Colorado's Job Growth Incentive Tax Credit and Evaluation of Job Growth in Colorado Firms

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April 8, 2014

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Abstract – Many states offer tax credits to firms that increase employment. Do firms that receive credits exhibit different job growth than do non-recipient firms? This paper evaluates Colorado's Job Growth Incentive Tax Credit (JGITC) using comparisons of employment changes in recipient, eligible non-recipient, and non-eligible firms. Results from a linear regression of employment change during the year in which a firm receives credit indicates that, in 2011 and 2012, recipient firms create more jobs than eligible non-recipients and non-eligible firms. These results suggest that the credit may lower the cost of hiring new employees, but it is more likely that recipient establishments had already planned significant growth and applied to the program in order to receive a credit on that growth.

Introduction

Approximately half of the states in the U.S. offer tax credits to firms that increase employment, and these credits are referred to as job tax credits. Faulk and Hicks (2010) categorize these credits as either statutory or discretionary. Statutory credits are those given to firms that meet specific criteria, such as creating at least a certain number of jobs in a specific sector, whereas discretionary credits are negotiated to attract or retain firms. Colorado's Job Growth Incentive Tax Credit (JGITC), which is evaluated in this paper, is a statutory credit for firms that meet both employment and wage criteria. Although many states offer these credits, not all evaluate them with the same level of scrutiny.

State evaluations of tax credits are limited at best. The Pew Center on the States identifies four criteria that states may utilize for effective evaluation of tax credit programs, whether for the purpose of job creation or not: inclusion of incentive evaluation into policymaking decisions; establishment of regular review of tax incentive programs; measurement of economic impact; and determination of whether incentives achieve intended goals.[1] These criteria, which measure the scope and quality of evaluation, are combined to grade states' efforts to be accountable for their programs.

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[1] *Evidence Counts: Evaluating State Tax Incentives for Jobs and Growth.* Pew Center on the States, 2012, p. 4.

States are graded as "leading the way" if they meet many standards of evaluation, as "mixed results" if they meet only one standard, or as "trailing behind" if not meeting any standard. The Pew Center reasons that 13 states are leading, 12 have mixed results, and the remaining 25, as well as the District of Columbia, are trailing behind.[2] Colorado is one of the states identified as trailing behind.

Economic literature devoted to job tax credits is similarly limited. Literature concerning state tax credits for job growth or retention focus on two key issues: 1) participating firm type; and 2) job growth attributable to the credit. It is important to know which types of firms are apt to apply for credits to forecast the size and cost of the program. Also, it is important to quantify what job growth, if any, is due to the credits to inform future policies.

Economic studies on job tax credits provide mixed results as to which firms apply and as to their effectiveness, measured in job growth attributable to the credit. Those that examine participation do not produce a consensus as to which types of firms are most likely to participate. Faulk (2002) studies Georgia's Job Tax Credit (JTC), which is a statutory program, and regresses participation on control variables for the economic well being in the firm's geographic region, initial employment, tax liability, headquarters location, a manufacturing dummy, previous tax credits claimed, and whether the firm is a startup. Faulk finds that previous credit claims, tax liability, and headquarters location are significant predictors of participation in Georgia's tax credit program.

Gabe and Kraybill (1998), in a study on Ohio's Job Creation Tax Credit program, a discretionary program, use a logit model with firm and community characteristics and

[2] *Evidence Counts: Evaluating State Tax Incentives for Jobs and Growth.* Pew Center on the States, 2012, p. 2.

find that a firm's age and size are negatively correlated to the probability of participation. There is a negative relation between positive recent employment growth and credit receipt. If a firm is in a county with a nonattainment environmental status or with high wages, it is less likely to participate. Gabe and Kraybill also find that industry type is not important to participation. There are not common characteristics, such as firm size or industry type, that are identified as significant to the participation decision across the studies that examine participation.

The job creation effects of tax credits are difficult to estimate, for there is no certain way to determine what would have happened if a tax credit had not been available. Some studies use opinion surveys of firms, whereas others use econometric approaches. Faulk (2002) finds that participant firms created between 1,870 and 2,196 more jobs than eligible non-participants, and attributes these jobs to the tax credit. The cost per job created by the credit falls between $2,280 and $2,678. The job attribution is rather low, but so is the cost per job created. Sohn and Knaap (2005) perform a similar study in Maryland that examines the state's Job Creation Tax Credit program, which intends to concentrate job growth inside "priority funding areas" (PFAs), or economically distressed regions. Their model looks at job growth in five sectors and aggregates data by zip code. They control for economic well being and other regional characteristics and find mild employment growth in the services, transportation, communication, and utilities sectors within PFAs.

Not all studies, however, show significant positive job growth at low costs. On the federal level, Bishop and Montgomery (1993) examine the Targeted Jobs Tax Credit program, which aims to increase employment for ex-offenders, the handicapped, and Aid

for Families with Dependent Children recipients. Using survey data from over 3,400 firms, Bishop and Montgomery estimate that jobs are created at a cost between $5,270 and $11,581, but that a subsidy intended to create one position only truly creates between .13 and .3 jobs. Thus, there is a disconnect between the price reported and the outcome.

Some state programs reach similarly troubling conclusions. In a study on North Carolina's Lee Employment Tax program, Luger and Bae (2005) find positive job growth at a high cost. They find that the credits lower the cost of labor, and thus increase labor demand. Interestingly, they found a much higher cost per job created than researchers found in other states. They calculate that the average cost per job was $147,463, which is about 50 times higher than costs estimated in other states. Further, they note that although the state reported 7,888 jobs created, they can only attribute 262 to the tax credits, perhaps due to the high costs.

Hicks and LaFaive (2011), in a study on the Michigan Economic Growth Authority (MEGA), which is a discretionary credit, also find little evidence of job growth. The study uses a fixed-effects model and measures regional and sectoral employment changes that result from MEGA credits and accounts for the state of Michigan's economy during the years examined. Hicks and LaFaive find that MEGA has no significant impact on employment, per capita income, or changes in the unemployment rate in Michigan. They note that the only noteworthy change in employment is in the construction sector, which has growth at the cost of $123,000 per job. Such programs are effective in the sense that they create jobs, which is the intended goal, but the high cost detracts from their worth.

This study improves on other studies on statutory job tax credits by comparing employment change in recipient establishments during the year in which they receive credit to employment change for eligible non-recipients and non-recipient firms to evaluate whether they exhibit different job growth during that same year. Further, this study includes past employment change, base employment, and average wages as independent variables to evaluate whether they are good predictors of future employment change.

Colorado's Job Growth Incentive Tax Credit

The JGITC is a statutory credit with requirements based on net employment growth, a minimum wage threshold, and job maintenance. To be eligible to receive credit in year t for taxes owed for year $t-1$, an establishment must create at least 20 net new jobs from year $t-3$ to year $t-2$ and each new job must pay at least 110% of the average wage of the county in which the establishment is located. Further, each new position must be maintained for one full year, through year $t-1$.

Businesses that wish to receive the credit must submit an application to the Office of Economic Development and International Trade (OEDIT) in year $t-3$, before the job growth occurs, and must be examined by the OEDIT during the year in which they forecast sufficient job growth and the subsequent year, during which the OEDIT will ensure that jobs are maintained. Firms that submit an application and create at least 20 net new jobs at the sufficient wage threshold and maintain those jobs are given tax credits in year t equal to 50% of the Federal Insurance Contributions Act (FICA) tax paid by the

firm for each net job created. The FICA tax amount paid by the firm is equal to 7.65% of the employee's wages, and the amount redeemable through the JGITC is 3.825%.[3]

The program's structure gives some expectations as to which establishments will apply. Being that the minimum job requirement is 20 net new positions, it is likely that small firms will be unable to apply; as seen in Table 2, 20 jobs is double the size of the average establishment in Colorado. Further, given that the establishment must apply for the credit in year *t-3*, before job growth occurs, the establishment must be expecting increased job growth at a significant magnitude. Thus, establishments that are planning a significant expansion or reallocation from an out of state branch are more likely to apply. Establishments that create at least 20 net new jobs but do not expect it would not know of the job growth before it was too late to apply.

Data and Methodology

The data sample used in this study comes from Colorado's Quarterly Census of Employment and Wages (QCEW). The QCEW contains monthly employment figures, quarterly total wages, county codes, and industry type for all establishments that pay unemployment insurance in the state. This analysis uses data from 2008 through 2013; the JGITC was established in 2009 and 2011 was the first credit year. The unit of observation is a single establishment in a given month, examined annually.[4]

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[3] FICA taxes are split between two taxes, social security and Medicare. Current social security tax rates are 12.4%, of which the employer must pay half. The current Medicare tax rate is 2.9%, also split equally by the employee and employer. Thus, the employer pays 7.65% of the FICA taxes; the amount redeemable through the JGITC is 50%, or 3.825% of the employees' wages. Internal Revenue Service http://www.irs.gov/taxtopics/tc751.html.

[4] A single establishment, as opposed to a firm, is used because several firms have multiple establishments and each has different employment and wages.

The regression used, which is run for each year 2011-2013, analyses whether firms that received the credit create more jobs subsequently than do eligible non-recipient and non-eligible firms:

$$\Delta y_{it} = \beta_0 + \beta_1 RC_{it} + \beta_2 EligNonRec_{it} + \beta_3 \Delta y_{-2it} + \beta_4 (\Delta y_{-2it})^2 + \beta_5 \Delta y_{-1it} + \beta_6 (\Delta y_{-1it})^2$$
$$+ \beta_7 y_{-1it} + \beta_8 AvgWage_{-1it} + \beta_9 County_{it} + \beta_{10} Industry_{it}$$

Where Δy_{it} is the change in employment during the credit year t (that is, the employment change from December in year t-1 to December in year t), RC_{it} is an indicator variable that equals 1 if an establishment received credit in year t and 0 if it did not, $EligNonRec_{it}$ is an indicator variable that equals 1 if, ex post, a firm would have been eligible to receive credit in year t, Δy_{-2it} is the change in employment from year t-3 to year t-2 (or employment change during the year in which recipient establishments must create 20 jobs), $(\Delta y_{-2it})^2$ is the change in employment from year t-3 to year t-2 in quadratic form, Δy_{-1it} is the change in employment from year t-2 to year t-1 (or employment change in the year prior to the credit year), $(\Delta y_{-1it})^2$ is the past employment change term for year t-1 in quadratic form, y_{-1it} is base employment in the credit year, $AvgWage_{-1it}$ is the average wage in Quarter 4 by establishment in the year prior to credit receipt, $County_{it}$ is a vector of all county codes, and $Industry_{it}$ is a vector of industry codes as identified by the NAICS.[5] Sedgwick County and the NAICS classification "Other" are omitted.

Being that the QCEW reports total wages by quarter, as opposed to monthly wages for individual employees, there is some uncertainty as to the true average wage per job created from years t-3 to t-2. To calculate which establishments would have been eligible, total wages in Quarter 4 are summed for each county and then divided by the

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[5] The North American Industry Classification System (NAICS) classifies firms by industry type, such as agriculture or manufacturing, to allow for data analysis.

number of employees in the respective counties, giving average quarterly wages. Then, establishments are marked as eligible if: 1) their employment change from year *t-3* to year *t-2* is greater than or equal to 20; 2) their change in wages divided by their change in employment (an estimate for the wage per job created) is greater than or equal to 110% of the average quarterly wage for the county in which they are located; and 3) the sum of their net employment change in year *t-3* through *t-2* and year *t-2* through *t-1* is at least equal to 20.

Past employment change for both years *t-3* to *t-2* and for years *t*-2 to *t-1* is included to determine whether it has any bearing, either positive or negative, on the establishment's employment change in the credit year, and the quadratic form of past employment change is included because the relation between past and present employment change is likely nonlinear and the study wishes to demonstrate the ranges in which past employment change has a negative or positive effect on present employment change. Davis and Haltiwanger (1992), in a longitudinal study on manufacturing firms, find that firms with significant job growth experience subsequent job losses; this large fluctuation is attributed to job reallocation.

The analysis controls for base employment to examine whether larger firms have a greater magnitude of current employment change; it is more difficult for smaller firms to have high employment change. The threshold for eligibility is 20 net new jobs, and this number may be difficult to achieve for small firms. Finally, the average quarterly wages in year *t-1* for each establishment are included, for it is possible that establishments with higher average wages will experience lower job growth in the present; if an establishment

has higher average wages, it is more costly to hire additional employees. Descriptive

statistics provide a sense of scope for variables of interest in each year examined.

Table 1: Numbers of Non-Eligible, Eligible, and Participant Establishments by Year

Year t	All	Non-Eligible	Eligible	Recipient
2011	223,213	222,509	704	6
2012	223,231	222,466	765	5
2013	215,056	214,329	727	8

Table 1 demonstrates the numbers of non-eligible, eligible, and participant

establishments in each year 2011 through 2013. Of approximately 220,000

establishments each year, about 0.003% would have been eligible, ex post, to receive the

credit. And of those few eligible firms, less than one percent participate in the program.

Table 2: Average Base Employment (year $t-1$) by Establishment Type in Year t

Year t	All	Non-Eligible	Eligible	Recipient
2011	9.341	8.855	162.918	201.667
2012	9.517	8.890	191.642	275
2013	10.194	9.681	161.195	374.625

To give a sense of firm size, Table 2 provides base employment figures for non-

eligible, eligible, and participant establishments in each year. Non-eligible establishments

are small; it would be unlikely that any could create the 20 jobs necessary for eligibility

in one year. Eligible and participant establishments, however, are very large; they

average over 15 times larger than non-eligible establishments. The 20 jobs needed to

establish eligibility are approximately one tenth of the average total employment for

eligible establishments and one twelfth of the average total employment for participant

establishments.

Table 3: Average Employment Change by Establishment Type from Year $t-3$ to Year $t-2$

Year t	All	Non-Eligible	Eligible	Recipient
2011	-0.494	-0.679	57.994	34.333
2012	0.0813	-0.157	69.384	65.4
2013	0.192	-0.0148	61.216	30.25

During the year in which recipient firms created at least 20 net new jobs to establish future eligibility, Colorado establishments, on average, experienced little job growth, as seen in Table 3. Non-eligible establishments, on average, experienced slight job losses, whereas eligible and recipient firms experienced positive and significant job growth.

Table 4: Average Employment Change by Establishment Type from Year *t-2* to Year *t-1*

Year *t*	All	Non-Eligible	Eligible	Recipient
2011	0.0778	0.0183	18.908	56.5
2012	0.184	0.116	20.135	38.2
2013	0.327	0.263	19.140	82.5

As seen in Table 4, past employment change from year *t-2* to *t-1*, the year in which recipient establishments had to maintain their 20 net new jobs, varies greatly between the types of establishments. All establishments, on average, have very small past employment change. Non-eligible establishments tend to have positive, but small, past employment change, whereas eligible and participant establishments have positive and large employment change. Past employment change in recipient establishments, however, is greater in magnitude. Establishments that received credit in year *t* experienced significant positive job growth in the two years prior to credit receipt.

Table 5: Average Quarterly Wage by Establishment Type and Year, $

Year	All	Non-Eligible	Eligible	Recipient
2011	13,044.01	13,045.07	12,831.86	25,802.76
2012	13,246.11	13,240	14,377.64	23,874.11
2013	14,345.94	14,305.89	22,454	29,180.55

Now, to give a sense of wages, Table 5 presents average quarterly wages by establishment type for each year. On average, Colorado establishments pay approximately $13,500. Payment in eligible establishments varies; in year 2011, pay is slightly less, but it is slightly more in 2012 and much more in 2013. Interestingly,

recipient establishments average nearly double the pay of the average Colorado establishment. Thus, the jobs they create subsequent to credit receipt likely have much higher wages than do jobs created at other types of establishments.

Table 6: Average Employment Change by Establishment Type in Credit Year t

Year t	All	Non-Eligible	Eligible	Recipient
2011	0.184	0.205	-6.311	32.167
2012	0.316	0.416	-28.727	102
2013	0.240	0.274	-9.814	67.125

Finally, Table 6 demonstrates average employment change for each establishment type in credit year t (December t-1 to December t). Again, employment change, averaged across all establishments, is minute. The establishments that would have been eligible to receive credit in year t experience negative job growth during the credit year. Eligible firms grew by approximately 19 net new positions in the prior year, and approximately 62 the year before that, whereas they shrunk by 14 net positions, on average, in the current year. Yet again, recipient establishments grew substantially during the year in which they received credit for past job growth.

Results

The regression on employment change examines whether establishments that received the credit in year t created more jobs that year than did eligible non-recipients and non-eligible firms, controlling for past employment change for two years and one year prior, base employment, and average quarterly wages in the year prior to receipt to determine whether those factors have bearing on employment change in the current year. Table 7 illustrates estimates for those parameters in each year examined.

For years 2011 and 2012, credit receipt is a positive and significant indicator of employment change in year t. In those years, recipient establishments created between 38

and 128 more jobs than did non-eligible establishments. Similarly, eligible non-recipients created more jobs than non-eligible establishments in years 2012 and 2013; eligible non-

Table 7: Regression Results by Year

Δy	2011		2012		2013	
	Coef.	St. Err.	Coef.	St. Err.	Coef.	St. Err.
β_0	0.475	1.276	2.416	1.577	-0.0519	1.876
RC_{it}	38.469**	9.005	128.431**	48.360	88.614*	52.721
$EligNonRec_{it}$	1.766	5.047	16.800**	6.469	14.017**	3.555
Δy_{-2it}	0.0382	0.0705	-0.193*	0.106	-0.120**	0.044
$(\Delta y_{-2it})^2$ (1,000)	9.2e-3	0.0191	0.0357	0.0515	-0.0408*	0.0244
Δy_{-1}	-0.109**	0.0411	-0.399**	0.140	-0.188**	0.0563
$(\Delta y_{-1it})^2$ (1,000)	0.0288*	0.0163	0.513	0.182	0.0498**	0.0136
y_{-1it}	-0.0156	0.0106	0.00146	0.00948	-0.0131	0.00978
$\beta_8 AvgWage_{it-1}$ (100,000)	-3.36e-3	0.144	4.89e-3	0.0907	0.012	977.9
R-sq.	0.0312		0.1415		0.0502	

recipients created approximately 15 more jobs than non-eligible establishments in these years.

     Tests are run to ensure that the estimated coefficients for establishments that received credit (RC) and eligible non-recipient establishments (EligNonRec) are not equal. The tests calculate the probability that $-RC + EligibleNonRec = 0$, and Table 8 shows statistics and significance levels.

Table 8: Probability of Equality of Coefficients for Recipients & Eligible Non-Recipients

Year	2011	2012	2013
Prob. RC = EligNonRec	0.0001**	0.0196**	0.1562

The two estimated parameters are statistically different for years 2011 and 2012.

Employment change during year *t-2*, the year in which recipient firms had to

create at least 20 net new positions, has a negative and statistically significant, but

miniscule, effect on employment change in year *t* for year 2013 only. Establishments that

experienced positive job growth in the year immediately preceding credit receipt,

however, experience negative job growth in the current year, although only to a small

extent. The quadratic form of employment change during year *t-2* was positive,

significant, and near zero for year 2013. Thus, in year 2013, employment change in the

current year may be represented by a U-shaped curve for which X represents the number

at which past employment change (in the year immediately preceding) switches from

having a negative to a positive impact on current employment change. This X value is

calculated and represented in Table 9.

Table 9: X Value for Minimum of U-Shaped Curve

Year	2013
X Value	1883.768

The X value is extremely large; past employment in 2013 has a negative influence

on employment in year t if employment change from year *t-2* to year *t-1* is less than

1,883.768. This employment change is far greater in magnitude than what establishments

experienced in a given year. Thus, for all years, we may infer that for every job created in

the year immediately prior, establishments experienced a loss of approximately 0.2 jobs.

The assumption that larger firms would have higher employment change in the

current year was not supported by the data. The estimates for coefficients of past

employment are statistically insignificant. Larger firms did not exhibit different

magnitudes of job growth in year *t*. Also, the assumption that wages could influence

subsequent job growth was not supported by data.

Discussion

Establishments that receive credit through the JGITC create more jobs than eligible non-recipient and non-eligible establishments. Recipient establishments had to demonstrate growth and maintenance of at least 20 jobs to qualify to receive the credit, but the JGITC program has no requirements on what establishments must do after they receive the credit. Why, then, do recipient establishments create more jobs? The credit could increase an establishment's demand for labor by reducing the cost of labor in terms of wages. Another possibility is that the establishments that received credit had planned, prior to applying for the credit, a significant expansion in the state and wished to receive the credit to mitigate some of the costs of expansion. Either option could explain an establishment's decision-making process in applying for the credit and merits further discussion.

First, we assume that an establishment hires more employees after it receives the credit because the cost of labor is reduced after credit receipt. An establishment's labor elasticity of demand provides a sense of how much of the quantity labor demanded, measured in the number of employees hired or fired, will change when the cost of labor, measured in wages, changes. An equation for labor elasticity of demand will provide an estimate of recipient establishments' elasticity of demand:

$$\%\Delta D_{li} / \%\Delta W_i$$

Where D_{li} is establishment *i's* quantity demanded for labor and W_i is establishment *i's* wages.

On average, recipient establishments hired 40.789 employees during the year in which they qualified to receive credit (year *t-3* to year *t-2*). For each of these new hires,

the establishment received a credit equal to 3.825% of the employee's yearly wage. Subsequent to receiving credit, each firm hired, on average, 65.263 employees in year *t*. Thus, each credit of 3.825% of an employee's wage now applies to a reduction in cost for 1.600 new hires.

Dividing the 3.825% reduction by the 1.600 new hires for which the credit applies in the current year, we find that the change in wages is 2.391%. Being that each recipient establishment, on average, had 293.790 employees at the beginning of the year in which they received credit and added 65.263 employees, each establishment grew by approximately 22.214%. Thus, the estimated labor elasticity of demand for these firms is 9.291 (in absolute value); a one percent increase in wages causes a 9.291% decrease in quantity of labor demanded.

This number must be compared to estimates of labor elasticity of demand in economic literature for plausibility. Two reviews of economic literature that estimate the value of labor elasticity of demand provide a sense of values to be expected when reviewing empirical studies. Hamermesh (1993) surveys literature on heterogeneous labor demand and concludes that labor elasticity of demand lies between 0.15 and 0.75, but estimates that it is closest to 0.30. Lichter *et al.* (2014) conduct a meta-analysis on 1,560 estimates of the elasticity of labor demand, of which the mean short-run elasticity is 0.212, the mean intermediate-run elasticity is 0.447, and the mean long-run elasticity is 0.341. Their study concludes that intermediate-run elasticity is 0.274 and long-run elasticity is 0.330. The best estimate obtained for long-run elasticity is 0.246, which is very near the estimate reached in Hamermesh (1993). These comprehensive reviews

suggest that a one percent increase in wages causes the quantity of labor demanded to drop by approximately 0.3%.

These estimates are much smaller in magnitude when compared to the estimated elasticity of labor demand of participant firms in this study. Assuming that the decrease in the cost of labor from credit receipt induces an increase in the quantity of labor demanded in recipient firms, these firms are much more susceptible to changes in wages than are firms evaluated extensively in economic literature. In fact, the estimated labor elasticity of demand in this study suggests that recipient firms are nearly 30.97 times more susceptible to changes in wages. The large difference between the estimated elasticity in this study and estimated elasticity in other literature suggests that something else causes this increase in job growth.

The second explanation mentioned is that the establishments planned significant job growth or expansion prior to applying for credit and applied to ease tax burdens associated with additional employment. That explanation, however, assumes that the incidence of the tax falls on the hiring establishment. If the incidence of the tax falls on the employees and is capitalized in their wages, then the credit is essentially a monetary transfer from the state to the firm.

Firms that planned to consolidate employment from out of state at an establishment in Colorado could be inclined to apply for the credit to mitigate the significant costs associated with significant reallocation of labor. Larger firms, which may have tax advisers and the wherewithal to apply for the credit program, could be better able to discover and apply for the program. And, given the program's minimum employment growth requirement, such firms certainly comprise the list of those eligible

to apply. Given the program's structure and the evident disconnect between elasticity of labor demand for participant firms and measured elasticity in other studies, this explanation is more persuasive. Why, then, is participation so low among eligible firms?

Given that significant job growth in a firm could be a result of planned expansion or consolidation, it is possible that not all eligible establishments anticipated sufficient job growth to become eligible to receive credit. Large firms with higher than county average wages may very well add 20 new jobs in a year without expecting to do so; they would be eligible to receive the credit but would not have known to apply. Davis *et al.* (1996) find lower rates of job reallocation within plants for workers with higher wages and attribute these workers' higher level of human capital to a stronger relationship with the firm. Further research could look at the rate at which an establishment expands employment throughout the year in which they establish eligibility to see if participant firms have sudden growth whereas eligible non-recipients experience more gradual job growth. Sudden growth could suggest planned reallocation or expansion for which the establishment wished to receive credit to lower costs.

Further research on both statutory and discretionary programs could also examine the political connections between an establishment and the state organization that gives the credit. Especially for discretionary programs, the human element in deciding which establishment receives credit merits scrutiny, as there is a possibility that campaign contributions or other connections could unduly influence the selection process used in granting credits. For statutory programs, the low participation rate could also be explained by a lack of knowledge about the credit program; establishments with political connections may be more aware of the credit.

Conclusions

Establishments that received credit through the JGITC created, on average, 83 more jobs than non-eligible firms in years 2011-2012. Thus, even after those establishments received credit for demonstrated job growth in the previous year at a minimum wage threshold and maintained those jobs for one year, they continued to exhibit greater job growth when compared to others, including eligible non-recipient establishments.

The JGITC's structure is such that larger establishments are better able to apply. However, past employment is not a significant indicator of job growth in the current year. Past employment change in the year immediately prior, however, is a significant indicator of job growth in the current year. Establishments that experienced positive job growth in the previous year subsequently experienced negative job growth in the current year. This effect is persistent for a significant range of past employment change.

In looking at the possible causes for job growth by recipient establishments in the current year, two possibilities emerge: 1) the credit induced job growth as it lowered the cost of wages, or; 2) the establishments which received credit had previously planned significant growth and applied for the credit to receive a monetary transfer that may ease in costs associated with increased hiring over time. An analysis on the labor elasticity of demand for participant firms suggests that, if credit receipt is responsible for subsequent job growth, recipient firms are much more susceptible to changes in wages compared to other firms studied in surveys of economic literature on elasticity of labor demand. Thus, it is more likely that the second option, which posits that recipient establishments applied for the credit after expecting significant future job growth, is the best explanation.

Acknowledgements

I would like to extend my sincere gratitude and thanks to Dr. Jeffrey Zax for advising my research and writing and Drs. Terra McKinnish and Martin Boileau for instructing courses that facilitated and eased in the research and writing process.

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