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Guaranteed Transfer Policies and Post-Secondary Outcomes

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Abstract

Community colleges are a large part of the nation's higher education system and provide an important access point to post-secondary education for many students. Transfer to a four-year institution is one of the many functions served by community colleges. Despite the importance placed on the transfer function, the transfer process between higher education institutions can be confusing. A variety of policies have been instituted to address the uncertainty present in the transfer process. States have formalized and expanded pre-existing institutional transfer agreements to provide clearer linkages between two-year and four-year institutions of higher education. However, many schools maintain institution-to-institution agreements. This paper will explore the effects of the transfer admission guarantees (TAG) between California Community Colleges and some University of California (UC) campuses. This paper will investigate the impact of the TAG policy on transfer and the bachelor's degree outcomes of transfer students. Preliminary analysis suggests a positive relationship between TAG and transfer, as well as a positive association with bachelor's degrees at some campuses.

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I. Introduction

Community colleges educate a growing number of students, with enrollment growing from around 27 percent in 1970 to over 36 percent by 2008 (U.S. Department of Education 2010). Over the past several decades policymakers have paid increasing attention to student transfer between two-year and four-year institutions. In response to perceived low levels of transfer, postsecondary institutions and state governments have instituted policies aimed at easing transfer. Most of the research comparing states with policies to states without policies finds little relationship between these policies and postsecondary outcomes. The extent to which transfer policies are effective has implications for both individuals and state governments. A year of education at a community college is less expensive for both students and states than a year of education at a four-year public university.

This paper looks at transfer policies in the state of California. Focusing on one state allows for analysis of institution-to-institution policies, which may be particularly relevant to students. Also, California's 112 community colleges form the largest higher education system in the nation, serving almost 750,000 full-time equivalent students in 2008. In addition, this paper looks at a particular type of policy: guaranteed transfer. Broadly, the agreements studied here guarantee transfer to some UC campuses for community college students who have completed a required number of credits, and maintained a minimum GPA. We study the relationship between the policy and transfer between two-year and four-year institutions, as well as bachelor's degree outcomes of transfer students.

Section II gives background on higher education in California, discusses the particular guaranteed transfer policy of interest, and reviews the literature. Section III discusses the

economics of transfer policies and the methods used to evaluate this particular policy. The data used in the analysis are presented in Section IV. Section V gives the results and Section VI provides a discussion and conclusion.

II. Background

Transfer in California

California public higher education consists of three systems: University of California (UC), California State University (CSU), and the California Community Colleges (CCC). There are currently 9 UC, 23 CSU, and 112 CCC campuses serving undergraduates in California. Figures 2, 3, and 4 show maps of the campus systems.

Figure 1 shows transfers to the UC system over time. In general, transfers have been rising over time. The trend is the same whether you look at total transfers into UC campuses or at the percent of transfer students that transfer to public four-year universities in California. The downward trend in transfers to the UC system beginning in 1993 prompted the UC campuses to agree to try and increase transfer students, which resulted in a 1997 policy change.

The Memorandum of Understanding (MOU) in 1997 began a renewed focus on transfer students into the University of California system. In response to concern over the declining transfer between the California Community Colleges and the UC system seen in Figure 1, the MOU re-asserted the transfer role and set transfer targets. The signing of this agreement set off a new wave of expansion of the transfer guarantee programs in California. UC campuses that already had a program began expanding to more community colleges. This is the case for UC Davis, UC San Diego and UC Santa Cruz. The agreement also spurred other campuses to begin

offering a transfer guarantee. For example, UC Irvine and UC Santa Barbara began their programs after 1997.

There are several other transfer-related policies in place at these colleges during this time. One is the Intersegmental General Education Transfer Curriculum (IGETC). The "Access to Transfer Information for Community College Students Act" was passed by the California State Legislature in 2000. It required community colleges to publicize IGETC so that students would know what courses and credits were transferable. The IGETC fulfills lower-division general education requirements at both UC and CSU campuses. The law requiring publication of the IGETC suggests that it may not have been effective prior to 2000 because students may not have known about its existence.

The ASSIST website (www.assist.org) lists all of the course articulation agreements between each community college and four-year campus in California. ASSIST is most helpful for students who know early on the four-year institution to which they want to transfer. While the ASSIST website guides students about particular courses that transfer, the admission guarantee policy is much broader in that it is a guarantee of admission for meeting certain requirements.

Transfer Admission Guarantee (TAG)

The policies known as Transfer Admission Guarantees (TAG) in California have also been called Transfer Admission Agreements (TAA), Guaranteed Admission for Transfer Entry (GATE – at UC Santa Cruz), and Preliminary Admission in the Field (PAIF – at UC Irvine). The TAG policy, begun at UC Davis in the mid-1980's, expanded to other UC campuses during the 1990's and early 2000's. Students typically sign these agreements at the beginning of their

second year of community college to apply for admission to a UC campus the following fall. Students using TAG are considered junior-level transfers. In order to sign the agreement, students generally must have completed 30 transferable semester (45 quarter) units. In addition, many TAG agreements require a minimum grade point average (GPA), which may vary by campus and by major within campus. The GPA requirements range around 2.8 to 3.2 during the years studied. Students must maintain the minimum GPA and complete a specified number of credits by the spring before they transfer.

Students do not need to sign a TAG agreement in order to be admitted to a UC campus. However, signing a TAG allows for early review of student records, and a guarantee of admission to the campus. Community college students who do not sign a TAG are given priority but not guaranteed admission to a UC campus. In general, the requirements for signing a TAG are more stringent than those needed for regular transfer admission. For example, the GPA minimum for TAG agreements is higher than regular transfer admission GPA. The benefits of guaranteed admission are enough to encourage a non-trivial portion of transfer students to sign a TAG.

The number of students signing TAGs varies from campus to campus. UC Davis Research Synopsis reports from 1996 and 2000 provide information on the TAG program. The number of TAGs (then called TAAs) signed at UC Davis was 202 in 1987-88, 792 in 1994-95, and 716 in 1998-99. These agreements accounted for 23%, 44%, and 40% of entering community college transfer students in those academic years respectively. In 1994-95, 35% of all entering transfer students signed an agreement. The number of TAGs submitted to UC Davis for review in 2009-10 exceeded 3,000 (email correspondence with Cynthia Bevc, 10/5/2010).

However, the number of TAGs signed was much lower at UC Merced, with only around 200 students signing a TAG in 2009-10 (forwarded email correspondence, Susan Fauroat, Laurel Wilder, 2/3/2011). Students who sign TAGs are more likely to enroll in UC Davis than transfer students admitted without signing a TAG. For example, in 1998-99, 62% of TAG signers enrolled at UC Davis, compared to 50% of other advanced standing applicants.

In 2007, the seven UC schools that use admission guarantees agreed to a common name – Transfer Admission Guarantee (TAG). In addition, the UC campuses decided to use a common TAG application form for all campuses. Summer and fall 2010 was the first time that the TAG application was available on-line. Students applying at this time were applying for fall 2011 admission. Overall, the 2000's were a period of expansion and alignment for the transfer guarantee program. UC Berkeley and UCLA do not participate in the TAG program. However, they do offer priority admission to California Community College transfer students.

In many ways the California experience with Transfer Admission Guarantees (TAG) provides ideal variation to study the effect of policies on transfer students' experiences. The TAG agreements expanded on two levels. They rolled-out across the UC campuses over time, with the exception of Berkeley and UCLA. In addition, for some UC campuses the agreements generally began regionally and then expanded to include community colleges across the state of California. For example, UC Davis expanded its program from 56 community colleges in 2000, to 94 partner colleges by fall 2008. UC Santa Cruz expanded its TAG program from 20 community colleges in 2000, to 90 in 2001, and 102 by 2008. This analysis examines the expansion of the TAG policy after 1997. In particular, we use the differential timing of this policy to identify its effects on post-secondary outcomes.

Relevant Literature

Several papers look at whether there is an association between state transfer policies and student outcomes. The datasets used are the National Education Longitudinal Study (NELS) 88/2000, and the Beginning Postsecondary Students (BPS) 89/94 longitudinal study. The most common outcomes studied are the probability of transfer, and, conditional on transfer, the probability of receiving a bachelor's degree as well as time-to-degree. So far, the bulk of research concludes that the presence of a state policy does not increase the transfer rate between 2-year and 4-year institutions.

The studies that use the NELS:88/2000 are Goldhaber and Gross (2009), Roksa and Keith (2008) and Reynolds (2007). In most of the studies, there is a dummy variable indicating whether or not a state had a transfer or articulation policy in a given year. Goldhaber and Gross (2009) attempt to classify 'strong' and 'weak' policies. However, even after trying to account for the difference in state policies, the authors find only small effects on transfer. Gross and Goldhaber next investigate if state policies have differential effects for minority students or for first-generation college attendees. They find that state policies are associated with higher odds of transfer for Hispanic students. Roksa and Keith (2008) investigate the outcomes of transfer, bachelor's degree attainment, and time-to-degree. They find no effect of a state transfer policy on these outcomes. The policy variable they use, and indicator for whether a state has a policy, does not exactly match the policy indicator used by Gross and Goldhaber. Reynolds, in a 2007 dissertation, tries to look at the effect of state policies on students by using propensity score matching. He matches students who have similar characteristics on the outcome of living in a

state with a transfer policy. He also runs his analysis separately for men and women. Reynolds' paper is the only one that finds an effect of state articulation policies on student outcomes.

Anderson, Sun, and Alfonso (2006) use the BPS 89/94 to look at transfer rates between two-year and four-year institutions. They define their policy as presence of a legislated transfer policy in a state by 1991. They find no effect of presence of a transfer policy on transfer in a state.

None of the studies listed above is able to take advantage of policy changes over time, which may be one reason why they find little relationship between state transfer policies and post-secondary outcomes. In addition, these studies look at state-level policies. One reason nationally representative studies may not show a relationship is that there might be many other differences between states that are hard to control for. State level studies show more promising results.

One study of California Community Colleges (Transfer Velocity Project, RP Group, 2010) did find a relationship between transfer rates and the use of Transfer Admission Agreements (TAAs) and Transfer Admission Guarantees (TAGs). In particular, the Transfer Velocity Project showed a positive association between a colleges transfer rate and the number of students signing TAAs or TAGs with a UC or CSU institution. However, transfer is an intermediate outcome and the goal of transfer policies between two-year and four-year institutions is to help students attain bachelor's degrees. Therefore, student persistence and graduation rates at four-year campuses are perhaps a better way to evaluate transfer policies.

Dupraw and Michael (1995) study the early outcomes of TAG transfer students and UC San Diego (UCSD). They compare junior GPA at UCSD for students who transferred with a TAG to community college students who transferred without a TAG, and to native students, who began their studies as freshman at UCSD. Their data covers three cohorts of transferring students, from fall 1988 to spring 1991. This period was in the very early stages UCSD's TAG program with only a few local community colleges participating. The authors find that both types of transfer students obtain roughly the same GPA, and that this GPA is only slightly lower than that received by students who entered the university as freshman. Transfer students who earned a higher community college GPA were less likely to face academic probation at UCSD due to poor academic performance. The authors relate this higher level of academic success to the increase in the GPA requirement for TAG students from 2.4 in fall 1988 to 2.8 in fall 1990.

Ehrenberg and Smith, 2004 assess two-year and four-year institutions in New York based on transfer and graduation rates. The authors have access to persistence, graduation, and dropout data for transfer students from two-year to four-year schools in the SUNY system. The data is observed at the pair level; that is they know the two-year sending institution and the four-year receiving institution. Their methodology models transfer students outcomes after three years as a function of the two-year college and four-year college a student attended, the year a student transferred, the distance between the two-year and four-year college, any degrees earned prior to transfer, and local labor market conditions. Overall, the authors find that some schools are more successful than others at promoting transfer and degree completion. We have a similar data structure and will employ similar estimation methods discussed in greater detail in the methodology section.

III. Methods

Economics of transfer policies

The TAG policy lowers barriers to transfer by informing students about specific requirements to achieve guaranteed admission to a particular UC campus. Students enrolled in a community college when TAG is enacted may not be able to take advantage of the policy due to course requirements and GPA thresholds. However, some students meet the TAG requirements and will be able to qualify for transfer. For these individuals, TAG may also reduce the time-to-transfer by focusing them on specific courses. Students who enroll after TAG is adopted may be better prepared because they know all of the prerequisites to transfer to a particular UC campus. Overall, this policy should induce transfer for students on the margin.

Changes in student sorting between two-year and four-year institutions may also impact transfer and bachelor's degree attainment. California's community colleges charge much lower tuition than UC campuses. They also use an open-enrollment policy. As a result, transfer policies provide incentives for UC-eligible students to begin their bachelor's degree studies at a community college. This lowers the cost of a bachelor's degree for students who begin at a two-year college and successfully transfer and complete at degree at a UC campus. However, diverting students to community college may have negative consequences. If two-year campuses offer lower-quality instruction than UC campuses, then transfer students may not be equipped to complete a bachelor's degree in a timely fashion, if at all. It is possible that transfer students would have to spend three or four years at the UC campus to complete a bachelor's degree. In addition to trouble acclimatizing academically, transfer students may also have trouble adjusting socially to the UC campus. These barriers may discourage transfer students from persisting at

UC campuses. Overall, there are ambiguous effects of transfer policies on eventual bachelor's degree attainment.

UC campuses have several motivations for implementing admission guarantees on top of existing priority admission policies. One reason, stated by UC Davis, is to attract better-prepared transfer students by clarifying requirements for transfer admission. UC Merced uses the guarantee as a recruitment tool. It is possible that other campuses also use TAG as a means of recruiting qualified students. However, there may be other reasons for enacting TAG. In general, students who sign TAGs are more likely to enroll. The higher yield rate of TAG signers gives UC campuses a better idea of the number of transfer students attending in the next year. To the extent that TAG students are better prepared, they may also be more likely to persist and graduate.

In addition, UC campuses may have financial incentives to encourage students to transfer. Generally, UC campuses offer guaranteed housing to incoming high school students for one to three years, with most promising two years of housing. Available housing may place restrictions on the number of incoming freshman each campus admits. At most campuses the housing guarantee for transfer students is one year. As a result, UC campuses can increase revenue from tuition while spending less on housing if they admit transfer students. These financial issues suggest that UC campuses benefit by encouraging transfers. Campuses may benefit financially from transfer students who take a long time to complete a bachelor's degree because they charge them tuition and do not provide housing in later years. Therefore, the impact of TAG on bachelor's degree attainment is not clear based on the incentives of UC campuses.

Empirical Specification

This project explores the relationship between the TAG policy and post-secondary outcomes of students who begin their studies at community colleges. In particular, we will use the expansion of the TAG policy to estimate a differences-in-differences model.

The equation we will estimate relates outcomes of transfer and degree completion to the admission guarantee policy, and other characteristics of the schools. These outcomes are measured in year t for individuals who transferred from community college j to four-year UC campus h. For the transfer outcome, the year t is the fall of the academic year in which the student transferred. When using bachelor's degree as the outcome, the year is the spring of the academic year in which the student graduated with a bachelor's degree.

Specifically, we will estimate

$$\text{FallTransfers}_{jht} = \alpha + \beta \text{TAG}_{jht} + \eta X_{jt} + \lambda_t + \theta_{jh} + \varepsilon_{jht} \qquad (1)$$

where X_{jt} is a set of county labor market and demographic characteristics. Currently, this includes unemployment rate for the community college county. In the future, X_{jt} will also include percent employed in the county, as well as county earnings, and county population in different age categories. Equation (1) also includes a set of year dummies, λ_t, and a random error term ε_{jht}. The θ_{jh} are pair fixed effects. The data used in this project is not student-level data, so there are no student demographic characteristics. $\text{FallTransfers}_{jht}$ in equation (1) is the log of either fall transfers between each pair in year t.

The TAG policy variable, TAG_{jht}, is an indicator variable that equals one if the community college and UC campus pair has an admission guarantee in year t. It equals zero

otherwise. For the outcome of transfer between the pair of institutions, the TAG policy is defined in the same year as the outcome.

To analyze the effect of the TAG policy on bachelor's degree outcomes of transfer students we estimate

$$BAdegree_{jht} = \alpha + \delta TAG_{jh,t-3} + X_{jt} + \lambda_t + \theta_{jh} + \varepsilon_{jht} \qquad (2)$$

where $BAdegree_{jht}$ is the count of bachelor's degrees given to transfer students from community college j to UC campus h in year t. The TAG variable represents three-year lags of the TAG policy in (1). For example, the three-year lag means that students obtaining a bachelor's degree in the 1999-2000 school year (coded as 2000), are given the value of the TAG policy in 1997. All other variables are defined above for equation (1).

Equations (1) and (2) are estimated for each UC campus separately, as well as pooled across UC campuses. UC Irvine and UC Merced are not included in any specification due to incomplete policy information and low number of bachelor's degree outcome observations respectively. Pooled regressions include the remaining seven UC campuses. Additionally, some specifications analyze just those campuses that changed TAG policy during the study period (Davis, San Diego, Santa Barbara, and Santa Cruz). The data used in this analysis is described in the following section.

IV. Data

Much of the data used in the analysis comes from the California Postsecondary Education Commission (CPEC) website. The main outcome variables are transfers between each two-year and four year public institution in California, and bachelor's degree outcomes for transfer

students at the four-year campuses. The transfer data covers both fall-term and full-year transfers from each community college to each UC campus. The number of transfers between each pair of schools in each year is coded as occurring in the fall of the academic year. That is, fall transfers in 1999 and full-year transfers in the 1999-2000 academic year both occur in the data in the year 1999. The data on transfers between community colleges, and from community colleges to in-state private or out-of-state institutions is not available for all years and missing for some institutions. As a result, this transfer data will not be used in the analysis.

The CPEC website also contains data on bachelor's degrees given to California community college transfer students at the UC campuses. The data consists of the number of bachelor's degrees received each year at each public four-year institution from each source community college. Unlike the transfer data, the bachelor's degree data is coded as occurring in the spring of the academic year. That is, students who receive a bachelor's degree in the 1998-1999 academic year are coded as receiving that degree in 1999. This data does not include information on persistence or time-to-degree. As a result, for students receiving a degree in the 1999-2000 school year, we do not know when they transferred to the four-year campus. Due to this ambiguity, the main specification includes a three-year lag of the policy variable but sensitivity analysis adds two- and four-year lags.

The policy variable was compiled mainly from information in the Answers for Transfers publication from the University of California. Other sources, including campus reports, email correspondence with Admissions and TAG representatives at the UC campuses, and on-line searches supplemented the Answers for Transfers information. The policy variable is given at the community college – UC campus pair level. That is, each community college is linked to

each UC campus. The TAG policy is coded as zero in years when the policy did not exist between the campus pair, and switches to one the fall of the first academic year that transfer students were accepted. As a result, each pair of campuses has one TAG policy variable that can switch from zero to one. Remember that UC Berkeley and UCLA never instituted a TAG policy. This paper analyzes the implementation of the TAG policy after 1997. The Policy Appendix contains information on the policy date for each pair.

Other covariates include the local unemployment rates. The unemployment rate is measured at the county level. Specifically, it is given for the county where the community college is located. These variables are included as controls to account for possible outside labor market opportunities.

Currently, there are 112 community colleges in California, although two were added after the period of this study. There are 106 community colleges that are open for the entire period of the study. For right now, we restrict our analysis to these colleges as we gather particular information on when new colleges were added. See Figure 3 for a map of the California community colleges.

There were eight UC campuses open during the entire study period. UC Merced opened in 2005-06. Figure 2 shows a map of the UC system. UC Berkeley and UCLA never had the TAG policy while UC Riverside had a TAG with all California community colleges by 1997. Therefore, the policy variation comes from schools added to the TAG program at UC Davis, Irvine, San Diego, Santa Barbara, and Santa Cruz. Table 1 shows the number of community colleges that had a TAG with each UC campus over time. Of the UC campuses with a policy change, UC Davis had the most agreements, with 56 community colleges, as of 1997. On the

other hand, UC Irvine and UC Santa Barbara did not have a guaranteed transfer program in place in 1997. By 2009, the UC campuses with a TAG program had added all community colleges, with the exception of UC Santa Cruz.

V. Results

Descriptive statistics are given in Table 2. The always TAG group is defined as those pairs having an agreement by 1997. The never TAG designation consists of Berkeley, UCLA, and several UC Santa Cruz pairs. Note that fall transfers and bachelor's degrees awarded are much higher for the pairs that always had a TAG or never had a TAG. Figure 1 shows trends in transfer to the UC system over time. In general, transfers are rising. After 1997, transfers rise steadily until 2005 when they dip and then begin rising again. Figure 5 shows trends in fall transfers to each UC campus. Transfers are generally rising over time. We are investigating causes of the jump in fall transfers to UCLA in the early 2000s.

The outcome variables used in the baseline analysis are log of fall transfers and bachelor's degrees awarded to transfer students. The log specification adds one to each outcome and then takes the natural log. This strategy allows us to keep campuses with zero transfers between pairs in some years. In addition, the log transformation reduces the disparity in average transfers and bachelor's degrees between pairs that changed TAG from 1997 to 2009 and those that did not. Alternative specifications are also considered and are discussed later.

Table 3 gives the main results for the baseline specifications in equations (1) and (2). Regressions are pooled either by campuses that change TAG during the period (Davis, San Diego, Santa Barbara, and Santa Cruz) or by all UC campuses except Irvine and Merced. These groups are referred to as `Changers' and `All' respectively. All specifications include year and

pair fixed effects. The TAG policy variable is specified as the third lag in the bachelor's degree specifications. The only significant coefficient on the TAG policy variable is 0.08 in the fall transfer specification pooled across UC campuses that change their policy during this time. All other coefficients are positive but statistically insignificant.

Table 4 shows results for both outcomes run separately for each UC campus that rolled out the TAG policy from 1997 to 2009. When the outcome is fall transfers, the coefficients on the TAG variable are positive and statistically significant in all specifications. These results suggest that the guaranteed admission policy is related to increased transfers. However, it is possible that the increase in fall transfers comes from a reduction in winter/spring transfers. If this were true, there would be little relationship between TAG and full-year transfers. To test this, we run regressions using the log of full-year transfers as the outcome variable. These specifications give positive and statistically significant coefficients between 0.14 and 0.23, very similar to the coefficients in Table 4. Results from these regressions are contained in the Appendix. Taken together, these results suggest that TAG is related to an increase in transfers.

Table 4 also contains campus-specific regressions using log of bachelor's degrees as the outcome. The coefficient on the third lag of the policy variable is positive for all campuses and statistically significant at the 10% level for three campuses. Overall, there appears to be a positive association between TAG and bachelor's degrees awarded to transfer students.

Sensitivity checks

The results presented above show a generally positive relationship between the TAG policy and fall transfers as well as bachelor's degree attainment. However, additional

specifications should be considered to assess the robustness of the results to the estimation methods used. Below we discuss these additional techniques. Unless otherwise specified, all of the robustness checks are included in the Appendix.

The current analysis rests on estimation using the log of fall transfers or BA recipients. We also consider estimating equations (1) and (2) using levels or Poisson regression. The Poisson specification takes into consideration the count nature of the outcome. Overall, the results remain similar for both transfer and bachelor's degree outcomes. In general, the Poisson regression results match more with the log specification in terms of sign and significance. The levels specification is much more sensitive. This is perhaps to be expected given the large differences in average transfers and bachelor's recipients between those pairs that changed TAG policy during this time and those that did not. Generally, these results support the conclusion that the TAG policy is related to an increase in transfers and an increase in graduation.

The data on bachelor's degrees gives the number of students receiving a bachelor's degree for each pair, but does not provide information about when the students transferred. Some of these transfer students may have completed a degree after two years at a UC campus, while other students may take longer. The baseline specification in equation (2) only considers the third lag of the TAG policy. We include two-, three-, and four-year lags of the policy variable in supplementary specifications. The positive association between the TAG policy and bachelor's degrees remains at UC San Diego and UC Santa Cruz. However, there are no statistically significant coefficients on any of the lagged variables for UC Davis.

To provide a more complete picture of the timing of the effect of the TAG policy, we also use an event history methodology.

$$Y_{jht} = \alpha + \sum \pi_k D_{jh} 1(t - T_{jh} = k) + \eta X_{jt} + \lambda_t + \theta_{jh} + \varepsilon_{jht} \qquad (3)$$

where Y_{jht} measures either fall transfer students or bachelor's degree recipients from community college j at UC campus h in year t. D_{jh} is a dummy variable equal to one if the pair ever got a TAG agreement, and equal to zero otherwise. The indicator function 1(), is equal to one if the pair is k years from the enactment of the TAG agreement. The omitted category is the year in which TAG is enacted between the pair. Pairs are observed up to 13 years pre-policy, and up to ten years post-policy. All specifications include year and pair fixed effects. Estimation of equation (3) is done using an unbalanced panel.

Results from the event history analysis are in Table 5. The minus sign in front of a variable indicates the number of years prior to enactment of TAG. We only report coefficients on the indicators for five year prior and five years after TAG. A full results table with coefficients on earlier and later years is in the Appendix. In the log of fall transfer regressions, very little is statistically significantly different from zero in the years leading up to TAG adoption. Positive and statistically significant coefficients show up in the years following the enactment of the policy. UC Santa Cruz shows the weakest results on fall transfers with coefficients in post-policy years only marginally statistically significant. The other campuses display persistent increases in transfers in post-policy years. All campuses except UC San Diego show no change in bachelor's degrees awarded to transfer students after the policy was enacted. The regressions for UC San Diego display negative and statistically significant coefficients up to three years before the policy, and positive and statistically significant coefficients beginning two years following the adoption of the policy. Overall, the event history analysis confirms the fall

transfer results from the baseline specifications. We intend to explore further the results for the bachelor's degree specifications.

VI. Discussion and Conclusion

This paper provides an initial look at the relationship between institution-to-institution guaranteed transfer policies and post-secondary outcomes for students who start at a community college. Preliminary estimates suggest a positive impact of the TAG policy on transfer, as well as on bachelor's degree attainment at some campuses. We will examine further the positive association between TAG and bachelor's degree attainment at UC San Diego.

We continue to gather additional county and institutional control variables, as well as information on other potential policies occurring at the same time as TAG. Future work will investigate additional checks on the robustness of these estimates to alternate estimation strategies. In addition, we will include an analysis of the relationship between TAG and enrollment at community colleges.

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Tables and Figures

Table 1. Number of community college campuses with a TAG agreement with each UC campus in selected years.

	UCB	UCD	UCI	UCLA	UCM	UCR	UCSD	UCSB	UCSC
1986	None	3	None	None	.	None	None	None	None
1988	None	25	None	None	.	None	3	None	None
1995	None	56	None	None	.	?	?	None	?
1997	None	56	None	None	.	All	14	None	17
1998	None	56	?	None	.	All	14	None	17
1999	None	56	?	None	.	All	14	None	17
2000	None	56	16	None	.	All	15	None	20
2001	None	60	16	None	.	All	16	None	92
2002	None	70	All	None	.	All	17	3	92
2003	None	81	All	None	.	All	17	9	94
2004	None	81	All	None	.	All	24	10	97
2005	None	82	All	None	All	All	26	All	99
2006	None	90	All	None	All	All	27	All	99
2007	None	90	All	None	All	All	33	All	101
2008	None	94	All	None	All	All	33	All	101
2009	None	All	All	None	All	All	All	All	103
2010	None	All	All	None	All	All	All	All	103

Table 2. Descriptive statistics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Always TAG			Change TAG			Never TAG	
	N	mean	sd	N	mean	sd	N	mean	sd
Year	2,509	2,003	3.742	4,394	2,003	3.742	2,821	2,003	3.742
Fall transfers	2,508	16.25	28.32	4,390	6.912	19.81	2,819	18.68	40.62
BA degree	2,509	17.22	32.99	4,394	6.776	23.05	2,821	18.86	41.35
Unemp (CC)	2,509	6.566	3.135	4,394	6.578	2.952	2,821	6.555	3.004
TAG	2,509	1	0	4,394	0.384	0.486	2,821	0	0
ln(fall trans + 1)	2,508	1.917	1.362	4,390	1.386	1.054	2,819	2.049	1.334
ln(BA deg + 1)	2,509	1.899	1.394	4,394	1.344	1.049	2,821	2.032	1.350

Table 3. Baseline specifications pooling across campuses.

	Outcome: Fall transfers		Outcome: BA degree	
	(1) FE logs	(2) FE logs	(3) FE logs	(4) FE logs
TAG	0.08***	0.01		
	(0.03)	(0.02)		
TAG (3rd lag)			0.04	0.00
			(0.03)	(0.03)
Unemp.	0.03***	0.02***	-0.02	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)
Constant	1.34***	1.54***	1.62***	1.77***
	(0.10)	(0.03)	(0.06)	(0.05)
Obs	5,560	10,749	4,280	7,490
R-squared	0.03	0.05	0.01	0.02
# groups	428	856	428	749
Year FE	X	X	X	X
Pair FE	X	X	X	X
Campuses	Changers	All	Changers	All

Table 4. Campus-specific regression results.

	Outcome: Fall transfers				Outcome: Bachelor's degree			
	(1) FE logs	(2) FE logs	(3) FE logs	(4) FE logs	(5) FE logs	(6) FE logs	(7) FE logs	(8) FE logs
TAG	0.15**	0.17**	0.17**	0.22***				
	(0.07)	(0.06)	(0.08)	(0.06)				
TAG (3rd lag)					0.18**	0.27***	0.07	0.10*
					(0.08)	(0.07)	(0.08)	(0.06)
Unemp.	0.01	0.04***	0.03**	0.02*	-0.01	-0.02	-0.02	-0.03
	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)	(0.03)	(0.02)	(0.02)
Constant	1.86***	1.36***	1.40***	0.35*	1.76***	1.78***	1.84***	1.76***
	(0.19)	(0.15)	(0.07)	(0.18)	(0.28)	(0.33)	(0.25)	(0.24)
Obs	1,390	1,390	1,390	1,390	1,070	1,070	1,070	1,070
R-squared	0.07	0.15	0.06	0.14	0.04	0.09	0.01	0.02
# groups	107	107	107	107	107	107	107	107
Year FE	X	X	X	X	X	X	X	X
Pair FE	X	X	X	X	X	X	X	X
Campus	Davis	San Diego	Santa Barbara	Santa Cruz	Davis	San Diego	Santa Barbara	Santa Cruz

Table 5. Event history analysis using fall transfers and bachelor's degrees as outcome variables.

	Outcome: Fall transfers					Outcome: Bachelor's degrees				
	(1) FE logs	(2) FE logs	(3) FE logs	(4) FE logs	(5) FE logs	(6) FE logs	(7) FE logs	(8) FE logs	(9) FE logs	(10) FE logs
-5	-0.19*	-0.29***	-0.07	-0.18	-0.05	-0.08	-0.34***	-0.01	-0.15	-0.09
	(0.11)	(0.09)	(0.17)	(0.19)	(0.06)	(0.09)	(0.11)	(0.22)	(0.18)	(0.06)
-4	-0.04	-0.09	-0.03	-0.13	-0.04	0.01	-0.13*	-0.10	-0.03	-0.02
	(0.11)	(0.08)	(0.14)	(0.18)	(0.06)	(0.10)	(0.07)	(0.16)	(0.20)	(0.05)
-3	0.03	-0.13	0.28**	-0.17	0.06	-0.05	-0.19**	-0.13	-0.12	0.03
	(0.10)	(0.08)	(0.11)	(0.14)	(0.05)	(0.10)	(0.09)	(0.16)	(0.17)	(0.05)
-2	0.12	-0.12	0.13	-0.02	-0.01	-0.11	-0.13*	-0.16	-0.23	-0.04
	(0.09)	(0.08)	(0.12)	(0.13)	(0.05)	(0.11)	(0.07)	(0.11)	(0.15)	(0.05)
-1	0.03	0.09	0.10	-0.02	0.07*	0.01	0.05	0.05	0.03	0.05
	(0.09)	(0.07)	(0.11)	(0.10)	(0.04)	(0.12)	(0.08)	(0.07)	(0.13)	(0.05)
1	0.21**	0.17*	0.25*	0.14	0.08*	-0.06	0.06	0.12	0.05	-0.05
	(0.11)	(0.09)	(0.13)	(0.10)	(0.04)	(0.11)	(0.08)	(0.09)	(0.15)	(0.05)
2	0.23*	0.22**	0.28**	0.21*	0.08	-0.02	0.44***	-0.09	-0.02	0.06
	(0.13)	(0.09)	(0.13)	(0.12)	(0.05)	(0.12)	(0.10)	(0.12)	(0.13)	(0.05)
3	0.34**	0.20**	0.32***	0.23*	0.14***	-0.01	0.49***	0.15	0.20	0.10*
	(0.13)	(0.10)	(0.12)	(0.13)	(0.05)	(0.15)	(0.07)	(0.13)	(0.16)	(0.06)
4	0.51***	0.39***	0.34***	0.16	0.14**	0.03	0.59***	0.04	0.09	0.11*
	(0.15)	(0.14)	(0.09)	(0.13)	(0.06)	(0.16)	(0.11)	(0.14)	(0.16)	(0.06)
5	0.50***	0.31**	0.13	0.17	0.18***	0.12	0.61***	0.15	0.18	0.08
	(0.18)	(0.13)	(0.09)	(0.19)	(0.06)	(0.18)	(0.13)	(0.14)	(0.18)	(0.06)
Unemp	0.02	0.04**	0.03**	0.02	0.03***	-0.00	-0.02	-0.00	-0.01	-0.00
	(0.03)	(0.02)	(0.02)	(0.02)	(0.01)	(0.03)	(0.02)	(0.01)	(0.02)	(0.01)
Constant	0.54***	1.36***	1.54***	1.16***	1.21***	0.96***	1.46***	1.73***	1.26***	1.37***
	(0.17)	(0.14)	(0.19)	(0.20)	(0.12)	(0.18)	(0.17)	(0.15)	(0.31)	(0.12)
Obs	662	1,208	1,390	1,169	4,429	663	1,209	1,391	1,170	4,433
R-squared	0.13	0.15	0.07	0.13	0.07	0.07	0.15	0.01	0.04	0.02
# groups	51	93	107	90	341	51	93	107	90	341
Year FE	X	X	X	X	X	X	X	X	X	X
Pair FE	X	X	X	X	X	X	X	X	X	X
Campus	Davis	San Diego	Santa Barbara	Santa Cruz	Changers	Davis	San Diego	Santa Barbara	Santa Cruz	Changers

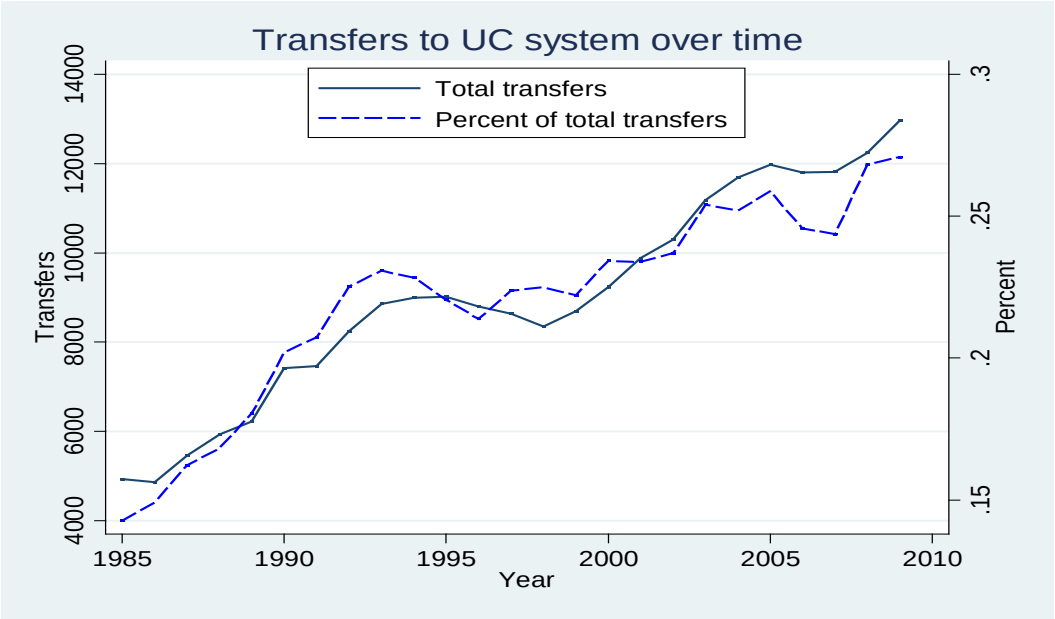

Figure 1. Transfers from the California Community Colleges to the UC campuses over time.

Figure 2. UC campus map. Note: UC San Francisco does not serve undergraduates.

Source: http://www.universityofcalifornia.edu/campuses/welcome.html

Figure 3. California Community Colleges map. Source: Chancellor's Office, California Community Colleges (http://www.cccco.edu/LinkClick.aspx?fileticket=1MLZTbFko6s%3d&tabid=917)

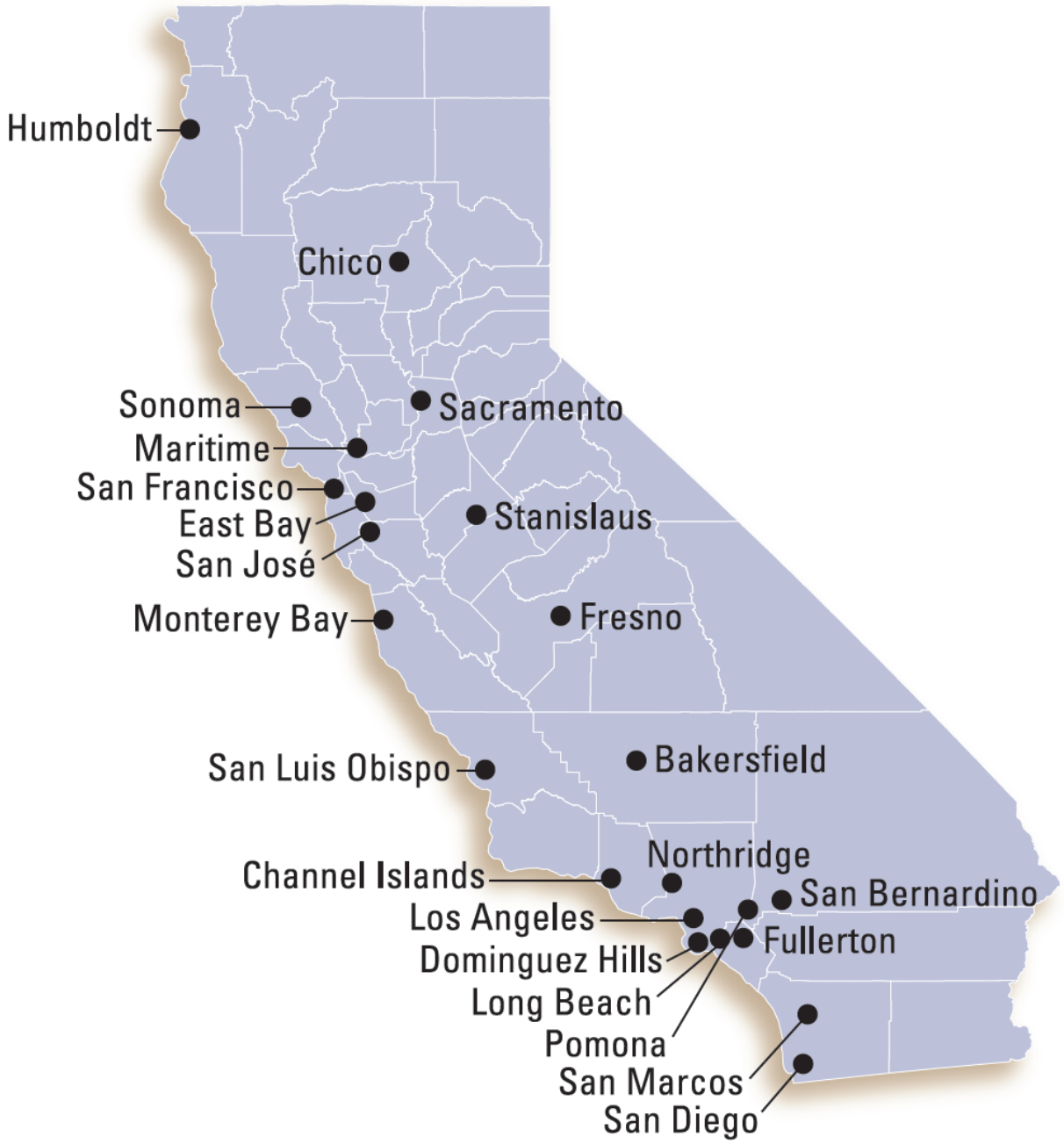

Figure 4. California State University campus map. Source: http://www.calstate.edu/datastore/campus_map.shtml

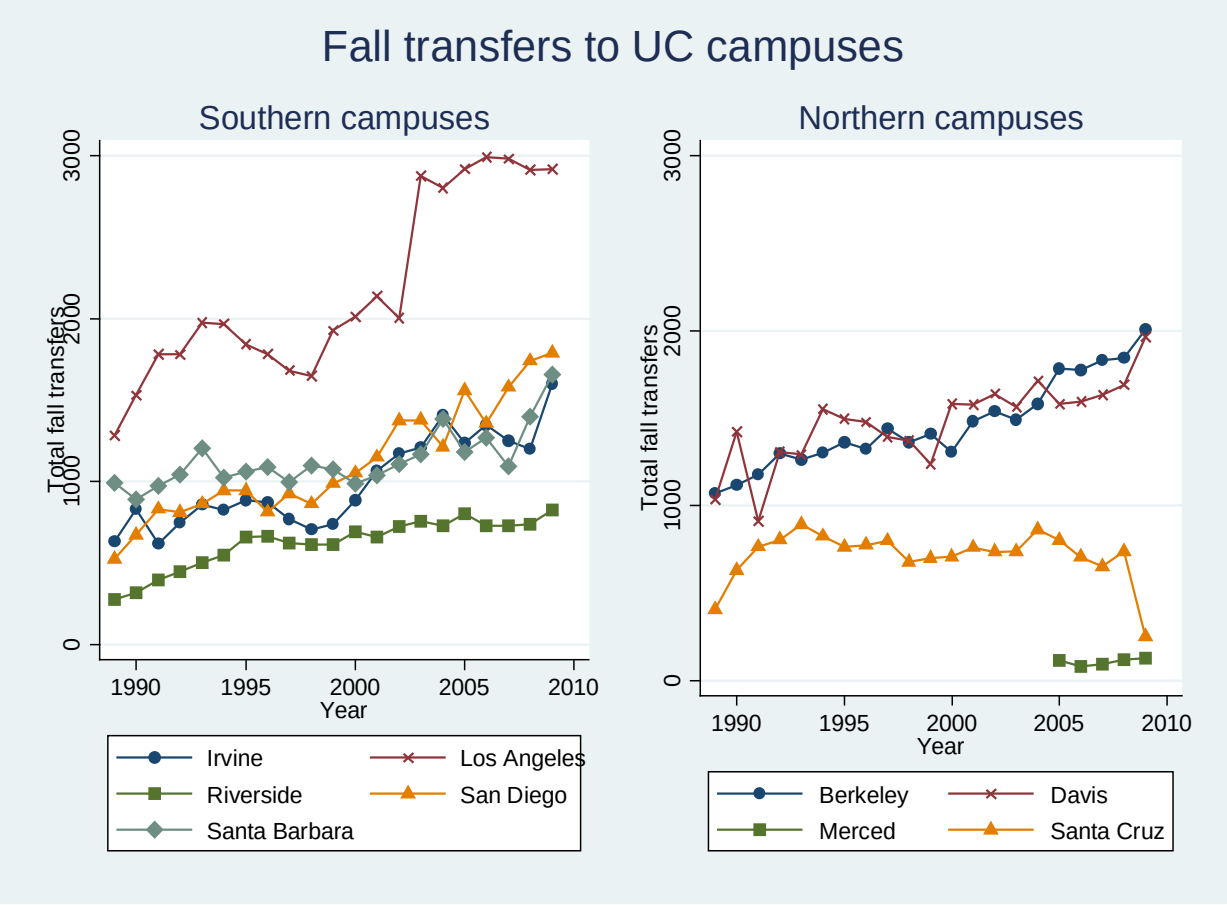

Figure 5. Fall transfers to UC campuses.

Appendix Tables

Table A1. Fall transfer regressions.

	(1) FE levels	(2) FE logs	(3) Poisson	(4) FE levels	(5) FE logs	(6) Poisson	(7) FE levels	(8) FE logs	(9) Poisson	(10) FE levels	(11) FE logs	(12) Poisson
TAG	-1.31*	0.15**	0.25***	2.42	0.17**	0.20**	2.87*	0.17**	0.02	2.71***	0.22***	0.30***
	(0.77)	(0.07)	(0.08)	(2.61)	(0.06)	(0.08)	(1.57)	(0.08)	(0.06)	(0.85)	(0.06)	(0.06)
Unemp.	0.38*	0.01	0.00	0.89**	0.04***	0.04**	-0.13	0.03**	0.02	0.23**	0.02*	0.01
	(0.23)	(0.01)	(0.01)	(0.40)	(0.01)	(0.02)	(0.22)	(0.02)	(0.02)	(0.11)	(0.01)	(0.01)
Constant	14.93***	1.86***		3.90	1.36***		14.12***	1.40***		-2.90	0.35*	
	(2.06)	(0.19)		(3.88)	(0.15)		(1.32)	(0.07)		(2.61)	(0.18)	
Obs	1,390	1,390	1,364	1,390	1,390	1,390	1,390	1,390	1,378	1,390	1,390	1,364
R-squared	0.09	0.07		0.16	0.15		0.08	0.06		0.10	0.14	
# groups	107	107	105	107	107	107	107	107	106	107	107	105
Year FE	X	X	X	X	X	X	X	X	X	X	X	X
Pair FE	X	X	X	X	X	X	X	X	X	X	X	X
Berkeley												
Davis	X	X	X									
Irvine												
LA												
Riverside												
San Diego				X	X	X						
Santa Barbara							X	X	X			
Santa Cruz										X	X	X

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

	(13) FE levels	(14) FE logs	(15) Poisson	(16) FE levels	(17) FE logs	(18) Poisson	(19) FE levels	(20) FE logs	(21) Poisson	(22) FE levels	(23) FE logs	(24) Poisson
TAG	0.26	0.08***	0.13***	1.00**	0.15***	0.16***	-1.00*	0.01	0.04	0.88*	0.14***	0.15***
	(0.55)	(0.03)	(0.04)	(0.50)	(0.03)	(0.04)	(0.54)	(0.02)	(0.03)	(0.49)	(0.03)	(0.04)
Unemp.	0.33**	0.03***	0.02*	0.33***	0.03***	0.02*	0.25***	0.02***	-0.00	0.25***	0.02***	0.00
	(0.13)	(0.01)	(0.01)	(0.13)	(0.01)	(0.01)	(0.10)	(0.01)	(0.01)	(0.10)	(0.01)	(0.01)
Constant	9.02***	1.34***		7.10***	1.38***		10.13***	1.54***		8.34***	1.44***	
	(1.48)	(0.10)		(0.00)	(0.00)		(0.50)	(0.03)		(0.70)	(0.04)	
Obs	5,560	5,560	5,496	5,560	5,560	5,496	9,730	9,730	9,666	9,730	9,730	9,666
R-squared	0.04	0.03		0.08	0.06		0.05	0.04		0.09	0.06	
# groups	428	428	423	428	428	423	749	749	744	749	749	744
Year FE	X	X	X	X	X	X	X	X	X	X	X	X
Pair FE	X	X	X	X	X	X	X	X	X	X	X	X
Time trends				X	X	X				X	X	
Berkeley							X	X	X	X	X	X

Davis	X	X	X	X	X	X	X	X	X	X	X	X
Irvine							.	.	.	.	.	.
LA							X	X	X	X	X	X
Riverside							X	X	X	X	X	X
SD	X	X	X	X	X	X	X	X	X	X	X	X
SB	X	X	X	X	X	X	X	X	X	X	X	X
SC	X	X	X	X	X	X	X	X	X	X	X	X

Table A2. Full-year transfer regressions.

	(1) FE levels	(2) FE logs	(3) Pois	(4) FE levels	(5) FE logs	(6) Pois	(7) FE levels	(8) FE logs	(9) Pois	(10) FE levels	(11) FE logs	(12) Pois
TAG	-2.45**	0.14**	0.21***	1.81	0.21***	0.29***	3.83**	0.14*	0.02	3.32***	0.23***	0.30***
	(0.97)	(0.07)	(0.08)	(3.25)	(0.06)	(0.09)	(1.77)	(0.08)	(0.06)	(1.15)	(0.05)	(0.05)
Unemp	0.59**	0.01	0.00	1.12**	0.05***	0.04**	0.08	0.04**	0.03*	0.36**	0.03**	0.03***
	(0.26)	(0.01)	(0.01)	(0.44)	(0.01)	(0.02)	(0.11)	(0.01)	(0.02)	(0.16)	(0.01)	(0.01)
Constant	14.12***	1.85***		7.13*	1.43***		10.94***	1.37***		-2.21	0.70***	
	(2.38)	(0.19)		(4.26)	(0.15)		(2.51)	(0.18)		(3.59)	(0.17)	
Obs	1,391	1,391	1,365	1,391	1,391	1,391	1,391	1,391	1,378	1,391	1,391	1,365
R-sq	0.09	0.07		0.16	0.17		0.05	0.03		0.07	0.07	
# groups	107	107	105	107	107	107	107	107	106	107	107	105
Year FE	X	X	X	X	X	X	X	X	X	X	X	X
Pair FE	X	X	X	X	X	X	X	X	X	X	X	X
UC trend												
UCB												
UCD	X	X	X									
UCLA												
UCR												
UCSD				X	X	X						
UCSB							X	X	X	.		
UCSC										X	X	X

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

	(13) FE levels	(14) FE logs	(15) Poisson	(16) FE levels	(17) FE logs	(18) Poisson	(19) FE levels	(20) FE logs	(21) Poisson	(22) FE levels	(23) FE logs	(24) Poisson
TAG	-0.45	0.06**	0.07	1.03*	0.15***	0.20***	-0.74	0.03	0.05	0.93	0.14***	0.19***
	(0.65)	(0.03)	(0.05)	(0.60)	(0.03)	(0.04)	(0.45)	(0.02)	(0.04)	(0.58)	(0.03)	(0.04)
Unemp	0.52***	0.03***	0.03***	0.52***	0.03***	0.02***	0.40***	0.02***	0.02*	0.40***	0.02***	0.01*
	(0.14)	(0.01)	(0.01)	(0.13)	(0.01)	(0.01)	(0.10)	(0.01)	(0.01)	(0.09)	(0.01)	(0.01)
Constant	9.77***	1.45***		7.41***	1.43***		11.65***	1.63***		9.43***	1.52***	
	(1.51)	(0.09)		(1.08)	(0.05)		(0.73)	(0.04)		(0.47)	(0.03)	

Obs	5,564	5,564	5,499	5,564	5,564	5,499	9,737	9,737	9,672	9,737	9,737	9,672
R-sq	0.04	0.03		0.09	0.06		0.05	0.04		0.08	0.06	
# groups	428	428	423	428	428	423	749	749	744	749	749	744
Year FE	X	X	X	X	X	X	X	X	X	X	X	X
Pair FE	X	X	X	X	X	X	X	X	X	X	X	X
UC time trend				X	X	X				X	X	X
Berkeley							X	X	X	X	X	X
Davis	X	X	X	X	X	X	X	X	X	X	X	X
Irvine												
LA							X	X	X	X	X	X
Riverside							X	X	X	X	X	X
SD	X	X	X	X	X	X	X	X	X	X	X	X
SB	X	X	X	X	X	X	X	X	X	X	X	X
SC	X	X	X	X	X	X	X	X	X	X	X	X

Table A3. Bachelor's degree regressions with 3-year lag of TAG policy variable.

	(1) FE levels	(2) FE logs	(3) Poisson	(4) FE levels	(5) FE logs	(6) Poisson	(7) FE levels	(8) FE logs	(9) Poisson	(10) FE levels	(11) FE logs	(12) Poisson
TAG (-3)	-0.46	0.18**	0.16*	6.14**	0.27***	0.19***	1.15	0.07	-0.04	1.26**	0.10*	0.17***
	(0.66)	(0.08)	(0.08)	(2.59)	(0.07)	(0.07)	(1.43)	(0.08)	(0.05)	(0.54)	(0.06)	(0.04)
Unemp	-0.13	-0.01	-0.04	0.01	-0.02	0.00	0.04	-0.02	0.01	0.03	-0.03	-0.01
	(0.41)	(0.02)	(0.02)	(0.33)	(0.03)	(0.03)	(0.16)	(0.02)	(0.02)	(0.15)	(0.02)	(0.02)
Constant	17.12***	1.76***		12.86***	1.78***		10.60***	1.84***		5.74**	1.76***	
	(5.09)	(0.28)		(4.00)	(0.33)		(2.13)	(0.25)		(2.25)	(0.24)	
Obs	1,070	1,070	1,030	1,070	1,070	1,030	1,070	1,070	1,040	1,070	1,070	1,020
R-sq	0.05	0.04		0.13	0.09		0.01	0.01		0.02	0.02	
# groups	107	107	103	107	107	103	107	107	104	107	107	102
Year FE	X	X	X	X	X	X	X	X	X	X	X	X
Pair FE	X	X	X	X	X	X	X	X	X	X	X	X
Berkeley												
Davis	X	X	X									
Irvine												
LA												
Riverside												
SD				X	X	X						
SB							X	X	X			
SC										X	X	X

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)

	FE levels	FE logs	Poisson	FE levels	FE logs	Poisson	FE levels	FE logs	Poisson	FE levels	FE logs	Poisson
TAG (-3)	-0.29	0.04	0.00	1.06***	0.10***	0.11***	-0.88**	0.00	-0.02	0.98**	0.10***	0.11***
	(0.40)	(0.03)	(0.04)	(0.40)	(0.03)	(0.03)	(0.36)	(0.03)	(0.03)	(0.39)	(0.03)	(0.03)
Unemp	0.02	-0.02	0.00	-0.01	-0.02	-0.01	-0.12	-0.01	-0.01	-0.14	-0.01	-0.01
	(0.14)	(0.01)	(0.01)	(0.14)	(0.01)	(0.01)	(0.10)	(0.01)	(0.01)	(0.10)	(0.01)	(0.01)
Constant	10.45***	1.62***		9.78***	1.53***		15.21***	1.77***		10.67***	1.52***	
	(0.78)	(0.06)		(0.49)	(0.04)		(0.61)	(0.05)		(0.42)	(0.03)	
Obs	4,280	4,280	4,120	4,280	4,280	4,120	7,490	7,490	7,250	7,490	7,490	7,250
R-sq	0.03	0.01		0.06	0.02		0.05	0.02		0.08	0.03	
# groups	428	428	412	428	428	412	749	749	725	749	749	725
Year FE	X	X	X	X	X	X	X	X	X	X	X	X
Pair FE	X	X	X	X	X	X	X	X	X	X	X	X
UC time trends				X	X	X				X	X	X
Berkeley							X	X	X	X	X	X
Davis	X	X	X	X	X	X	X	X	X	X	X	X
Irvine												
LA							X	X	X	X	X	X
Riverside							X	X	X	X	X	X
SD	X	X	X	X	X	X	X	X	X	X	X	X
SB	X	X	X	X	X	X	X	X	X	X	X	X
SC	X	X	X	X	X	X	X	X	X	X	X	X

Table A4. Bachelor's degree regressions with 2-, 3-, and 4-year lags

	(1) FE levels	(2) FE logs	(3) Poisson	(4) FE levels	(5) FE logs	(6) Poisson	(7) FE levels	(8) FE logs	(9) Poisson	(10) FE levels	(11) FE logs	(12) Poisson
TAG (-2)	-0.83	0.06	0.12	2.80**	0.24***	0.15**	3.38***	0.16**	0.03	0.57	0.25***	0.09
	(0.54)	(0.08)	(0.08)	(1.41)	(0.08)	(0.06)	(1.14)	(0.07)	(0.04)	(0.70)	(0.09)	(0.10)
TAG (-3)	-0.04	0.09	0.03	-0.55	-0.01	-0.05	-3.15	-0.08	-0.05	0.06	-0.10	0.02
	(0.48)	(0.10)	(0.12)	(1.61)	(0.09)	(0.08)	(2.36)	(0.10)	(0.04)	(0.74)	(0.08)	(0.08)
TAG (-4)	0.52	0.07	0.06	5.14**	0.09	0.14**	8.05*	0.21***	0.08	1.19**	0.08	0.12*
	(0.54)	(0.09)	(0.12)	(2.42)	(0.13)	(0.07)	(4.25)	(0.06)	(0.05)	(0.57)	(0.07)	(0.07)
Unemp	-0.19	0.01	-0.04	-0.16	-0.03	-0.03	-0.13	-0.02	-0.02	0.05	-0.03	-0.01
	(0.47)	(0.02)	(0.03)	(0.52)	(0.03)	(0.04)	(0.16)	(0.02)	(0.02)	(0.16)	(0.02)	(0.03)
Constant	17.20***	1.60***		13.28***	1.84***		12.25***	1.81***		5.77***	1.40***	
	(2.64)	(0.15)		(2.81)	(0.17)		(1.15)	(0.15)		(0.96)	(0.13)	
Obs	963	963	927	963	963	927	963	963	936	963	963	918
R-sq	0.05	0.05		0.12	0.07		0.05	0.01		0.02	0.03	
# groups	107	107	103	107	107	103	107	107	104	107	107	102
Year FE	X	X	X	X	X	X	X	X	X	X	X	X
Pair FE	X	X	X	X	X	X	X	X	X	X	X	X

UC time trends												
Berkeley												
Davis	X	X	X									
Irvine												
LA												
Riverside												
SD				X	X	X						
SB							X	X	X			
SC										X	X	X

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

	(13) FE levels	(14) FE logs	(15) Poisson	(16) FE levels	(17) FE logs	(18) Poisson	(19) FE levels	(20) FE logs	(21) Poisson	(22) FE levels	(23) FE logs	(24) Poisson
TAG (-2)	-0.23	0.02	0.00	0.44	0.07**	0.06**	-0.45	0.00	-0.01	0.58*	0.08**	0.07*
	(0.35)	(0.03)	(0.03)	(0.32)	(0.04)	(0.03)	(0.30)	(0.03)	(0.04)	(0.31)	(0.04)	(0.04)
TAG (-3)	-0.18	0.01	-0.02	0.17	0.03	0.02	-0.56**	-0.02	-0.04	-0.06	0.01	0.01
	(0.26)	(0.04)	(0.02)	(0.26)	(0.04)	(0.03)	(0.26)	(0.04)	(0.02)	(0.26)	(0.04)	(0.03)
TAG (-4)	0.29	0.05	0.05	1.05**	0.06*	0.10***	0.24	0.05	0.04	1.24***	0.08**	0.11***
	(0.40)	(0.03)	(0.03)	(0.45)	(0.03)	(0.03)	(0.35)	(0.03)	(0.03)	(0.41)	(0.03)	(0.03)
Unemp	-0.07	-0.02	-0.01	-0.12	-0.02	-0.02	-0.13	-0.01	-0.00	-0.18	-0.01	-0.01
	(0.19)	(0.01)	(0.02)	(0.18)	(0.01)	(0.02)	(0.13)	(0.01)	(0.01)	(0.13)	(0.01)	(0.01)
Constant	13.18***	1.83***		9.97***	1.60***		16.31***	1.80***		10.15***	1.55***	
	(2.32)	(0.15)		(0.56)	(0.05)		(1.63)	(0.11)		(0.47)	(0.03)	
Obs	3,852	3,852	3,708	3,852	3,852	3,708	6,741	6,741	6,525	6,741	6,741	6,525
R-sq	0.03	0.01		0.05	0.02		0.04	0.02		0.07	0.03	
# groups	428	428	412	428	428	412	749	749	725	749	749	725
Year FE	X	X	X	X	X	X	X	X	X	X	X	X
Pair FE	X	X	X	X	X	X	X	X	X	X	X	X
UC time trends				X	X	X				X	X	X
Berkeley							X	X	X	X	X	X
Davis	X	X	X	X	X	X	X	X	X	X	X	X
Irvine												
LA							X	X	X	X	X	X
Riverside							X	X	X	X	X	X
SD	X	X	X	X	X	X	X	X	X	X	X	X
SB	X	X	X	X	X	X	X	X	X	X	X	X
SC	X	X	X	X	X	X	X	X	X	X	X	X

Table A5. Fall transfer event history regressions.

	(1) FE levels	(2) FE logs	(3) FE levels	(4) FE logs	(5) FE levels	(6) FE logs	(7) FE levels	(8) FE logs	(9) FE levels	(10) FE logs
-13	0.00	0.00	0.00	0.00	0.00	0.00	-1.07	-0.43	1.21*	0.08
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(1.03)	(0.38)	(0.72)	(0.12)
-12	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.17	1.39*	0.45**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.96)	(0.39)	(0.83)	(0.21)
-11	0.00	0.00	0.00	0.00	0.00	0.00	-0.74	-0.37	0.32	-0.06
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.88)	(0.33)	(0.67)	(0.09)
-10	-0.51	-0.23	-2.83**	-0.18	0.00	0.00	-0.48	-0.28	-0.33	-0.14*
	(0.60)	(0.22)	(1.18)	(0.14)	(0.00)	(0.00)	(0.78)	(0.31)	(0.70)	(0.09)
-9	-0.04	-0.01	-2.63*	-0.14	0.00	0.00	0.07	0.01	-0.03	-0.01
	(0.45)	(0.17)	(1.44)	(0.10)	(0.00)	(0.00)	(0.82)	(0.30)	(0.70)	(0.08)
-8	-0.87**	-0.32**	-4.73***	-0.24**	0.00	0.00	0.52	0.09	0.12	-0.08
	(0.37)	(0.15)	(1.08)	(0.10)	(0.00)	(0.00)	(0.87)	(0.31)	(0.57)	(0.07)
-7	-0.73*	-0.25*	-4.46***	-0.15*	0.00	0.00	0.04	-0.18	0.09	0.01
	(0.39)	(0.13)	(1.26)	(0.09)	(0.00)	(0.00)	(0.80)	(0.27)	(0.60)	(0.07)
-6	-0.65	-0.23*	-3.42***	-0.15*	0.00	0.00	-0.61	-0.25	-0.13	-0.03
	(0.39)	(0.13)	(1.23)	(0.09)	(0.00)	(0.00)	(0.72)	(0.24)	(0.52)	(0.06)
-5	-0.67*	-0.19*	-6.45***	-0.29***	4.15	-0.07	-0.25	-0.18	-0.48	-0.05
	(0.35)	(0.11)	(1.69)	(0.09)	(4.80)	(0.17)	(0.57)	(0.19)	(0.50)	(0.06)
-4	-0.29	-0.04	-1.94*	-0.09	-4.45	-0.03	-0.29	-0.13	-1.50**	-0.04
	(0.40)	(0.11)	(1.10)	(0.08)	(2.74)	(0.14)	(0.53)	(0.18)	(0.63)	(0.06)
-3	-0.11	0.03	-5.05***	-0.13	8.00**	0.28**	-0.23	-0.17	0.46	0.06
	(0.37)	(0.10)	(1.42)	(0.08)	(3.20)	(0.11)	(0.41)	(0.14)	(0.35)	(0.05)
-2	0.38	0.12	-1.60	-0.12	3.24	0.13	-0.05	-0.02	-0.19	-0.01
	(0.29)	(0.09)	(1.30)	(0.08)	(3.47)	(0.12)	(0.30)	(0.13)	(0.36)	(0.05)
-1	0.11	0.03	1.34	0.09	-0.19	0.10	0.11	-0.02	0.67*	0.07*
	(0.32)	(0.09)	(1.38)	(0.07)	(3.26)	(0.11)	(0.27)	(0.10)	(0.35)	(0.04)
1	0.91*	0.21**	4.17**	0.17*	3.69	0.25*	0.78**	0.14	0.24	0.08*
	(0.49)	(0.11)	(1.65)	(0.09)	(3.21)	(0.13)	(0.30)	(0.10)	(0.41)	(0.04)
2	0.83	0.23*	6.83***	0.22**	11.57**	0.28**	1.16**	0.21*	1.79***	0.08
	(0.50)	(0.13)	(2.15)	(0.09)	(5.63)	(0.13)	(0.52)	(0.12)	(0.64)	(0.05)
3	1.10**	0.34**	9.60***	0.20**	12.16**	0.32***	1.20***	0.23*	1.66**	0.14***
	(0.54)	(0.13)	(2.72)	(0.10)	(6.05)	(0.12)	(0.41)	(0.13)	(0.66)	(0.05)
4	1.83***	0.51***	14.59***	0.39***	13.40	0.34***	0.82**	0.16	1.98**	0.14**
	(0.64)	(0.15)	(4.06)	(0.14)	(8.38)	(0.09)	(0.36)	(0.13)	(0.90)	(0.06)
5	2.62***	0.50***	11.22***	0.31**	10.67*	0.13	1.11**	0.17	2.11***	0.18***
	(0.81)	(0.18)	(3.15)	(0.13)	(5.99)	(0.09)	(0.55)	(0.19)	(0.71)	(0.06)
6	3.44***	0.59***	17.93***	0.44***	5.56	0.02	0.68	0.02	1.73*	0.08
	(1.06)	(0.19)	(5.94)	(0.14)	(5.06)	(0.18)	(0.53)	(0.21)	(0.88)	(0.07)
7	3.53***	0.65***	27.01**	0.51***	18.39	0.26**	1.20*	0.26	2.67*	0.10
	(0.93)	(0.18)	(11.83)	(0.18)	(11.60)	(0.11)	(0.63)	(0.22)	(1.37)	(0.07)
8	6.04***	1.04***	30.12***	0.60***	36.14	0.06	1.06	0.22	2.98*	0.13*
	(1.12)	(0.18)	(7.21)	(0.13)	(22.58)	(0.15)	(0.78)	(0.25)	(1.66)	(0.08)
9	4.40***	0.94***	30.34***	0.63***	0.00	0.00	-0.50	0.11	-3.42***	-0.58***
	(0.94)	(0.20)	(5.12)	(0.13)	(0.00)	(0.00)	(0.86)	(0.29)	(0.98)	(0.09)

10	0.00	0.00	37.27***	0.80***	0.00	0.00	2.34**	0.63	3.26	-0.08
	(0.00)	(0.00)	(4.26)	(0.16)	(0.00)	(0.00)	(1.09)	(0.41)	(4.65)	(0.23)
Unemp (CC)	0.00	0.02	0.17	0.04**	0.11	0.03**	0.13*	0.02	0.13	0.03***
	(0.08)	(0.03)	(0.14)	(0.02)	(0.11)	(0.02)	(0.08)	(0.02)	(0.10)	(0.01)
Constant	1.23**	0.54***	9.18***	1.36***	11.59***	1.54***	3.33***	1.16***	7.45***	1.21***
	(0.57)	(0.17)	(1.36)	(0.14)	(1.75)	(0.19)	(0.62)	(0.20)	(1.47)	(0.12)
Obs	662	662	1,208	1,208	1,390	1,390	1,169	1,169	4,429	4,429
R-squared	0.20	0.13	0.41	0.15	0.23	0.07	0.13	0.13	0.08	0.07
# groups	51	51	93	93	107	107	90	90	341	341
Year FE	X	X	X	X	X	X	X	X	X	X
Pair FE	X	X	X	X	X	X	X	X	X	X
Berkeley										
Davis	X	X							X	X
Irvine										
LA										
Riverside										
SD			X	X					X	X
SB					X	X			X	X
SC							X	X	X	X

Robust standard errors are in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A6. Bachelor's degree event history specifications.

	(1) FE levels	(2) FE logs	(3) FE levels	(4) FE logs	(5) FE levels	(6) FE logs	(7) FE levels	(8) FE logs	(9) FE levels	(10) FE logs
-13	0.00	0.00	0.00	0.00	0.00	0.00	-0.79	-0.12	-0.33	0.05
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.90)	(0.32)	(0.65)	(0.16)
-12	0.00	0.00	0.00	0.00	0.00	0.00	-0.03	-0.01	0.45	0.19
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(1.13)	(0.39)	(0.97)	(0.29)
-11	0.00	0.00	0.00	0.00	0.00	0.00	-0.52	-0.16	-0.78	-0.13
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.86)	(0.31)	(0.56)	(0.09)
-10	-0.03	0.04	-1.33	-0.28	0.00	0.00	-0.44	-0.10	-0.75	-0.20**
	(0.39)	(0.13)	(1.57)	(0.17)	(0.00)	(0.00)	(0.62)	(0.26)	(0.50)	(0.09)
-9	-0.32	-0.10	-0.81	-0.13	0.00	0.00	0.69	0.24	-0.95*	-0.15**
	(0.37)	(0.13)	(1.30)	(0.15)	(0.00)	(0.00)	(0.77)	(0.26)	(0.56)	(0.07)
-8	0.23	0.05	-2.28*	-0.33***	0.00	0.00	-0.05	0.08	-0.64	-0.12*
	(0.38)	(0.15)	(1.19)	(0.12)	(0.00)	(0.00)	(0.56)	(0.21)	(0.44)	(0.07)
-7	0.50	0.14	-3.24**	-0.28*	0.00	0.00	0.34	0.14	-0.61	-0.05
	(0.41)	(0.14)	(1.28)	(0.14)	(0.00)	(0.00)	(0.56)	(0.19)	(0.54)	(0.07)
-6	0.42	0.05	-1.16	-0.16*	0.00	0.00	-0.06	-0.01	-0.47	-0.08
	(0.42)	(0.11)	(0.94)	(0.09)	(0.00)	(0.00)	(0.82)	(0.23)	(0.42)	(0.06)
-5	-0.03	-0.08	-3.32***	-0.34***	-0.22	-0.01	-0.53	-0.15	-0.28	-0.09

	(0.32)	(0.09)	(0.90)	(0.11)	(4.60)	(0.22)	(0.52)	(0.18)	(0.47)	(0.06)
-4	0.19	0.01	-1.76***	-0.13*	-3.54	-0.10	-0.13	-0.03	-0.15	-0.02
	(0.36)	(0.10)	(0.64)	(0.07)	(3.84)	(0.16)	(0.57)	(0.20)	(0.45)	(0.05)
-3	-0.16	-0.05	-3.74***	-0.19**	-6.98*	-0.13	0.19	-0.12	0.19	0.03
	(0.29)	(0.10)	(1.04)	(0.09)	(4.07)	(0.16)	(0.51)	(0.17)	(0.32)	(0.05)
-2	-0.41	-0.11	-1.63*	-0.13*	-4.67***	-0.16	-0.39	-0.23	-0.19	-0.04
	(0.34)	(0.11)	(0.85)	(0.07)	(1.57)	(0.11)	(0.46)	(0.15)	(0.26)	(0.05)
-1	-0.16	0.01	1.16	0.05	1.78	0.05	0.22	0.03	0.52	0.05
	(0.35)	(0.12)	(1.00)	(0.08)	(4.26)	(0.07)	(0.40)	(0.13)	(0.48)	(0.05)
1	-0.45	-0.06	2.31**	0.06	3.43	0.12	0.25	0.05	0.23	-0.05
	(0.38)	(0.11)	(1.03)	(0.08)	(4.22)	(0.09)	(0.42)	(0.15)	(0.41)	(0.05)
2	-0.39	-0.02	6.99***	0.44***	-6.64	-0.09	-0.08	-0.02	0.79	0.06
	(0.38)	(0.12)	(1.47)	(0.10)	(4.52)	(0.12)	(0.39)	(0.13)	(0.50)	(0.05)
3	-0.14	-0.01	8.69***	0.49***	-1.68	0.15	0.74	0.20	1.40***	0.10*
	(0.46)	(0.15)	(1.56)	(0.07)	(4.25)	(0.13)	(0.46)	(0.16)	(0.45)	(0.06)
4	-0.07	0.03	10.11***	0.59***	-0.09	0.04	0.76	0.09	1.52***	0.11*
	(0.61)	(0.16)	(1.54)	(0.11)	(2.87)	(0.14)	(0.50)	(0.16)	(0.49)	(0.06)
5	0.27	0.12	11.57***	0.61***	4.71	0.15	1.01**	0.18	1.79***	0.08
	(0.66)	(0.18)	(2.43)	(0.13)	(3.74)	(0.14)	(0.50)	(0.18)	(0.60)	(0.06)
6	-0.15	0.05	15.16***	0.74***	0.57	0.15	0.64	0.18	1.31**	0.08
	(0.66)	(0.18)	(3.96)	(0.17)	(3.34)	(0.12)	(0.53)	(0.20)	(0.62)	(0.06)
7	0.62	0.21	35.17***	1.15***	8.46	0.08	0.48	-0.01	3.03***	0.14**
	(0.78)	(0.20)	(1.48)	(0.14)	(6.71)	(0.17)	(0.58)	(0.19)	(1.10)	(0.07)
8	1.09	0.10	29.95***	1.08***	-3.64	-0.20	0.54	0.01	1.50*	0.12*
	(1.13)	(0.23)	(5.82)	(0.15)	(4.69)	(0.17)	(0.57)	(0.17)	(0.76)	(0.07)
9	-0.50	0.03	30.45***	1.22***	0.00	0.00	0.92	0.14	1.62**	0.10
	(1.29)	(0.28)	(2.87)	(0.20)	(0.00)	(0.00)	(0.61)	(0.23)	(0.79)	(0.08)
10	0.00	0.00	23.61***	1.17***	0.00	0.00	2.23***	0.78***	4.05**	0.64***
	(0.00)	(0.00)	(1.75)	(0.18)	(0.00)	(0.00)	(0.69)	(0.26)	(1.61)	(0.12)
Unemp (CC)	-0.10	-0.00	-0.11	-0.02	-0.01	-0.00	-0.04	-0.01	0.02	-0.00
	(0.10)	(0.03)	(0.09)	(0.02)	(0.09)	(0.01)	(0.09)	(0.02)	(0.06)	(0.01)
Constant	3.28***	0.96***	6.32***	1.46***	12.11***	1.73***	4.39***	1.26***	6.23***	1.37***
	(0.68)	(0.18)	(1.43)	(0.17)	(1.28)	(0.15)	(1.19)	(0.31)	(0.96)	(0.12)
Obs	663	663	1,209	1,209	1,391	1,391	1,170	1,170	4,433	4,433
R-squared	0.10	0.07	0.53	0.15	0.10	0.01	0.03	0.04	0.04	0.02
# groups	51	51	93	93	107	107	90	90	341	341
Year FE	X	X	X	X	X	X	X	X	X	X
Pair FE	X	X	X	X	X	X	X	X	X	X
Berkeley										
Davis	X	X							X	X
Irvine										
LA										
Riverside										
SD			X	X					X	X
SB					X	X			X	X
SC							X	x	X	x

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1