# SOCIAL ANIMAL HOUSE:

# THE ECONOMIC AND ACADEMIC CONSEQUENCES

# OF FRATERNITY MEMBERSHIP[1]

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**Abstract**: We exploit changes in the residential and social environment on campus to identify the economic and academic consequences of fraternity membership at a small Northeastern college. Our estimates suggest that these consequences are large, with fraternity membership lowering student GPA by 0.2 to 0.4 points on the traditional four-point scale, but raising future income by 35% to 50%, for those students whose decision about membership is affected by changes in the environment. These results suggest that fraternity membership produces large gains in social capital, which more than outweigh its negative effects on human capital for potential members. Alcohol-related behavior does not explain much of the effects of fraternity membership on either the human capital or social capital effects. These findings suggest that college administrators face significant trade-offs when crafting policies related to Greek life on campus.

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## I. INTRODUCTION

For a certain generation of American, the image of fraternities is indelibly linked to *National Lampoon's Animal House* (1978), a fictionalized account of a group of hedonistic fraternity brothers at a US college.[3] Interestingly, the movie ends by revealing that the students in question have gone on to become, *inter alia*, a doctor, a lawyer, and a US senator. While these "where are they now" snippets are clearly intended as satire, they raise important questions about the long run economic consequences of fraternity membership. Do the members of actual fraternities prosper relative to non-members, and if so, do they prosper because, or in spite of, their participation in Greek life?

The existing literature provides incomplete and at times contradictory evidence on this question. To begin with, while several papers investigate the economic consequences of fraternity membership, they focus on its impact on a graduate's initial employment opportunities. For example, Routon and Walker (2014) report that fraternity membership increases the probability of a recent graduate obtaining a job, and Marmaros and Sacredote (2002) find that fraternity membership is positively associated with networking and with finding a high paying job directly out of college.[4] It is unclear, however, to what degree these initial placements are correlated with long run equilibrium outcomes. It may be that the economic benefits of fraternity membership diminish over time, as the labor market sorts out under qualified fraternity member and correctly identifies and rewards talented non-members.

[3] The portrayal of fraternity life in the movie draws on the college experiences of its writers at Dartmouth College, Washington University, and McMaster University.

[4] Popov and Bernhardt (2012) provide a theoretical treatment of student rush and fraternity member selection in which membership signals student quality to potential employers.

Second, any advantage fraternity membership conveys with respect to developing social capital and connections may be partly or fully offset by its deleterious effect on human capital formation. Both Grubb (2006) and Routon and Walker (2014) find that fraternity membership is associated with significantly lower college grades. In addition, a substantial literature links fraternity membership to increased drinking and increased binge drinking (Alva, 1998; Cashin et al., 1998; Chaloupka and Wechsler, 1996; DeSimone, 2007, 2009), which provides a plausible channel through which membership may affect academic performance. As a result, any attempt to estimate the long run consequences of fraternity membership should account for its influence on both human and social capital.

In this paper, we present evidence on the impact of fraternity and sorority membership on the academic and economic performance of the alumni of one Northeastern college. Our results are based on an alumni survey administered in the fall of 2009, with detailed questions on income, employment, collegiate social activities, academic performance, and personal characteristics. After restricting the data to men who are currently employed full-time, the data include more than 1600 observations for alumni with graduation dates that span over 40 years.

The structure of our survey allows us to address two key issues that have not been considered in the literature. First, we are able to investigate the impact of fraternity membership on an individual's future income.[5] The use of income has a number of advantages. First, income is a more finely grained measure of the economic return to fraternity membership than employment status, and second, the longer time horizon may provide a better estimate of the equilibrium impact of fraternity membership. Finally, as income levels likely reflect the impact

[5] While it is perhaps most natural to think of fraternity membership affecting labor market outcomes, recent work suggests social capital also affects entrepreneurship and investment income, e.g. Guiso et al. (2004).

of both human and social capital, their use provides a more comprehensive measure of the economic impact of fraternity membership.

A second advantage of the long time period covered by our dataset is that it allows us to employ a unique strategy for identifying the *causal effects* of fraternity membership. Identifying the effect is fraternity membership is a challenge due to selection bias. As DeSimone (2009, p. 338) notes, there is concern that "students choose to join fraternities in part because of preexisting preferences toward behaviors that membership facilitates." Thus, it is difficult to tell whether fraternity membership decreases grades and increases drinking and social networking, or whether low achieving, hard drinking, and highly social students select into fraternities. The available evidence suggests causation likely runs in both directions. For example, Sacerdote (2001) finds that high school drinking behavior predicts fraternity membership.

The existing literature employs a number of strategies to isolate the causal effect of fraternity membership on individual behavior and outcomes. A number of papers address causation by controlling for a large number of potential covariates. For example, to identify the causal effect of fraternity membership on binge drinking, DeSimone (2007) controls for situational and total alcohol use. A downside of this approach is that it may result in over controlling and thus underestimate the impact of fraternity membership. For example, after controlling for a large number of potential covariates, Grubb (2006) reports that fraternity membership lowers grades by 2.2%, an estimated effect that may seem small relative to the priors of many casual observers and may be too small to justify dramatic interventions. Similarly, Routon and Walker (214) use a propensity score matching approach, which does not control for the influence of unobserved individual characteristics that are related to the propensities to study, drink or socialize. Finally, DeSimone (2009) controls for drinking

behavior three years after graduation, but it's unclear how this approach might be extended to address other areas of interest, such as grades or economic outcomes.

In this paper, we identify the causal effect of fraternity membership on college grades and future income levels by exploiting time variation in the college's social and residential environment. We use different combinations of instruments including the presence of theme houses and non-Greek social houses, the number of Greek houses on campus, and the presence of female students on campus, all of which may affect students' choices about whether to join a Greek organization. Using these variables as instruments, we are able to identify shifts in the probability of fraternity membership that are plausibly exogenous and, thereby, to estimate the impact of fraternity membership on an individual's academic and economic performance.

An additional advantage of using these particular instruments is that they are clearly choice variables from the perspective of the college administration. Thus, our results provide an estimate of the impact of several dimensions of college policy toward Greek life on fraternity membership, student grades, and expected future income levels. Although the precise magnitude of these effects is likely to be particular to the college used in the study, which has a strong Greek culture of very long standing, it is reasonable to expect the qualitative effects of these policies to be similar at similar institutions.

We find that the academic and economic consequences of fraternity membership are quite large. Fraternity membership reduces a student's GPA by 0.2 to 0.4 points on a four-point scale. Moreover, controlling for alcohol-related behavior only slightly reduces this effect, suggesting that college policies designed to reduce alcohol use at fraternities will have only limited academic benefits. We also find that, in spite of the strong negative effect on human capital accumulation, fraternity membership increases expected future income by 35% to 50%.

This suggests that the negative effect of fraternity membership on human capital accumulation is more than offset by its positive impact on social capital formation. For this reason, joining a fraternity may be a rational decision that improves the long-term prospects of an individual student despite its damaging effects on a student's grades. These estimates also indicate that college administrators face an important trade-off when they consider policies designed to limit fraternity life on campus: while this may be expected to significantly raise academic performance, these gains may come at a significant cost in terms of expected future income for their graduates.

## II. DATA

Our data are taken from a survey administered in 2009 to alumni of one Northeastern liberal arts college. 3,762 alumni responded to the survey, a response rate of 25.8%. The survey asked respondents for information about their demographic characteristics, college activities, academic achievement, and current work status and income. In the analysis below, we limit the sample to men under the age of 65 who are employed fulltime and for whom all of the control variables are present, resulting in 1,632 observations.[6] Measures of the institution-specific variables are taken from college records. Descriptive statistics for all of the variables used in the analysis are found in Table 1.

We use two outcome variables. *GPA* is a respondent's self-reported grade point average on a four-point scale. It is our main measure of collegiate human capital formation. For current

[6] We have also examined the effects of sorority membership on grades and income, but the female student sample is smaller than the male student sample, as the college did not admit female students until 1974. We found little significant effect of sorority membership on academic or economic outcomes, so we restrict attention here to fraternity membership.

income, we ask respondents to identify the range within which their average annual income for the last three years falls. We convert income ranges to dollar figures, and then take the natural log of these numbers to produce the variable *Log(income*). We also ask if the respondent is currently employed full time, part time, or not employed. In the regressions below we limit the sample to full-time workers, and our results should be interpreted as being conditional on selecting full-time work.[7] Our treatment variable, *Greekmem,* is an indicator variable which is 1 if the respondent was a member of a fraternity and 0 if not.

We also use a number of demographic variables that may affect a student's choice of college activities, academic achievement, or post-college income. These include *Age, Age Squared, Gender,* and a set of indicator variables for the respondent's race and ethnicity, including *African-American, Asian, Hispanic* and *Other race.* The reference race-ethnicity category is non-Hispanic White. These variables are used to control for systematic difference across student populations in labor market and academic outcomes and in opportunities for collegiate social capital accumulation that might otherwise provide alternative causal channels between fraternity membership and the two outcome variables. For example, there could be a positive correlation between fraternity membership and income if minority students face discrimination in both the Greek system and in labor markets; controlling for race prevents this effect from biasing our estimates. The variables *Age* and *Age Squared* control for a quadratic relationship in the evolution of the college academic and social environment, such as grade inflation and social norms related to Greek life. We also include the variable *Unemp*, the unemployment rate at the time of the student's graduation. This variable may affect choice of

[7] This could cause problems for our estimation strategy if Greeks were more likely to be full time workers than non-Greeks, or vice-versa. However, that is not the case in the data. The full-time employment rate overall is 82.002%. For Greeks it is 81.646%, and for non-Greeks it is 82.068%; the difference of the means for the two groups is not statistically significant, with a t-statistic of 0.25.

activities if a student anticipates an easier or more difficult job market on graduation; for example, during a recession, students may select majors that offer better chances of employment. It can also control for the possibility that job market conditions at the start of a student's career might affect the career trajectory of the student, e.g. Oreopoulos et al. (2012).

In addition, we include three student characteristics that may affect aptitude for or interest in different college activities. The variable *SAT* is a respondent's self-reported score on the Scholastic Aptitude Test. We interpret this variable as a control for a variety of individual characteristics that might reasonably be expected to affect a student's academic performance in college, e.g. intellectual ability, work effort, and socio-economic background. The variable *Parents College* is the number of a respondent's parents who graduated from college. It is included as a rough measure of socioeconomic background. The variable *Appearance* corresponds to a respondent's self-assessment of their physical attractiveness during their college years. We include this variable on the theory that physical attractiveness may influence student opportunities for social capital accumulation (Glaser et al., 2000) or labor market outcomes (Hamermesh and Biddle, 1994). These variables are plausibly unaffected by a student's decision to join a fraternity.

We also ask two questions about drinking habits. *Drinking nights* is the self-reported number of nights per week the respondent drank in college. *Drinking intensity* is the respondent's subjective measure of drinking intensity on a five-point scale, with categories ranging from *Didn't Drink* to *Very Heavy*. We convert this to an indicator variable, *Binge*, which is 1 if the respondent gave an answer of 4 or 5, which correspond to *Heavy* and *Very Heavy* drinking, to this question, and 0 if the respondent answered 1, 2, or 3.[8] Although these variables

[8] We have also estimated regressions using the original 1-5 responses; they are substantially the same as those reported here, and are available from the authors on request.

are likely to be affected by fraternity membership, and hence are not exogenous, we use them in some specifications to control the part played by alcohol use in the Greek system's effects on human and social capital formation. By using both dimensions of drinking behavior, our analysis permits frequent and intense drinking to affect human and social capital accumulation differently.

Finally, we collect several variables that describe important aspects of student residential options and the social environment of the college. *Fraternities* is the number of housed fraternities that exist at the college (almost all fraternities at the college are housed, and the few that are not have limited social function). *Sororities* is the number of sororities that exist at the college. *Minervas* is the number of Minerva houses at the college, which are student houses created in 2004 to provide a social alternative to Greek life. All students are members of one of the houses (though only some of them actually live in the house) and the houses have substantial budgets for programs and activities designed to create a social alternative to the Greek system. *Themes* is a dummy variable for the presence of theme houses on campus, another alternative to the Greek system that was created in 1985.[9] Last, *Coed* is a dummy variable for the presence of women in the student body; the college was all-male prior to 1970.[10] The bivariate correlations of these five variables with *Greekmem* is shown in Table 2A.

Figure 1 illustrates the evolution of some of these instruments over time. The number of fraternities falls gradually from the mid-1960s through the mid-1970s, losing nearly 20% from its value, and then rises again to a peak of eighteen in the late 1980s before falling sharply beginning in the late 1990s. The first sororities on campus were formed in 1978 shortly after the

[9] We do not yet have data on the number of theme houses, but will use that variable when we gain access to it.
[10] We have also used the share of the student body that is female, which produces results very similar to those reported here, since it is 0 until the college goes coed, and after a few years is consistently close to 0.50.

college admitted female students. Thereafter, the number of sororities gradually rises though the late 1980s and is relatively constant thereafter. The Minerva system was created with seven houses, and the number has not changed since that time. Hence, this variable takes only two values, and is equivalent to an indicator variable for the existence of the Minerva system. However, we include it as the number of houses so that the value of its parameter will be comparable to the value of the parameters of the *Fraternities* and *Sororities* variables.[11]

## III. METHODOLOGY

In this section of the paper, we describe the methodology used to identify the causal effect of fraternity membership on academic achievement and future income. The basic regressions we estimate are

$$GPA_{it} = \beta_0 + \beta_1 * Greekmem_i + \beta_j * X_{ji} + \varepsilon_i \quad (1)$$

$$\log(Income_{it}) = \gamma_0 + \gamma_1 * Greekmem_i + \gamma_j * X_{ji} + \varepsilon_i \quad (2)$$

where i indexes individuals, t indexes graduation years, $X_{ij}$ is a vector of individual level characteristics affecting grades and income. Fraternity membership is likely to be correlated with unobserved factors that influence a student's GPA and income, because students choosing how hard to study are also choosing whether to join a fraternity, and both of these may be correlated with the student's post-college income. As a result, least squares estimates of equations (1) and

[11] A future version of this figure will show the number of theme houses as well; in the meantime, as an indicator variable it would be a step function with a value of 0 before 1985 and 1 thereafter.

(2) will not correctly identify the casual effect that Greek life has on grades and income. They may be biased by self-selection of students with particular unobserved characteristics into the fraternity system.

To consistently estimate the causal effect of fraternities, we need instrumental variables which are plausibly randomly assigned to students, and hence are not correlated with the error terms of equations (1) and (2), but significantly affect decisions about joining a fraternity, and do not affect grades and post-college income except through the student's decision to join a fraternity. We use several different combinations of instruments, all of which are related to the residential and social choices available to students at the College. When those policies make living in a fraternity more attractive, then students are more likely to choose to do so; if there are better options for non-fraternity living, students are more likely to select those and thus less likely to join a fraternity. In addition to providing a plausible strategy for identifying the causal effect of fraternities on academic and economic outcomes, many of these variables may be considered policy instruments by college administrators. Thus, they shed light on how changes in college policies affect fraternity membership, and through membership, academic achievement and post-college income of alumni.

Because our instruments are measures of the College's residential and social environment, not of the characteristics of the students or the academic program, they are identical for all students in a given class at the college, but vary over time as the college varies the housing options it offers. Changes in these variables over time provide variation in student housing options that change the propensity of students to join fraternities and allow us to identify the effect of fraternity life on grades and post-college income. Since our identification strategy relies on comparison across cohorts, based on variation in the college's residential system, the

changes in the residential system shown in Figure 1 must be uncorrelated with other differences between cohorts.

This assumption may be untrue if there have been changes in the college's grade distribution, or in the job prospects of cohorts over time or across the business cycle. We address this issue in two ways. First, we include a quadratic function of age, which should capture most of the variation in slowly evolving aspects of the labor market and the college's social and academic environment. Second, we include the unemployment rate at the time of graduation to controls for these alternative channels from a student's cohort to his or her income. Given these controls, we are identifying our effects by the shocks that occur when there are discrete changes to the college's residential and social environment. Our identification strategy will be effective as long as these shocks have a significant impact on fraternity membership (we will test for the strength of these instruments) and they are not significantly correlated with idiosyncratic shocks affecting our dependent variables across time.

As noted in the introduction, fraternity membership may influence future outcomes through a number of channels, including drinking behavior and the accumulation of human and social capital. We investigate the importance of these channels by considering specifications that include controls related to student drinking behavior and, in the income equation, academic performance.[12] Since drinking behavior and grades are clearly endogenous, the coefficients on these variables should not be interpreted as representing causal effects. However, these regressions shed light on important policy questions by decomposing the effects of the Greek

[12] We have also run specifications including controls for student major. Since students choose majors at the same time that they choose Greek membership, and the choices are possibly related, we cannot treat student major as an exogenous control, just as we cannot treating drinking behavior as one. However, including it allows us to separate the choice-of-major channel of Greek membership's effects from other channels. The controls for student major are not significant in the results and are not included in this version of the paper.

system into alcohol-related and non-alcohol-related channels. For example, controlling for measures of drinking behavior in equation (1) provides information on the effect of fraternity membership on academic achievement holding student drinking behavior constant. This information might matter for college administrators interested in addressing the impact of fraternities on academic performance by implementing policies related to student alcohol use. Similarly, controlling for grades in equation (2) provides a rough proxy for the relative importance of human and social capital channel on future income.

In order to assure that our results are reasonably robust across a range of different assumptions about college policies and Greek organization membership, we estimate our model using four different sets of instruments.

Instrument Set A: College Housing Policies

We run our first regressions using two instruments; the presence of theme houses[13] and the number of Minerva houses on campus. Both of these policies created new living options on campus that created competition for students with Greek houses (which may in turn have caused the Greek houses to change the living standards they offered, a point to which we will return below.) Our variables only indicate whether these housing options existed during a student's time at the college – they do not depend on whether the student participated in a theme house or a Minerva house. This means that they have no variation within a given class of students. They identify the effect of the Greek system on grades and incomes only with variation across time. As more living options, and more competition between different living options, makes Greek

[13] We will switch this to the number of houses when it becomes available, but since the number hasn't changed very much over time, we don't expect the results to change a great deal.

membership more or less attractive, we can use the changes to identify the effect of Greek membership on grades and post-college incomes.

These variables are plausibly randomly assigned to students as long as these policy changes did not significantly change the academic caliber or employability of the students attending the college. Neither policy was directly linked to the academic program of the college, nor were they intended to affect recruiting of students; both were designed primarily to alter the student living experience. Although the changes in its social and residential options might have affected the ability of the college to recruit strong applicants, these policies were also quite unpopular with alumni and existing Greek students, which might have reduced the college's ability to attract applicants. We believe that these two effects approximately offset one another and that these policies did not significantly alter the quality of the student body. It is therefore appropriate to assume that the *Themes* and *Minervas* variables are uncorrelated with the error terms of equations (1) and (2). We think of these instruments as being the most plausible instruments, but possibly not very powerful because their effect on Greek membership is somewhat indirect. Our other three sets of instruments add additional instruments which may have a more direct effect on students' decisions to join fraternities, but may raise more concerns about the exogeneity and excludability of the variables.

Instrument Set B: College Housing Policies and Coeducation

In our second set of instruments, we also include *Coed,* indicating whether the college is coeducational. It has always been the case that one function of fraternities is to provide opportunities for men and women to meet. In the all-male era of the college's history, fraternities organized a number of events at which male students could meet women from other colleges or

from the local area. Once there were women in the student body, fraternities became a much less important channel for social mingling of the genders, and this may have reduced the interest of students in joining them. We do not include *Coed* in our first set of instruments because of concerns that it might be correlated with the errors of equations (1) and (2). This could happen for two reasons. First, going coeducational may have altered the quality of the student body, and thus students may not be plausibly randomly assigned to the coed/non-coed condition. We do not think this is a major effect, because many single-gender schools were going coed at about the same time as the school that provides our data. In particular, a nearby women's college of comparable academic stature, long known as a sister school of the school we study, went coeducational in 1971, just one year after the school we study did. Thus, although the college gained the ability to recruit female students, it also faced more competition for male students from women's schools that had gone coeducation, and also it had lost the product differentiation of being one of a relatively small number of all-male schools. Including it in this set gives us more estimating power, and also allows us to test, via overidentifying restrictions tests, whether it is a valid instrument.

Instrument Set C: Residential Alternatives

Our third instrument set contains the variables *Fraternities, Sororities,* and *Minervas*, measuring the number of fraternities, sororities, and Minerva houses on campus (and does not use the *Themes* and *Coed* variables, although *Sororities* is necessary zero for the all-male classes). Having more fraternities makes more Greek housing options open to male students, and also allows students a choice among more differentiated set of fraternity brothers, making it more likely to find a social match. In addition, an increase in the number of fraternities may also

reduce the selectivity of the Greek system, as fraternities compete for members. Both of these considerations suggest a positive relationship between the number of fraternities on campus and the likelihood any individual student will select fraternity membership. Although male students cannot live in sororities, interactions between fraternities and sororities provide channels for male and female students to socialize. When there are more sororities, fraternities have more opportunities to offer these connections to their members, making fraternity membership more attractive. The Minerva houses, by contrast, offer additional residential and social options outside the Greek system. Their presence on campus decreases the opportunity cost of fraternity membership and is expected to reduce the probability of fraternity membership.

One concern about these variables is that the number of fraternities and sororities on campus may depend on the quality of students. When a new fraternity opens on a campus, it does so only after the national organization carefully considers the long-term viability of the house. Fraternities may be more likely to open at times when the student body is relatively strong.[14] Also, a weaker student body may be less able to meet college academic expectations, leading houses to close. Thus, we may be concerned that students are not plausibly randomly assigned to a number of fraternities or sororities that are on campus during their four years.

Instrument Set D: Residential Alternatives Plus Themes and Coed

Our fourth set of instruments is the union of our second and third sets. The purpose of this set is to gain the most possible power, though at the expense of greater concerns about instrumental validity and small-sample bias due to a larger number of instruments. This specification also allows us to test the exogeneity of the additional instruments in the second and

[14] We thank Brad Humphreys for a valuable discussion of this point.

third sets under the assumption that at least one of the instruments in the first set is valid. This is important because of concerns over the validity of instruments based on the number of fraternities and sororities on campus.

## IV. RESULTS

Residence Policies as Determinants of Greek Membership – Instrument Set A

Using each of our four sets of instruments, we estimate equations (1) and (2) by two-stage least squares. The first-stage regression is

$$Greekmem_{it} = \delta_0 + \delta_j * X_{ji} + \lambda_k * Z_{ik} + \varepsilon_i \qquad (3)$$

where Z is the set of variables describing residential and social offerings on campus, with k indexing the instruments, and other variables as in equations (1) and (2). Since *Greekmem* is an indicator variable, equation (3) can be interpreted as a linear probability model.

Results of estimating equation (3) using instrument set A – *Themes* and *Minervas* - are shown in column 1 of Table 3A. Both of the instruments are significant at the 1% level. The introduction of Minerva houses decreased fraternity membership as expected, but the introduction of theme houses increased it. This may imply that with the introduction of theme houses, fraternities responded by making their houses more attractive places to live, or perhaps increased recruitment efforts. The effect sizes are fairly large, with the seven Minerva houses reducing the chance of Greek membership by about 18% (2.54*7) and the theme house system increasing it by nearly 30%. The correlations of the instruments with fraternity membership,

shown in Table 2A, are 0.085 for theme houses and -0.095 for number of Minerva houses. The partial $R^2$ for the two instruments together, which is shown in Table 2B, is 0.03324, and the F-statistic for their exclusion from the first stage, which is also the Cragg-Donald statistic for instrument strength and is also shown in table 2B, is 28.49. The latter is well above the critical value for the test for 2SLS size of 10%, which is 19.93 (critical values for relative bias are not available with only two instruments).

Columns 2 through 4 of Table 3A provide results for specifications that include controls for student drinking behavior and grades. These regressions correspond to the first stages of two-stage least squares regressions, presented below, that include those variables as controls. Controlling for these variables in the second stage regression provides valuable information about the channels through which fraternity membership affects academic and economic outcomes. Since drinking behavior and grades are highly likely to be endogenous to fraternity membership, the coefficients on these variables should not be viewed as representing causal effects. The results indicate the fraternity membership is associated with lower grades and with more frequent and heavier drinking. The effects of theme houses and Minervas on fraternity membership are quite similar in magnitude and significance in all four specifications. This suggests that their effects on fraternity membership are not driven primarily by any correlation with alcohol use over time.

Fraternity Membership and Academic Performance – Instrument Set A

We turn next to our main equations of interest, beginning with the effects of fraternity membership on grades. Column 1 of Table 4A shows the result of estimating equation (1) by OLS. The least squares result suggests a negative association between grades and fraternity

membership, with fraternity members having GPAs 0.213 points (on the standard 0-4 scale) below those of non-fraternity members. In addition, college grades are quadratic in age, peaking in 1991, negatively related to Black and Hispanic ethnicity, and positively related to the SAT score, though the effect is fairly small, with an additional 100 points on SATs (1600 scale) producing only a 0.084 increase in GPA.

Column 2 shows results for the 2SLS regression in which we instrument for fraternity membership using variables for the presence of theme houses and the number of Minerva houses (instrument set A). Comparing our results in columns 1 and 2, we find that 2SLS estimates of the effects of fraternities on grades are similar to those of OLS, though not statistically significantly different from zero; fraternity membership reduces grades by 0.183 points on the 0-4 scale. The implication of this finding is that students who join fraternities have unobserved characteristics that are not particularly different from those who do not join. We conduct the Sargan test for the validity of the overidentifying restrictions and find that, conditional on at least one instrument being valid, the restrictions are acceptable with a p-value of 0.583. The pattern of coefficients for the control variables is highly similar across these two specifications.

Column 3 shows results when controlling for drinking behavior. The coefficients on the drinking variables cannot be taken as causal effects, but using these controls allows us to separate the drinking channel of joining a fraternity on grades from other effects. The effect of fraternity membership does drop in size, but only slightly, from -0.183 to -0.167. This implies that the causal effect of joining a fraternity operates only in small part via the effect of joining a fraternity on drinking behavior. Most of the reduction in grades that is caused by joining a fraternity operates through other channels, such as possible negative attitudes towards academic work in the house, or an emphasis on using time to develop social capital through organizing

house activities and building a network of relationships within the house. This implies that attempts by college administrators to improve academic performance in Greek houses should go beyond attempts to reduce alcohol consumption in the house; other factors are substantially more important.

Fraternity Membership and Economic Performance – Instrument Set A

Next we turn to the effects of fraternity membership on post-college incomes. Column 1 of Table 5A shows the result of estimating equation (2) by OLS. It suggests that fraternity members have *exp*(0.183)-1 = 20.1% higher incomes than non-members. Other coefficients take expected signs. Income rises with age at a decreasing rate and is predicted to peak at 52.9 years of age. African-American students have significantly lower incomes, and Asian students have higher incomes, though the latter effect is significant only at the 10% level. Several explanations of these results are possible, including discrimination in labor markets and differences in choice of major and classes. SAT scores have no effect on post-college income, but college appearance does, with a one-point increase in self-reported attractiveness increasing wages by 12.3%.

Column 2 presents results from the 2SLS regression using instrument set A. It indicates that Greek membership increases future income by *exp*(0.397)-1 = 48.7%. This effect is much larger than the OLS estimate, suggesting that OLS estimates of the effect of fraternity membership on grades are biased downwards due to conscious selection of students with high income-earning potential (but not more academic potential) into fraternities. This estimate implies that the formation of social capital that takes place in fraternities is much more than sufficient to overcome the loss of human capital from reduced studying, as reflected in poorer grades. This finding may seem counter-intuitively large, particularly if one believes that

fraternity membership is more attractive to students with lower academic standards, since this regression does not control for (endogenous) grade point averages.

To make sense of this finding, it is important to recall that two-stage least squares estimate measures the local average treatment effect (LATE). That is, it measures the effect of fraternity membership on the academic performance of *marginal* fraternity members, who are sorted into or out of fraternity membership based on changes in the treatment variables. Our findings suggest that fraternity membership matters more for the future incomes of marginal fraternity members, whose membership decisions are influenced by marginal changes in college living options, than it does for individuals whose membership decision is relatively unaffected by such changes. A plausible explanation for this outcome is that fraternity membership has a larger impact on social capital formation for marginal than average members. While fraternity membership may affect the academic performance of marginal and inframarginal members differently, we believe that the impact on marginal fraternity members is the relevant measure for thinking about college policies, since these students are the most likely to be sorted into and out of fraternity membership by changes in the regulation of Greek organizations.

Because the alumni in our survey are at all stages of their careers, the income effects should be understood as being the increase in earnings over the student's lifetime, not just the earnings from the first job. They may be higher than effects of fraternity membership on salary in the student's first job if social capital formation through fraternity membership increases the ability of a student to get promotions or salary increases in mid-career, or to shift from lower-paying to higher-paying career tracks in response to changes in the economic environment.[15]

[15] We have tried subsample regressions to see if the effects are different for early career, mid-career, and late career subjects, but we find no substantial differences. The subsample regressions are not very precise and not reported here, but are available from the authors on request.

These estimates could be biased if job market conditions at the time the student takes his first job are important for later earnings, and there is some kind of correlation between Greek membership and those conditions. To eliminate this possibility, Column 3 of table 5A includes the unemployment rate at the time of the student's graduation as a control. It is very small (less than 0.01) and not statistically significantly different from zero.

Columns 4, 5, and 6 of Table 5A show the effects of re-estimating equation (2) including controls for collegiate drinking behavior, for grades, and for both. This allows us to decompose the effects of fraternity membership on income into an alcohol channel, a human capital channel, and all other channels, which we expect primarily to reflect social capital accumulation. The results in column 4 show that controlling for collegiate drinking behavior has little effect on our estimate of the effect of fraternity membership on future income. This implies that the social capital formation that takes place in fraternities is not particularly affected by the amount of drinking a student does. In addition, neither collegiate drinking variable is significantly associated with future income.

In contrast, a student's grade point average does affect their future income, and holding grades constant affects our estimate of the effect of Greek membership on income. Column 5 of table 5A shows that, when grades are held constant (that is, we compare two students with the same GPA, one of whom chose to join a fraternity and one of whom did not), fraternity membership increases future income by $exp(0.450)-1 = 56.8\%$, an effect we attribute to social capital accumulation. Comparing results for columns 2 and 5, we find that the human capital channel accounts for an 8.1% decline in future income, indicating that the social capital channel is considerably more important than the human capital channel for future income. This is why

fraternity members earn higher incomes despite the harmful effects of fraternity membership on their grades.

Column 6 of table 5A includes both the drinking behavior and GPA controls. The estimated effect of fraternity membership in this specification is much the same as the result in column 5, and again suggests that the social capital formation effects of fraternities are not dependent on the amount of drinking that takes place in them. Our results for this specification show frequent drinking is associated with higher future income; this could indicate that frequency (but not intensity) of drinking is associated with higher social capital formation for Greeks and non-Greeks alike. However, it cannot be given a causal interpretation due to the endogeneity of drinking behavior. It may be that students who have more social capital choose to drink more frequently, but the drinking itself has no effect on their post-college incomes.

Results Using Instrument Set B: *Minervas*, *Themes* and *Coed*

The above results are dependent on a particular set of instruments, which may not be particularly powerful. In the rest of this section, we run the same regressions using alternative sets of instruments. The alternative instruments are more closely related to residential and social circumstances that affect student decisions about Greek membership, and hence provide greater estimating power. However, they require somewhat stronger assumptions to satisfy the conditions of being exogenous and excludable. The regressions using these instruments provide a check on whether our results are robust to different identifying assumptions.

We start by using instrument set B, which adds the *Coed* variable to the original two instruments. The first-stage regression using instrument set B is shown in column 1 of table 3B. The *Coed* instrument is significant at the 1% level, and the other two instruments also remain

significant, though *Minervas* is so only at the 5% level. Students are about 20% less likely to join a fraternity in the coeducational era, presumably because they can meet female students in classes instead of at fraternity-organized events. The result is robust to including controls for drinking and grades; fraternity membership is associated, in a non-causal way, with more drinking and lower grades. The correlation of *Coed* with Greek membership is -0.107, which is a little higher than the correlations of *Themes* and *Minervas*. The partial $R^2$ of this set of instruments is 0.04112, and the F-stat for the exclusion of the three instruments from the first stage is 23.67, comfortably above the critical value for the test for 5% relative bias (13.91) and above the critical value of the test for 2SLS size of 10% (22.30).

Estimates of equation (1) using this instrument set are shown in columns 2 and 3 of Table 4B, along with the OLS results in column 1. With this instrument set we find a significant effect of Greek membership on grades, partly because the additional instrument has increased the precision of the estimate (the standard error of the estimate has dropped from 0.135 to 0.121) but also because the point estimate is larger in absolute value; it is now -0.259, somewhat larger than the OLS point estimate of -0.213. This result implies that joining a fraternity lowers a student's grades by 0.259 points, almost a plus/minus. The fact that it is larger (in absolute value) than the OLS estimate implies that students who join fraternities have slightly better unobserved characteristics for earning high grades than students who don't, causing OLS to be biased upwards (towards zero). This may occur because students who are academically more marginal are less likely to choose to join a fraternity which may have a negative impact on their grades. The p-value of the overidentification test is 0.374, suggesting that the addition of the *Coed* variable is acceptable as long as at least one of the other two instruments is valid. The results do

not change when controls for drinking behavior are included; they still show that most of the effects of Greek membership on grades takes place even when drinking is held constant.

Estimates of equation (2) using this instrument set are shown in columns 2 through 6 of Table 5B, along with the OLS results in column 1 for comparison. The results show that joining a Greek organization increases post-college income by 36.2%, which is somewhat smaller than the estimate of 48.7% from the first set of regressions, and somewhat more precisely estimated (standard error of 0.156 vs. 0.176). The other columns show the effect of including controls for unemployment at the time of graduation, to eliminate possible alternative channels, and drinking and grades, to decompose the effect of joining the fraternity into alcohol, academic, and social channels. The main result is generally robust to the inclusion of these controls. Unemployment is not significant. Grade point average is significant and positive, meaning that the negative effect on grades of joining a fraternity hurt post-college income. This causes the estimated effect through other channels to be larger. Drinking behavior is generally not significant except that number of nights drinking has a positive effect on income. All of these results are the same as we got using instrument set A.

Results Using Instrument Set C: *Fraternities*, *Sororities*, and *Minervas*

Next we show results using the number of fraternity, sorority, and Minerva houses on campus, and dropping themes and coed to reduce the risk of small-sample bias from a large number of instruments. We expect the number of fraternities and sororities to be more powerful instruments since they are more directly connected to a student's decision to join a Greek organization (the sororities by the social coordination they do with fraternities) but as noted above, there are reasons to be concerned about their exogeneity.

The first-stage regression using instrument set C is shown in column 1 of table 3C. The number of fraternities and sororities are significant at the 1% level, though the Minerva variable is significant only at the 10% level. More fraternities and more sororities increase the odds that a student will choose to live in a fraternity, and the Minerva house system reduces the odds that a student will do so. All of these are the expected signs. The presence of an additional fraternity on campus increases the likelihood of fraternity membership by around 3.5 percent, while at 7.5% the effect of an additional sorority is roughly twice as large. The raw correlations of the two new instruments with fraternity membership are 0.1983 for number of fraternities and 0.0716 for number of sororities. The partial $R^2$ for the three instruments together is 0.04839, and the F-statistic for their exclusion from the first stage is 28.07, above the critical values for the test for 5% relative bias (13.91) and the test for 2SLS size of 10% (22.30).

Columns 2 through 4 of Table 3C provide results for specifications that include controls for student drinking behavior and grades. Our results again indicate the fraternity membership is associated with lower grades and with more frequent and heavier drinking. The effects of fraternities, sororities, and Minervas on fraternity membership are similar in magnitude and significance in all four specifications. This suggests that their effects on fraternity membership are not driven primarily by their impact on alcohol use.

Columns 2 of Table 4C shows the result of estimating equation (1) by 2SLS using this instrument set, while column 1 shows the OLS estimates. These results suggest that OLS significantly underestimates the negative effects of fraternities on grades. Joining a fraternity causes students to lose 0.423 points to their GPA, an effect that is nearly double the size of the least-squares result. We conduct the Sargan test for the validity of the overidentifying restrictions and find that, conditional on at least one instrument being valid, the restrictions are acceptable

with a p-value of 0.327. This suggests that if the Minervas variable is a valid instrument, then the numbers of fraternities and sororities are as well. As in previous tables, this result is robust to inclusion of controls for drinking, shown in column 3; drinking is associated with lower grades, and this diminishes, though only slightly, the implied effect of fraternities on grades.

Column 2 of Table 5C shows the results of estimating equation (2) by 2SLS using this instrument set; column 1 shows the OLS results. The 2SLS estimates are very similar to those from instrument set B, suggesting that Greek membership increases future income by 37.2%. Columns 3, 4, 5, and 6 show the effects of re-estimating equation (2) including controls for unemployment rate at graduation, collegiate drinking behavior, for grades, and both of the latter. Unemployment again has no significant effect on post-college income, and controlling for drinking has little effect on our estimate of the effect of fraternity membership on future income. Controlling for GPA does increase the estimated effect of membership on income, to 54.5%, because of the negative effects of fraternity membership on academic performance.

Results Using Instrument Set D: *Fraternities, Sororities, Coed, Themes,* and *Minervas*

Finally, we show results using all of the instruments in the first three sets. First stage regressions are in Table 3D. They show that the most powerful instruments are number of sororities and the presence of themes, both significant at the 5% level and almost always at the 1% level. The Minerva system is significant at the 10% level but not the 5% level, and the number of fraternities and the coed variable are not significant at all. The partial $R^2$ for all five instruments in the first stage is 0.05218, and the F-stat for excluding all five instruments from the first stage regression is 18.21. This is just under the 5% critical value for relative bias, which is 18.37, but above the 10% statistic which is 10.83. It is above the 15% size critical value of 15.09

but not the 10% size critical value of 26.87. This suggests that weak instruments are starting to become a problem in this specification.

Despite this possible problem, the estimated effects on grades and income, shown in Tables 4D and 5D, remain similar to those of earlier instrument sets. The effect of Greek membership on grades is -0.368, and is robust to the inclusion of drinking controls. In the income regression, Greek membership causes an income increase of 38.3% when all channels are taken into account, and 53.4% after controlling for the negative effect of lower grades. The controls for unemployment and drinking behavior remain insignificant. The most important finding of these equations are the p-values for the validity of the overidentifying restrictions, which are 0.223 in the grade equation and 0.841 in the income equation. These suggests that, as long as either *Themes* or *Minervas* is a valid instrument, then *Coed, Fraternities*, and *Sororities* are also valid instruments. Although the test is not powerful, the fact that the main results – fraternity membership hurts a student's grades in ways that are mostly not related to alcohol use, but has a positive effect on post-college income through the accumulation of social capital which more than offsets the lost human capital from less studying and lower grades – are robust to different combinations of the instruments gives us some additional confidence in the validity of the findings of the research.

## V. CONCLUSION

This paper identifies the academic and economic consequences of fraternity membership using data from a survey of the alumni of a small Northeastern college that spans over forty years of graduates. We identify the causal effect of fraternity membership by considering changes to the

college's residential and social environment over this timespan. These include changes in the number of fraternities and sororities on campus and the introduction of coeducation, theme houses, and the Minerva houses, a set of non-Greek social houses intended to provide a wider range of social alternatives to students. Consistent with expectations, we find that the probability of fraternity membership increases in the number of fraternities and sororities on campus and decreases with the introduction of coeducation and the Minerva houses. It also increases with the introduction of theme houses.

We find that fraternity membership lowers grades by an amount ranging between 0.18 and 0.42 points on the traditional four-point scale. Controlling for alcohol-related behavior reduces this estimate, but only slightly – by about 0.03 to 0.05 points. This suggests that, despite its visibility, alcohol consumption plays a relatively minor role in the reduced academic achievement of fraternity members. This finding implies limits to the ability of alcohol-related policies to address the academic impact of fraternities. We also find that fraternity membership has a large positive impact on future income levels, increasing it by amounts between 35 and 50 percent. Thus, it appears that the impact of fraternity membership on human capital accumulation is more than offset by its effect on the formation of social capital. Because our data is collected from workers from ages 25 to 65, it incorporates the effect of Greek membership on lifetime earnings, not just on earnings in the first job after college.

In interpreting these results, we stress that two-stage least squares estimates reflect the local average treatment effect. That is, they reflect the effect of fraternity membership on marginal fraternity members, whose membership decision is influenced by changes in residential options at the college, rather than the effects on those students who will join fraternities in any event. This may differ from the average effect of fraternity membership if the marginal and

average members respond to membership differently. In particular, marginal members may be less capable of balancing their academic lives and the demands of fraternity social life. However, the large impact of fraternity membership in future income suggests that marginal members may experience large gains in terms of social capital and relationships. In addition, our estimates pertain to the effects of fraternity membership at a single college with a long history of fraternity life on campus, and may not general to other schools with different histories or social environments. That said, we find no reason to believe that the trade-off between human and social capital accumulation that we identify would be qualitatively different at other institutions.

Taken together, our estimates suggest that academic policy makers face a significant tradeoff when designing policies that affect the prevalence of Greek organizations on campus. Limiting Greek life may increase academic achievement, particularly by reducing fraternity membership, but these academic gains will tend to come at relatively large cost in terms of alumni incomes. Of course, the presence of Greek organizations may also influence campus culture in important ways not considered here. For example, the exclusive nature of Greek organizations may work against creating a culture of inclusion, and fraternities may also contribute to a climate that encourages undesirable sexual behavior and norms. In addition, from a broader social perspective, some of the income gains to fraternity members may represent redistribution to fraternity members from non-members, rather than increased productivity. For this reason, the private gains to fraternity members do not imply that fraternity membership is Pareto improving. Academic administrators may wish to consider these and other factors, together with the effects of fraternities on grades and future incomes of alumni, in determining the appropriate extent of a Greek system on campus.

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**Figure 1: Social Houses by Year of Graduation**

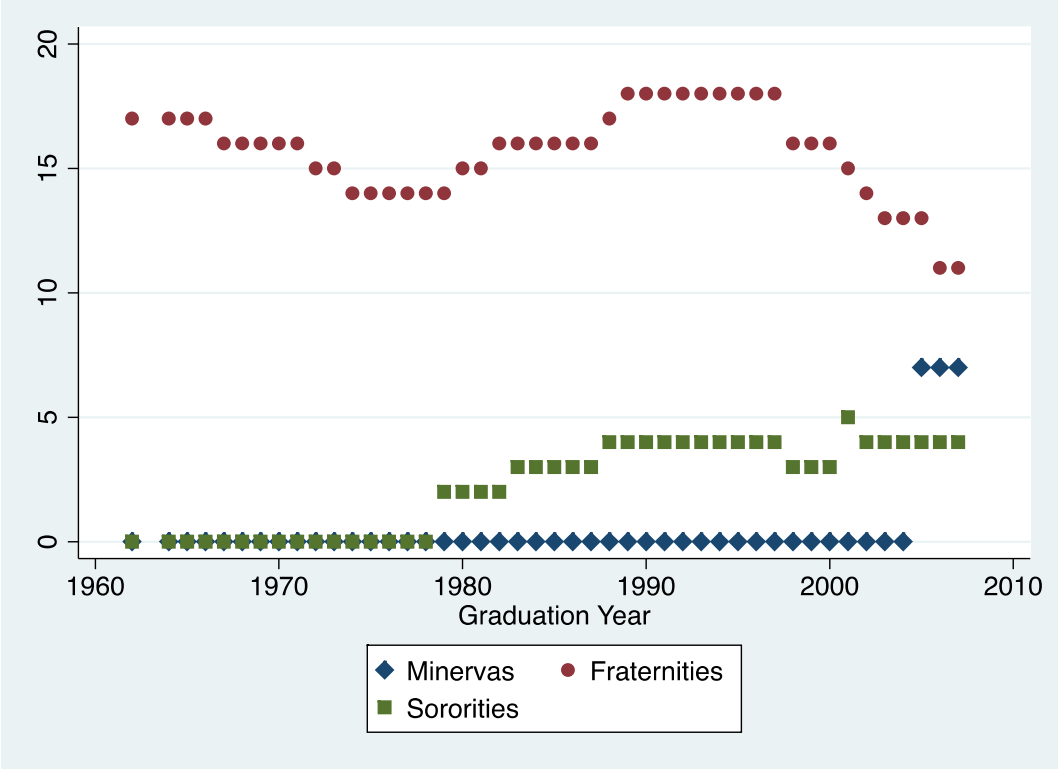

**Table 1: Summary Statistics**

| Variable | Obs. | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| greekmem | 1667 | 0.5752849 | 0.494448 | 0 | 1 |
| GPA | 1667 | 3.15093 | 0.5136236 | 1 | 4 |
| lnincome | 1667 | 11.81566 | 0.7578879 | 10.12663 | 12.76569 |
| age | 1667 | 45.79424 | 11.93199 | 24 | 69 |
| raceblack | 1667 | 0.0143971 | 0.1191569 | 0 | 1 |
| racehisp | 1667 | 0.0077984 | 0.0879902 | 0 | 1 |
| raceasian | 1667 | 0.0071986 | 0.0845638 | 0 | 1 |
| parentscollege | 1632 | 1.199142 | 0.8492355 | 0 | 2 |
| sat00 | 1667 | 12.08278 | 1.317209 | 8 | 15 |
| collegeappearance | 1667 | 3.446911 | 0.7630622 | 0 | 5 |
| binge | 1667 | 0.2681464 | 0.4431272 | 0 | 1 |
| nightsdrinking | 1667 | 2.772046 | 1.614642 | 0 | 7 |
| unemp | 1667 | 6.071911 | 1.465078 | 3.491667 | 9.708333 |
| i_frats | 1667 | 15.38272 | 1.768713 | 11 | 18 |
| i_sorors | 1667 | 2.179964 | 1.736206 | 0 | 5 |
| i_minervas | 1667 | 0.4703059 | 1.75294 | 0 | 7 |

**Table 2A. Raw Correlations of Instruments with Greek Membership**

| | Themes | Minervas | Coed | Fraternities | Sororities |
|---|---|---|---|---|---|
| correlation $\sigma$ | 0.085 | -0.094 | -0.107 | 0.198 | 0.072 |
| T-stat for $\sigma$=0 | 3.482 | -3.861 | -4.371 | 8.257 | 2.929 |
| p-value | 0.001 | 0.000 | 0.000 | 0.000 | 0.003 |

**Table 2B. Weak Instruments Diagnostics**

| Instrument set | A | B | C | D |
|---|---|---|---|---|
| Partial R2 in first stage | 0.03324 | 0.04112 | 0.04839 | 0.05218 |
| F-statistic for exclusion | 28.49 | 23.67 | 28.07 | 18.21 |
| 5% critical value - relative bias | (NA) | 13.91 | 13.91 | 18.37 |
| 10% critical value - 2SLS size | 19.93 | 22.30 | 22.30 | 26.87 |
| Instruments: | *Themes, Minervas* | *Themes, Minervas, Coed* | *Fraternities, Sororities, Minervas* | *Fraternities, Sororities, Minervas, Themes, Coed* |

**Table 3A: Determinants of Fraternity Membership, Instrument Set A**

| VARIABLES | (1)<br>greekmem | (2)<br>greekmem | (3)<br>greekmem | (4)<br>greekmem |
|---|---|---|---|---|
| i_minervas | -0.0254*** | -0.0237*** | -0.0235** | -0.0227** |
| | (-2.708) | (-2.647) | (-2.560) | (-2.562) |
| i_themes | 0.295*** | 0.305*** | 0.287*** | 0.300*** |
| | (6.064) | (6.571) | (6.037) | (6.517) |
| age | -0.00575 | -0.0191* | -5.27e-05 | -0.0143 |
| | (-0.555) | (-1.899) | (-0.00519) | (-1.433) |
| age2 | 0.000183* | 0.000376*** | 0.000109 | 0.000311*** |
| | (1.704) | (3.604) | (1.035) | (2.980) |
| raceblack | -0.166* | -0.0522 | -0.208** | -0.0927 |
| | (-1.665) | (-0.547) | (-2.135) | (-0.979) |
| racehisp | -0.125 | -0.0354 | -0.173 | -0.0787 |
| | (-0.929) | (-0.276) | (-1.317) | (-0.618) |
| raceasian | -0.442*** | -0.294** | -0.428*** | -0.302** |
| | (-3.179) | (-2.206) | (-3.142) | (-2.292) |
| sat00 | -0.0431*** | -0.0399*** | -0.0247*** | -0.0283*** |
| | (-4.576) | (-4.436) | (-2.609) | (-3.099) |
| collegeappearance | 0.0709*** | 0.0525*** | 0.0719*** | 0.0552*** |
| | (4.534) | (3.500) | (4.697) | (3.718) |
| nightsdrinking | | 0.0816*** | | 0.0738*** |
| | | (9.756) | | (8.781) |
| binge | | 0.0856*** | | 0.0643** |
| | | (2.747) | | (2.068) |
| collegegrade2 | | | -0.198*** | -0.130*** |
| | | | (-8.567) | (-5.579) |
| Constant | 0.592** | 0.536* | 0.898*** | 0.754*** |
| | (1.966) | (1.853) | (3.025) | (2.609) |
| Observations | 1,667 | 1,667 | 1,667 | 1,667 |
| R-squared | 0.069 | 0.155 | 0.109 | 0.170 |

T-statistics in parentheses
Asterisks indicate statistical significance: *** p<0.01, ** p<0.05, * p<0.1.

**Table 4A: Fraternity Membership and Grades, Instrument Set A**

| VARIABLES | (1)<br>OLS | (2)<br>IV | (3)<br>IV |
|---|---|---|---|
| greekmem | -0.213*** | -0.183 | -0.167 |
| | (-8.536) | (-1.359) | (-1.290) |
| age | 0.0241*** | 0.0241*** | 0.0311*** |
| | (2.862) | (2.946) | (3.684) |
| age2 | -0.000308*** | -0.000309*** | -0.000424*** |
| | (-3.270) | (-3.363) | (-4.390) |
| raceblack | -0.253*** | -0.248** | -0.324*** |
| | (-3.353) | (-2.391) | (-3.271) |
| racehisp | -0.272** | -0.267* | -0.339** |
| | (-2.360) | (-1.940) | (-2.554) |
| raceasian | -0.0248 | -0.0122 | -0.119 |
| | (-0.142) | (-0.0802) | (-0.840) |
| sat00 | 0.0835*** | 0.0851*** | 0.0824*** |
| | (7.863) | (7.185) | (7.337) |
| collegeappearance | 0.0200 | 0.0179 | 0.0302* |
| | (1.093) | (0.976) | (1.797) |
| binge | | | -0.150*** |
| | | | (-4.303) |
| nightsdrinking | | | -0.0466*** |
| | | | (-3.493) |
| Constant | 1.789*** | 1.760*** | 1.852*** |
| | (6.632) | (6.623) | (7.153) |
| Observations | 1,667 | 1,667 | 1,667 |
| R-squared | 0.106 | 0.105 | 0.153 |
| Overid p-value | | 0.583 | 0.692 |
| First stage F-stat | | 28.49 | 31.99 |

Column 1: Robust t-statistics in parentheses
Colums 2-3: z-statistics in parentheses
Asterisks indicate statistical significance: *** p<0.01, ** p<0.05, * p<0.1.
Estimates from IV regressions treat Greek membership as endogenous. The excluded instruments are Themes and Minervas

**Table 5A: Fraternity Membership and Income, Instrument Set A**

| VARIABLES | (1) OLS | (2) IV | (3) IV | (4) IV | (5) IV | (6) IV |
|---|---|---|---|---|---|---|
| greekmem | 0.183*** | 0.397** | 0.453** | 0.415** | 0.450** | 0.468*** |
| | (5.826) | (2.261) | (2.415) | (2.386) | (2.511) | (2.685) |
| age | 0.179*** | 0.179*** | 0.174*** | 0.175*** | 0.173*** | 0.165*** |
| | (14.51) | (16.80) | (11.99) | (15.43) | (16.38) | (15.00) |
| age2 | -0.00169*** | -0.00170*** | -0.00163*** | -0.00165*** | -0.00161*** | -0.00151*** |
| | (-12.08) | (-14.15) | (-10.13) | (-12.68) | (-13.62) | (-12.06) |
| raceblack | -0.275*** | -0.238* | -0.229* | -0.218 | -0.167 | -0.116 |
| | (-3.178) | (-1.760) | (-1.675) | (-1.638) | (-1.235) | (-0.878) |
| racehisp | -0.114 | -0.0802 | -0.0711 | -0.0720 | -0.00369 | 0.0354 |
| | (-0.611) | (-0.446) | (-0.392) | (-0.403) | (-0.0207) | (0.201) |
| raceasian | 0.249* | 0.338* | 0.364* | 0.361* | 0.341* | 0.399** |
| | (1.951) | (1.706) | (1.804) | (1.891) | (1.754) | (2.123) |
| sat00 | 0.0153 | 0.0266* | 0.0291* | 0.0272* | 0.00225 | 0.00111 |
| | (1.357) | (1.720) | (1.845) | (1.799) | (0.162) | (0.0789) |
| College appearance | 0.116*** | 0.102*** | 0.0972*** | 0.0978*** | 0.0964*** | 0.0882*** |
| | (6.215) | (4.238) | (3.939) | (4.324) | (4.040) | (3.929) |
| binge | | | | -0.0467 | | 0.000600 |
| | | | | (-0.999) | | (0.0134) |
| nightsdrinking | | | | 0.0195 | | 0.0342** |
| | | | | (1.087) | | (2.031) |
| unemprate | | | 0.00922 | | | |
| | | | (0.613) | | | |
| collegegrade2 | | | | | 0.286*** | 0.316*** |
| | | | | | (6.003) | (7.963) |
| Constant | 6.707*** | 6.500*** | 6.521*** | 6.549*** | 5.996*** | 5.963*** |
| | (22.02) | (18.74) | (18.43) | (18.82) | (15.80) | (16.22) |
| Observations | 1,667 | 1,667 | 1,667 | 1,667 | 1,667 | 1,667 |
| R-squared | 0.318 | 0.299 | 0.289 | 0.297 | 0.324 | 0.325 |
| Overid p-value | | 0.863 | 0.846 | 0.843 | 0.957 | 0.915 |
| First stage F-stat | | 28.49 | 25.36 | 31.99 | 27.59 | 31.15 |

Column 1: Robust t-statistics in parentheses
Colums 2-6: z-statistics in parentheses
Asterisks indicate statistical significance: *** p<0.01, ** p<0.05, * p<0.1.
Estimates from IV regressions treat Greek membership as endogenous. The excluded instruments are *Themes* and *Minervas*.

**Table 3B: Determinants of Fraternity Membership, Instrument Set B**

| VARIABLES | (1)<br>greekmem | (2)<br>greekmem | (3)<br>greekmem | (4)<br>greekmem |
|---|---|---|---|---|
| i_themes | 0.228*** | 0.241*** | 0.228*** | 0.240*** |
| | (4.407) | (4.877) | (4.503) | (4.908) |
| i_coed | -0.233*** | -0.224*** | -0.207*** | -0.209*** |
| | (-3.689) | (-3.725) | (-3.338) | (-3.489) |
| i_minervas | -0.0197** | -0.0182** | -0.0185** | -0.0177** |
| | (-2.081) | (-2.016) | (-1.994) | (-1.971) |
| age | 0.0224* | 0.00798 | 0.0248** | 0.0107 |
| | (1.745) | (0.646) | (1.973) | (0.873) |
| age2 | -0.000199 | 9.26e-06 | -0.000228 | -2.89e-05 |
| | (-1.336) | (0.0646) | (-1.566) | (-0.203) |
| raceblack | -0.158 | -0.0446 | -0.200** | -0.0845 |
| | (-1.589) | (-0.470) | (-2.058) | (-0.895) |
| racehisp | -0.121 | -0.0327 | -0.169 | -0.0748 |
| | (-0.908) | (-0.256) | (-1.292) | (-0.590) |
| raceasian | -0.443*** | -0.295** | -0.429*** | -0.303** |
| | (-3.196) | (-2.224) | (-3.159) | (-2.307) |
| sat00 | -0.0400*** | -0.0369*** | -0.0223** | -0.0259*** |
| | (-4.249) | (-4.109) | (-2.359) | (-2.839) |
| collegeappearance | 0.0682*** | 0.0499*** | 0.0695*** | 0.0528*** |
| | (4.374) | (3.340) | (4.549) | (3.561) |
| nightsdrinking | | 0.0816*** | | 0.0741*** |
| | | (9.790) | | (8.835) |
| binge | | 0.0840*** | | 0.0635** |
| | | (2.707) | | (2.049) |
| collegegrade2 | | | -0.194*** | -0.126*** |
| | | | (-8.414) | (-5.422) |
| Constant | 0.360 | 0.313 | 0.686** | 0.541* |
| | (1.173) | (1.065) | (2.265) | (1.836) |
| Observations | 1,667 | 1,667 | 1,667 | 1,667 |
| R-squared | 0.077 | 0.162 | 0.115 | 0.176 |

T-statistics in parentheses
Asterisks indicate statistical significance: *** p<0.01, ** p<0.05, * p<0.1.

**Table 4B: Fraternity Membership and Grades, Instrument Set B**

| VARIABLES | (1) OLS | (2) IV | (3) IV |
|---|---|---|---|
| greekmem | -0.213*** | -0.259** | -0.236** |
| | (-8.536) | (-2.139) | (-2.003) |
| age | 0.0241*** | 0.0240*** | 0.0300*** |
| | (2.862) | (2.931) | (3.562) |
| age2 | -0.000308*** | -0.000306*** | -0.000408*** |
| | (-3.270) | (-3.332) | (-4.244) |
| raceblack | -0.253*** | -0.261** | -0.328*** |
| | (-3.353) | (-2.530) | (-3.305) |
| racehisp | -0.272** | -0.279** | -0.344*** |
| | (-2.360) | (-2.029) | (-2.579) |
| raceasian | -0.0248 | -0.0437 | -0.138 |
| | (-0.142) | (-0.292) | (-0.972) |
| sat00 | 0.0835*** | 0.0811*** | 0.0790*** |
| | (7.863) | (7.091) | (7.216) |
| collegeappearance | 0.0200 | 0.0231 | 0.0337** |
| | (1.093) | (1.291) | (2.023) |
| binge | | | -0.143*** |
| | | | (-4.138) |
| nightsdrinking | | | -0.0411*** |
| | | | (-3.245) |
| Constant | 1.789*** | 1.833*** | 1.917*** |
| | (6.632) | (7.062) | (7.526) |
| Observations | 1,667 | 1,667 | 1,667 |
| R-squared | 0.106 | 0.104 | 0.147 |
| Overid p-value | | 0.374 | 0.415 |
| First stage F-stat | | 23.67 | 26.12 |

Column 1: Robust t-statistics in parentheses
Colums 2-3: z-statistics in parentheses
Asterisks indicate statistical significance: *** p<0.01, ** p<0.05, * p<0.1.
Estimates from IV regressions treat Greek membership as endogenous. The excluded instruments are Themes, Minervas, and Coed

**Table 5B: Fraternity Membership and Income, Instrument Set B**

| VARIABLES | (1) OLS | (2) IV | (3) IV | (4) IV | (5) IV | (6) IV |
|---|---|---|---|---|---|---|
| greekmem | 0.183*** | 0.309** | 0.347** | 0.328** | 0.384** | 0.403** |
| | (5.826) | (1.976) | (2.133) | (2.098) | (2.369) | (2.549) |
| age | 0.179*** | 0.179*** | 0.175*** | 0.174*** | 0.173*** | 0.164*** |
| | (14.51) | (16.94) | (12.34) | (15.55) | (16.52) | (15.10) |
| age2 | -0.00169*** | -0.00169*** | -0.00165*** | -0.00163*** | -0.00161*** | -0.00150*** |
| | (-12.08) | (-14.25) | (-10.43) | (-12.76) | (-13.73) | (-12.13) |
| raceblack | -0.275*** | -0.253* | -0.247* | -0.223* | -0.181 | -0.122 |
| | (-3.178) | (-1.900) | (-1.845) | (-1.699) | (-1.359) | (-0.941) |
| racehisp | -0.114 | -0.0939 | -0.0877 | -0.0777 | -0.0170 | 0.0282 |
| | (-0.611) | (-0.528) | (-0.491) | (-0.440) | (-0.0963) | (0.162) |
| raceasian | 0.249* | 0.301 | 0.319 | 0.337* | 0.315* | 0.381** |
| | (1.951) | (1.556) | (1.631) | (1.796) | (1.650) | (2.056) |
| sat00 | 0.0153 | 0.0220 | 0.0237 | 0.0228 | 5.74e-05 | -0.00131 |
| | (1.357) | (1.484) | (1.588) | (1.574) | (0.00424) | (-0.0959) |
| College appearance | 0.116*** | 0.108*** | 0.105*** | 0.102*** | 0.101*** | 0.0917*** |
| | (6.215) | (4.642) | (4.441) | (4.626) | (4.359) | (4.176) |
| binge | | | | -0.0378 | | 0.00573 |
| | | | | (-0.828) | | (0.130) |
| nightsdrinking | | | | 0.0263 | | 0.0388** |
| | | | | (1.567) | | (2.429) |
| unrate | | | 0.00620 | | | |
| | | | (0.424) | | | |
| collegegrade2 | | | | | 0.273*** | 0.307*** |
| | | | | | (6.069) | (8.043) |
| Constant | 6.707*** | 6.585*** | 6.599*** | 6.631*** | 6.080*** | 6.039*** |
| | (22.02) | (19.61) | (19.23) | (19.64) | (16.66) | (17.01) |
| Observations | 1,667 | 1,667 | 1,667 | 1,667 | 1,667 | 1,667 |
| R-squared | 0.318 | 0.312 | 0.307 | 0.312 | 0.334 | 0.337 |
| Overid p-value | | 0.506 | 0.477 | 0.473 | 0.668 | 0.644 |
| First stage F-stat | | 23.67 | 22.05 | 26.12 | 22.22 | 24.96 |

Column 1: Robust t-statistics in parentheses
Colums 2-6: z-statistics in parentheses
Asterisks indicate statistical significance: *** p<0.01, ** p<0.05, * p<0.1.
Estimates from IV regressions treat Greek membership as endogenous. The excluded instruments are *Themes*, *Minervas*, and *Coed*.

**Table 3C: Determinants of Fraternity Membership, Instrument Set C**

| VARIABLES | (1)<br>greekmem | (2)<br>greekmem | (3)<br>greekmem | (4)<br>greekmem |
|---|---|---|---|---|
| i_frats | 0.0356*** | 0.0339*** | 0.0351*** | 0.0338*** |
| | (3.282) | (3.264) | (3.292) | (3.283) |
| i_sorors | 0.0797*** | 0.0779*** | 0.0677*** | 0.0705*** |
| | (3.578) | (3.659) | (3.088) | (3.332) |
| i_minervas | -0.0187* | -0.0185* | -0.0175* | -0.0178* |
| | (-1.844) | (-1.914) | (-1.758) | (-1.855) |
| age | -0.0411*** | -0.0544*** | -0.0341*** | -0.0491*** |
| | (-4.151) | (-5.619) | (-3.498) | (-5.076) |
| age2 | 0.000572*** | 0.000757*** | 0.000470*** | 0.000677*** |
| | (5.043) | (6.834) | (4.191) | (6.095) |
| raceblack | -0.190* | -0.0802 | -0.230** | -0.117 |
| | (-1.930) | (-0.847) | (-2.368) | (-1.239) |
| racehisp | -0.120 | -0.0342 | -0.169 | -0.0754 |
| | (-0.901) | (-0.268) | (-1.288) | (-0.594) |
| raceasian | -0.456*** | -0.311** | -0.441*** | -0.318** |
| | (-3.303) | (-2.350) | (-3.256) | (-2.421) |
| sat00 | -0.0380*** | -0.0355*** | -0.0213** | -0.0252*** |
| | (-4.027) | (-3.936) | (-2.245) | (-2.751) |
| collegeappearance | 0.0672*** | 0.0491*** | 0.0683*** | 0.0518*** |
| | (4.328) | (3.297) | (4.484) | (3.499) |
| nightsdrinking | | 0.0801*** | | 0.0730*** |
| | | (9.644) | | (8.727) |
| binge | | 0.0812*** | | 0.0624** |
| | | (2.621) | | (2.013) |
| collegegrade2 | | | -0.186*** | -0.118*** |
| | | | (-8.047) | (-5.101) |
| Constant | 0.696** | 0.708*** | 1.022*** | 0.925*** |
| | (2.481) | (2.619) | (3.670) | (3.405) |
| Observations | 1,667 | 1,667 | 1,667 | 1,667 |
| R-squared | 0.084 | 0.165 | 0.118 | 0.178 |

T-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

**Table 4C: Fraternity Membership and Grades, Instrument Set C**

| VARIABLES | (1)<br>OLS | (2)<br>IV | (3)<br>IV |
|---|---|---|---|
| greekmem | -0.213*** | -0.423*** | -0.385*** |
| | (-8.536) | (-3.711) | (-3.333) |
| age | 0.0241*** | 0.0238*** | 0.0277*** |
| | (2.862) | (2.844) | (3.221) |
| age2 | -0.000308*** | -0.000300*** | -0.000374*** |
| | (-3.270) | (-3.202) | (-3.807) |
| raceblack | -0.253*** | -0.290*** | -0.338*** |
| | (-3.353) | (-2.760) | (-3.324) |
| racehisp | -0.272** | -0.305** | -0.354*** |
| | (-2.360) | (-2.173) | (-2.592) |
| raceasian | -0.0248 | -0.112 | -0.178 |
| | (-0.142) | (-0.736) | (-1.228) |
| sat00 | 0.0835*** | 0.0724*** | 0.0716*** |
| | (7.863) | (6.357) | (6.466) |
| collegeappearance | 0.0200 | 0.0343* | 0.0412** |
| | (1.093) | (1.908) | (2.427) |
| binge | | | -0.127*** |
| | | | (-3.631) |
| nightsdrinking | | | -0.0295** |
| | | | (-2.322) |
| Constant | 1.789*** | 1.992*** | 2.058*** |
| | (6.632) | (7.636) | (7.955) |
| Observations | 1,667 | 1,667 | 1,667 |
| R-squared | 0.106 | 0.067 | 0.106 |
| Overid p-value | | 0.327 | 0.295 |
| First stage F-stat | | 28.07 | 28.58 |

Column 1: Robust t-statistics in parentheses
Colums 2-3: z-statistics in parentheses
Asterisks indicate statistical significance: *** p<0.01, ** p<0.05, * p<0.1.
Estimates from IV regressions treat Greek membership as endogenous. The excluded instruments are *Fraternities, Sororities,* and *Minervas*.

**Table 5C: Fraternity Membership and Income, Instrument Set C**

| VARIABLES | (1) OLS | (2) IV | (3) IV | (4) IV | (5) IV | (6) IV |
|---|---|---|---|---|---|---|
| greekmem | 0.183*** | 0.316** | 0.333** | 0.321** | 0.435*** | 0.441*** |
| | (5.826) | (2.186) | (2.202) | (2.144) | (2.796) | (2.840) |
| age | 0.179*** | 0.179*** | 0.176*** | 0.173*** | 0.173*** | 0.165*** |
| | (14.51) | (16.93) | (12.41) | (15.58) | (16.42) | (15.07) |
| age2 | -0.00169*** | -0.00169*** | -0.00165*** | -0.00163*** | -0.00161*** | -0.00151*** |
| | (-12.08) | (-14.25) | (-10.48) | (-12.80) | (-13.65) | (-12.14) |
| raceblack | -0.275*** | -0.252* | -0.250* | -0.224* | -0.170 | -0.118 |
| | (-3.178) | (-1.897) | (-1.871) | (-1.704) | (-1.275) | (-0.906) |
| racehisp | -0.114 | -0.0929 | -0.0899 | -0.0782 | -0.00678 | 0.0323 |
| | (-0.611) | (-0.523) | (-0.505) | (-0.443) | (-0.0382) | (0.185) |
| raceasian | 0.249* | 0.304 | 0.314 | 0.336* | 0.335* | 0.391** |
| | (1.951) | (1.582) | (1.617) | (1.791) | (1.756) | (2.105) |
| sat00 | 0.0153 | 0.0223 | 0.0229 | 0.0225 | 0.00174 | 8.12e-05 |
| | (1.357) | (1.543) | (1.576) | (1.570) | (0.129) | (0.00592) |
| college appearance | 0.116*** | 0.107*** | 0.106*** | 0.103*** | 0.0975*** | 0.0897*** |
| | (6.215) | (4.697) | (4.559) | (4.669) | (4.234) | (4.081) |
| binge | | | | -0.0371 | | 0.00278 |
| | | | | (-0.817) | | (0.0627) |
| nightsdrinking | | | | 0.0269 | | 0.0361** |
| | | | | (1.637) | | (2.280) |
| unrate | | | 0.00581 | | | |
| | | | (0.400) | | | |
| collegegrade2 | | | | | 0.283*** | 0.313*** |
| | | | | | (6.425) | (8.198) |
| Constant | 6.707*** | 6.579*** | 6.609*** | 6.638*** | 6.015*** | 5.995*** |
| | (22.02) | (19.89) | (19.45) | (19.83) | (16.65) | (16.91) |
| Observations | 1,667 | 1,667 | 1,667 | 1,667 | 1,667 | 1,667 |
| R-squared | 0.318 | 0.311 | 0.309 | 0.313 | 0.327 | 0.331 |
| Overid p-value | | 0.978 | 0.950 | 0.976 | 0.987 | 0.980 |
| First stage F-stat | | 28.07 | 25.57 | 28.58 | 24.58 | 26.26 |

Column 1: Robust t-statistics in parentheses
Colums 2-6: z-statistics in parentheses
Asterisks indicate statistical significance: *** p<0.01, ** p<0.05, * p<0.1.
Estimates from IV regressions treat Greek membership as endogenous. The excluded instruments are *Fraternities, Sororities,* and *Minervas*.

**Table 3D: Determinants of Fraternity Membership, Instrument Set D**

| VARIABLES | (1)<br>greekmem | (2)<br>greekmem | (3)<br>greekmem | (4)<br>greekmem |
|---|---|---|---|---|
| i_frats | 0.0146 | 0.00851 | 0.0130 | 0.00819 |
| | (1.051) | (0.642) | (0.952) | (0.623) |
| i_sorors | 0.0781*** | 0.0759*** | 0.0663*** | 0.0688*** |
| | (3.427) | (3.489) | (2.960) | (3.180) |
| i_minervas | -0.0189* | -0.0188* | -0.0177* | -0.0181* |
| | (-1.869) | (-1.949) | (-1.786) | (-1.891) |
| i_themes | 0.148** | 0.178*** | 0.159*** | 0.182*** |
| | (2.445) | (3.073) | (2.672) | (3.169) |
| i_coed | -0.0663 | -0.0808 | -0.0644 | -0.0778 |
| | (-0.867) | (-1.107) | (-0.858) | (-1.075) |
| age | -0.0165 | -0.0250 | -0.00879 | -0.0197 |
| | (-0.976) | (-1.540) | (-0.529) | (-1.222) |
| age2 | 0.000347* | 0.000488** | 0.000242 | 0.000411** |
| | (1.748) | (2.561) | (1.237) | (2.167) |
| raceblack | -0.175* | -0.0598 | -0.213** | -0.0964 |
| | (-1.769) | (-0.632) | (-2.200) | (-1.023) |
| racehisp | -0.110 | -0.0208 | -0.158 | -0.0621 |
| | (-0.823) | (-0.164) | (-1.207) | (-0.491) |
| raceasian | -0.453*** | -0.306** | -0.438*** | -0.313** |
| | (-3.290) | (-2.322) | (-3.241) | (-2.393) |
| sat00 | -0.0380*** | -0.0355*** | -0.0212** | -0.0252*** |
| | (-4.030) | (-3.943) | (-2.237) | (-2.750) |
| collegeappearance | 0.0681*** | 0.0500*** | 0.0694*** | 0.0527*** |
| | (4.389) | (3.362) | (4.556) | (3.570) |
| nightsdrinking | | 0.0815*** | | 0.0743*** |
| | | (9.818) | | (8.898) |
| binge | | 0.0794** | | 0.0604* |
| | | (2.569) | | (1.954) |
| collegegrade2 | | | -0.187*** | -0.119*** |
| | | | (-8.115) | (-5.151) |
| Constant | 0.390 | 0.343 | 0.701** | 0.557* |
| | (1.279) | (1.171) | (2.322) | (1.896) |
| Observations | 1,667 | 1,667 | 1,667 | 1,667 |
| R-squared | 0.088 | 0.171 | 0.123 | 0.184 |

T-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

**Table 4D: Fraternity Membership and Grades, Instrument Set D**

| VARIABLES | (1)<br>OLS | (8)<br>IV | (9)<br>IV |
|---|---|---|---|
| greekmem | -0.213*** | -0.368*** | -0.328*** |
| | (-8.536) | (-3.387) | (-3.041) |
| age | 0.0241*** | 0.0238*** | 0.0286*** |
| | (2.862) | (2.881) | (3.368) |
| age2 | -0.000308*** | -0.000302*** | -0.000387*** |
| | (-3.270) | (-3.254) | (-4.003) |
| raceblack | -0.253*** | -0.280*** | -0.334*** |
| | (-3.353) | (-2.698) | (-3.326) |
| racehisp | -0.272** | -0.296** | -0.350*** |
| | (-2.360) | (-2.134) | (-2.594) |
| raceasian | -0.0248 | -0.0889 | -0.162 |
| | (-0.142) | (-0.594) | (-1.137) |
| sat00 | 0.0835*** | 0.0753*** | 0.0744*** |
| | (7.863) | (6.745) | (6.899) |
| collegeappearance | 0.0200 | 0.0306* | 0.0383** |
| | (1.093) | (1.728) | (2.298) |
| binge | | | -0.133*** |
| | | | (-3.863) |
| nightsdrinking | | | -0.0339*** |
| | | | (-2.783) |
| Constant | 1.789*** | 1.939*** | 2.004*** |
| | (6.632) | (7.554) | (7.911) |
| Observations | 1,667 | 1,667 | 1,667 |
| R-squared | 0.106 | 0.085 | 0.126 |
| Overid p-value | | 0.223 | 0.282 |
| First stage F-stat | | 18.21 | 19.33 |

Column 1: Robust t-statistics in parentheses
Colums 2-3: z-statistics in parentheses
Asterisks indicate statistical significance: *** p<0.01, ** p<0.05, * p<0.1.
Estimates from IV regressions treat Greek membership as endogenous. The excluded instruments are *Fraternities, Sororities, Coed, Minervas,* and *Themes*.

**Table 5D: Fraternity Membership and Income, Instrument Set D**

| VARIABLES | (1) OLS | (2) IV | (3) IV | (4) IV | (5) IV | (6) IV |
|---|---|---|---|---|---|---|
| greekmem | 0.183*** | 0.324** | 0.350** | 0.336** | 0.428*** | 0.439*** |
| | (5.826) | (2.330) | (2.416) | (2.377) | (2.894) | (3.021) |
| age | 0.179*** | 0.179*** | 0.175*** | 0.174*** | 0.173*** | 0.165*** |
| | (14.51) | (16.92) | (12.39) | (15.62) | (16.44) | (15.10) |
| age2 | -0.00169*** | -0.00169*** | -0.00165*** | -0.00163*** | -0.00161*** | -0.00151*** |
| | (-12.08) | (-14.25) | (-10.45) | (-12.86) | (-13.66) | (-12.17) |
| raceblack | -0.275*** | -0.251* | -0.247* | -0.223* | -0.172 | -0.119 |
| | (-3.178) | (-1.886) | (-1.850) | (-1.695) | (-1.291) | (-0.908) |
| racehisp | -0.114 | -0.0916 | -0.0874 | -0.0772 | -0.00820 | 0.0322 |
| | (-0.611) | (-0.515) | (-0.490) | (-0.436) | (-0.0464) | (0.184) |
| raceasian | 0.249* | 0.308 | 0.320* | 0.340* | 0.333* | 0.391** |
| | (1.951) | (1.605) | (1.658) | (1.815) | (1.751) | (2.110) |
| sat00 | 0.0153 | 0.0227 | 0.0238* | 0.0233* | 0.00151 | 2.34e-05 |
| | (1.357) | (1.590) | (1.652) | (1.645) | (0.113) | (0.00172) |
| college appearance | 0.116*** | 0.107*** | 0.104*** | 0.102*** | 0.0980*** | 0.0898*** |
| | (6.215) | (4.700) | (4.546) | (4.657) | (4.304) | (4.121) |
| binge | | | | -0.0387 | | 0.00290 |
| | | | | (-0.856) | | (0.0657) |
| nightsdrinking | | | | 0.0257 | | 0.0362** |
| | | | | (1.606) | | (2.356) |
| unrate | | | 0.00627 | | | |
| | | | (0.433) | | | |
| collegegrade2 | | | | | 0.282*** | 0.312*** |
| | | | | | (6.561) | (8.350) |
| Constant | 6.707*** | 6.570*** | 6.597*** | 6.623*** | 6.024*** | 5.997*** |
| | (22.02) | (19.98) | (19.48) | (19.95) | (16.94) | (17.20) |
| Observations | 1,667 | 1,667 | 1,667 | 1,667 | 1,667 | 1,667 |
| R-squared | 0.318 | 0.310 | 0.307 | 0.311 | 0.328 | 0.331 |
| Overid p-value | | 0.841 | 0.826 | 0.823 | 0.878 | 0.881 |
| First stage F-stat | | 18.21 | 16.91 | 19.33 | 16.35 | 18.04 |

Column 1: Robust t-statistics in parentheses
Colums 2-6: z-statistics in parentheses
Asterisks indicate statistical significance: *** p<0.01, ** p<0.05, * p<0.1.
Estimates from IV regressions treat Greek membership as endogenous. The excluded instruments are *Fraternities, Sororities, Coed, Minervas,* and *Themes*.