz members feel the impact of the economic crisis. The previous section showed that there is indeed a correlation between the extent of the economic crisis and the ability of kibbutzim to subsidize higher studies for their members. It is therefore
expected that the more a kibbutz cut its higher education budget, the higher its subsequent rate of attrition. In order to test this hypothesis, the following equation is estimated

\[
growth_{i,t} = \alpha + \beta_1 \text{population}_{i,t-1} + \beta_2 \text{young}_{i,t-1} + \beta_3 \text{Takam}_{i} + \beta_4 \text{age}_{i} \\
\beta_5 \text{GDP}_{gr,t-1} + \beta_6 \text{year}_{i} + \beta_7 (\text{debt}_{i,t-1} / \text{ability}_{i,t-1}) + \beta_8 \text{stud}_{kibbutz}_{i,t-1} + \epsilon_{i,t}
\]  

(2)

Where \( \text{growth}_{i,t} \) denotes the percentage change in the population of kibbutz \( i \) in year \( t \).

The demographic and financial variables are included in the regression with one lag, because most often, the decision to leave the kibbutz is made some time in advance. The use of lagged variables also avoids simultaneity bias.

Equation (2) (like equation (1)) was estimated using pooled OLS, with standard errors corrected for panel-level heteroskedasticity. The results are reported in Table 4.

The coefficient on \( \text{population}_{i,t-1} \) is positive. This indicates that large kibbutzim tend to have a higher growth rate (lower rate of attrition) than smaller kibbutzim. There are several reasons for this result: (a) Large kibbutzim enjoy the advantage of having many members in each age group, which increases the probability that one’s friends will remain on the kibbutz.; (b) Large kibbutzim offer more diversified (internal) job opportunities, so that members have more freedom to find their own niches; (c) holding the share of young members constant, the larger the kibbutz, the greater the absolute number of young people. The coefficient of \( \text{young}_{i,t-1} \) is positive as well. This is also intuitive. A larger share of young members implies (a) a higher probability that one’s friends will remain on the kibbutz; (b) a higher probability of finding a mate within the kibbutz (holding the total kibbutz population constant); (c) a higher fertility rate. All of these factors imply a lower rate of attrition. Israel’s (lagged) GDP growth rate has a

\[25\]
negative and significant effect; members are more likely to leave during years of
prosperity, because at such times it is easier to find jobs outside the kibbutz. Interestingly,
the ratio of debt to ability to repay has only a small direct influence over the decision to
leave the kibbutz. It seems that people do not directly internalize the kibbutz’s financial
condition, but make their decisions according to the indirect impact of those variables on
their lifestyles. In addition, since the debt of the kibbutzim (the numerator in the
debt/ability ratio) does not vary much, the influence of the financial troubles on members'
decisions to leave the kibbutz may be captured by the normal rate of attrition.26

Most importantly, the coefficient of 1, _kibbutz_ came out significantly
positive. The coefficient of 1, _kibbutz_ measures the effect of higher education
sponsorship on the attachment of members to their kibbutz; the results indicate that
investment in higher education indeed increases the attachment of members to their
kibbutz. This is consistent with the findings of Leviatan (1982) and Avrahami (1997). It
also implies that kibbutzim that decreased their investment in higher education (ceterus
paribus), paid the price by suffering from a higher rate of attrition with all the associated
negative implications.

VII. Discussion and Conclusions

The credit literature implies that during periods when firms have low net worth,
they are likely to face financial constraints that make it much harder for them to obtain
loans and continue with their normal (real) activities. As a consequence, those firms are
forced to make cuts in production, employment and investment; this in turn may worsen
their economic situation, further decrease their net value, and make it harder for them to recover (Mishkin 1995, Bernanke and Gertler 1995 and Hubbard 1998).

In the kibbutz environment, the credit channel had further effects. Kibbutzim in financial distress made cuts in their higher education budgets. The financing of investment in the human capital of the next generation became dependent on current cash flow and net worth. The uncertainty regarding the opportunity to go and study damaged kibbutz members' feeling of security and in some cases replaced it with a feeling of distrust towards the administrative institutions of their kibbutzim. The people most likely to suffer from cuts in the higher education budget are the young and able members; these are the members that are most likely to leave the kibbutz if they feel dissatisfied with what the kibbutz way of life has to offer them. The results of Equation (2) indicate that indeed, a reduction in the number of students in a given year tends to increase the rate of departure from the kibbutz in the following year. The increased rate of departure has had a negative impact on the ability of the kibbutzim to handle the economic difficulties, because of the resulting decrease in the able work force. It has also had implications for the ideological crisis in the kibbutzim, because many with leadership potential future left, which forced kibbutzim to bring hired managers and to abandon some of their socialist ideology in order to survive (Leviatan 2001).

As a consequence of all these effects, higher education may be seen as one of the channels in the black box that transformed the financial difficulties that faced kibbutzim (as a result of adverse economic conditions) into a major crisis that had (and still has) major implications for kibbutz ideology and demography.
Our findings shed some light on the current (February 2005) situation in Russia. The recent elimination of many free social benefits has sparked widespread anger and mass demonstrations. As in the kibbutzim, the Russian populace sees these benefits as entitlements, and is upset about having to pay for goods and services that they have always received for free. Young people are also affected by the reforms, especially the proposal to end draft deferments for university students. Consequently, they have become active in the antireform movement (Murphy 2005). If the Putin government goes through with unpopular reforms, some citizens will consider emigration. The desire to emigrate is expected to be strongest among highly educated young people, who can easily adapt to life in a new country. As in the kibbutz, this may lead to a prolongation of the economic crisis. 28

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Table 1--The Evolution of the Debt of the Israeli Kibbutzim, 1982–1988\(^{a,b}\)

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<tr>
<td><strong>Total Debt</strong></td>
<td>7,353</td>
<td>8,951</td>
<td>10,754</td>
<td>13,466</td>
<td>14,608</td>
<td>16,750</td>
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<tr>
<td><strong>Assets</strong></td>
<td>3,741</td>
<td>4,159</td>
<td>4,031</td>
<td>3,988</td>
<td>3,096</td>
<td>2,630</td>
<td>2,191</td>
</tr>
<tr>
<td><strong>Net Debt=</strong></td>
<td>3,612</td>
<td>4,792</td>
<td>6,723</td>
<td>9,478</td>
<td>11,512</td>
<td>13,939</td>
<td>15,134</td>
</tr>
<tr>
<td><strong>Total Debt – Assets</strong></td>
<td>3,612</td>
<td>4,792</td>
<td>6,723</td>
<td>9,478</td>
<td>11,512</td>
<td>13,939</td>
<td>15,134</td>
</tr>
</tbody>
</table>

\(^{a}\)Source: Barnea and Givoli (1996)

\(^{b}\)All figures are expressed in millions of 1995 NIS.
Table 2--Summary Statistics$^{a}$

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of members$^b$</td>
<td>447.9256</td>
<td>208.9432</td>
</tr>
<tr>
<td>Share of members aged 23-35</td>
<td>0.2147619</td>
<td>0.0505014</td>
</tr>
<tr>
<td>Debt per capita (2002 NIS)</td>
<td>243.2288</td>
<td>200.7935</td>
</tr>
<tr>
<td>Ability to repay per capita (2002 NIS)</td>
<td>16.09988</td>
<td>16.8305</td>
</tr>
<tr>
<td>Number of students</td>
<td>13.25298</td>
<td>10.12924</td>
</tr>
<tr>
<td>Age of kibbutz in 1990</td>
<td>46.25</td>
<td>7.11001</td>
</tr>
</tbody>
</table>

$^a$The sample contains 28 kibbutzim; each kibbutz is observed over 11 years, for a total of 308 observations.

$^b$Only permanent kibbutz members and their families are included. Volunteers and other non-members who live in the kibbutz are excluded.
Table 3--Results for Student Share Equation

<table>
<thead>
<tr>
<th></th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>Z value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>.1142248</td>
<td>.938745</td>
<td>0.12</td>
</tr>
<tr>
<td>Population (t-1)</td>
<td>-.0000198 ***</td>
<td>4.62×10^-6</td>
<td>-4.30</td>
</tr>
<tr>
<td>Share of members aged 23-35 (t-1)</td>
<td>.0433696 ***</td>
<td>.0163377</td>
<td>2.65</td>
</tr>
<tr>
<td>Takam dummy</td>
<td>-.0082461 ***</td>
<td>.0016637</td>
<td>-4.96</td>
</tr>
<tr>
<td>Age of kibbutz in 1990</td>
<td>.0005074 ***</td>
<td>.0001622</td>
<td>3.13</td>
</tr>
<tr>
<td>Share of students in Israel’s population (t-1)</td>
<td>1.392527 **</td>
<td>.5926258</td>
<td>2.35</td>
</tr>
<tr>
<td>Time trend</td>
<td>-.0000697</td>
<td>.0004757</td>
<td>-0.15</td>
</tr>
<tr>
<td>Growth of Israel’s per capita GDP (t-1)</td>
<td>.0213981</td>
<td>.0387497</td>
<td>0.55</td>
</tr>
<tr>
<td>Per capita ability to repay (t-1)</td>
<td>.0006509 ***</td>
<td>.0001223</td>
<td>5.32</td>
</tr>
<tr>
<td>Per capita ability to repay (t-1) × Per capita debt (t-1)</td>
<td>-2.42×10^-6 ***</td>
<td>3.63×10^-7</td>
<td>-6.66</td>
</tr>
<tr>
<td>Wald Statistic $\chi^2$ (9)</td>
<td>108.22 ***</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
*=Significant at the 10% level. **=Significant at the 5% level. ***=Significant at the 1% level.

*Number of kibbutzim=28. Number of observations=303. Standard errors are corrected for panel-level heteroskedasticity.
<table>
<thead>
<tr>
<th></th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>Z value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-.0548774**</td>
<td>.0227216</td>
<td>-2.42</td>
</tr>
<tr>
<td>Population (t-1)</td>
<td>.0000289**</td>
<td>.000014</td>
<td>2.06</td>
</tr>
<tr>
<td>Share of members aged 23-35 (t-1)</td>
<td>.1549399*</td>
<td>.0863914</td>
<td>1.79</td>
</tr>
<tr>
<td>Takam dummy</td>
<td>-.0015478</td>
<td>.0092357</td>
<td>-0.17</td>
</tr>
<tr>
<td>Age of kibbutz in 1990</td>
<td>-.0001571</td>
<td>.0002557</td>
<td>-0.61</td>
</tr>
<tr>
<td>Growth of Israel’s per capita GDP (t-1)</td>
<td>-.6913565***</td>
<td>.1704496</td>
<td>-4.06</td>
</tr>
<tr>
<td>Time Trend</td>
<td>-.0002957</td>
<td>.000762</td>
<td>-0.39</td>
</tr>
<tr>
<td>Per capita debt (t-1) / Per capita ability to repay (t-1)</td>
<td>-6.84×10^-6</td>
<td>.0000103</td>
<td>-0.67</td>
</tr>
<tr>
<td>Share of students in kibbutz population (t-1)</td>
<td>.2599209**</td>
<td>.1280554</td>
<td>2.03</td>
</tr>
<tr>
<td>Wald Statistic $\chi^2_{(8)}$</td>
<td>36.58 ***</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* = Significant at the 10% level. ** = Significant at the 5% level. *** = Significant at the 1% level.
Number of Kibbutzim=28. Number of observations=303. Standard errors are corrected for panel-level heteroskedasticity.
Figure 1—Total Population of Israeli Kibbutzim<sup>a</sup>

(in thousands)

![Bar Chart](image)

<sup>a</sup>Data adapted from Leviatan (2001).
Figure 2-Age Distribution of Israel’s Kibbutz Population, 1989 and 1999
In a survey taken in 2001, just 21% of kibbutz members expressed strong confidence in the future of the kibbutz as an egalitarian society. The defection rate was so high that by 1998, the kibbutz population was only 89% its size in 1991 (Leviatan 2001).

Leviatan (2001) made an attempt to study the connection between the financial and ideological consequences by studying the implications of the structural changes kibbutzim implemented in order to improve their economic performance on the kibbutz’ ideology and demography.

The premium is higher because the negative implications of asymmetric information get worse as the net value of firms becomes smaller. See: Bernanke, Gertler and Gilchrist (1996) and. Hubbard (1998).


Traditionally, each kibbutz is affiliated with one of several ideological movements. Until the early 2000s, the most important movements were the Takam, Haartzi and the Religious Kibbutz. Each movement has its own headquarters that serve as government-like agencies in supervising and assisting affiliated kibbutzim. Traditionally, Haartzi was considered the most dogmatic movement, while the Takam was considered the most "open." In the early 2000s, these two movements merged to form the Tnuah Hakibbutzt (Kibbutz Movement). Over 90% of all kibbutzim belong to this merged movement.

S. Leshem, who was the general secretary of Kibbutz Urim at that time, related that his kibbutz was in such distress that it almost failed to pay its water and electricity bills.
(Leshem, 2003). For more on the development of the debt, see Kislev et al. (1990) and Kroll and Polovin (1997).

7 A 1977 study showed that 51% of kibbutz members were interested in studying for at least one year. A 1980 study found that of those who went to study in that year most made the decision of study field on their own; only 30% were directed by their kibbutz (Leviathan 1982).

8 Amitai and Shefer (1991) show that cuts in the higher education bill were one of the first budgetary contractions made in many kibbutzim.

9 As a result of the move towards privatization, some kibbutzim have entirely ended their sponsorship of higher education (Getz 2002). For more on higher education in the kibbutzim and the way it is sponsored currently, see Avrahami (1997) and Avrahami and Dar (2004).

10 In a recent survey of members’ attitudes towards the kibbutz, only 25% of respondents said that the kibbutz is doing all that it can to convince young members to remain (Orchan and Palgi 2003). Similar results were obtained in previous surveys as well (Palgi and Shrir 1999). This is an indication of the feeling that the key to the survival of the kibbutz is convincing the next generation to stay, and the frustration that is felt when the kibbutz fails to supply young members with all their needs and desires.

11 S. Leshem described in an interview the frustration he felt when he could not support his student children, who eventually left the kibbutz (Leshem 2003). See also Avrahami (1997) on differences in the perception of the kibbutz between young members in kibbutzim that are able to subsidize higher studies and young members of kibbutzim that could not subsidize higher studies.
By 2004, over 100 kibbutzim (out of about 270) have reformed their structure in a way that makes each member’s disposable income dependent on his salary. The number of completely egalitarian kibbutzim is getting smaller each year (Getz 2002).

Avrahami (1997) mentions that for young members who seek higher education, frequent changes in the scholarships programs are sometimes worse than a simple "no" answer. Even if changes are made with good intentions (when there is an increase in the kibbutz income, for example), if the kibbutz cannot maintain these changes for long periods it increases the feeling of distrust between young members and the kibbutz administration. In addition, when there are shifts in the ability of the kibbutz to finance members during different times, this sometimes breeds jealousy between those who enjoyed better terms and those who did not.

This paper does not test this last hypothesis, but there is evidence that that the attrition rate increased especially among the most educated. In 1985 (prior to the crisis), only 6% of all members who left their kibbutz had a B.A. degree or higher. In 1999, this figure was 18.8% (data taken from Pavin 2001).

For example, the lack of able managers leads many kibbutzim to bring in hired managers in both social roles (as community manager) and business jobs. These managers tend to bring with them attitudes that are foreign to the spirit of the kibbutz. See Topel (1996).

Since the late 1980's, many kibbutzim have offered young members a special youngsters' course in which the kibbutz sponsors studies (and sometimes also housing and basic needs) in return for remaining in the kibbutz for a minimum period following the completion of studies. See: Avrahami (1997) and Avrahami and Dar (2004).
When the original recovery plan was signed in 1989, all Haartzi kibbutzim joined it (including kibbutzim that did not require assistance). The Takam movement, on the other hand, allowed kibbutzim that were financially sound not to sign the agreement. The data used in this paper therefore includes some of the strong kibbutzim that belong to the Haartzi movement, but does not include strong kibbutzim that are affiliated to the Takam.

The JNF is a nonprofit organization, whose purpose is to develop Israel’s land resources in cooperation with the Israeli government.

Students on special programs for young members were counted as half students, since the kibbutz’s investment is approximately half of the investment in a full member who is sponsored. Young members in the special program also work part time in order to partially defray the cost of their studies. They may therefore be regarded as equivalent to part time students.

The NIS was introduced as part of the 1985 stabilization program, and is equivalent to 1,000 old Shekels.

See the Complementary Kibbutzim Agreement (Correction), signed on April 11, 1999 appendix A (in Hebrew).

For example, S. Buber, secretary of kibbutz Sdot Yam, said that his kibbutz adopted during the 1990s a policy of sending six members a year to colleges and universities (Buber 2003).

We also tried estimating equation (1) using a GEE estimator with panel-corrected standard errors. (This estimator is asymptotically equivalent to the random effects GLS estimator.). The important results remain unaltered, with the only difference being in Regression (2) where the students' coefficient comes out as significant only at 10%.
Denoting by $\bar{X}$ the average value of $X$, the average values of the variables included in Equation (1) are:

$\overline{\text{population}} = 447.9$, $\overline{\text{young}} = 0.215$, $\overline{\text{GDPGR}} = 0.015$, $\overline{\text{stud}_\text{Israel}} = 0.026$, $\overline{\text{year}} = 1995.5$,

$\overline{\text{age}} = 46.3$, $\overline{\text{ability}} = 16.1$, $\overline{\text{debt}} = 200.79$ (These averages differ from what is shown in Table 2, because the use of lagged variables results in the loss of one year of data.) Using these values, the predicted share of students in a Takam kibbutz is 0.028. Multiplying this figure by the average kibbutz population (447.9) gives the expected number of students as 12.58. Increasing the debt by one standard deviation increases the value of $\text{ability} \times \text{debt}$ to 7473.12. The predicted share of students drops to 0.017. For a kibbutz of average membership, the absolute number of students is 7.61.

In private conversation, former kibbutz members mentioned their inability to find mates within the kibbutz, due to the small number of members in their age group. This is less of a problem in large kibbutzim.

Alternative specifications for debt and ability to repay were tested. However, none of these produced significant coefficients on debt and ability to repay. This gives robustness to the findings reported here.

There are probably other similar mechanisms that operated in the kibbutz environment. The cuts in the higher education are just one of many cuts that were made. Any of those cuts that hurt what members saw as their prerogatives probably had similar effects (although probably not so strong as the cuts in higher-education).

Similar situation may develop in firms that try to recover from financial distress by making cuts in workers entitlements. See: Fehr and Kirchsteiger (1994).