The Response of Skill Investment to Changes in the Skill Premium (Revisited) *

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March 18, 2019

Abstract

The last few decades in the US have seen a dramatic increase in the earning premium for skilled labor and in the returns to certain fields of study. Nevertheless, these changes did not induce Americans to significantly increase their skill acquisition or to change their choice of major. We study the response of skill investment to changes in the skill premium by exploiting an episode where different Israeli kibbutzim shifted from equal sharing to productivity-based wages in different years. We find that the dramatic increase in the rate of return to schooling and its sharp variation across field of study led to a large increase in the probability of receiving a Bachelor degree, especially in STEM fields of studies. For women, this expansion was largely in computer science, a major traditionally dominated by men. Contrary to evidence from the US, our findings suggest that investment in higher education and the choice of major are responsive to changes in the return to schooling.

1. Introduction

Economic models of optimal human capital investment Becker (1967); Ben-Porath (1967); Weiss (1995) predict that the higher the rate of return to education, the higher is investment in schooling. However, two sets of recent studies yield evidence that is not consistent with this prediction. First, Americans did not acquire significantly greater skills in response to the dramatic increase in the earnings premium for skilled labor that took place over recent decades Heckman et al. (2008); Altonji et al. (2012). Second, while descriptive studies Montmarquette et al. (2002); Long et al. (2015) found positive elasticities of choice of major with respect to expected earnings [1], recent studies suggests no causal response in the choice of major to variation in returns across field of study Wiswall and Zafar (2015); Beffy et al. (2012).[2] [3]

In this paper, we exploit a unique episode to examine the effect of changes in the rate of return to schooling on college degree attainment and on field of study choice. Starting the late 1990s, kibbutzim (plural of kibbutz) in Israel shifted away from their decades-long policy of equal sharing of incomes to productivity-based wages that reflect the market rate of return to education. The pay reform in kibbutzim increased the average financial return to schooling from close to zero to about 8% per year of schooling, as well the relative returns to schooling across majors. Before

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[1]For example,Montmarquette et al. (2002); Long et al. (2015), found higher elasticities of choice of major with respect to expected earnings. See Altonji et al. (2016) for an extensive survey of studies on the relationship between the rate of return to schooling and the choice if field of study

[2]For example,Wiswall and Zafar (2015) based on lab experimental variation in information about the returns to schooling, and Beffy et al. (2012) based on variation in the returns to schooling induced by business cycle fluctuations, find that variation in the return to schooling play a small role in the choice of field of study in university. This evidence could suggest that the elasticity of demand for schooling with respect to the skill premium is small Heckman and LaFontaine (2010); Altonji and Zimmerman (2017).

[3]There is also an extensive literature, past and more recent, that focuses on the role of perceived financial and non-financial returns on college enrollment decisions. These studies often use surveys to elicit students beliefs about the benefits of university education and about intention to engage in university schooling. For example, Boneva and Rauh (2017) finds based on a sample of secondary school students that perceived pecuniary and non-pecuniary benefits explain a large share of the variation in intentions to enroll in university education. The perceived non-pecuniary factors have a larger effect than pecuniary returns, in particular expected job satisfaction, parental approval, and perceptions about social life after secondary school are most important. Other recent examples include Manski (2004); Zafar (2013); Arcidiacono et al. (2012).

the reform, all college majors had the same (zero) monetary return given the equal sharing practice in kibbutzim. After the reform, college majors have heterogeneous returns, with majors such as STEM yielding higher return than humanities, as in the rest of Israel. Our setting is unique because the pay reform introduced financial considerations to the choice of field of study.

We use newly-available administrative data from Israels Central Bureau of Economics Research on the field of study of adult kibbutz members to test how this pay reform influenced kibbutz members college attainment and the choice of major during college. Our identification strategy relies on the fact that different kibbutzim implemented the pay reform in different years. We use difference-in-differences approaches, comparing the field of study of adult kibbutz members in kibbutzim that reformed early and late, before and after the early reforms. We show evidence that kibbutz members in early-reforming (the treatment group) and late-reforming kibbutzim (control group) were similar in both their observable background characteristics and their pre-reform schooling outcomes. A similar identification strategy used by Abramitzky and Lavy (2014) showed that the increase in the returns to schooling induced high school students to improve their academic achievements.

Contrary to the abovementioned evidence from the US, we find that young adults respond to the change in returns to schooling by choosing fields of studies in college and university that are expected to yield higher financial returns, mainly STEM subjects. As expected, these effects are most evident for individuals who had the pre-determined pre-requisites high school achievements. Men increase their academic degrees in engineering, physics, and computer science. Women respond similarly to the changes in returns, both by selecting fields that are traditionally dominated by women such as biology but also ones that are traditionally attended by men such as computer science. This finding that women are equally responsive to changes in returns is in contrast to recent studies that show that males were more responsive than females to the increase in the relative prices of majors with high returns to skills during the 80s and 90s Gemici and Wiswall (2014); Zafar (2013). We show that men and women kibbutz members, who before the reform chose majors with lower return

relative to others in Israel, closed much of this gap after the reform.

Our evidence are not changed when using alternative identification strategies and where carrying multiple robustness checks. For example, we also use an alternative non-kibbutz control group based on the population of young adults in Tel-Aviv, perhaps the most competitive labor market in the country with a concentration of highly skilled workers. We get similar results in this different controlled experiment even though this control group had much better pre-reform outcomes.

The rest of the paper is structured as follows. Section 2 presents the background of kibbutzim and the pay reform and of the Israeli high school system. Section 3 describes the data and sample restrictions. Section 4 presents the empirical framework and identification strategy. Section 5 presents the results on the effect of the reform on college attainment and choice of major as well as placebo estimates and Section 6 concludes.

2.   Background

2.1   The pay reform and the return to schooling

Kibbutzim are voluntary communities that have provided their members with a high degree of income equality for almost a century.[4] Kibbutzim account for about 2.5% of the Jewish population in Israel. Traditionally, all kibbutzim were based on full income sharing between members, and their members were paid an equal wage regardless of her contribution to the community. Those who worked outside their kibbutz brought their salaries in, and these were split equally among members. This meant that monetary returns to ability and effort were close to zero. There were no monetary returns to schooling in the kibbutz, as members earned the same regardless of their

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[4]For an overview of the history and economics of kibbutzim, Abramitzky (2008, 2011, 2018) and Near (1992, 1997).

education levels.[5]

The episode that we study is a pay reform that kibbutzim adopted beginning in the late 1990s. During the following years, many kibbutzim shifted from equal sharing by introducing compensation schemes based on members productivity, which created a link between productivity and earnings in kibbutzim for the first time. These pay reforms were a response to changing external pressures and circumstances facing kibbutzim. Kibbutzim, like many other businesses in Israel, found themselves with huge debts they could not repay. Eventually, some of the loans were erased and others were rescheduled, but living standards in many kibbutzim still fell substantially, many members left during the late 1980s and early 1990s, and talk about a major reform of kibbutz life began.

In reformed kibbutzim, members wages reflected market wages so that members were allowed to keep a substantial fraction of their earnings for themselves. For members who worked outside their kibbutzim (about a fourth of all members), market wages were the wages they received from their employers. For members who worked inside, market wages were based on the wages of non-kibbutz workers of similar occupations, education, skills, and experience. A kibbutz tax was deducted from members gross wages to guarantee older members and very low wage earners in the kibbutz a safety net (i.e. a minimum wage). We note that throughout the period we study, students made free educational choices.

Abramitzky and Lavy (2014) suggest that the move from equal sharing to differential pay signaled strongly to members in kibbutzim an increase in the financial rewards to human capital. First, this pay reform was a dramatic change in the returns to skill. Whereas before the reform wages were equal for all members of a kibbutz, the reform introduced huge productivity-related wage differences within a kibbutz for the first time.

Second, the pay reform was highly noticeable by members. The pay reforms in

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[5]Kibbutz scholars and observers have often felt, as predicted by economic theory, that under the traditional kibbutz system, kibbutz-raised children often lacked ambition and a sense of personal achievement. Bettelheim (1969) concluded that they will not be leaders or philosophers, will not achieve anything in science or art. This quote was also cited in Gavron (2000).

kibbutzim have been the most discussed topic in kibbutzim since the reforms started. The new productivity-based sharing rules were hotly debated and voted on by members in kibbutzim. Naturally, high school students in kibbutzim observed the heated discussions over the pay reform and they must have been aware both that their kibbutz had instituted a pay reform and of its practical implications. Moreover, with the implementation of the reforms, kibbutz members received detailed information about the new sharing rule and how earnings were now going to be linked to productivity and reflect market forces.

The pay reform was essentially a sharp decrease in the income tax rate. Before the reform, income in kibbutzim was 100% taxed. Post reform, the tax rates in kibbutzim became more similar to the Israeli tax rates. Kibbutz members faced a progressive tax system, with marginal tax rates ranging from 20 to 50%. To gain a sense of how big the reform was in terms of an increase in the return to education, note that pre-reform the monetary return to education was zero and post reform the return to education became similar to the rest of Israel, which is estimated by various studies at about 8% per year of schooling Frish (2007).

In Table 9, we present Mincerian earning regressions for the year 2010 for reformed kibbutzim. We find that there are no differences in the return to schooling for kibbutz members (who worked outside the kibbutz) and non-kibbutz members.[6] For example, the return to a BA degree over high school dropout is 52 percent for non-kibbutz labor market participants and 55 percent for kibbutz members who work outside the kibbutz. This pattern holds for both men and women.

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[6]Our paper estimates the effect of the pay reform on expected and not actual earnings because the latter is not available in the administrative data we use in the protected lab. In fact, the Israeli Tax Authority that provides the earnings data does not have earnings information on kibbutz members who work inside the kibbutz because the kibbutz pays to date taxes as an aggregate economic unit based on the sum of income of all its members and therefore it does not report to the tax authority individual level income. However, over a quarter of kibbutz members work outside the kibbutz and their employer does report to the tax authority their incomes and therefore they appear in our data.

2.2 Colleges and Universities in Israel

After completing high school, students can decide to continue their studies in various post-secondary schooling institutions. The post high school schooling system in Israel includes seven universities (one of which confers only graduate and PhD degrees), and over 50 colleges that confer academic undergraduate degrees (some of these also give masters degrees).[7] All universities require a bagrut diploma for enrollment. The bagrut is completed by passing a series of national exams in core and elective subjects taken by the students between 10th and 12th grade. Thus, bagrut certificates are typically obtained at the end of senior year (twelfth grade) or later.[8] Most academic colleges also require a bagrut, though some look at specific bagrut diploma components without requiring full certification. For a given field of study, it is typically more difficult to be admitted to a university than to a college. Hence, we expect improvements in outcomes related to the bagrut to translate into improvements in post-secondary schooling outcomes. The national university enrollment rates for the cohort of graduating seniors in 1995 (through 2003) was 27.6 percent and the respective rate for academic colleges was 8.5 percent.[9]

3. Data

Our datasets are derived from the Ministry of the Interior population registry, and are made available to us at a protected research lab at the Israeli Central Bureau of Statistics (CBS). These datasets contain an individual identifier, gender, date of birth, number of siblings, country of birth, parent's country of birth, and year of immigration (if relevant).

We merge this data with information from several additional administrative data

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[7]A 1991 reform sharply increased the supply of postsecondary schooling in Israel by creating publicly funded regional and professional colleges.

[8]Similar high school matriculation exams are found in many countries and in some states in the United States. Examples include the French Baccalaureate, the German Certificate of Maturity, the Italian Diploma di Maturit, and the New York State Regents examinations.

[9]These data are from the Israel Central Bureau of Statistics, Report on Post-Secondary Schooling of High School Graduates in 1989-1995 (available at http://www.cbs.gov.il/publications/h_education02/h_education_h.html).

sources. First are the 1995 and 2008 censuses, from which we obtain the individual's current residency that allow us to identify those who lived in kibbutzim at the relevant years. Data from the Ministry of Education provides us with student-level information on as parental schooling, ethnicity and country of birth as well as information on high school attendance, year of graduation, years of schooling, matriculation eligibility and matriculation exams test scores. The high school data is available only for cohorts that graduated high school from 1995 on. From the National Council for Higher Education, we obtained administrative data files containing information about all individuals that obtained a BA or higher academic degree from any post-secondary institution in the country, including the institution, field of study (one or two majors) and year of graduation. This data is available for all cohorts that we examine in this study. The Institution for the Research of the Kibbutz and the Cooperative Idea, University of Haifa, publishes reports about the dates in which the pay reform started in each kibbutz. This data was also used in Abramitzky and Lavy (2014) and it allows us to sort the kibbutzim to early and late reformers.

Our sample includes 32 kibbutzim that reformed early, in 1998-1999, and 29 that reformed later, in 2004-2005. All members of these kibbutzim that were age 22-27 in 1992-93 (pre-reform) or in 2001-2002 (post-reform) form our first sample. We will explain in the empirical strategy section the rationale for these sample selection rules.

We focus our analysis on two college related outcomes: obtaining a B.A. diploma and the field of study. Based on CBS categorization of field of study, we group the BA degrees to humanities, social sciences, and sciences. This division is our main focus on assessing the effect of the return to schooling on the choice of field of study. However, we also look into a more detailed classification of field of study within these categories. In particular, in social science we examine whether there was a stronger effect on higher-return fields such as economics, business, and law, and in sciences we estimated specific treatment effects on the following aggregates: (1) biology, chemistry, pre-health sciences, (2) STEM (math, engineering, physics, computer science, statistics), (3) computer science (4) engineering. These more detailed definitions of fields of study are particularly interesting for the discussion of results by gender.

We also make use of data that we obtained from the office of the Chief Economist in the Israeli Ministry of Finance that rank all field of study by expected average earnings in the labor market for BA holders.[10] These means are computed based on the population of employees in Israel in 2013. We use this ranking as an alternative dependent variable (to the division of degrees to the categories described in the previous paragraph), which allows us to examine whether the pay reform induced young adults in kibbutzim to choose majors with higher wages.[11]

4. Graphical Representation of the Evidence

Figure 4 and Figure 5 illustrates one of the main finding of the paper that the pay reform affected BA degree attainment. Figure 4 shows the proportion of individuals aged 22-27 who received a BA degree for four samples: kibbutzim that reformed early, kibbutzim that reformed late, all Israel except kibbutzim and the city of Tel Aviv. The means for these samples are presented for 1990, 1995, 2001 and 2007. Comparing first early and late reform kibbutzim, the rates of receiving a BA degree in 1990 and 1995 (before the pay reform took place) are similar. By 2001, the pay reform took place in the early reformed kibbutzim group. Consistent with the increase in the return to schooling, by 2001 early-reformed kibbutzim opened a gap of 4 percentage points in BA degree attainment. This gap is eliminated in 2007, once the reform also took place in late reformed kibbutzim. The figure further illustrates how kibbutz members, who started out with lower BA attainment relative to the rest of Israel, converged to the countrys average BA attainment following the pay reform, and even closed much of the gap with residents of the wealthy city of Tel-Aviv.

Figure 5 further investigates these results, by providing a graphical representation of the estimates of the leads and lags of the impact of the pay reform obtained via

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[10]The ranking is based on unconditional mean earnings across majors without any controls for differences in observables.

[11]Data from the Israel Tax Authority includes yearly payroll data and the number of months worked during the relevant year. Unfortunately, this information cannot be used to evaluate the effect of the reform on the wages since the salary is the same for all members of a kibbutz before the reform, while after the pay reform, the report from the Israel Tax Authority includes earnings data only for members of kibbutzim that are employed outside the kibbutz.

the estimation of the treatment-control mean differences in proportion receiving a BA degree. The first red vertical line denotes the time of the early reform and the second red line denotes the time of the late reform. The horizontal axis measures the years since the early reform. None of the coefficients in the years leading to the reform shows up as significant, suggesting that the evolution of BA attainment was similar before the early implementation of the pay reform. Following the early reform, individuals in early-reformed kibbutzim open a gap relative to individuals in late-reformed kibbutzim, and this gap gradually peters out and eventually disappears as we approach the year of late reform.

5. Empirical Strategy

Our empirical strategy takes advantage of the different timing of the reforms in different kibbutzim. We choose the kibbutzim that implemented the pay reform in 1998, 1999 as treatment group and the kibbutzim that adopted it in 2004, 2005 as control group. To estimate the effect of the pay reform on university schooling attainment and the choice of field of study, we compare the treatment group to the control group, before and after the early reform (but before the late reform). We cannot rule out that members in kibbutzim that reformed later observed the pay reforms in other kibbutzim and anticipated that at some later date their kibbutz would reform too. However, anticipation effects would attenuate our results, because it would imply that students in the control group perceived some possible increase in the returns to education as well and increased their investment in schooling accordingly

Our sample includes individuals aged 22-27 in 2001-2002 (affected cohort) and in 1995-96 (unaffected cohort). We follow each cohort for 4 years. The rationale for these samples is that 22-32 is the age range where the majority of Israeli earns their BA degree (which typically takes three years). Indeed, Figure 2 suggests that only about 10% manage to earn a BA degree before the age of 24, and only about 10-15% earn their BA degree after the age of 32. Figure 1 illustrates the timeline of the early and late reforms, and of the affected and unaffected cohorts.

Figure 1: Timeline of the pay reform
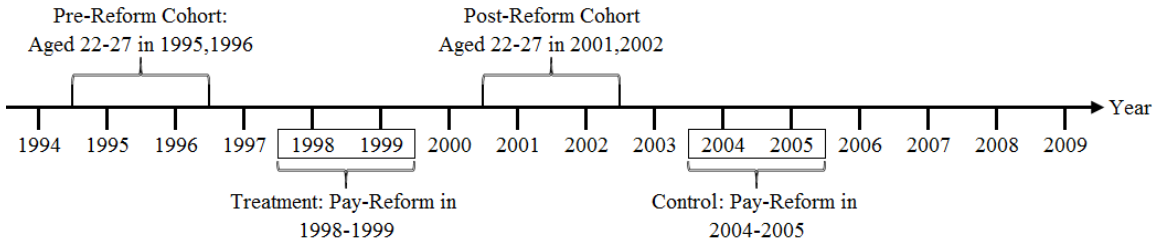
notes: The model is differential for the year of reform. Pre-Reform cohort include individuals' who are aged 22-27 3 years before the reform of the treatment group and 9 years before the reform of the control group (Aged 22-27 in 1995 for the 1998,2004 reform Aged 22-27 in 1996 for the 1999,2005 reform). Post-Reform cohort include individuals' who are aged 22-27 3 years after the reform of the treatment group and 3 years before the reform of the control group (Aged 22-27 in 2001 for the 1998,2004 reform Aged 22-27 in 2002 for the 1999,2005 reform).

Using the pre-reform and post-reform cohorts, we implement a difference in differences methodology. As the first difference (after treatment), we compare individuals aged 22-27 in 2001-2002 in kibbutzim that reform early vs. late (2003-2004). As the second difference (before treatment), we compare (individuals aged 22-27 in 1995-1996) in kibbutzim that reform early vs. late.

We estimate the following regression equation:

$$Y_{ikc} = \alpha_c + \beta_1(EarlyReform_k) + \beta_2(Treatment_c X EarlyReform_k) + \epsilon_{ikc} \quad (1)$$

where Y_{ikc} is the BA degree attainment of student i in kibbutz k in cohort c in year t. are cohort fixed effects (for individuals age 22-27 in 1995-1996, and 2001-2002). denotes whether the individual belonged to a kibbutz that implemented the reform early, and $(Treatment_c X EarlyReform_k)$ is the interaction of interest, namely whether the individuals belonged to the affected (younger) cohort and lived in a kibbutz that reformed early. Standard errors are adjusted for clustering at the kibbutz level.

We also run controlled specifications where we add kibbutz fixed effects and a vector of the individuals background characteristics. We therefore estimate the following

model:

$$Y_{ikc} = \gamma_k + \alpha_c + \beta_1(Treatment_c X EarlyReform_k) + \beta_2 X_{ikc} + \epsilon_{ikc} \tag{2}$$

where γ_k are kibbutz fixed effects, X_{ikc} are individual is characteristics: gender, number of siblings, a set of ethnic dummies (originate from Africa/ Asia, Europe/America, the former Soviet Union (FSU), Ethiopia and other countries). All other variables are same as in equation (1).

The identifying assumption in the difference in differences strategy is that the exact timing of the reform is unrelated to potential outcomes of high school students. This assumption implies that older cohorts of early and late reformed kibbutzim should have had similar college schooling outcomes on average. Since kibbutzim started to reform their pay systems in 1998, for all individuals who completed their military service and are in their 20s, the exposure is a decreasing function of their date of birth. Particularly, all individuals age 30 years or older were less likely to be affected by the reforms because they have left fewer years to benefit from this investment once the pay reforms began. Hence, the effect of the pay reform should be close to 0 for cohorts around age 30 and beyond around the date of the reform and increasing for younger cohorts. Therefore, the basic idea behind the identification strategy is to compare the difference in college outcomes between potentially affected and unaffected cohorts in a kibbutz that reformed early and the respective difference in a kibbutz that reformed late. The difference in these differences can be interpreted as the causal effect of the reform, under the assumption that in the absence of the reform, the increase in college schooling would not have been systematically different for individuals from early- and late-reforming kibbutzim. We provide three related pieces of evidence in support of this assumption.

First, we show that individuals in the treatment and control groups are similar in terms of both their mean background characteristics and their pre-reform mean college schooling outcomes. Here we test directly whether the individuals in the treatment and control groups are statistically indistinguishable in terms of their observed

characteristics. To address this issue, we check whether the treatment status (early reformed kibbutzim) is correlated with individuals background variables. We perform these tests for pre-reform cohorts (individuals aged 22-27 in 1995, 1996) and for the post-reform cohort (individuals age 22-27 in 2001-2002). For the pre-reform cohorts, we also check whether their college attainment outcomes are similar.

Panel A of Table 1 provides evidence on the balancing tests and presents the mean individual characteristics for the pre and post samples, by treatment status. Columns 1,2 and 3 present pre-reform means of treatment and control group and the difference between them respectively. Columns 4,5 and 6 present post-reform means of treatment and control group and the difference between them respectively.

Student background characteristics are similar in the treatment and control groups, both for pre and post cohorts. For example, focusing first on the pre-reform cohorts, we see that number of siblings are very similar in control and treatment, with 2.7 children per family. The differences in number of siblings presented in column 3 are -0.002 (se=0.096) and the respective difference for the post reform cohorts presented in column 6 are 0.034 (se=0.101). Note that these differences are not statistically different from zero and they are very small relative to the respective means. The differences in proportion ethnicity Africa/Asia and ethnicity Europe/America are very small, -0.001 (se=0.029) and 0.016 (se=0.040) respectively, in the post period they are 0.014 (se=0.018) and 0.049 (se=0.030) respectively. The similar proportion of these two important ethnic groups in the treatment and control groups suggest that students in the two groups had similar academic potential, both before and after the pay reform because these two characteristics are strong predictors of socio-economic status. Similarly, small and non-significant differences are also seen in all the other background characteristics. We therefore view the results presented in Table 1 as an indication of good balancing, meaning that, within cohorts, the treatment and control group are indistinguishable in their observables.

Panel B of Table 1 shows that among pre-reform cohorts, there is no significant difference in the proportion of BA degree attainment between early- and late-reformed kibbutzim. There are also no significant differences between the two groups in the

proportion of BA degrees by field (humanities, social science and science studies). These suggest similarities between the early- and late-reformed kibbutzim in their in pre-reform outcomes, suggesting that kibbutzim that reformed late are a compelling control group for kibbutzim that reformed early.

Next, we show in Table 2 that early- and late-reform kibbutzim were on the same time trend of educational college outcomes. The unit of observation in this analysis is a kibbutz-year. In the first column, we estimate a linear time trend model, testing whether there is an interaction of the linear trend with being an early reformed kibbutz (treatment). In the second column, we estimate a model with a series of cohort dummies and include in the regression an interaction of each of these cohort dummies with the treatment indicator. The table suggests a secular positive time trend attainment of BA degrees, with a slope of 0.003 that is significant in both models. This positive trend is seen also in Figure 3, which suggests that the trend was positive for both men and women. However, the interaction term between the trend slope and the treatment status (panel A) is small and not significantly different from zero, suggesting that the control and treatment groups were on the same time trend before the pay reform was implemented. The estimates from the speciation that replaces the linear rime trend with year dummies, presented in panel B, lead to the same conclusion of no pre-reform time trends.

Furthermore, in Panel B of Table 3 we perform a placebo test by comparing two pre-reform cohorts and show that there is no difference between the control and treatment groups. As an additional placebo test (Table 6), we compare the high school achievements of the post-reform cohort. This cohort already completed high school before the early reform so we expect no effect of the reform on high school outcomes, which is reassuringly what we find.

6. Results

Pre and Post Cross Section Regressions
Panel A in Table 3 shows that the pay reform induced kibbutz members to obtain

more BA degrees, mainly in fields with higher expected earnings. The first two rows report treatment-control differences in outcomes before and after the reform, respectively. The estimates from the pre-reform cross section regression show no difference in BA degree attainment between individuals in early- and late reformed kibbutzim (this difference is -0.005 with standard error 0.011). Notably, there is no significant difference between individuals in early- and late reformed kibbutzim in any field of study: namely -0.005 (se=0.005) in humanities, 0.006 (se=0.007) in social sciences, and -0.007 (se=0.007) in sciences. Within these fields, there are no significant differences across subfields (for example, 0.000 (se=0.003) in computer science and -0.002 (se=0.004) in engineering).

In contrast, the post-reform cross section regression estimates show significant improvements in outcomes of individuals in early-reformed kibbutzim relative to those in late-reformed kibbutzim. Individuals from kibbutzim that reformed early had a higher overall BA attainment (difference of 0.029 with a standard error of 0.011), and opened a significant gap in sciences (estimate of 0.031 (se=0.007)). Each of the sub-fields in sciences experienced a statistically significant expansion, for example, in computer science 0.014 (se=0.003) and in engineering 0.007 (se=0.004). In humanities and social sciences, in contrast, there remained no difference between early and late-reformed kibbutzim (-0.001 (se=0.005) in humanities and in -0.002 (se=0.007) in social sciences)).

Simple and Controlled Difference in Differences (DID) Regressions

The third row of Table 3 presents the simple difference-in-differences estimates and the fourth row presents the controlled difference-in-differences estimates. We find a positive effect of the pay reform on BA degree completion, especially in STEM subjects. Focusing on the controlled difference in differences estimation, the first column shows that the BA degree completion rate is up by 3.4 percentage points (se=0.016). Given that the post reform treatment mean was 0.11, the pay reform increases the BA degree completion rate by 45%. Column 2 shows that there is no effect in humanity majors and column 3 shows a very small and insignificant decrease of 0.9 percent-

age points (se=0.010) in social sciences majors. Column 5 shows that the BA degree completion rate in sciences is up by 3.8 percentage points (se=0.010), from a post reform treatment mean of 0.054, meaning the increase in BA degree completion is driven by the sciences. The difference in differences treatment estimates within sciences suggest that the effect is present in a wide range of subjects, including biology and chemistry, computer science and engineering. Figure 6 presents the difference in differences estimates and confidence intervals by field of study, illustrating the effect on Science/STEM subjects and the lack of effect on other majors.

The positive and significant treatment effect estimates are similar in the simple and controlled DID, which is a result of the treatment-control similarity in background characteristics and pre-reform outcomes. Indeed, the estimates from the cross-section treatment-control comparison from the period after the early reform, presented in the previous section, are similar to the DID estimates.

In panel B of Table 3 we present evidence from a control experiment, in which we use a difference in differences model to compare two older cohorts who were less likely affected by the reform, namely individuals aged 22-27 in 1989-1990 and in 1995-1996. Note that the second group (22-27 in 1995-96) form our control group in panel A. We note that the simple and the controlled difference in differences estimates are similar, again reaffirming that the control and treatment groups are balanced in characteristics even in older cohorts. This result suggests that there were no differential trends in background characteristics of the treatment and the control groups, in line with the evidence we have shown in the previous section of no differential trends in outcomes. We also note that there are only small differences in the cohort leading to the reform. The differences on BA degree attainment in any field is 0.004 (se=0.014) in comparison to 0.033 (se=0.016) in panel A. The estimate on BA degree attainment in science fields is 0.005 (se=0.009) in comparison to 0.038 (se=0.010) in panel A. The two estimates in each pair are either marginally statistically different (first pair) or statistically different (second pair).

Treatment Effect Estimates by Gender

In Table 4, we present results by gender. Looking at evidence separately for men and women is important for several reasons. First, there is a large gender gap in earnings and we can examine how this earning inequality is related to differential response by gender to changes in the financial return to schooling. Secondly, there is a growing literature suggesting that women shy away from occupations that are traditionally dominated by men, such as STEM fields (engineering, computer science and math) Arcidiacono et al. (2012); Gemici and Wiswall (2014); Zafar (2013); Bronson (2015); Kirkeboen et al. (2016); Kugler et al. (2017).

Overall, the evidence in Table 4 shows that women, not just men, are highly responsive to changes in financial returns to schooling, with some gender differences across field of study choice.[12] The estimated effect on BA attainment is 0.031 for men and 0.034 for women. The gain for men is against a mean of 0.024 in the pre-reform cohorts and for women it is a mean of 0.061 in the pre-reform cohort. Therefore, the treatment effect is much larger proportion wise for men (more than doubling the rate) than for women (a 50 percent increase). The gain among men is mostly in science (0.024), mostly in STEM, with a small but statistically insignificant increase in humanities. For women the pattern is somewhat different: there is a 0.055 in science majors coupled with a decrease of 0.020 in social science, mainly in economics and law. Within science majors, the increase is concentrated in biology, chemistry and pre-medical studies, but it is also evident in expansion in STEM subjects, mainly computer science. There is no effect in engineering.

Treatment Effect Estimates on Expected Wages

We next map fields of studies into expected earnings and show a positive effect of the reform on major with higher expected earnings. In Figure 7, we present the distribution of earnings by university field of study. These estimates are based on actual earnings for the full country in 2013. The field of study with the highest earnings are STEM subjects and the lowest are the humanities.

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[12]We note that the treatment-control samples by gender are also well balanced in terms of background characteristics and for the pre-treatment cohort also in terms of outcomes. These balancing tables are presented in online appendix Tables A1 (for men) and A2 (for women).

Table 5 shows that the effect of the pay reform is skewed towards BA degrees in fields with higher expected earnings. We define three different measures of expected wages. The first is a dummy indicator for fields of study with above median wages, and the second is a dummy indicator for fields of study with above 75 percentile wages and the third is actual expected wages in Israeli Shekels. For each of these outcomes, we present pre and post cross section regression estimates and simple and controlled difference in differences estimates. We show evidence based on the full sample as well as for men and women separately. Focusing on the difference in differences estimates, we find that the pay reform expanded BA degree attainment in fields of study in the top quartile of the wage distribution, and both for men and women. The likelihood of obtaining an academic degree in fields with expected wages in the upper quartile of wage distribution, presented in columns 4-6, increased by 1.9 percent for men, and by 2.1 percent for women. All estimates are significantly different from zero. For men, there is also some effect for field of study with expected wages in the third quartile of the ability distribution but this effect is not precisely estimated (column 2). For women we find zero effect for field of study at the third quartile of the wage distribution, meaning that women increased degree attainment in fields of study placed at the high end of expected wages.

In columns 7-9, we present the estimates on expected wages as the dependent variable. The effect in the full sample suggests that the pay reform increased expected wages by 420 NIS a month, about 120$. This gain accounts for about 4 percent of monthly expected earnings. The gain for men is 471 NIS and for women it is only marginally lower at 419 NIS. Because mean expected wages for women is lower[13] , this absolute increase in expected earnings translates to higher proportional increase for women.

Validation of the Causal Interpretation and Robustness Checks

We next show evidence of placebo treatment effect on pre-reform outcomes that were

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[13]Our data on expected wage is not available by gender. However, related evidence from the Labor Force Survey 2017 suggest that a higher proportion of women work less than full time which lower expected earnings.

measured before the reform was implemented. However, since data on matriculation high school outcomes is only available for the post-reform cohort, we can only estimate treatment effect based on post-reform cross section regression. This may be less of a limitation than initially perceived because we have shown that the pre-reform treatment-control differences are practically zero. We use four end of high school outcomes: receiving a matriculation diploma, number of matriculation credit units, matriculation units in English and matriculation units in math. These results are presented in Table 6 for the full sample (columns 1-3), for men (columns 4-6) and for women (columns 7-9). All 12 controlled cross section estimates that are presented in columns 3, 6, and 9 are small and not statistically different from zero.

Another validation check that we perform is to estimate the effect for two sub-samples, those in our sample who earned a matriculation diploma and those who did not. Since a matriculation diploma is a pre-requisite for admission to universities, we expect the effect that we presented in Tables 4-6 to originate from the sub sample of those who hold a matriculation diploma. We present these heterogeneity results in Table 7. The sample is split almost evenly between those who have and those who do not have a matriculation diploma. The estimates show that indeed all the effect on university degree attainment comes from those who attained a matriculation diploma. For example, the effect on BA attainment in the sample of matriculation diploma holders is 0.057 (se=0.030) and it is only 0.019 (se=0.014) in the sample without a matriculation diploma. The difference between the two groups in the effect on expected earnings is even more striking: 1078 NIS (se=397) versus 142 NIS (se=110).

Another informative robustness check originates from the fact that most of the effect is on science majors. In Israel, admission is for a specific department, not for the University as a whole. Admission to science-related departments typically requires high level of math in high school. The high school matriculation program is offered at three levels: basic, intermediate and advance. The latter is a pre-requisite for admission to engineering and computer science programs at all universities and most colleges that offer these programs. In Table 8, we present results for the two sub-samples defined by level of math in high school. We group the basic and intermediate

math levels together and keep students with advance math in a second sample. As expected, Table 8 shows that most of the effect to originate from students in the advance math sample. For example, the effect on BA attainment in the advanced math sample is 0.182 (se=0.060) while it is only 0.016 (se=0.019) in the basic and intermediate math sample. The effect on BA attainment in science in the advanced math sample is 0.194 (se=0.048) versus 0.021 (se=0.012) in the basic and intermediate math sample. The effect on expected earnings in the two sub-samples is 3238 NIS (se=397) versus 257 NIS (se=202).

The analysis so far was based on a sample that included individuals age 22-27. As a robustness, in Tables A3-A8 in online appendix we replicate all our results reported above for the sample of individuals aged 23-28. These tables present treatment effect estimates for the full sample and by gender, and balancing tests for the full sample and by gender. Overall, the treatment estimates obtained from this alternative age group are similar to those reported above based on the 22-27 age group.

We also tried a completely different control group, individuals from the city of Tel Aviv, who have stronger background characteristics and higher outcomes at baseline. The labor market for the educated individuals in Tel-Aviv is perhaps the most competitive in the country because of its high concentration of high-tech companies and highly skilled workers. Yet the results we obtain based on this comparison group is almost identical to the one obtained based on a comparison to late reform kibbutzim. The results are presented in online appendix tables A9-A16.

Our evidence are not changed when using alternative identification strategies and where carrying multiple robustness checks. For example, we also use an alternative non-kibbutz control group based on the population of young adults in Tel-Aviv, perhaps the most competitive labor market in the country with a concentration of highly skilled workers. We get similar results in this different controlled experiment even though this control group had much better pre-reform outcomes.[14] Therefore, unlike the first set of estimates that were based on late reforming kibbutzim as a control group and reflected only postreform differences with perfect pre-reform balancing, the

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[14]The results are presented in online appendix tables A9-A16.

results using Tel-Aviv as a control group reflected partial narrowing of the pre-reform gap between treatment and control. These divergent patterns in the difference in differences estimates indicate that our treatment estimates are not driven by convergence to the mean following random shocks to outcomes in the treated kibbutzim.

7. Conclusion

This paper provides quasi-experimental evidence on the effect of changes in the skill premium on the propensity of young adults to enroll in university schooling and obtain BA degrees and on their choice of field of study. Our empirical setting provides a compelling natural experiment with a large discrete increase in the financial return to schooling, from zero rate of return to the level of the market wide rate of 8-9 percent return to a year of schooling. Even though individuals living in kibbutzim in Israel might look at first as a special population with limited external validity, we show that the labor market prices of human capital for this population is similar to other participants in the same labor market.

Our findings are different from recent evidence from the US. Altonji et al. (2012) summarize this evidence as the anemic response of skill investment to skill premium growth, and concluded that the earnings premium for skilled labor has increased dramatically in recent decades. Yet, Americans are not acquiring significantly greater skills in response to this change. In contrast, our findings show large response to changes in the return to schooling, both in terms of attainment of BA university degrees and in terms of choice of field of study. The response is mainly driven by individuals who had the high school pre-requisites for admission to universities and to STEM fields of study. Both men and women shifted their choice of field of study towards majors with higher expected earnings, a pattern that did not in itself lead to higher expected gender gap in earnings, although more work on the occupation after schooling is needed to understand the sources of the gender earning gap.

A natural question that arises is the external validity of our findings. The context is surely different from a regular environment due to the equal sharing and commune life

style that preceded the pay reform. This structural change manifests itself to a sharp and large change in the return to schooling that is rarely observed in modern times. Nevertheless, we believe that our findings are informative given recent events such as the transition from centrally planned to market economies following the collapse of the Soviet Union (see Brainerd (1998)), the labor market liberalization in Vietnam in the 1980s (see Moock et al. (2003)), and the effect of skill biased technical change that increased sharply the skill premium in the United States and many other developed countries over the past decades (see the survey by Autor et al. (2008).

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Table 1: Comparison Between Treatment and Control Groups, Individuals'
Characteristics and Pre- and Post-Reform Outcomes

	Pre-Reform Individuals' Aged 22-27 in 1995-1996			Post-Reform Individuals' Aged 22-27 in 2001-2002		
	Treatment (1)	Control (2)	Difference (3)	Treatment (4)	Control (5)	Difference (6)
A. Characteristics						
Male	0.555	0.549	0.006	0.546	0.544	0.003
	(0.497)	(0.498)	(0.020)	(0.498)	(0.498)	(0.023)
Number of Siblings	2.757	2.760	-0.002	2.645	2.611	0.034
	(1.291)	(1.290)	(0.096)	(1.170)	(1.029)	(0.101)
Ethnic Origin: Africa/Asia	0.171	0.172	-0.001	0.093	0.107	-0.014
	(0.377)	(0.377)	(0.029)	(0.290)	(0.309)	(0.018)
Ethnic Origin: Europe/America	0.179	0.163	0.016	0.166	0.117	0.049
	(0.383)	(0.369)	(0.040)	(0.372)	(0.321)	(0.030)
Ethnic Origin: Ethiopia	0.000	0.003	-0.003	0.000	0.006	-0.006
	(0.000)	(0.052)	(0.003)	(0.000)	(0.080)	(0.004)
Ethnic Origin: FSU Countries	0.032	0.025	0.007	0.017	0.021	-0.005
	(0.176)	(0.155)	(0.010)	(0.128)	(0.145)	(0.007)
Ethnic Origin: Israel	0.562	0.553	0.010	0.654	0.662	-0.009
	(0.496)	(0.497)	(0.060)	(0.476)	(0.473)	(0.042)
Ethnic Origin: Other	0.056	0.086	-0.030	0.071	0.086	-0.015
	(0.230)	(0.280)	(0.028)	(0.257)	(0.281)	(0.022)
F-Statistic			6.480			7.154
P-Value			0.000			0.000
B. BA Degree by Field of Study						
Any Field	0.041	0.046	-0.005	0.110	0.082	0.029**
	(0.197)	(0.209)	(0.006)	(0.313)	(0.274)	(0.013)
Humanities	0.013	0.017	-0.005	0.017	0.018	-0.001
	(0.111)	(0.131)	(0.005)	(0.128)	(0.132)	(0.006)
Social Sciences	0.017	0.011	0.006	0.040	0.042	-0.002
	(0.131)	(0.104)	(0.005)	(0.196)	(0.200)	(0.008)
Sciences	0.011	0.017	-0.007	0.054	0.022	0.031***
	(0.103)	(0.131)	(0.004)	(0.225)	(0.148)	(0.009)
Observations	1035	1095		1025	1078	
Kibbutzim	32	29		32	29	

Notes: This table presents means, means-difference and standard deviations (in parentheses) of characteristics and outcomes of Individuals' in treatment kibbutzim (reformed early 1998,1999) and control kibbutzim (reformed late 2004,2005) who are aged 22-27 at the beginning of the follow-up periods: pre-reform, 1995-1996 (untreated) and post-reform, 2001-2002 (treated). Columns 1-3 present pre-reform means of treatment and control group and the difference between them, respectively. Columns 4-6 present post-reform means of treatment and control group and the difference between them, respectively. Standard errors of these differences are clustered at the kibbutz level and are presented in parentheses. All estimated coefficients are based on a regression of the characteristic or outcomes as a dependent variable and the treatment indicator is the explanatory variable. The F-statistics reported at the bottom of panel A test whether the estimated coefficients of all characteristics are jointly zero in a regression where treatment is the dependent variable and all the students characteristics are included jointly as regressors. In panel B, the dependent variable is an indicator of whether the student completed BA degree in the areas of study indicated by the outcome. Difference in means significant at ***1% **5% *10%.

Table 2: Treatment-Control Differences in Pre-Reform Time Trends in Academic Outcomes, 1989-1995

| | BA | |
	(1)	(2)
A. Linear Trend Model		
Treatment	0.005	
	(0.007)	
Time Trend	0.003***	0.003***
	(0.001)	(0.001)
Treatment X Time Trend	-0.000	-0.000
	(0.001)	(0.001)
B. Cohort Dummies Model		
Treatment	0.004	
	(0.010)	
Treatment X 1990	-0.001	-0.001
	(0.013)	(0.013)
Treatment X 1991	0.009	0.010
	(0.013)	(0.013)
Treatment X 1992	0.010	0.010
	(0.013)	(0.013)
Treatment X 1993	-0.009	-0.009
	(0.013)	(0.013)
Treatment X 1994	-0.012	-0.012
	(0.013)	(0.013)
Treatment X 1995	-0.012	-0.012
	(0.013)	(0.013)
Kibbutz Fixed-Effects	NO	YES
F-statistic	1.727	1.716

Notes:This table presents results from OLS regressions where the dependent variable is an indicator of whether the student completed BA degree and the sample includes Individuals' aged 22-27 in each year from 1989 to 1995 (pre reform). The treatment group includes kibbutzim that reformed in 1998-1999, and the control group includes kibbutzim that reformed in 2004 -2005. The regression in panel B includes cohort dummies. Standard errors clustered at the kibbutz level are presented in parentheses. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 3: Pre and Post Cross Section Regressions and Difference-in-Differences Estimates of Effect of Pay Reform on BA Degree Attainment, by Field of Study

	BA Degree by Field of Study								
		Humanities	Social Sciences		Sciences				
	Any Field	Humanities Any Field	Social Sciences Any Field	Economics, Business, Law	Sciences Any Field	Biology, Chemistry, Pre-Health Sciences	Math, Engineering, Physics, Computer Science, Statistics	Computer Science	Engineering
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
A. Experiment of Interest, Individuals' Aged 22-27 in 1995-1996 and in 2001-2002									
Cross Section Pre-Reform	-0.005 (0.011)	-0.005 (0.005)	0.006 (0.007)	0.004 (0.004)	-0.007 (0.007)	-0.003 (0.004)	-0.003 (0.005)	0.000 (0.003)	-0.002 (0.004)
Cross Section Post-Reform	0.029*** (0.011)	-0.001 (0.005)	-0.002 (0.007)	-0.005 (0.004)	0.031*** (0.007)	0.013*** (0.004)	0.018*** (0.005)	0.014*** (0.003)	0.007* (0.004)
Simple Difference-in-Differences	0.034** (0.016)	0.004 (0.008)	-0.008 (0.010)	-0.009 (0.006)	0.038*** (0.010)	0.016*** (0.006)	0.022*** (0.008)	0.014*** (0.005)	0.009* (0.005)
Controlled Difference-in-Differences	0.033** (0.016)	0.004 (0.008)	-0.009 (0.010)	-0.010* (0.006)	0.038*** (0.010)	0.017*** (0.006)	0.020*** (0.008)	0.014*** (0.005)	0.008 (0.005)
Observations	4233	4233	4233	4233	4233	4233	4233	4233	4233
B. Control Experiment, Individuals' Aged 22-27 in 1989-1990 and in 1995-1996									
Simple Difference-in-Differences	0.008 (0.014)	-0.013** (0.007)	0.015* (0.009)	0.009 (0.006)	0.006 (0.009)	0.006 (0.006)	-0.000 (0.006)	0.003 (0.003)	-0.004 (0.005)
Controlled Difference-in-Differences	0.004 (0.014)	-0.012* (0.007)	0.011 (0.009)	0.008 (0.006)	0.005 (0.009)	0.005 (0.006)	-0.000 (0.007)	0.003 (0.003)	-0.005 (0.005)
Observations	3863	3863	3863	3863	3863	3863	3863	3863	3863

Notes: Panel A presents the estimated coefficients of interest of difference-in-differences regressions, comparing cohorts of Individuals' aged 22-27 in pre/post reform period (See Figure 1). Panel B presents Difference-in-Differences and controlled Difference-in-Differences coefficients of placebo experiment that compare cohorts of Individuals' aged 22-27 in two pre-reform periods. Treatment group consists of kibbutzim that reformed in 1998-1999. The control group includes kibbutzim that reformed in 2004-2005. The dependent variable is an indicator of whether the student completed BA in the areas of study indicated by the outcome. The simple difference-in-differences regressions includes only cohort dummies. The controlled difference-in-differences regressions includes cohort dummies, kibbutz fixed effect and the following students demographic controls: gender, number of siblings, a set of ethnic dummies (origin from Africa/Asia, Europe/America, immigrants from FSU, Ethiopia, Israel and other countries). Standard errors clustered by Kibbutz are presented in parentheses. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 4: Pre and Post Cross Section Regressions and Difference-in-Differences Estimates of Effect of Pay Reform on BA Degree Attainment by Field of Study, By Gender

			BA by Field of Study						
		Humanities	Social Sciences		Sciences				
	Any Field	Humanities Any Field	Social Sciences Any Field	Economics, Business, Law	Sciences Any Field	Biology, Chemistry, Pre-Health Sciences	Math, Engineering, Physics, Computer Science, Statistics	Computer Science	Engineering
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Experiment of Interest, Individuals' Aged 22-27 in 1995-1996 and 2001-2002									
A. Male									
Cross Section Pre-Reform	0.006 (0.011)	-0.003 (0.005)	0.002 (0.007)	0.004 (0.005)	0.007 (0.008)	0.002 (0.003)	0.005 (0.007)	0.002 (0.004)	0.002 (0.005)
Cross Section Post-Reform	0.041*** (0.012)	0.006 (0.005)	0.003 (0.007)	0.001 (0.005)	0.033*** (0.008)	0.005 (0.003)	0.027*** (0.007)	0.014*** (0.004)	0.020*** (0.005)
Simple Difference-in-Differences	0.035** (0.016)	0.009 (0.007)	0.001 (0.010)	-0.003 (0.008)	0.026** (0.011)	0.004 (0.005)	0.022** (0.010)	0.013** (0.006)	0.018** (0.008)
Controlled Difference-in-Differences	0.033** (0.017)	0.009 (0.007)	0.001 (0.010)	-0.004 (0.008)	0.024** (0.012)	0.003 (0.005)	0.021** (0.010)	0.012** (0.006)	0.018** (0.008)
Observations	2321	2321	2321	2321	2321	2321	2321	2321	2321
B. Female									
Cross Section Pre-Reform	-0.018 (0.020)	-0.007 (0.010)	0.012 (0.013)	0.005 (0.007)	-0.024** (0.012)	-0.010 (0.009)	-0.014* (0.008)	-0.002 (0.005)	-0.006 (0.005)
Cross Section Post-Reform	0.014 (0.020)	-0.009 (0.010)	-0.007 (0.013)	-0.012* (0.007)	0.030** (0.012)	0.022** (0.009)	0.008 (0.008)	0.013** (0.005)	-0.008 (0.005)
Simple Difference-in-Differences	0.032 (0.028)	-0.002 (0.015)	-0.019 (0.019)	-0.016* (0.009)	0.053*** (0.017)	0.032*** (0.012)	0.021* (0.011)	0.015** (0.007)	-0.002 (0.008)
Controlled Difference-in-Differences	0.034 (0.029)	-0.001 (0.015)	-0.020 (0.019)	-0.018* (0.010)	0.055*** (0.017)	0.033*** (0.013)	0.023* (0.012)	0.018** (0.008)	-0.002 (0.008)
Observations	1912	1912	1912	1912	1912	1912	1912	1912	1912

Notes: This table presents the estimated coefficients of interest of difference-in-differences regressions, comparing Individuals' aged 22-27 in pre/post reform period (See Figure 1). Treatment group consists of kibbutzim that reformed in 1998-1999. control group consists of kibbutzim that reformed in 2004-2005. the dependent variable is an indicator of whether the student completed BA. in the areas of study indicated by the outcome. The simple difference-in-differences regressions includes only cohort dummies. The controlled difference-in-differences regressions includes cohort dummies, kibbutz fixed effect and the following students demographic controls: gender, number of siblings, a set of ethnic dummies (origin from Africa/Asia, Europe/America, immigrants from FSU, Ethiopia, Israel and other countries). Standard errors clustered by Kibbutz are presented in parentheses. ***, **, * indicate significance at the 1%, 5%, and 10% levels respectively.

Table 5: Pre and Post Cross Section Regressions and Difference-in-Differences Estimates of Effect of Pay Reform on BA Degree Attainment by Expected Wages and Gender

	BA Degree by Expected Wages								
	Field of Studies With Expected Wages Above Median			Field of Studies With Expected Wages Above 3rd Quartile			Expected Wages		
	All (1)	Male (2)	Female (3)	All (4)	Male (5)	Female (6)	All (7)	Male (8)	Female (9)
Experiment of Interest, Individuals' Age 22-27 in 1995-1996 and 2001-2002									
Cross Section Pre-Reform	0.003 (0.007)	0.009 (0.009)	-0.005 (0.010)	-0.002 (0.005)	0.004 (0.007)	-0.008 (0.007)	-7.426 (113.600)	125.300 (149.900)	-168.400 (173.100)
Cross Section Post-Reform	0.015** (0.007)	0.030*** (0.009)	-0.002 (0.010)	0.018*** (0.005)	0.025*** (0.007)	0.010 (0.007)	439.100*** (114.300)	634.500*** (151.800)	207.100 (172.900)
Simple Difference-in-Differences	0.013 (0.010)	0.021 (0.013)	0.003 (0.014)	0.020*** (0.007)	0.022** (0.009)	0.018* (0.010)	446.600*** (161.100)	509.100** (213.300)	375.500 (244.700)
Controlled Difference-in-Differences	0.011 (0.010)	0.019 (0.013)	0.003 (0.015)	0.019*** (0.007)	0.020** (0.010)	0.021** (0.010)	422.000*** (163.200)	471.200** (217.600)	418.500* (250.200)
Observations	4233	2321	1912	4233	2321	1912	4233	2321	1912

*Notes:*This table presents the estimated coefficients of interest of difference-in-differences regressions, comparing cohorts of individuals' aged 22-27 in pre/post reform period (See Figure 1). Treatment group consists of kibbutzim that reformed in 1998, 1999. control group consists of kibbutzim that reformed in 2004-2005. the dependent variable in columns 1-6 is an indicator of whether the student completed BA. in a field of studies with expected wages between the different quartile. In columns 7-9 the dependent variable is continuous and the measurement unit is New Israeli Sheqels per month. The data on the distribution of wages by field of study was provided by the chief economist, Ministry of Finance, Israel. The simple difference-in-differences regressions includes only cohort dummies. The controlled difference-in-differences regressions includes cohort dummies, kibbutz fixed effect and the following students demographic controls: gender, number of siblings, a set of ethnic dummies (origin from Africa/Asia, Europe/America, immigrants from FSU, Ethiopia, Israel and other countries). Standard errors clustered by Kibbutz are presented in parentheses. ***, **, * indicate significance at the 1%, 5%, and 10% levels respectively.

Table 6: Placebo Effects on Pre-Determined High School Matriculation Outcomes

	Full Sample			Male			Female		
	Treatment (1)	Control (2)	Difference (3)	Treatment (4)	Control (5)	Difference (6)	Treatment (7)	Control (8)	Difference (9)
Matriculation Certificate	0.525 (0.500)	0.554 (0.497)	-0.029 (0.028)	0.486 (0.500)	0.502 (0.501)	-0.017 (0.039)	0.567 (0.496)	0.608 (0.489)	-0.041 (0.032)
Matriculation Credit Units	20.569 (8.149)	20.927 (7.832)	-0.358 (0.546)	19.693 (8.699)	20.250 (8.389)	-0.557 (0.754)	21.497 (7.424)	21.631 (7.151)	-0.134 (0.626)
Math Number of Credits	2.582 (1.696)	2.688 (1.697)	-0.105 (0.095)	2.583 (1.767)	2.773 (1.756)	-0.190 (0.120)	2.582 (1.620)	2.599 (1.631)	-0.017 (0.119)
English Number of Credits	3.865 (1.409)	3.867 (1.435)	-0.002 (0.094)	3.782 (1.459)	3.810 (1.511)	-0.028 (0.124)	3.953 (1.350)	3.927 (1.350)	0.026 (0.120)
Observation	741	785		381	400		360	385	

Notes: This table presents means, means-difference and standard deviations (in parentheses) of outcomes of Individuals' who are aged 22-27 in 2001,2002. Treatment group consists of kibbutzim that reformed in 1998, 1999. control group consists of kibbutzim that reformed in 2004, 2005. The dependent variable in row I is whether the student received a matriculation certificate; in row II is the number of credit unites of the matriculation certificate; in row III, IV is the number of matriculation units in English and mathematics subjects respectively. The range of units in these subjects is 0-5. ***, **, * indicate significance at the 1%, 5%, and 10% levels respectively.

Table 7: Treatment and Control Groups Means, Differences and Controlled Differences, by Eligibility for Matriculation Certificate

	Individuals' With a Matriculation Certificate				Individuals' Without a Matriculation Certificate			
	Treatment Group	Control Group	Treatment-Control Difference	Controlled Difference	Treatment Group	Control Group	Treatment-Control Difference	Controlled Difference
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
A: BA Degree by Field of Study								
Any Field	0.216 (0.412)	0.163 (0.370)	0.053* (0.029)	0.057* (0.030)	0.057 (0.232)	0.037 (0.189)	0.020 (0.015)	0.019 (0.014)
Humanities	0.028 (0.166)	0.039 (0.194)	-0.011 (0.013)	-0.011 (0.013)	0.009 (0.092)	0.006 (0.075)	0.003 (0.006)	0.004 (0.005)
Social Sciences	0.069 (0.254)	0.080 (0.272)	-0.011 (0.017)	-0.009 (0.017)	0.031 (0.174)	0.020 (0.140)	0.011 (0.011)	0.009 (0.012)
Economics, Business, Law	0.021 (0.142)	0.030 (0.170)	-0.009 (0.010)	-0.009 (0.010)	0.009 (0.092)	0.006 (0.075)	0.003 (0.006)	0.004 (0.006)
Sciences	0.118 (0.323)	0.044 (0.205)	0.075*** (0.022)	0.077*** (0.022)	0.017 (0.130)	0.011 (0.106)	0.006 (0.008)	0.006 (0.008)
Biology, Chemistry, Pre-Health Sciences	0.036 (0.187)	0.009 (0.096)	0.027** (0.010)	0.028*** (0.011)	0.011 (0.106)	0.006 (0.075)	0.006 (0.006)	0.006 (0.007)
Math, Eng, Physics, Computer Science, Statistics	0.082 (0.275)	0.034 (0.183)	0.048** (0.019)	0.048** (0.020)	0.006 (0.075)	0.006 (0.075)	-0.000 (0.005)	-0.000 (0.006)
Computer Science	0.044 (0.205)	0.011 (0.107)	0.032*** (0.011)	0.033*** (0.011)	0.003 (0.053)	0.000 (0.000)	0.003 (0.003)	0.003 (0.003)
Engineering	0.041 (0.199)	0.021 (0.143)	0.020 (0.015)	0.022 (0.015)	0.003 (0.053)	0.003 (0.053)	-0.000 (0.004)	-0.000 (0.004)
B: BA Degree by Expected Wages								
Above 75'th Percentile (Dummy Indicator)	0.075 (0.263)	0.030 (0.170)	0.045** (0.018)	0.045** (0.019)	0.006 (0.075)	0.003 (0.053)	0.003 (0.005)	0.003 (0.005)
Above 50'th Percentile (Dummy Indicator)	0.108 (0.311)	0.064 (0.246)	0.044* (0.022)	0.044* (0.022)	0.014 (0.119)	0.011 (0.106)	0.003 (0.007)	0.003 (0.007)
Expected wage (In New Israeli Shekels)	8878.439 (5600.638)	7834.264 (3829.801)	1044.175** (395.873)	1078.100*** (397.072)	6909.929 (1965.729)	6767.474 (1529.918)	142.455 (116.385)	142.629 (110.218)
Observations	389	435			352	350		

Notes: This table presents means, means-difference and standard deviations (in parentheses) of outcomes of Individuals' who are aged 22-27 in 2001,2002. Treatment group consists of kibbutzim that reformed in 1998, 1999. control group consists of kibbutzim that reformed in 2004, 2005. In Panel A the dependent variable is an indicator of whether the student completed BA in the areas of study indicated by the outcome. In Panel B the dependent variable is an indicator of whether the student completed BA in a field of studies with expected wages between the different quartile. The outcome Expected Wages is continuous and the measurement unit is New Israeli Sheqels per month. 1US dollar is currently equal to approximately 3.7 shekels. The estimated coefficients in rows3,4,7,8 are based on a regression of the outcome as a dependent variable and the treatment indicator is the explanatory variable. The simple difference regressions include only cohort dummies. The controlled difference regressions include cohort dummies, kibbutz fixed effect and the following students demographic controls: gender, number of siblings, a set of ethnic dummies (origin from Africa/Asia, Europe/America, immigrants from FSU, Ethiopia, Israel and other countries). Difference in means significant at ***1% **5% *10%.

Table 8: Treatment and Control Groups Means, Differences and Controlled Differences, by Level of Math Matriculation Study Program

	Advance				Basic and Intermediate			
	Treatment Group	Control Group	Treatment-Control Difference	Controlled Difference	Treatment Group	Control Group	Treatment-Control Difference	Controlled Difference
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
A: BA Degree by Field of Study								
Any Field	0.364	0.180	0.184***	0.182***	0.110	0.096	0.014	0.016
	(0.484)	(0.386)	(0.060)	(0.060)	(0.314)	(0.295)	(0.020)	(0.019)
Humanities	0.023	0.040	-0.017	-0.018	0.018	0.022	-0.004	-0.003
	(0.150)	(0.197)	(0.026)	(0.025)	(0.135)	(0.147)	(0.009)	(0.009)
Social Sciences	0.080	0.080	-0.000	0.005	0.048	0.050	-0.002	-0.002
	(0.272)	(0.273)	(0.033)	(0.032)	(0.213)	(0.217)	(0.011)	(0.012)
Economics, Business, Law	0.045	0.070	-0.025	-0.018	0.011	0.012	-0.001	-0.001
	(0.209)	(0.256)	(0.029)	(0.028)	(0.103)	(0.108)	(0.006)	(0.006)
Sciences	0.261	0.060	0.201***	0.194***	0.044	0.025	0.020	0.021*
	(0.442)	(0.239)	(0.047)	(0.048)	(0.206)	(0.156)	(0.012)	(0.012)
Biology, Chemistry, Pre-Health Sciences	0.034	0.000	0.034*	0.032**	0.023	0.009	0.014**	0.015**
	(0.183)	(0.000)	(0.018)	(0.016)	(0.150)	(0.093)	(0.006)	(0.006)
Math, Eng, Physics, Computer Science, Statistics	0.227	0.060	0.167***	0.162***	0.021	0.016	0.005	0.006
	(0.421)	(0.239)	(0.047)	(0.047)	(0.145)	(0.126)	(0.009)	(0.009)
Computer Science	0.114	0.030	0.084**	0.081**	0.012	0.003	0.009*	0.010*
	(0.319)	(0.171)	(0.036)	(0.036)	(0.110)	(0.054)	(0.005)	(0.005)
Engineering	0.102	0.030	0.072*	0.079*	0.012	0.010	0.002	0.002
	(0.305)	(0.171)	(0.039)	(0.042)	(0.110)	(0.101)	(0.006)	(0.007)
B: BA Degree by Expected Wages								
Above 75'th Percentile (Dummy Indicator)	0.205	0.060	0.145***	0.137***	0.020	0.012	0.008	0.009
	(0.406)	(0.239)	(0.047)	(0.047)	(0.140)	(0.108)	(0.008)	(0.008)
Above 50'th Percentile (Dummy Indicator)	0.273	0.130	0.143**	0.144**	0.035	0.028	0.007	0.008
	(0.448)	(0.338)	(0.059)	(0.058)	(0.185)	(0.164)	(0.012)	(0.012)
Expected wage (In New Israeli Shekels)	11826.103	8562.670	3263.432***	3238.032***	7421.481	7183.844	237.638	257.250
	(8099.873)	(5227.583)	(974.442)	(973.728)	(3285.824)	(2575.711)	(204.451)	(202.592)
Observations	88	100			652	684		

Notes: This table presents means, means-difference and standard deviations (in parentheses) of outcomes of Individuals' who are aged 22-27 in 2001,2002. Treatment group consists of kibbutzim that reformed in 1998, 1999. control group consists of kibbutzim that reformed in 2004, 2005. In Panel A the dependent variable is an indicator of whether the student completed BA in the areas of study indicated by the outcome. In Panel B the dependent variable is an indicator of whether the student completed BA in a field of studies with expected wages between the different quartile. The outcome Expected Wages is continuous and the measurement unit is New Israeli Sheqels per month. 1US dollar is currently equal to approximately 3.7 shekels. The estimated coefficients in rows 3,4,7,8 are based on a regression of the outcome as a dependent variable and the treatment indicator is the explanatory variable. The simple difference regressions include only cohort dummies. The controlled difference regressions include cohort dummies, kibbutz fixed effect and the following students demographic controls: gender, number of siblings, a set of ethnic dummies (origin from Africa/Asia, Europe/America, immigrants from FSU, Ethiopia, Israel and other countries). Difference in means significant at ***1% **5% *10%.

Table 9: Rate of Return To Education by Level of Schooling Attainment

	Full Sample		Female		Male	
	Non-Kibbutzim (1)	Kibbutzim (2)	Non-Kibbutzim (3)	Kibbutzim (4)	Non-Kibbutzim (5)	Kibbutzim (6)
High School Completion	0.026***	0.025***	0.020***	0.009	0.024***	0.032***
	(0.002)	(0.007)	(0.003)	(0.011)	(0.003)	(0.009)
Matriculation Certificate	0.231***	0.273***	0.209***	0.238***	0.236***	0.291***
	(0.003)	(0.007)	(0.004)	(0.010)	(0.004)	(0.010)
Post-Secondary Certificate	0.233***	0.201***	0.191***	0.165***	0.247***	0.221***
	(0.003)	(0.010)	(0.004)	(0.015)	(0.004)	(0.013)
Undergraduate Degree	0.521***	0.553***	0.471***	0.492***	0.551***	0.592***
	(0.002)	(0.007)	(0.003)	(0.010)	(0.003)	(0.009)
Master Degree	0.626***	0.656***	0.580***	0.593***	0.660***	0.701***
	(0.002)	(0.007)	(0.003)	(0.010)	(0.004)	(0.010)
PhD Degree	0.508***	0.456***	0.576***	0.492***	0.433***	0.418***
	(0.006)	(0.014)	(0.008)	(0.021)	(0.009)	(0.020)
Observation	554,452	89,713	256,393	41,847	298,059	47,866

Notes: This tables presents results from OLS regressions where the dependent variable is the natural log of wages of Individuals' aged 30-45. In rows 2, 4, 6 the regressions run for all kibbutzim were reformed by 2010 and in rows 1, 3, 5 for Non Kibbutzim members. Wages are measured in New Israeli 2010 Shekels per month. 1 US dollar is currently equal to approximately 3.7 shekels. Outliers are members with wages below 3890 shekels or Those who worked less than 8 months. All the regressions include control variables: Age, Age squared, gender, number of siblings, a set of ethnic dummies (origin from Africa/Asia, Europe/America, immigrants from FSU, Ethiopia, Israel and other countries). ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

Figure 2 : Distribution of BA Attainment By Age at Graduation
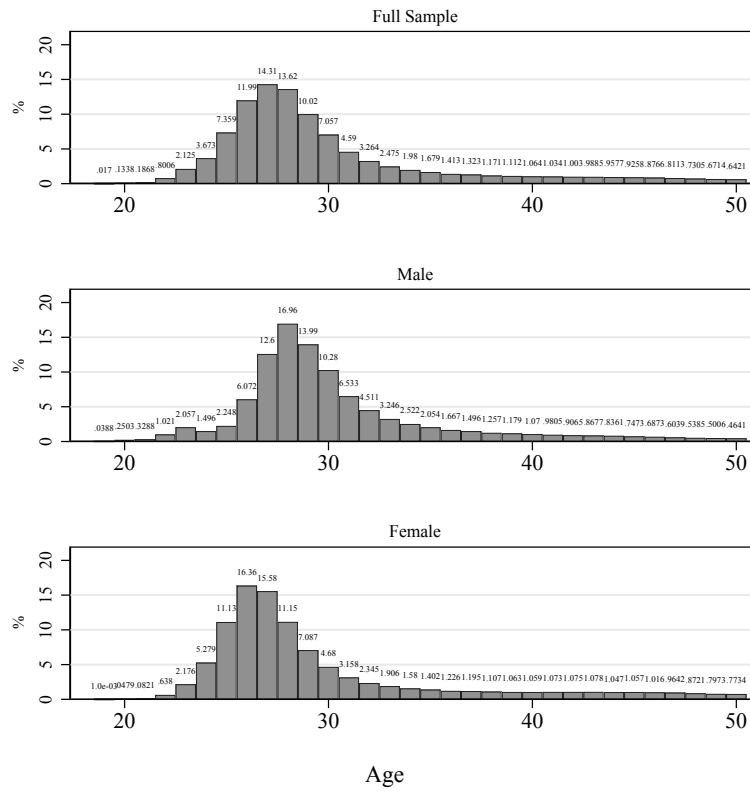
Figure 3 : Distribution of BA Attainment By Year and Gender
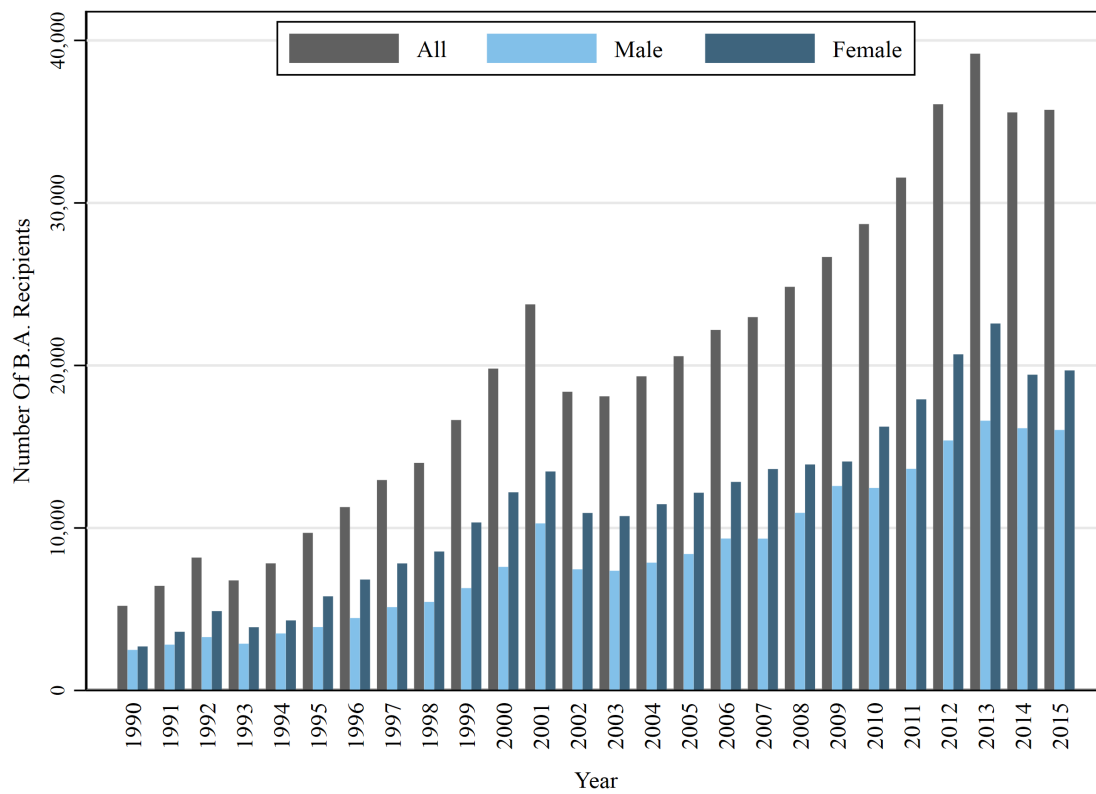
Figure 4 : Proportion Receiving BA Degree
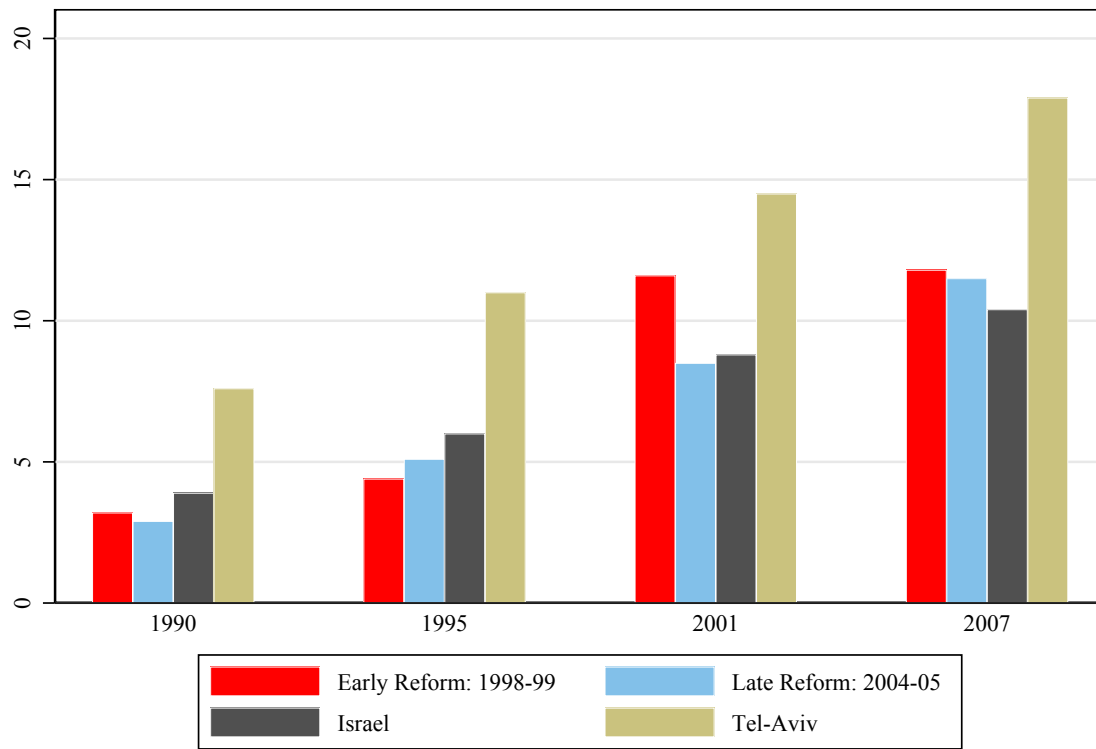
Note: The proportion is for individuals aged 22-27 in the relevant years

Figure 5 : Treatment-Control Mean Differences in Proportion Receiving BA Degree, By Year

Note: Vertical bands represents +-1.96 times SE of each point estimate
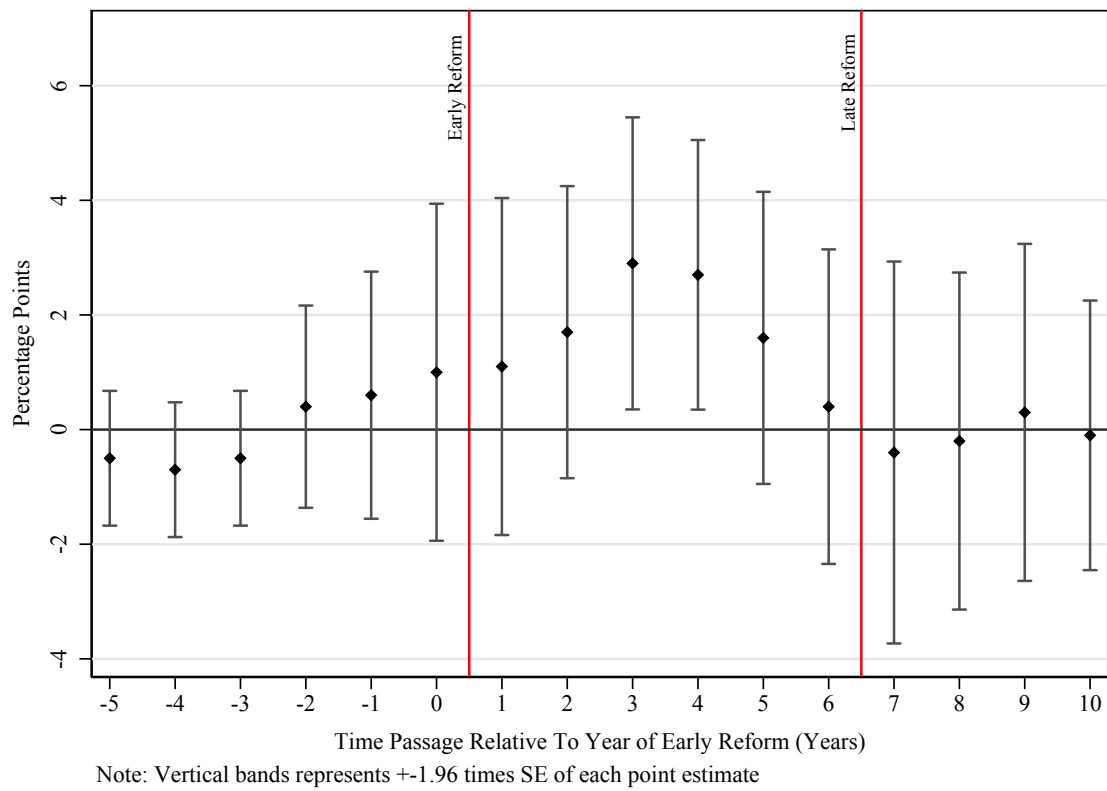
Figure 6 : Differences in Differences Estimates, by Fields of Study
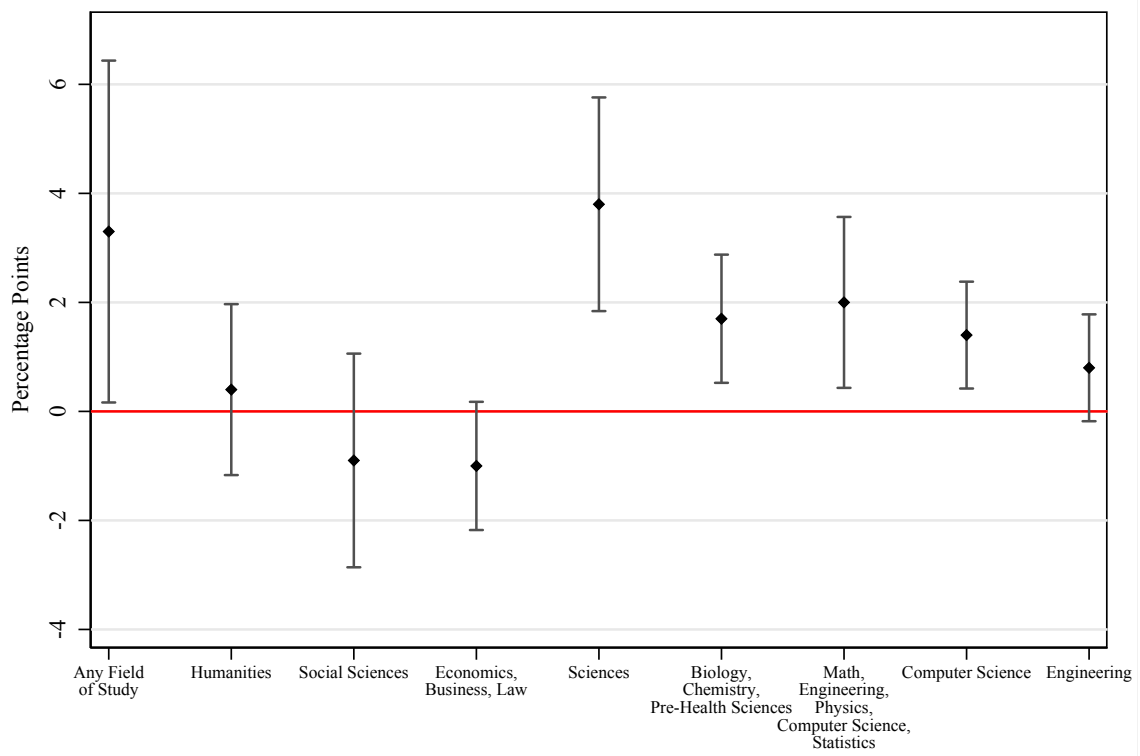
Note: Vertical bands represents +-1.96 times SE of each point estimate

Figure 7: Average Monthly Wage, By Field of Study

New Israeli Shekels'

Table A1: Comparison Between Treatment and Control Groups, Individuals'
Characteristics and Pre- and Post-Reform Outcomes, Male

	Pre-Reform Individuals' Aged 22-27 in 1995-1996			Post-Reform Individuals' Aged 22-27 in 2001-2002		
	Treatment (1)	Control (2)	Difference (3)	Treatment (4)	Control (5)	Difference (6)
A. Characteristics						
Number of Siblings	2.767	2.824	-0.057	2.702	2.555	0.147
	(1.234)	(1.382)	(0.113)	(1.205)	(0.963)	(0.113)
Ethnic Origin: Africa/Asia	0.164	0.183	-0.019	0.086	0.109	-0.024
	(0.370)	(0.387)	(0.031)	(0.280)	(0.312)	(0.023)
Ethnic Origin: Europe/America	0.178	0.158	0.020	0.150	0.111	0.039
	(0.383)	(0.365)	(0.043)	(0.357)	(0.314)	(0.030)
Ethnic Origin: Ethiopia	0.000	0.005	-0.005	0.000	0.003	-0.003
	(0.000)	(0.071)	(0.005)	(0.000)	(0.058)	(0.003)
Ethnic Origin: FSU Countries	0.035	0.022	0.013	0.013	0.012	0.001
	(0.184)	(0.146)	(0.012)	(0.111)	(0.109)	(0.007)
Ethnic Origin: Israel	0.570	0.557	0.012	0.671	0.667	0.004
	(0.496)	(0.497)	(0.062)	(0.470)	(0.472)	(0.049)
Ethnic Origin: Other	0.054	0.075	-0.021	0.080	0.097	-0.017
	(0.226)	(0.263)	(0.029)	(0.272)	(0.297)	(0.030)
F-Statistic			7.554			9.169
P-Value			0.000			0.000
B. BA Degree by Field of Study						
Any Field	0.024	0.018	0.006	0.080	0.039	0.041**
	(0.154)	(0.134)	(0.008)	(0.272)	(0.194)	(0.016)
Humanities	0.007	0.010	-0.003	0.009	0.003	0.006
	(0.083)	(0.099)	(0.005)	(0.094)	(0.058)	(0.005)
Social Sciences	0.007	0.005	0.002	0.023	0.020	0.003
	(0.083)	(0.071)	(0.004)	(0.151)	(0.142)	(0.008)
Sciences	0.010	0.003	0.007*	0.048	0.015	0.033***
	(0.102)	(0.058)	(0.004)	(0.214)	(0.123)	(0.012)
Observations	574	601		560	586	
Kibbutzim	32	29		32	29	

Notes: This table presents means, means-difference and standard deviations (in parentheses) of characteristics and outcomes of Individuals' in treatment kibbutzim (reformed early 1998-1999) and control kibbutzim (reformed late 2004-2005) who are aged 22-27 at the beginning of the follow-up periods: pre-reform, 1995-1996 (untreated) and post-reform, 2001-2002 (treated). Columns 1-3 present pre-reform means of treatment and control group and the difference between them, respectively. Columns 4-6 present post-reform means of treatment and control group and the difference between them, respectively. Standard errors of these differences are clustered at the kibbutz level and are presented in parentheses. All estimated coefficients are based on a regression of the characteristic or outcomes as a dependent variable and the treatment indicator is the explanatory variable. The F-statistics reported at the bottom of panel A test whether the estimated coefficients of all characteristics are jointly zero in a regression where treatment is the dependent variable and all the students characteristics are included jointly as regressors. In panel B, the dependent variable is an indicator of whether the student completed BA degree in the areas of study indicated by the outcome. Difference in means significant at ***1% **5% *10%.
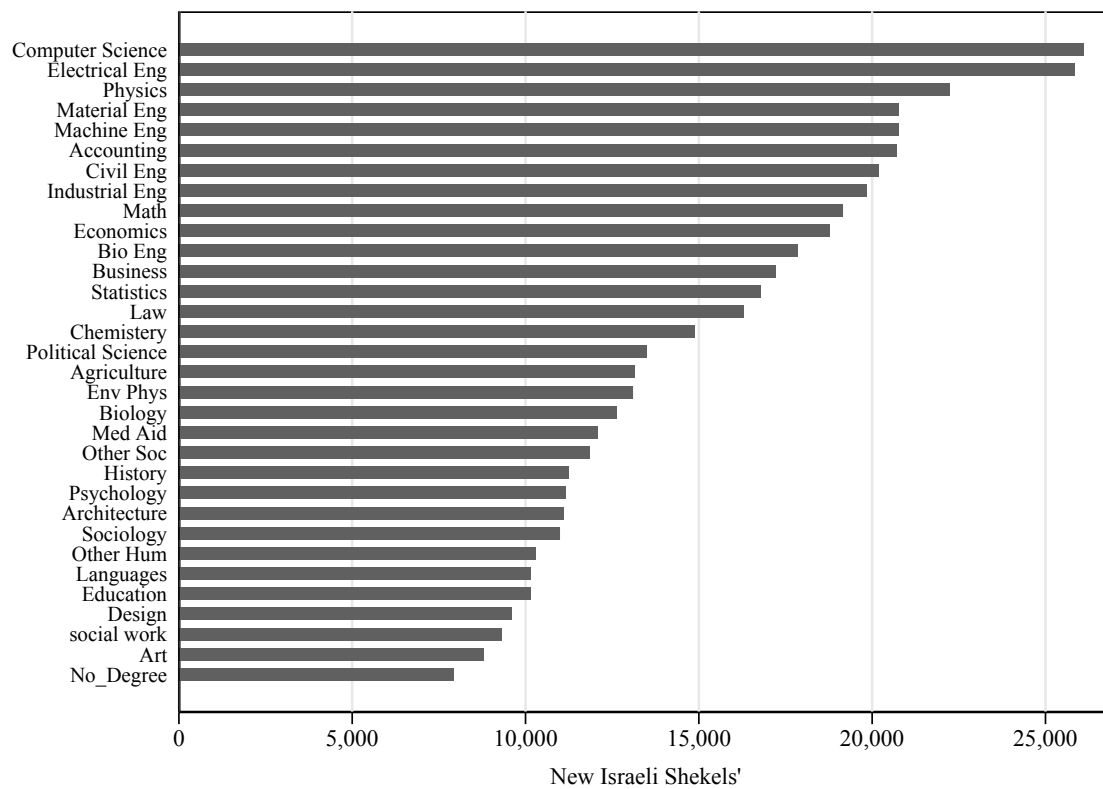
Table A2: Comparison Between Treatment and Control Groups, Individuals'
Characteristics and Pre- and Post-Reform Outcomes, Female

	Pre-Reform Individuals' Aged 22-27 in 1995-1996			Post-Reform Individuals' Aged 22-27 in 2001-2002		
	Treatment (1)	Control (2)	Difference (3)	Treatment (4)	Control (5)	Difference (6)
A. Characteristics						
Number of Siblings	2.746 (1.360)	2.682 (1.167)	0.064 (0.105)	2.576 (1.123)	2.679 (1.099)	-0.103 (0.109)
Ethnic Origin: Africa/Asia	0.180 (0.385)	0.158 (0.365)	0.022 (0.033)	0.101 (0.302)	0.104 (0.305)	-0.003 (0.019)
Ethnic Origin: Europe/America	0.180 (0.385)	0.168 (0.374)	0.012 (0.045)	0.185 (0.389)	0.124 (0.330)	0.061* (0.036)
Ethnic Origin: Ethiopia	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.010 (0.100)	-0.010 (0.008)
Ethnic Origin: FSU Countries	0.028 (0.166)	0.028 (0.166)	-0.000 (0.012)	0.022 (0.145)	0.033 (0.178)	-0.011 (0.011)
Ethnic Origin: Israel	0.553 (0.498)	0.547 (0.498)	0.007 (0.065)	0.632 (0.483)	0.657 (0.475)	-0.024 (0.046)
Ethnic Origin: Other	0.059 (0.235)	0.099 (0.299)	-0.041 (0.031)	0.060 (0.238)	0.073 (0.261)	-0.013 (0.019)
F-Statistic			0.596			7.389
P-Value			0.703			0.000
B. BA Degree by Field of Study						
Any Field	0.061 (0.239)	0.079 (0.270)	-0.018 (0.014)	0.146 (0.354)	0.132 (0.339)	0.014 (0.022)
Humanities	0.020 (0.139)	0.026 (0.160)	-0.007 (0.011)	0.026 (0.159)	0.035 (0.183)	-0.009 (0.012)
Social Sciences	0.030 (0.172)	0.018 (0.134)	0.012 (0.011)	0.060 (0.238)	0.067 (0.250)	-0.007 (0.014)
Sciences	0.011 (0.104)	0.034 (0.182)	-0.024*** (0.008)	0.060 (0.238)	0.030 (0.172)	0.030** (0.014)
Observations	461	494		465	492	
Kibbutzim	32	29		32	29	

Notes: This table presents means, means-difference and standard deviations (in parentheses) of characteristics and outcomes of Individuals' in treatment kibbutzim (reformed early 1998-1999) and control kibbutzim (reformed late 2004-2005) who are aged 22-27 at the beginning of the follow-up periods: pre-reform, 1995-1996 (untreated) and post-reform, 2001-2002 (treated). Columns 1-3 present pre-reform means of treatment and control group and the difference between them, respectively. Columns 4-6 present post-reform means of treatment and control group and the difference between them, respectively. Standard errors of these differences are clustered at the kibbutz level and are presented in parentheses. All estimated coefficients are based on a regression of the characteristic or outcomes as a dependent variable and the treatment indicator is the explanatory variable. The F-statistics reported at the bottom of panel A test whether the estimated coefficients of all characteristics are jointly zero in a regression where treatment is the dependent variable and all the students characteristics are included jointly as regressors. In panel B, the dependent variable is an indicator of whether the student completed BA degree in the areas of study indicated by the outcome. Difference in means significant at ***1% **5% *10%.

Table A3: Comparison Between Treatment and Control Groups, Individuals'
Characteristics and Pre- and Post-Reform Outcomes

	Pre-Reform Individuals' Aged 23-28 in 1995-1996			Post-Reform Individuals' Aged 23-28 in 2001-2002		
	Treatment (1)	Control (2)	Difference (3)	Treatment (4)	Control (5)	Difference (6)
A. Characteristics						
Male	0.564	0.543	0.021	0.550	0.551	-0.001
	(0.496)	(0.498)	(0.021)	(0.498)	(0.498)	(0.022)
Number of Siblings	2.811	2.776	0.035	2.662	2.625	0.037
	(1.331)	(1.299)	(0.092)	(1.202)	(1.010)	(0.102)
Ethnic Origin: Africa/Asia	0.178	0.194	-0.015	0.102	0.102	0.000
	(0.383)	(0.395)	(0.032)	(0.303)	(0.303)	(0.018)
Ethnic Origin: Europe/America	0.170	0.170	0.000	0.165	0.125	0.040
	(0.376)	(0.376)	(0.039)	(0.371)	(0.330)	(0.028)
Ethnic Origin: Ethiopia	0.000	0.002	-0.002	0.000	0.005	-0.005
	(0.000)	(0.043)	(0.002)	(0.000)	(0.074)	(0.004)
Ethnic Origin: FSU Countries	0.031	0.023	0.008	0.014	0.024	-0.010
	(0.174)	(0.149)	(0.010)	(0.117)	(0.152)	(0.007)
Ethnic Origin: Israel	0.560	0.529	0.031	0.654	0.658	-0.004
	(0.497)	(0.499)	(0.061)	(0.476)	(0.475)	(0.038)
Ethnic Origin: Other	0.060	0.082	-0.022	0.065	0.086	-0.021
	(0.238)	(0.275)	(0.030)	(0.247)	(0.281)	(0.020)
F-Statistic			6.457			6.299
P-Value			0.000			0.000
B. BA Degree by Field of Study						
Any Field	0.046	0.055	-0.009	0.141	0.111	0.030*
	(0.210)	(0.228)	(0.006)	(0.348)	(0.314)	(0.015)
Humanities	0.013	0.019	-0.006	0.018	0.024	-0.006
	(0.113)	(0.136)	(0.005)	(0.132)	(0.152)	(0.007)
Social Sciences	0.020	0.015	0.005	0.051	0.054	-0.003
	(0.140)	(0.122)	(0.005)	(0.219)	(0.225)	(0.009)
Sciences	0.013	0.021	-0.008	0.072	0.034	0.039***
	(0.113)	(0.143)	(0.005)	(0.259)	(0.180)	(0.010)
Observations	998	1058		1009	1100	
Kibbutzim	32	29		32	29	

Notes: This table presents means, means-difference and standard deviations (in parentheses) of characteristics and outcomes of Individuals' in treatment kibbutzim (reformed early 1998-1999) and control kibbutzim (reformed late 2004-2005) who are aged 23-28 at the beginning of the follow-up periods: pre-reform, 1995-1996 (untreated) and post-reform, 2001-2002 (treated). Columns 1-3 present pre-reform means of treatment and control group and the difference between them, respectively. Columns 4-6 present post-reform means of treatment and control group and the difference between them, respectively. Standard errors of these differences are clustered at the kibbutz level and are presented in parentheses. All estimated coefficients are based on a regression of the characteristic or outcomes as a dependent variable and the treatment indicator is the explanatory variable. The F-statistics reported at the bottom of panel A test whether the estimated coefficients of all characteristics are jointly zero in a regression where treatment is the dependent variable and all the students characteristics are included jointly as regressors. In panel B, the dependent variable is an indicator of whether the student completed BA degree in the areas of study indicated by the outcome. Difference in means significant at ***1% **5% *10%.

Table A4: Pre and Post Cross Section Regressions and Difference-in-Differences Estimates of Effect of Pay Reform on BA Degree Attainment, by Field of Study

	BA Degree by Field of Study								
		Humanities	Social Sciences		Sciences				
	Any Field	Humanities Any Field	Social Sciences Any Field	Economics, Business, Law	Sciences Any Field	Biology, Chemistry, Pre-Health Sciences	Math, Engineering, Physics, Computer Science, Statistics	Computer Science	Engineering
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
A. Experiment of interest of Individuals' Aged 23-28 in 1995-1996 and in 2001-2002									
Cross Section Pre-Reform	-0.009	-0.006	0.005	0.001	-0.008	-0.002	-0.005	0.000	-0.003
	(0.012)	(0.006)	(0.008)	(0.005)	(0.008)	(0.005)	(0.006)	(0.004)	(0.005)
Cross Section Post-Reform	0.030**	-0.006	-0.003	-0.009*	0.039***	0.015***	0.024***	0.018***	0.011**
	(0.012)	(0.006)	(0.008)	(0.005)	(0.008)	(0.005)	(0.006)	(0.004)	(0.005)
Simple Difference-in-Differences	0.039**	0.000	-0.008	-0.010	0.047***	0.017**	0.029***	0.018***	0.014**
	(0.017)	(0.008)	(0.011)	(0.007)	(0.011)	(0.007)	(0.009)	(0.006)	(0.007)
Controlled Difference-in-Differences	0.035**	-0.001	-0.008	-0.011	0.044***	0.017**	0.028***	0.018***	0.012*
	(0.018)	(0.008)	(0.012)	(0.007)	(0.011)	(0.007)	(0.009)	(0.006)	(0.007)
Observations	4165	4165	4165	4165	4165	4165	4165	4165	4165
B. Control Experiment of Individuals' aged 23-28 in 1989-1990 and in 1995-1996									
Simple Difference-in-Differences	0.010	-0.015**	0.017*	0.010	0.009	0.010	-0.001	0.004	-0.007
	(0.015)	(0.008)	(0.009)	(0.006)	(0.010)	(0.007)	(0.007)	(0.003)	(0.006)
Controlled Difference-in-Differences	0.004	-0.016**	0.013	0.009	0.008	0.009	-0.002	0.004	-0.008
	(0.016)	(0.008)	(0.009)	(0.006)	(0.010)	(0.007)	(0.008)	(0.003)	(0.006)
Observations	3735	3735	3735	3735	3735	3735	3735	3735	3735

Notes: Panel A presents the estimated coefficients of interest of difference-in-differences regressions, comparing cohorts of Individuals' aged 23-28 in pre/post reform period (See Figure 1). Panel B presents Difference-in-Differences and controlled Difference-in-Differences coefficients of placebo experiment that compare cohorts of Individuals' aged 23-28 in two pre-reform periods. Treatment group consists of kibbutzim that reformed in 1998-1999. The control group includes kibbutzim that reformed in 2004-2005. The dependent variable is an indicator of whether the student completed BA in the areas of study indicated by the outcome. The simple difference-in-differences regressions includes only cohort dummies. The controlled difference-in-differences regressions includes cohort dummies, kibbutz fixed effect and the following students demographic controls: gender, number of siblings, a set of ethnic dummies (origin from Africa/Asia, Europe/America, immigrants from FSU, Ethiopia, Israel and other countries). Standard errors clustered by Kibbutz are presented in parentheses. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table A5: Pre and Post Cross Section Regressions and Difference-in-Differences Estimates of Effect of Pay Reform on BA Degree Attainment by Field of Study, By Gender

| | Any Field | Humanities | Social Sciences | | Sciences | | | | |
		Humanities Any Field	Social Sciences Any Field	Economics, Business, Law	Sciences Any Field	Biology, Chemistry, Pre-Health Sciences	Math, Engineering, Physics, Computer Science, Statistics	Computer Science	Engineering
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

Experiment of interest of Individuals' Aged 23-28 in 1995-1996 and 2001-2002

A. Male

Cross Section Pre-Reform	-0.005	-0.005	-0.005	-0.002	0.005	0.004	0.002	0.002	0.000
	(0.014)	(0.005)	(0.009)	(0.007)	(0.010)	(0.004)	(0.009)	(0.006)	(0.007)
Cross Section Post-Reform	0.046***	0.004	-0.002	-0.007	0.044***	0.007*	0.037***	0.022***	0.027***
	(0.014)	(0.005)	(0.009)	(0.007)	(0.010)	(0.004)	(0.009)	(0.006)	(0.007)
Simple Difference-in-Differences	0.051***	0.009	0.003	-0.005	0.039***	0.004	0.035***	0.021***	0.026**
	(0.020)	(0.008)	(0.013)	(0.010)	(0.014)	(0.005)	(0.013)	(0.008)	(0.010)
Controlled Difference-in-Differences	0.048**	0.010	0.003	-0.005	0.034**	0.003	0.032**	0.020**	0.024**
	(0.020)	(0.008)	(0.013)	(0.011)	(0.014)	(0.006)	(0.013)	(0.008)	(0.011)
Observations	2299	2299	2299	2299	2299	2299	2299	2299	2299

B. Female

Simple Difference-in-Differences	-0.011	-0.006	0.018	0.005	-0.023*	-0.009	-0.014	-0.002	-0.006
	(0.021)	(0.012)	(0.014)	(0.007)	(0.013)	(0.010)	(0.009)	(0.005)	(0.006)
Controlled Difference-in-Differences	0.010	-0.018	-0.004	-0.011	0.032**	0.024**	0.009	0.014**	-0.007
	(0.021)	(0.011)	(0.014)	(0.007)	(0.013)	(0.010)	(0.009)	(0.005)	(0.006)
Simple Difference-in-Differences	0.021	-0.012	-0.022	-0.016	0.055***	0.033**	0.023*	0.016**	-0.001
	(0.030)	(0.016)	(0.020)	(0.010)	(0.019)	(0.014)	(0.012)	(0.008)	(0.009)
Controlled Difference-in-Differences	0.023	-0.015	-0.020	-0.017	0.058***	0.032**	0.026**	0.019**	-0.000
	(0.031)	(0.016)	(0.020)	(0.011)	(0.019)	(0.014)	(0.013)	(0.008)	(0.009)
Observations	1866	1866	1866	1866	1866	1866	1866	1866	1866

Notes: This table presents the estimated coefficients of interest of difference-in-differences regressions, comparing Individuals' aged 23-28 in pre/post reform period (See Figure 1). Treatment group consists of kibbutzim that reformed in 1998-1999. control group consists of kibbutzim that reformed in 2004-2005. the dependent variable is an indicator of whether the student completed BA in the areas of study indicated by the outcome. The simple difference-in-differences regressions includes only cohort dummies. The controlled difference-in-differences regressions includes cohort dummies, kibbutz fixed effect and the following students demographic controls: gender, number of siblings, a set of ethnic dummies (origin from Africa/Asia, Europe/America, immigrants from FSU, Ethiopia, Israel and other countries). Standard errors clustered by Kibbutz are presented in parentheses. ***, **, * indicate significance at the 1%, 5%, and 10% levels respectively..

Table A6: Pre and Post Cross Section Regressions and Difference-in-Differences Estimates of Effect of Pay Reform on BA Degree Attainment by Expected Wages and Gender

| | BA Degree by Expected Wages | | | | | | | | |
| | Field of Studies With Expected Wages Above Median | | | Field of Studies With Expected Wages Above 3rd Quartile | | | Expected Wages | | |
	All (1)	Male (2)	Female (3)	All (4)	Male (5)	Female (6)	All (7)	Male (8)	Female (9)
Experiment of interest of Individuals' Aged 23-28 in 1995-1996 and 2001-2002									
Cross Section Pre-Reform	-0.002	0.000	-0.005	-0.003	0.002	-0.008	-63.050	9.403	-144.200
	(0.008)	(0.012)	(0.011)	(0.006)	(0.008)	(0.008)	(133.100)	(186.700)	(187.800)
Cross Section Post-Reform	0.017**	0.032***	-0.000	0.023***	0.033***	0.011	519.600***	772.500***	209.800
	(0.008)	(0.012)	(0.011)	(0.006)	(0.008)	(0.008)	(131.500)	(185.000)	(184.700)
Simple Difference-in-Differences	0.019*	0.031*	0.005	0.025***	0.031***	0.019*	582.700***	763.100***	354.000
	(0.012)	(0.016)	(0.016)	(0.008)	(0.012)	(0.011)	(187.100)	(262.900)	(263.500)
Controlled Difference-in-Differences	0.017	0.028*	0.007	0.024***	0.028**	0.023**	539.700***	701.500***	418.500
	(0.012)	(0.017)	(0.016)	(0.008)	(0.012)	(0.012)	(189.300)	(267.400)	(268.500)
Observations	4165	2299	1866	4165	2299	1866	4165	2299	1866

Notes: This table presents the estimated coefficients of interest of difference-in-differences regressions, comparing cohorts of Individuals' aged 23-28 in pre/post reform period (See Figure 1). Treatment group consists of kibbutzim that reformed in 1998- 1999. control group consists of kibbutzim that reformed in 2004-2005. the dependent variable in columns 1-6 is an indicator of whether the student completed BA in a field of studies with expected wages between the different quartile. In columns 7-9 the dependent variable is continuous and the measurement unit is New Israeli Sheqels per month. The data on the distribution of wages by field of study was provided by the chief economist, Ministry of Finance, Israel. The simple difference-in-differences regressions includes only cohort dummies. The controlled difference-in-differences regressions includes cohort dummies, kibbutz fixed effect and the following students demographic controls: gender, number of siblings, a set of ethnic dummies (origin from Africa/Asia, Europe/America, immigrants from FSU, Ethiopia, Israel and other countries). Standard errors clustered by Kibbutz are presented in parentheses. ***, **, * indicate significance at the 1%, 5%, and 10% levels respectively.

Table A7: Comparison Between Treatment and Control Groups, Individuals'
Characteristics and Pre- and Post-Reform Outcomes, Male

	Pre-Reform Individuals' Aged 23-28 in 1995-1996			Post-Reform Individuals' Aged 23-28 in 2001-2002		
	Treatment (1)	Control (2)	Difference (3)	Treatment (4)	Control (5)	Difference (6)
A. Characteristics						
Number of Siblings	2.831 (1.284)	2.835 (1.391)	-0.004 (0.110)	2.690 (1.233)	2.571 (0.968)	0.119 (0.114)
Ethnic Origin: Africa/Asia	0.172 (0.378)	0.197 (0.398)	-0.024 (0.035)	0.090 (0.287)	0.092 (0.290)	-0.002 (0.023)
Ethnic Origin: Europe/America	0.171 (0.376)	0.167 (0.373)	0.004 (0.042)	0.157 (0.364)	0.129 (0.335)	0.028 (0.029)
Ethnic Origin: Ethiopia	0.000 (0.000)	0.003 (0.059)	-0.003 (0.003)	0.000 (0.000)	0.003 (0.057)	-0.003 (0.003)
Ethnic Origin: FSU Countries	0.034 (0.181)	0.024 (0.154)	0.009 (0.012)	0.011 (0.104)	0.015 (0.121)	-0.004 (0.007)
Ethnic Origin: Israel	0.567 (0.496)	0.537 (0.499)	0.029 (0.065)	0.663 (0.473)	0.663 (0.473)	-0.000 (0.045)
Ethnic Origin: Other	0.057 (0.232)	0.071 (0.258)	-0.014 (0.031)	0.079 (0.270)	0.097 (0.297)	-0.018 (0.028)
F-Statistic			7.337			7.265
P-Value			0.000			0.000
B. BA Degree by Field of Study						
Any Field	0.025 (0.156)	0.030 (0.170)	-0.005 (0.009)	0.117 (0.322)	0.071 (0.257)	0.046** (0.018)
Humanities	0.005 (0.073)	0.010 (0.102)	-0.005 (0.005)	0.011 (0.104)	0.007 (0.081)	0.004 (0.006)
Social Sciences	0.009 (0.094)	0.014 (0.117)	-0.005 (0.006)	0.034 (0.182)	0.036 (0.187)	-0.002 (0.010)
Sciences	0.011 (0.103)	0.005 (0.072)	0.005 (0.005)	0.072 (0.259)	0.028 (0.165)	0.044*** (0.012)
Observations	563	575		555	606	
Kibbutzim	32	29		32	29	

Notes: This table presents means, means-difference and standard deviations (in parentheses) of characteristics and outcomes of Individuals' in treatment kibbutzim (reformed early 1998-1999) and control kibbutzim (reformed late 2004-2005) who are aged 23-28 at the beginning of the follow-up periods: pre-reform, 1995-1996 (untreated) and post-reform, 2001-2002 (treated). Columns 1-3 present pre-reform means of treatment and control group and the difference between them, respectively. Columns 4-6 present post-reform means of treatment and control group and the difference between them, respectively. Standard errors of these differences are clustered at the kibbutz level and are presented in parentheses. All estimated coefficients are based on a regression of the characteristic or outcomes as a dependent variable and the treatment indicator is the explanatory variable. The F-statistics reported at the bottom of panel A test whether the estimated coefficients of all characteristics are jointly zero in a regression where treatment is the dependent variable and all the students characteristics are included jointly as regressors. In panel B, the dependent variable is an indicator of whether the student completed BA degree in the areas of study indicated by the outcome. Difference in means significant at ***1% **5% *10%.

Table A8: Comparison Between Treatment and Control Groups, Individuals'
Characteristics and Pre- and Post-Reform Outcomes, Female

	Pre-Reform Individuals' Aged 23-28 in 1995-1996			Post-Reform Individuals' Aged 23-28 in 2001-2002		
	Treatment (1)	Control (2)	Difference (3)	Treatment (4)	Control (5)	Difference (6)
A. Characteristics						
Number of Siblings	2.784	2.706	0.078	2.628	2.692	-0.065
	(1.391)	(1.177)	(0.103)	(1.162)	(1.057)	(0.113)
Ethnic Origin: Africa/Asia	0.186	0.190	-0.004	0.117	0.113	0.003
	(0.390)	(0.393)	(0.035)	(0.321)	(0.317)	(0.019)
Ethnic Origin: Europe/America	0.170	0.174	-0.004	0.174	0.119	0.055
	(0.376)	(0.379)	(0.042)	(0.380)	(0.325)	(0.035)
Ethnic Origin: Ethiopia	0.000	0.000	0.000	0.000	0.008	-0.008
	(0.000)	(0.000)	(0.000)	(0.000)	(0.090)	(0.008)
Ethnic Origin: FSU Countries	0.028	0.021	0.007	0.018	0.034	-0.017
	(0.164)	(0.143)	(0.010)	(0.132)	(0.182)	(0.011)
Ethnic Origin: Israel	0.552	0.520	0.032	0.643	0.652	-0.009
	(0.498)	(0.500)	(0.068)	(0.480)	(0.477)	(0.042)
Ethnic Origin: Other	0.064	0.095	-0.031	0.048	0.073	-0.024
	(0.246)	(0.294)	(0.032)	(0.215)	(0.260)	(0.016)
F-Statistic			0.408			7.334
P-Value			0.841			0.000
B. BA Degree by Field of Study						
Any Field	0.074	0.085	-0.011	0.170	0.160	0.010
	(0.261)	(0.279)	(0.014)	(0.376)	(0.367)	(0.026)
Humanities	0.023	0.029	-0.006	0.026	0.045	-0.018
	(0.150)	(0.168)	(0.011)	(0.161)	(0.206)	(0.013)
Social Sciences	0.034	0.017	0.018	0.070	0.075	-0.004
	(0.183)	(0.128)	(0.011)	(0.256)	(0.263)	(0.014)
Sciences	0.016	0.039	-0.023**	0.073	0.040	0.032**
	(0.126)	(0.195)	(0.010)	(0.260)	(0.197)	(0.016)
Observations	435	483		454	494	
Kibbutzim	32	29		32	29	

Notes:This table presents means, means-difference and standard deviations (in parentheses) of characteristics and outcomes of Individuals' in treatment kibbutzim (reformed early 1998-1999) and control kibbutzim (reformed late 2004-2005) who are aged 23-28 at the beginning of the follow-up periods: pre-reform, 1995-1996 (untreated) and post-reform, 2001-2002 (treated). Columns 1-3 present pre-reform means of treatment and control group and the difference between them, respectively. Columns 4-6 present post-reform means of treatment and control group and the difference between them, respectively. Standard errors of these differences are clustered at the kibbutz level and are presented in parentheses. All estimated coefficients are based on a regression of the characteristic or outcomes as a dependent variable and the treatment indicator is the explanatory variable. The F-statistics reported at the bottom of panel A test whether the estimated coefficients of all characteristics are jointly zero in a regression where treatment is the dependent variable and all the students characteristics are included jointly as regressors. In panel B, the dependent variable is an indicator of whether the student completed BA degree in the areas of study indicated by the outcome. Difference in means significant at ***1% **5% *10%.

Table A9: Comparison Between Treatment and Control Groups, Individuals'
Characteristics and Pre- and Post-Reform Outcomes. Tel-Aviv as a Control Group

	Pre-Reform Individuals' Aged 22-27 in 1995			Post-Reform Individuals' Aged 22-27 in 2001		
	Treatment (1)	Control (2)	Difference (3)	Treatment (4)	Control (5)	Difference (6)
A. Characteristics						
Male	0.550 (0.498)	0.524 (0.499)	0.026** (0.011)	0.551 (0.498)	0.536 (0.499)	0.016 (0.015)
Number of Siblings	2.754 (1.282)	2.471 (1.684)	0.284*** (0.062)	2.661 (1.179)	2.270 (1.505)	0.391*** (0.083)
Ethnic Origin: Africa/Asia	0.166 (0.372)	0.360 (0.480)	-0.194*** (0.019)	0.098 (0.297)	0.230 (0.421)	-0.132*** (0.010)
Ethnic Origin: Europe/America	0.179 (0.384)	0.151 (0.359)	0.028 (0.033)	0.168 (0.374)	0.117 (0.322)	0.050* (0.027)
Ethnic Origin: Ethiopia	0.000 (0.000)	0.001 (0.032)	-0.001 (0.000)	0.000 (0.000)	0.002 (0.047)	-0.002 (0.000)
Ethnic Origin: FSU Countries	0.030 (0.171)	0.081 (0.273)	-0.051*** (0.008)	0.014 (0.119)	0.115 (0.319)	-0.101*** (0.004)
Ethnic Origin: Israel	0.572 (0.495)	0.391 (0.488)	0.181*** (0.041)	0.655 (0.476)	0.518 (0.500)	0.137*** (0.030)
Ethnic Origin: Other	0.053 (0.225)	0.016 (0.127)	0.037** (0.016)	0.065 (0.247)	0.018 (0.132)	0.047*** (0.014)
F-Statistic			0.154			0.162
P-Value			0.992			0.991
B. BA Degree by Field of Study						
Any Field	0.044 (0.204)	0.110 (0.313)	-0.066*** (0.005)	0.116 (0.320)	0.145 (0.352)	-0.029*** (0.009)
Humanities	0.015 (0.120)	0.025 (0.156)	-0.010*** (0.003)	0.016 (0.127)	0.023 (0.150)	-0.007* (0.004)
Social Sciences	0.020 (0.141)	0.059 (0.236)	-0.039*** (0.004)	0.041 (0.199)	0.076 (0.264)	-0.034*** (0.005)
Sciences	0.009 (0.093)	0.026 (0.159)	-0.017*** (0.003)	0.058 (0.235)	0.046 (0.210)	0.012* (0.007)
Observations	1033	42955		1043	46532	

Notes:This table presents means, means-difference and standard deviations (in parentheses) of characteristics and outcomes of Individuals' in treatment group (kibbutzim reformed early 1998-1999) and control group (Non Kibutzim) who are aged 22-27 at the beginning of the follow-up periods: pre-reform, 1995 (untreated) and post-reform, 2001 (treated). Columns 1-3 present pre-reform means of treatment and control group and the difference between them, respectively. Columns 4-6 present post-reform means of treatment and control group and the difference between them, respectively. Standard errors of these differences are clustered at the kibbutz level and are presented in parentheses. All estimated coefficients are based on a regression of the characteristic or outcomes as a dependent variable and the treatment indicator is the explanatory variable. The F-statistics reported at the bottom of panel A test whether the estimated coefficients of all characteristics are jointly zero in a regression where treatment is the dependent variable and all the students characteristics are included jointly as regressors. In panel B, the dependent variable is an indicator of whether the student completed BA degree in the areas of study indicated by the outcome. Difference in means significant at ***1% **5% *10%.

Table A10: Treatment-Control Differences in Pre-Reform
Time Trends in Academic Outcomes, 1989-1995. Tel-Aviv
as a Control Group

	BA	
	(1)	(2)
A. Linear Trend Model		
Treatment	-0.037***	
	(0.008)	
Time Trend	0.006***	0.006***
	(0.000)	(0.000)
Treatment X Time Trend	-0.003*	-0.003*
	(0.001)	(0.001)
B. Cohort Dummies Model		
Treatment	-0.040***	
	(0.010)	
Treatment X 1990	-0.002	-0.002
	(0.014)	(0.014)
Treatment X 1991	0.005	0.005
	(0.014)	(0.014)
Treatment X 1992	-0.001	-0.000
	(0.014)	(0.014)
Treatment X 1993	-0.022	-0.021
	(0.014)	(0.014)
Treatment X 1994	-0.026*	-0.026*
	(0.014)	(0.014)
Treatment X 1995	-0.024*	-0.024*
	(0.013)	(0.014)
Kibbutz Fixed-Effects	NO	YES
F-statistic	1.892	1.818

*Notes:*This table presents results from OLS regressions where the dependent variable
is an indicator of whether the student completed BA degree and the sample includes
Individuals' aged 22-27 in each year from 1989 to 1995 (pre reform). The treatment
group includes kibbutzim that reformed in 1998-1999, and the control group consists
of Individuals' who lived in Tel-Aviv. The regression in panel B includes cohort
dummies. Standard errors clustered at the kibbutz level are presented in parentheses.
***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table A11: Pre and Post Cross Section Regressions and Difference-in-Differences Estimates of Effect of Pay Reform on BA Degree Attainment, by Field of Study. Tel-Aviv as a Control Group

	Any Field	Humanities	Social Sciences		Sciences				
		Humanities Any Field	Social Sciences Any Field	Economics, Business, Law	Sciences Any Field	Biology, Chemistry, Pre-Health Sciences	Math, Engineering, Physics, Computer Science, Statistics	Computer Science	Engineering
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
A. Experiment of interest of Individuals' Aged 22-27 in 1995 and 2001									
Cross Section Pre-Reform	-0.066***	-0.010**	-0.039***	-0.031***	-0.017***	-0.006**	-0.012**	-0.002	-0.005
	(0.011)	(0.005)	(0.008)	(0.006)	(0.006)	(0.003)	(0.005)	(0.003)	(0.004)
Cross Section Post-Reform	-0.029***	-0.007	-0.034***	-0.033***	0.012**	0.011***	0.002	0.003	0.005
	(0.010)	(0.005)	(0.008)	(0.006)	(0.006)	(0.003)	(0.005)	(0.003)	(0.003)
Simple Difference-in-Differences	0.037**	0.004	0.004	-0.002	0.029***	0.016***	0.013*	0.005	0.009*
	(0.015)	(0.007)	(0.011)	(0.009)	(0.008)	(0.004)	(0.007)	(0.005)	(0.005)
Controlled Difference-in-Differences	0.036**	0.002	0.003	-0.003	0.030***	0.017***	0.013*	0.005	0.009*
	(0.015)	(0.007)	(0.011)	(0.009)	(0.008)	(0.004)	(0.007)	(0.005)	(0.005)
Observations	91563	91563	91563	91563	91563	91563	91563	91563	91563
B. Control Experiment of Individuals' aged 22-27 in 1989 and in 1995									
Simple Difference-in-Differences	-0.025*	-0.003	-0.012	-0.012	-0.010	-0.005	-0.005	0.001	-0.005
	(0.014)	(0.007)	(0.010)	(0.008)	(0.007)	(0.004)	(0.006)	(0.003)	(0.004)
Controlled Difference-in-Differences	-0.020	-0.002	-0.011	-0.011	-0.007	-0.004	-0.003	0.001	-0.004
	(0.014)	(0.007)	(0.010)	(0.008)	(0.007)	(0.004)	(0.006)	(0.003)	(0.005)
Observations	76200	76200	76200	76200	76200	76200	76200	76200	76200

Notes: Panel A presents the estimated coefficients of interest of difference-in-differences regressions, comparing cohorts of Individuals' aged 22-27 in pre/post reform period (See Figure 1). Panel B presents Difference-in-Differences and controlled Difference-in-Differences coefficients of placebo experiment that compare cohorts of Individuals' aged 22-27 in two pre-reform periods. Treatment group consists of kibbutzim that reformed in 1998-1999. control group consists of Individuals' who lived in Tel-Aviv. The dependent variable is an indicator of whether the student completed BA in the areas of study indicated by the outcome. The simple difference-in-differences regressions includes only cohort dummies. The controlled difference-in-differences regressions includes cohort dummies, kibbutz fixed effect and the following students demographic controls: gender, number of siblings, a set of ethnic dummies (origin from Africa/Asia, Europe/America, immigrants from FSU, Ethiopia, Israel and other countries). Standard errors clustered by Kibbutz are presented in parentheses. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table A12: Pre and Post Cross Section Regressions and Difference-in-Differences Estimates of Effect of Pay Reform on BA Degree Attainment by Field of Study, By Gender. Tel-Aviv as a Control Group

	Any Field	Humanities Any Field	Social Sciences Any Field	Economics, Business, Law	Sciences Any Field	Biology, Chemistry, Pre-Health Sciences	Math, Engineering, Physics, Computer Science, Statistics	Computer Science	Engineering
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

BA Degree by Field of Study (spanning header); sub-groups: Humanities, Social Sciences, Sciences.

Experiment of interest of Individuals' Aged 22-27 in 1995 and 2001

A. Male

	Any Field	Humanities Any Field	Social Sciences Any Field	Economics, Business, Law	Sciences Any Field	Biology, Chemistry, Pre-Health Sciences	Math, Engineering, Physics, Computer Science, Statistics	Computer Science	Engineering
Cross Section Pre-Reform	-0.054***	-0.001	-0.037***	-0.032***	-0.016*	-0.002	-0.013*	-0.002	-0.005
	(0.013)	(0.004)	(0.009)	(0.009)	(0.008)	(0.002)	(0.008)	(0.005)	(0.006)
Cross Section Post-Reform	-0.023*	-0.002	-0.030***	-0.027***	0.008	0.004*	0.004	-0.001	0.010*
	(0.013)	(0.004)	(0.009)	(0.008)	(0.008)	(0.002)	(0.008)	(0.005)	(0.005)
Simple Difference-in-Differences	0.031*	-0.001	0.008	0.004	0.024**	0.006**	0.018	0.001	0.015**
	(0.018)	(0.006)	(0.013)	(0.012)	(0.011)	(0.003)	(0.011)	(0.007)	(0.008)
Controlled Difference-in-Differences	0.030*	-0.000	0.007	0.004	0.024**	0.006**	0.017	0.002	0.015*
	(0.018)	(0.006)	(0.014)	(0.012)	(0.012)	(0.003)	(0.011)	(0.007)	(0.008)
Observations	48579	48579	48579	48579	48579	48579	48579	48579	48579

B. Female

	Any Field	Humanities Any Field	Social Sciences Any Field	Economics, Business, Law	Sciences Any Field	Biology, Chemistry, Pre-Health Sciences	Math, Engineering, Physics, Computer Science, Statistics	Computer Science	Engineering
Cross Section Pre-Reform	-0.079***	-0.021**	-0.040***	-0.031***	-0.019**	-0.009*	-0.010	-0.002	-0.004
	(0.017)	(0.009)	(0.013)	(0.010)	(0.009)	(0.005)	(0.007)	(0.004)	(0.004)
Cross Section Post-Reform	-0.034**	-0.012	-0.039***	-0.040***	0.017*	0.019***	-0.003	0.007*	-0.002
	(0.017)	(0.009)	(0.013)	(0.010)	(0.009)	(0.005)	(0.007)	(0.004)	(0.004)
Simple Difference-in-Differences	0.045*	0.009	0.001	-0.009	0.035***	0.028***	0.007	0.009	0.002
	(0.024)	(0.013)	(0.018)	(0.014)	(0.012)	(0.007)	(0.010)	(0.006)	(0.006)
Controlled Difference-in-Differences	0.043*	0.004	0.001	-0.008	0.038***	0.030***	0.008	0.010*	0.000
	(0.024)	(0.013)	(0.019)	(0.014)	(0.012)	(0.008)	(0.010)	(0.006)	(0.006)
Observations	42984	42984	42984	42984	42984	42984	42984	42984	42984

Notes: This table presents the estimated coefficients of interest of difference-in-differences regressions, comparing Individuals' aged 22-27 in pre/post reform period (See Figure 1). Treatment group consists of kibbutzim that reformed in 1998-1999. control group consists of Individuals' who lived in Tel-Aviv. the dependent variable is an indicator of whether the student completed BA in the areas of study indicated by the outcome. The simple difference-in-differences regressions includes only cohort dummies. The controlled difference-in-differences regressions includes cohort dummies, kibbutz fixed effect and the following students demographic controls: gender, number of siblings, a set of ethnic dummies (origin from Africa/Asia, Europe/America, immigrants from FSU, Ethiopia, Israel and other countries). Standard errors clustered by Kibbutz are presented in parentheses. ***, **, * indicate significance at the 1%, 5%, and 10% levels respectively.

Table A13: Pre and Post Cross Section Regressions and Difference-in-Differences Estimates of Effect of Pay Reform on BA Degree Attainment by Expected Wages and Gender. Tel-Aviv as a Control Group

	BA Degree by Expected Wages								
	Field of Studies With Expected Wages Above Median			Field of Studies With Expected Wages Above 3rd Quartile			Expected Wages		
	All (1)	Male (2)	Female (3)	All (4)	Male (5)	Female (6)	All (7)	Male (8)	Female (9)
Experiment of Interest, Individuals' Aged 22-27 in 1995-1996 and 2001-2002									
Cross Section Pre-Reform	-0.040***	-0.043***	-0.037***	-0.007	-0.009	-0.006	-617.700***	-589.600***	-652.000***
	(0.008)	(0.011)	(0.011)	(0.005)	(0.007)	(0.006)	(119.300)	(173.900)	(160.100)
Cross Section Post-Reform	-0.029***	-0.022*	-0.038***	0.003	0.000	0.005	-289.100**	-259.600	-324.700**
	(0.008)	(0.011)	(0.011)	(0.005)	(0.007)	(0.006)	(118.600)	(172.600)	(159.500)
Simple Difference-in-Differences	0.011	0.021	-0.001	0.010	0.009	0.011	328.600*	329.900	327.200
	(0.011)	(0.016)	(0.016)	(0.007)	(0.010)	(0.008)	(168.200)	(245.000)	(226.000)
Controlled Difference-in-Differences	0.010	0.020	0.001	0.010	0.008	0.012	316.400*	312.400	351.500
	(0.011)	(0.016)	(0.016)	(0.007)	(0.010)	(0.008)	(169.700)	(250.000)	(228.800)
Observations	91563	48579	42984	91563	48579	42984	91563	48579	42984

Notes:This table presents the estimated coefficients of interest of difference-in-differences regressions, comparing cohorts of Individuals' aged 22-27 in pre/post reform period (See Figure 1). Treatment group consists of kibbutzim that reformed in 1998, 1999. control group consists of Individuals' who lived in Tel-Aviv. the dependent variable in columns 1-6 is an indicator of whether the student completed BA in a field of studies with expected wages between the different quartile. In columns 7-9 the dependent variable is continuous and the measurement unit is New Israeli Sheqels per month. The data on the distribution of wages by field of study was provided by the chief economist, Ministry of Finance, Israel. The simple difference-in-differences regressions includes only cohort dummies. The controlled difference-in-differences regressions includes cohort dummies, kibbutz fixed effect and the following students demographic controls: gender, number of siblings, a set of ethnic dummies (origin from Africa/Asia, Europe/America, immigrants from FSU, Ethiopia, Israel and other countries). Standard errors clustered by Kibbutz are presented in parentheses. ***, **, * indicate significance at the 1%, 5%, and 10% levels respectively.

Table A14: Placebo Effects on Pre-Determined High School Matriculation Outcomes.
Tel-Aviv as a Control Group

	Full Sample			Male			Female		
	Treatment (1)	Control (2)	Difference (3)	Treatment (4)	Control (5)	Difference (6)	Treatment (7)	Control (8)	Difference (9)
Experiment of Interest, Individuals' Aged 22-27 in 1995-1996 and 2001-2002									
Matriculation Certificate	0.504 (0.500)	0.648 (0.478)	-0.144*** (0.019)	0.469 (0.500)	0.657 (0.475)	-0.188*** (0.024)	0.542 (0.499)	0.638 (0.481)	-0.097*** (0.027)
Matriculation Credit Units	20.184 (8.227)	21.438 (7.192)	-1.253*** (0.291)	19.330 (8.755)	21.743 (7.384)	-2.413*** (0.393)	21.106 (7.522)	21.134 (6.983)	-0.028 (0.387)
Math Number of Credit	2.516 (1.720)	3.084 (1.515)	-0.568*** (0.052)	2.546 (1.783)	3.262 (1.519)	-0.716*** (0.072)	2.483 (1.650)	2.906 (1.491)	-0.422*** (0.073)
English Number of Credit	3.813 (1.453)	4.029 (1.467)	-0.217*** (0.067)	3.747 (1.488)	4.097 (1.417)	-0.349*** (0.066)	3.883 (1.413)	3.962 (1.511)	-0.079 (0.096)
Observation	748	31181		388	15551		360	15630	

Notes: This table presents means, means-difference and standard deviations (in parentheses) of outcomes of Individuals' who are aged 22-27 in 2001. Treatment group includes kibbutzim that reformed in 1998-1999. control group consists of Individuals' who lived in Tel-Aviv. The dependent variable in row I is whether the student received a matriculation certificate; in row II is the number of credit unites of the matriculation certificate; in row III, IV is the number of matriculation units in English and mathematics subjects respectively. The range of units in these subjects is 0-5.

Table A15: Treatment and Control Groups Means, Differences and Controlled Differences, by Eligibility for Matriculation Certificate. Tel-Aviv as a Control Group

	Individuals' With a Matriculation Certificate				Individuals' Without a Matriculation Certificate			
	Treatment Group	Control Group	Treatment-Control Difference	Controlled Difference	Treatment Group	Control Group	Treatment-Control Difference	Controlled Difference
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
A: BA Degree by Field of Study								
BA Any Field	0.236	0.281	-0.045**	-0.033	0.059	0.066	-0.007	-0.007
	(0.425)	(0.449)	(0.021)	(0.023)	(0.237)	(0.248)	(0.013)	(0.013)
Humanities	0.032	0.045	-0.013	-0.012	0.008	0.010	-0.002	-0.003
	(0.176)	(0.207)	(0.009)	(0.008)	(0.090)	(0.099)	(0.004)	(0.004)
Social Sciences	0.072	0.141	-0.069***	-0.063***	0.032	0.043	-0.011	-0.011
	(0.258)	(0.348)	(0.010)	(0.011)	(0.177)	(0.203)	(0.009)	(0.008)
Economics, Business, Law	0.024	0.087	-0.063***	-0.058***	0.013	0.025	-0.012*	-0.013**
	(0.153)	(0.282)	(0.006)	(0.007)	(0.115)	(0.157)	(0.006)	(0.006)
Sciences	0.133	0.095	0.037**	0.041**	0.019	0.013	0.006	0.007
	(0.340)	(0.294)	(0.018)	(0.018)	(0.136)	(0.112)	(0.007)	(0.007)
Biology, Chemistry, Pre-Health Sciences	0.032	0.015	0.017*	0.017*	0.013	0.002	0.011*	0.011*
	(0.176)	(0.123)	(0.009)	(0.009)	(0.115)	(0.047)	(0.006)	(0.006)
Math, Eng, Physics, Computer Science, Statistics	0.101	0.080	0.021	0.024*	0.005	0.011	-0.005	-0.005
	(0.301)	(0.271)	(0.014)	(0.014)	(0.073)	(0.102)	(0.004)	(0.004)
Computer Science	0.050	0.036	0.014	0.016	0.003	0.004	-0.002	-0.001
	(0.219)	(0.186)	(0.010)	(0.010)	(0.052)	(0.065)	(0.003)	(0.003)
Engineering	0.050	0.034	0.017	0.019	0.005	0.005	-0.000	-0.000
	(0.219)	(0.180)	(0.013)	(0.012)	(0.073)	(0.074)	(0.004)	(0.004)
B: BA Degree by Expected Wages								
Above 75'th Percentile (Dummy Indicator)	0.088	0.068	0.020	0.022	0.005	0.009	-0.003	-0.003
	(0.283)	(0.252)	(0.014)	(0.014)	(0.073)	(0.093)	(0.004)	(0.004)
Above 50'th Percentile (Dummy Indicator)	0.125	0.161	-0.036**	-0.028*	0.019	0.035	-0.016**	-0.017**
	(0.331)	(0.368)	(0.015)	(0.015)	(0.136)	(0.185)	(0.007)	(0.007)
Expected wage (In New Israeli Shekels)	9139.175	9409.642	-270.467	-138.132	6940.887	7104.407	-163.520*	-161.359*
	(5860.354)	(5751.018)	(287.581)	(293.216)	(2045.333)	(2630.392)	(92.223)	(92.515)
Observations	377	20197			371	10984		

Notes: This table presents means, means-difference and standard deviations (in parentheses) of outcomes of Individuals' who are aged 22-27 in 2001. Treatment group includes kibbutzim that reformed in 1998-1999. control group consists of Individuals' who lived in Tel-Aviv. In Panel A the dependent variable is an indicator of whether the student completed BA in the areas of study indicated by the outcome. In Panel B the dependent variable is an indicator of whether the student completed BA in a field of studies with expected wages between the different quartile. The outcome Expected Wages is continuous and the measurement unit is New Israeli Sheqels per month. 1 US dollar is currently equal to approximately 3.7 shekels. The estimated coefficients in rows 3,4,7,8 are based on a regression of the outcome as a dependent variable and the treatment indicator is the explanatory variable. The simple difference regressions includes only cohort dummies. The controlled difference regressions includes cohort dummies, kibbutz fixed effect and the following student's demographic controls: gender, number of siblings, a set of ethnic dummies (origin from Africa/Asia, Europe/America, immigrants from FSU, Ethiopia, Israel and other countries). Difference in means significant at ***1% **5% *10%.

Table A16: Treatment and Control Groups Means, Differences and Controlled Differences, by Level of Math Matriculation Study Program. Tel-Aviv as a Control Group

	Advance				Basic and Intermediate			
	Treatment Group	Control Group	Treatment-Control Difference	Controlled Difference	Treatment Group	Control Group	Treatment-Control Difference	Controlled Difference
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
A: BA Degree by Field of Study								
Any Field	0.384 (0.489)	0.396 (0.489)	-0.012 (0.035)	0.000 (0.038)	0.118 (0.323)	0.167 (0.373)	-0.049*** (0.015)	-0.042*** (0.015)
Humanities	0.035 (0.185)	0.024 (0.152)	0.011 (0.020)	0.013 (0.020)	0.018 (0.134)	0.034 (0.182)	-0.016*** (0.005)	-0.015*** (0.005)
Social Sciences	0.081 (0.275)	0.144 (0.351)	-0.063** (0.024)	-0.058** (0.025)	0.048 (0.215)	0.099 (0.298)	-0.050*** (0.007)	-0.046*** (0.008)
Economics, Business, Law	0.047 (0.212)	0.114 (0.317)	-0.067*** (0.021)	-0.066*** (0.021)	0.015 (0.122)	0.056 (0.229)	-0.041*** (0.005)	-0.038*** (0.005)
Sciences	0.267 (0.445)	0.228 (0.419)	0.040 (0.036)	0.046 (0.037)	0.051 (0.221)	0.034 (0.181)	0.017* (0.009)	0.019* (0.010)
Biology, Chemistry, Pre-Health Sciences	0.023 (0.152)	0.017 (0.128)	0.007 (0.015)	0.006 (0.014)	0.023 (0.149)	0.009 (0.097)	0.013* (0.007)	0.014** (0.007)
Math, Eng, Physics, Computer Science, Statistics	0.244 (0.432)	0.211 (0.408)	0.034 (0.037)	0.040 (0.037)	0.029 (0.167)	0.025 (0.155)	0.004 (0.007)	0.004 (0.007)
Computer Science	0.116 (0.322)	0.094 (0.292)	0.022 (0.032)	0.027 (0.032)	0.015 (0.122)	0.011 (0.104)	0.004 (0.005)	0.004 (0.005)
Engineering	0.105 (0.308)	0.090 (0.286)	0.015 (0.036)	0.015 (0.035)	0.018 (0.134)	0.010 (0.102)	0.008 (0.005)	0.008 (0.005)
B: BA Degree by Expected Wages								
Above 75'th Percentile (Dummy Indicator)	0.221 (0.417)	0.183 (0.386)	0.038 (0.038)	0.041 (0.038)	0.024 (0.154)	0.020 (0.140)	0.004 (0.007)	0.004 (0.007)
Above 50'th Percentile (Dummy Indicator)	0.291 (0.457)	0.309 (0.462)	-0.018 (0.040)	-0.014 (0.041)	0.044 (0.205)	0.078 (0.269)	-0.035*** (0.009)	-0.032*** (0.009)
Expected wage (In New Israeli Shekels)	11997.431 (8063.540)	11977.969 (7927.074)	19.461 (669.296)	144.138 (679.301)	7535.890 (3548.436)	7923.231 (3847.326)	-387.341** (162.332)	-340.351** (165.330)
Observations	86	5190			662	25979		

Notes: This table presents means, means-difference and standard deviations (in parentheses) of outcomes of Individuals' who are aged 22-27 in 2001. Treatment group includes kibbutzim that reformed in 1998-1999. control group consists of Individuals' who lived in Tel-Aviv. In Panel A the dependent variable is an indicator of whether the student completed BA in the areas of study indicated by the outcome. In Panel B the dependent variable is an indicator of whether the student completed BA in a field of studies with expected wages between the different quartile. The outcome Expected Wages is continuous and the measurement unit is New Israeli Sheqels per month. 1 US dollar is currently equal to approximately 3.7 shekels. The estimated coefficients in rows 3,4,7,8 are based on a regression of the outcome as a dependent variable and the treatment indicator is the explanatory variable. The simple difference regressions includes only cohort dummies. The controlled difference regressions includes cohort dummies, kibbutz fixed effect and the following student's demographic controls: gender, number of siblings, a set of ethnic dummies (origin from Africa/Asia, Europe/America, immigrants from FSU, Ethiopia, Israel and other countries). Difference in means significant at ***1% **5% *10%.