

**Discussant Comments On: Hyman, Benjamin, Matthew Freedman, Shantanu Khanna, and David Neumark, “Firm Responses to State Hiring Subsidies: Regression Discontinuity Estimates from a Tax Credit Formula” ([January 2023 version](#))**

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To begin with, I want to praise the paper for being one of the best papers ever written on business tax incentive programs. The paper is noteworthy because it uses a plausible natural experiment to estimate the causal effects of business tax incentives. The paper exploits variations in the scoring cutoff for firms advancing in winning a California Competes Tax Credit (CCTC) to estimate the credit’s effects on the firm’s subsequent employment. The paper finds very large effects, which could be used to justify expanding CCTC and implementing similar programs in other states.

My focus today will be on how to best interpret this paper’s large estimated effects. Do these estimates represent long-run effects on both the firm’s employment and total California employment? Or are these estimated effects, in their consequences for long-run California employment, offset by various substitution effects? I will argue the latter interpretation is more plausible.

CCTC provides a one-time tax credit of about \$10,000 per job, calculated as the gross cost of the program divided by the number of proposed jobs at the project site. Based on the job creation estimates in the paper, CCTC job creation of the program would be about 82% of the jobs at the proposed project site<sup>1</sup>. After adjusting for credit recaptures from projects that do not fulfill their promises, the authors estimate a net cost per job created of about \$8,000 (\$7,721, in the paper’s Appendix H).

If this represents PERMANENT job creation, then the net cost per job created is extraordinarily low, compared to the research literature. In [my review](#) of the research literature on place-based policies in the Journal of Economic Perspectives, I summarized the literature as implying that state and local tax incentives have a net cost per direct job created of at least \$165,000, or over 20 times the estimated cost per job created reported here.

But maybe these existing studies are wrong. As I said, the methodology here is quite good for detecting causal effects. But the estimates do seem to be too large to represent plausible effects on long-term job creation in California.

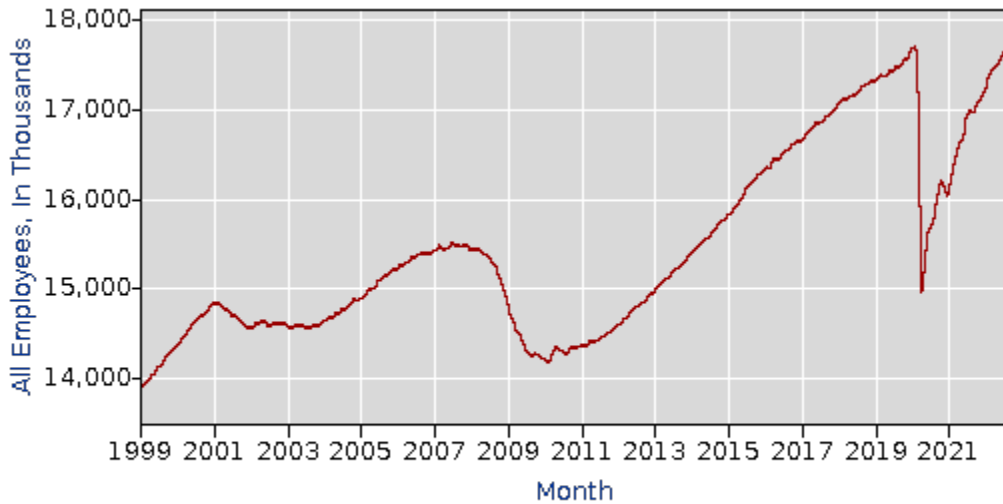
For example, suppose we think that the main direct effect of CCTC on the firm’s California job creation is due to job creation at the proposed project site. Then the program has a “but for” effect of 82%, that is 82% of the projects would not have gone ahead “but for” the credit

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<sup>1</sup> Based on California data, from 2014 to 2021 the program had gross incentive costs of \$1,523.3 million. According to this paper, credit recaptures average 36.7% (appendix D), so net incentive costs would be \$964 million. Dividing by net costs per jobs created of \$7,721 yields estimated job creation effects during this period of around 125K jobs. During this same period, the jobs at the awarded projects were 153K. 125K divided by 153K is 82%.

program, and only 18% of the proposed projects would have gone ahead anyway. This is for a program that only provides a one-time incentive of \$10,000. Average payroll per job in these firms is reported by the authors as being about \$60,000 (\$60,908 in Appendix H), so this incentive is 17% of average payroll cost. But this is out of one year of payroll costs. For considering long-run investment and job creation decisions, the firm will have to consider how this one-time incentive alters the present value of long-run costs. If firms use a real annual discount rate of 12%, as has been found in some studies, then the incentive of \$10,000 is only 2% of the present value of the payroll costs of the proposed project. But the 82% but-for rate implies that for a 2% reduction in labor costs, the expected employment due to the project quintuples, which seems like an implausibly large effect.

I also note that if we look at the estimated job creation of this program from 2014-2021, and assume the incented projects have a multiplier of 2, then the program from 2014-2021 should have created about 250,000 jobs. ( $250,000 = 153,000$  jobs in incented project times 82% induced jobs times a multiplier of 2). But during this period from December 2014 to December 2021, according to BLS, non-farm employment in California increased from 15.780 million jobs to 17.140 million jobs, or a little less than 1.4 million jobs. So, the program would have increased California’s job growth in this period by about 18%. This should be noticeable in the data, but it is not. If one looks at California’s job growth path, there is no sign of an upturn in 2014, when the program began.



Source: [Bureau of Labor Statistics, State and Metro Area Employment, Hours and Earnings](#), data on California non-farm employment, in thousands. Downloaded December 4, 2022.

Finally, if the program has such a low cost per net job added to total California employment, then it is a no-brainer that the program should be continued and expanded, and in fact every state should be advised to drop whatever they are currently doing and adopt this program. For

example, [according to the Institute for Taxation and Economic Policy](#), taxes as a percent of personal income in California average about 8 percent for a middle-income California taxpayer, and are somewhat higher for those with lower or higher incomes. So, 8 percent of \$60,000 salary is about \$4,800 per year, which indicates the program pays for itself in higher tax revenue within 2 years. If we add in other benefits from job creation, such as higher employment rates and therefore higher earnings per capita, the program has clear economic benefits, with no net fiscal costs.

What are the alternative interpretations of these data? One possible interpretation is that these effects do not represent effects on the long-run job creation of these firms, but an effect on the *timing* of the firm's job creation.

What needs to be understood is that given the way the program is structured, a firm can to a large extent control its odds of getting into the second round. If a firm feels it is urgent to immediately expand employment, it might increase its odds by only asking for a modest incentive per job created. If the firm has some flexibility regarding when to undertake a project, the firm might initially ask for a large cash incentive per job created, and only in later applications lower the amount. In the latter situation, the lucky firms whose large bids are accepted will immediately go ahead with the project, while the less lucky firms will wait to go ahead until they get approved in a later round,

A second possible interpretation is that even if the program does increase the firm's long-run job creation, it might not affect overall California job creation. As is true in most states, there is lot more to state economic development policy in California than handing out cash incentives. California heavily regulates new development via zoning and environmental permits. The Governor's Office of Business and Economic Development has staff persons who help with "business development" and even some people specifically helping with permitting issues – see <https://business.ca.gov/about/go-biz-team/>

Now, here is one hypothesis: the state has long been picking winners by providing selective assistance to businesses to overcome zoning and permitting barriers and other problems in creating new jobs. In the past, the screening for selectively providing this service was done entirely subjectively – they can't help everyone, so they target cases where: (1) the firm might go elsewhere and/or (2) the project is a large number of jobs, so helping has economies of scale, and/or (3) the jobs are good jobs and/or (4) the jobs are in a high poverty area.

After CCTC, it could be that now the team uses CCTC as a quantitative screening device for these services.

If this hypothesis is correct, then Yes, you would get this paper's result: firms that get through the first round by meeting the cutoff are more likely to expand jobs, *not* because of the credit by itself, but because they get help in overcoming California's regulatory and permitting morass.

However, this also does not really increase California's overall jobs from what they would have been otherwise, or the prior trend. The state was already selectively picking winners and pushing through some projects, and now it is using the CCTC as part of this process. But if what is really

crucial is the regulatory and permitting help, and if the overall volume of that help has not changed, merely how that help is targeted, then the CCTC would not have any effect on overall California business growth, even though the program does affect *which firms* get to grow.

In sum, I think this study convincingly shows that CCTC does affect a firm's California employment during the years right after the credit is received. But I am skeptical whether these estimated effects represent increases in total California employment, which is one of the key goals of state economic development policy.

## Appendix: Other evidence relative to assessing this paper on CCTC effects

In addition to the evidence cited in the main discussant comments, other evidence relative to CCTC includes the following:

- In a [study I did of incentive programs](#), most of which award credits significantly in excess of California Competes' credits of \$10,000 per job, I found that the mean "but for" across 34 studies was 23%, or about one-fourth of the amount reported here. In the best 7 studies, the estimated "but for" averaged about 7%. So, the "but for" here is 4 to 12 times what has been found in studies of often larger incentive programs.
- In the main comments, I calculated job creation effects and cost effects as a percentage of the jobs and payroll at the project site. I got the result that a 2% reduction in the present value of the project's payroll costs quintupled the project's expected job creation. We could instead recalculate these job creation effects and payroll cost reduction effects as percentages of the firm's total California jobs and payroll. But this simply lowers both percentage effects equally, and we still have percentage effects on job creation that are very large compared to the percentage effects on the firm's long-run costs.
- In a [recent report](#), I outlined a regional econometric model I have developed to estimate the benefits and costs of incentive programs. When I model a program that offers \$10,000 per job, and induces 82% of all incented projects, I find that the fiscal benefits exceed costs within 2 years. And when I include other benefits – higher employment to population ratios, higher real wages, higher property values, I get a benefit-cost ratio of over 70 to 1.