Iowa's High Quality Jobs Program

Tax Credits Program Background Information

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Preface

During the 2005 Legislative Session the Iowa Department of Revenue received an appropriation to establish the Tax Credits Tracking and Analysis Program to track tax credit awards and claims. In addition, the Department was directed to assist the legislature by performing periodic economic studies of tax credit programs. This is the second evaluation study completed for the Iowa High Quality Jobs Program.

As part of the evaluation, an advisory panel was convened to provide input and advice on the study's scope and analysis. We wish to thank the members of the panel:
Pat CallanIowa Workforce Development

James Morris	Iowa Workforce Development
Joe Murphy	Iowa Business Council
David Peters	Iowa State University
Tom Sands	Iowa Taxpayers Association
Paul Stueckradt	Iowa Economic Development Authority
Bulent Uyar	University of Northern Iowa

The assistance of an advisory panel implies no responsibility for the content and conclusions of the evaluation study.

This study and other evaluations of Iowa tax credits can be found on the Iowa Department of Revenue website.

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Executive Summary

The High Quality Jobs Program (HQJ) was enacted in tax year 2005. The program was established to promote businesses investment and employment in Iowa. The Iowa Economic Development Authority (IEDA) works with businesses interested in making capital investments in Iowa with the intent of either creating or retaining high-quality jobs to determine whether those businesses could qualify for benefits under HQJ. If approved, IEDA signs a contract with the business and monitors the agreement over a five-year period to ensure contract terms and conditions are met.

The HQJ program provides several tax incentives and direct financial assistance including a nonrefundable Investment Tax Credit, a Sales and Use Tax refund of taxes paid during construction, a Supplemental Research Activities Tax Credit, and forgivable loans offered by IEDA. Awards made under the High Quality Jobs Program were capped at $130 million per year between fiscal year 2012 and 2016, but that cap has been lowered to $105 million during fiscal years 2017 through 2021.

The main findings of the evaluation study are the following:

High Quality Jobs Program Awards

- Between fiscal years 2011 and 2021, 1,062 projects were approved for $496.6 million in incentives under the High Quality Jobs Program. Those awarded projects had promised investment of $67.6 billion, 34,742 new jobs, and 17,279 retained jobs in Iowa.

- Manufacturing businesses accounted for more than 60 percent of the promised investment and 58.6 percent of the current valid HQJ awards.

High Quality Jobs Program Tax Credit Claims

- Between tax years 2011 and 2021, $274.8 million of HQJ tax incentives have been claimed.

- Of the total incentives claimed, close to 50 percent were against the corporation income tax, 39.0 percent were against the sales and use tax, 9.4 percent were against the individual income tax and 4.4 percent were against the franchise tax and the insurance premium tax.

Economic Analysis of High Quality Jobs Program Outcomes

- Economic analysis suggests that industries of HQJ projects in counties with awards experienced an estimated 97 percent increase in employment (about 603 jobs) over the span of a decade, compared to that in the control group of comparable counties without HQJ awards.

- The report does not find evidence that HQJ program increased county-wide employment, probably because the employment impacts of the HQJ program were not large enough to be identifiable on the county level, though they were significant at an industry level.

- On the industry level, HQJ projects in rural areas were estimated to have a larger spillover effect on employment than those in urban areas.

I. Introduction

States and cities have competed for business investments with numerous subsidized tax incentives as demonstrated by a widely reported news story of a bidding war for Amazon's second headquarters a few years ago.[1] It is increasingly important to rigorously evaluate such tax incentive programs to ensure that incentives are effective, accountable, and fiscally sound.

As one of the major business development tools in Iowa, the Iowa High Quality Jobs (HQJ) Program provides qualifying businesses tax credits and direct financial assistance to encourage those businesses to locate, expand or modernize a facility in Iowa. The Iowa Economic Development Authority (IEDA) works with businesses interested in making capital investments in Iowa, with the intent of either creating or retaining high-quality jobs, to determine whether those businesses qualify for benefits under HQJ. If approved, IEDA signs a contract with the business and monitors the agreement over a five-year period to ensure contract terms and conditions are met.

To examine if the HQJ program has served as a valuable policy tool to induce investment and employment, prioritize economic development efforts, and improve effectiveness, this report evaluates the HQJ program using public data and data available from various state agencies using econometric methods. The results can help the State to continue to improve the incentive design to ensure that they are effectively and efficiently achieving their goals.

The primary research question is whether the HQJ program helped create jobs and how large the impact was. The difference-in-differences method is used to estimate the effect on employment at the industry-level and county-level employment growth. The difference-in-differences method compares the changes in outcomes over time between a population enrolled in a program (the treatment group) and a population that is not (the control group).

This report also examines the employment effect in Iowa's rural communities because of the extensive interest from policymakers. To analyze the HQJ program's impacts on rural employment, the employment multiplier is estimated, which is a good indicator of the effectiveness of the HQJ program on rural job creation beyond the direct employment incentivized by the program. The employment multiplier is the number of jobs in rural communities affected by an increase in employment of the HQJ project itself.

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[1] "Amazon Plans Second Headquarters, Opening a Bidding War Among Cities", New York Times, https://www.nytimes.com/2017/09/07/technology/amazon-headquarters-north-america.html

Section II summarizes related literature on economic development tax incentive programs. Section III compares similar programs from other states. Descriptive statistics of HQJ tax incentives awards and claims are included in Section IV. Economic analysis of the impacts of the HQJ tax incentives on employment is in Section V. Section VI draws the conclusion. The thorough description of the HQJ program is included in the Appendix.

II. Literature Review

Economic research on state and local economic development tax incentives received much attention in recent years. One highly cited research paper on the effects of business incentives (Greenstone, Hornbeck, and Moretti, 2010) utilized a unique dataset from the corporate real estate journal *Site Selection*. This data set describes where large manufacturing projects decided to locate and the business incentives that were received. The journal collected information for a sample of large manufacturing investment projects between 1981 and 1993, including the county that won the project, as well as one or two runner-up counties which were counties that had survived a long selection process but narrowly lost the competition. The study estimated the impact on the estimated productivity of the investment project itself and the estimated productivity of its industry through a differences-in-differences model. The main findings showed that productivity increased by 12 percent in the winning county compared to that in the runner-up counties.

Since it is very rare that the bidding information of different local communities competing to win investment projects is made public, the data used in the above study (Greenstone, Hornbeck, and Moretti, 2010) was also analyzed in several other studies (Patrick 2016; Bloom et al., 2019; Patrick and Partridge, 2019; Slattery, 2020; and Slattery and Zidar, 2020). Patrick (2016) and Patrick and Partridge (2019) added more establishment level data from the Census Bureau and used a similar model to that in the study by Greenstone, Hornbeck, and Moretti (2010). Their findings were that there were positive effects of winning investment projects on productivity in local communities, but the effects were only 8.7 percent, smaller than then 12 percent estimated in the 2010 study. On the other hand, Bloom et al. (2019) added large manufacturing project bidding data between 2005 and 2013 to the original dataset and using the same method, found that winning investment projects had positive impacts on productivity and local employment, consistent with the results from Greenstone, Hornbeck, and Moretti (2010)

One of the most recent papers is Slattery and Zidar (2020), which expanded the dataset used in Greenstone, Hornbeck, and Moretti, 2010 and focused on the effect of these large investment projects on local employment. Slattery and Zidar found that business incentives increased average employment within the three-digit industry of the awarded project by roughly 1,500 jobs. However, they did not find strong evidence that the tax incentives increased broader economic growth at the state and local level. The authors also analyzed the urban/rural division in economic development. They found that urban

communities were more likely to induce business investments by offering incentives and rural communities had to provide larger incentives and spend more per job.

While there was evidence to support the argument that tax incentives were effective in inducing local employment, the impact was found to be too small to influence the total output of a state (Greenstone, Hornbeck, and Moretti, 2010; Slattery and Zidar, 2020). Bartik (2017) estimated effects of tax incentives on state GDP growth between 1998 and 2014. Using a cross-sectional regression, the estimated effect of state tax incentives was statistically insignificant and not identifiable on a state's economy.

While the effects of tax incentives were not large enough for the state GDP, research has shown incentives to be more effective to improve employment in low-income areas. Bartik (2018) used research results from literature to establish a general equilibrium model and simulate the benefits of tax incentives in areas with various income groups. The results showed that the average share of economic benefits, such as personal income and property values in the lowest income quintile areas was about 5.1 percent when there were no tax incentives. With business tax incentives, low-income areas would receive an estimated 11.7 percent of economic benefits, exceeding the share they normally received.

III. Comparing with Similar Tax Incentive Programs in Other States
The Tax Foundation summarized investment tax incentives from all states (Walczak et al., 2021). Based on this work, similar tax incentive programs from other states are presented in Table 1.

In this report, similar economic development tax incentives from other states are grouped into two categories: tax incentives calculated based on the amount of investment and tax incentives calculated based on the number of jobs and wages.

There were 32 states and districts with some type of tax incentive program to promote capital investment and job creation in their jurisdictions. Among them, 24 states have tax incentive programs that issue awards based on capital investment. There are also 19 states which have tax incentive programs that issue awards based on the number of new jobs and wages. Eleven states have tax incentive programs that take both capital investment and new jobs into consideration when issuing awards.

For the 24 tax incentive programs that issue awards based on capital investment, no program awards tax credits equal to more than 10 percent of eligible capital investments to participating businesses. Only Hawaii, Iowa, Nebraska, and North Dakota also offer

sales tax refunds to the qualifying businesses. Most programs only provide non-refundable tax credits with only New York and Wisconsin offering refundable income tax credits.

For those 19 tax incentive programs that issue awards based on new jobs and wages, all of them either offer a percentage of payroll of the new jobs or a fixed cash payment to participating businesses. Thus, benefits received by businesses participating in these programs are not restricted by their income tax liabilities. Louisiana offers a tax credit equal to 25 percent of new payroll for eligible software development businesses, the highest tax credit rate among these 19 programs. Georgia offers a cash payment of up to $5,000 per new job per year, the highest cash incentive among these programs.

Among Iowa's neighboring states, Missouri, Nebraska and Wisconsin all have tax incentive programs based on job creation. The top tax credit rates in these three states are 7 percent of payroll per new job per year in Missouri, 9 percent in Nebraska, and 7.8 percent in Wisconsin. Both Nebraska and Wisconsin have tax incentive programs based on capital investment. In Nebraska, the top tax credit rate is 7 percent of eligible capital investment and the sales tax refund is also available. In Wisconsin, the top tax credit rate is 2.5 percent of real property and the tax credit is refundable.

IV. Descriptive Statistics of High Quality Jobs Program Awards and Claims
A. High Quality Jobs Program Awards
This section examines HQJ Program awards. Every High Quality Jobs Program application needs to be approved by the Iowa Economic Development Authority Board (the Board) before a contract is signed and the tax credit award or financial assistance is issued. Between fiscal years 2011 and 2021, the Board approved 1,517 HQJ applications with the total projected qualified business investment of $92.5 billion (see Table 2). Approved HQJ incentives for these 1,517 applications totaled $818.1 million, including $386.4 million of Investment Tax Credits, $218.5 million of sales and use refunds (including about $4.3 million of Third Party Developer Tax Credits), $36.1 million of Supplemental Research Activities Tax Credits, and $177.1 million of direct financial assistance (including loans and forgivable loans). The highest annual total was approved in fiscal year 2012 at $215.7 million. Total HQJ incentives approved in fiscal year 2020 were only $27.2 million, the lowest year, coinciding with the trough of the pandemic period.

Not all HQJ projects that are approved by the Board will be funded. If the business or IEDA determine that the approved project will not achieve the promised goals laid out in the initial agreement or even agreed to in a contract the project can be revoked or defaulted by IEDA or declined by the business before a tax credit certificate is issued. In

other words, not all approved projects will result in executed agreements. IEDA reports 1,062 HQJ awards issued between fiscal years 2011 and 2021, equal to 70.0 percent of all approved HQJ applications in the same period (see Table 3). Businesses receiving these 1,062 awards promised investments of $67.6 billion in Iowa, 73.1 percent of the total HQJ investment amount from all approved applications. The ratios of HQJ awards to approved HQJ incentives between fiscal years 2011 and 2021 generally declined over time during this period, suggesting that many of the newly approved HQJ projects are still in the performance period or the maintenance period. Some current valid contracts could fall short of the requirements before those projects are closed. On average, about 78.0 percent of all approved HQJ applications have been issued tax credit certificates.

The type of HQJ program award varies. The HQJ program will either award tax incentives or direct financial assistance. Between fiscal years 2011 and 2021, total HQJ tax incentives awarded on executed contracts were $496.6 million, about 77.8 percent of total incentives approved and executed, and the total direct financial assistance awarded was $141.6 million, about 22.2 percent of total incentives (see Figure 1). The HQJ tax incentives included investment tax credit (ITC) awards, sales and use tax refunds, and Supplemental Research Activities Tax Credit (SRAC) awards. Among those incentives, the ITC awards were $299.7 million, accounting for 47.0 percent of the total HQJ awards. Sales and use tax refund awards totaled $177.9 million, 27.9 percent of the total HQJ awards. The amount of sales and use tax refund also included about $1.6 million of Third-Party Developer Tax Credits, which is an incentive for sales and use taxes paid by a third-party developer. SRAC awards totaled $19.0 million, accounting for 3.0 percent of the total HQJ awards.

Trends in job creation and investment varies over time. For the 1,062 HQJ awards, businesses promised to create 34,742 new jobs and retain 17,279 existing jobs (see Table 4). Awarded businesses promised to create 6,005 new jobs in contracts awarded during fiscal year 2015, the highest number between fiscal years 2011 and 2021. The number of projected created jobs was 610 in contracts awarded during fiscal year 2020 and 666 during fiscal year 2021, lower than any other years during this period. This reflects the economic difficulties during the pandemic period. Businesses receiving HQJ awards had promised $24.1 billion of investment in fiscal year 2012 and $17.1 billion in fiscal year 2013, much higher than any other years during this period, due to some very large investment projects participating in the HQJ program in these two years.

HQJ awards also vary by industry. Among the1,062 HQJ awards, the majority (763) were awarded to manufacturing businesses. Wholesalers received 87 HQJ awards, the second highest number of awards among all industries (see Table 5). Awards received by manufacturing businesses totaled $388.7 million, accounting for 60.9 percent of total HQJ awards. Those manufacturing businesses pledged to make capital investments of $33.2 billion in Iowa, 49.1 percent of total pledged investment. Businesses in the information industry, mostly data centers, pledged to invest $15.8 billion in Iowa (23.4%) and received

$88.8 million of HQJ awards (13.9%), the second highest among all industries. Manufacturing and information accounted for 73.5 percent of pledged investment and received close to 75.0 percent of HQJ award amounts.

The type of award differed across industry. ITC awards comprised $198.1 million of the $388.7 million of HQJ awards received by manufacturing businesses and $67.0 million were sales and use tax refunds. For information businesses, $18.1 million of the $88.8 million of HQJ awards were ITC and $68.0 million were sales and use tax refunds. This difference in the distribution of HQJ incentives by industry likely reflects the fact that manufacturing businesses are able to benefit more from the ITC, which is related to the number of jobs created or retained and the amount of capital investment. Businesses in the information industry, many of which are data centers with a relatively lower number of jobs per investment dollar, could benefit more from tax incentives to refund sales taxes paid on construction materials and computer equipment. Manufacturing businesses were also awarded $13.3 million of SRAC and agriculture businesses were awarded $5.0 million of SRAC, which suggests that much of business research was conducted by traditional manufacturing and agriculture businesses in Iowa.

Jobs promised and retained differed across sectors. Manufacturing businesses pledged to create 23,256 new jobs and retain 4,616 existing jobs for awards made between fiscal years 2011 and 2021, accounting for 66.9 percent of all pledged new jobs and 26.7 percent of all pledged retained jobs (see Table 6). Businesses in the wholesale trade industry and professional service industry pledged to create 2,932 new jobs (8.4%) and 2,757 new jobs (7.9%) respectively. These top three industries accounted for more than 80 percent of total pledged new jobs for all HQJ awards. The professional service industry pledged to retain 11,160 jobs out of the total 17,279 retained jobs (64.6%). The average value of awards per pledged jobs varies widely across the industries, from $1,563 for the administrative and support and waste management industries to close to $75,000 for the information industry. Manufacturers received an average of $13,944 in awards per job.

B. High Quality Jobs Program Tax Credit Claims
This section analyzes claims made between fiscal years 2011 and 2021. Each HQJ award is assigned a unique tax credit certificate number. Taxpayers are directed to report that tax credit certificate number when making a claim and their total claim amount cannot exceed the award amount specified on the certificate; however, not all taxpayers include the tax credit certificate number. Although the Department attempts to verify claims by requesting missing information from taxpayers, those efforts were not as thorough in the early years of tracking.

Like awards, HQJ claims varied by type. Between fiscal years 2011 and 2021, more than $274.8 million of HQJ tax incentives were claimed by taxpayers (see Table 7). The ITC

claims total $127.2 million, accounting for 46.3 percent of the claimed HQJ tax incentives. Sales and use tax refunds, including a small count of Third-Party Developer Tax Credit claims, totaled $107.2 million (39.0%) and SRAC claims totaled $40.4 million (14.7%). Some of these claims were made on awards issued before fiscal year 2011, so SRAC claims exceeded the total SRAC awards issued between fiscal years 2011 and 2021.

The HQJ tax incentives can be claimed against individual income tax (including estate and trusts), corporation income tax, sales and use tax, franchise tax, insurance premium tax, and moneys and credits tax. Between fiscal years 2011 and 2021, $129.7 million (47.2% of all claimed HQJ tax incentives) were claimed against corporation income tax (see Figure 2). The sales and use tax refunds totaled $107.2 million, accounting for 39 percent of all claimed HQJ tax incentives. Individual taxpayers, mostly shareholders of pass-through entities, claimed $25.9 million of HQJ tax incentives (9.4%). Banks and insurance companies claimed about $12.0 million of HQJ tax incentives (4.4%).

Corporate taxpayers claimed 71.8 percent of ITC ($91.3 million) and 95.2 percent of SARC ($38.4 million) (see Table 8). Individual taxpayers, through pass-through entities only claimed $24.0 million of ITC and under $2 million of SRAC. Banks and insurance companies only claimed ITC ($12.0 million) against franchise tax and insurance premium tax.

V. Economic Analysis of High Quality Jobs Program
A. Employment at Rejected High Quality Jobs Program Applicants
The key purpose of the HQJ Program is to create and retain jobs in Iowa. If employment at the rejected projects' locations still experienced similar growth rates compared to awarded projects' locations, this might suggest that businesses would make investments and create jobs even *without* tax incentives. To examine this hypothesis, employment data for rejected or rescinded applications were collected. We look at the period between, 2011 and 2019. Keep in mind that businesses with rejected or rescinded awards may be inherently different than those awarded credits. For example, businesses that lose awards may have lower employment or employment growth than those businesses awarded credits.

Using IEDA's HQJ award database, a total of 21 rejected HQJ applicants could be matched with IWD data which contain quarterly employment information on the branch level of all Iowa employers. Among those 21 businesses, only 6 experienced positive employment growth between 2011 and 2019. The other 15 either experienced employment decline at the HQJ project locations, or abandoned the project locations altogether. The total employment at the project locations of these 21 rejected applications was 4,356 in 2011 and 4,314 in 2019, nearly flat over this period (see Figure 3). As a

comparison, it was reported that 34,742 jobs were created by approved HQJ projects (see Table 6). Thus, this result does not support the hypothesis that businesses would make investments and create jobs even without tax incentives.

B. Estimating Impacts of High Quality Jobs Program on County Employment
Another way to identify what would have happened to employment in Iowa counties in the absence of the HQJ program is to compare Iowa counties with HQJ program businesses to similar counties in states outside of Iowa. We use difference-in-differences method to do this analysis.

The difference-in-differences method is a statistical method to compare the changes in outcomes over time between a population enrolled in a program (the focus group) and a population that is not (the control group). The potential complication of this method is that Iowa counties with HQJ projects and those without HQJ projects may differ not only in HQJ program participation, but also in other characteristics that affect both program participation and the employment growth. Those inherent differences may bias the estimated impact of the program. Thus, it is essential to select a pool of counties from other states which were also demographically and economically similar to Iowa counties with HQJ programs prior to the HQJ awards. It is assumed that this pool of selected counties would experience the similar employment growth to those in Iowa counties in the absence of the HQJ program. Then, the estimated difference between the actual employment growth from the pre-HQJ period to the post-HQJ period in Iowa counties with the HQJ program and in the selected counties from other states would represent the impact of the HQJ program.

There are many observable demographic and economic characteristics that should be considered for matching Iowa counties and similar counties from other states. A statistical technique called propensity score matching (PSM) was used to select the pool of similar counties from other states. The propensity score is defined as the probability a county in the combined sample of Iowa counties with HQJ programs and all counties from other states that is likely to win HQJ projects, given a set of observed demographic and economic variables. The advantage of PSM is that it allows the problem of matching many characteristics to be reduced to a single metric, the propensity score. Therefore, rather than attempting to match on all values of the variables, cases can be compared on the basis of propensity scores alone.

As the first step of the propensity score matching, a probit model was used to estimate propensity scores. The probit model is a statistical model in which the dependent variable is a binary variable which means that it can have only two possible outcomes. In this case,1 for a county with HQJ projects and 0 for a county without HQJ projects.

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Two sets of employment data were examined using the difference-in-differences model with the propensity score matching method. The first set of employment data were focused on narrow impacts of HQJ projects on the industry employment in the county. The industry employment are numbers of employees at the 3-digit NAICS code level from the County Business Pattern. The second set of employment data were used to examine the impact of HQJ projects on county-wide employment, looking for evidence of whether there were any spill-over effects on employment.

Iowa counties with projects receiving HQJ awards between 2011 and 2016 were chosen to be the focus group. A HQJ project usually takes a few years to complete and reach the promised job creation target. The period between 2008 and 2010 is chosen to be the pre-HQJ period and the period between 2017 and 2019 is chosen to be the post-HQJ period. To implement the propensity score matching, data were obtained from the County Business Pattern released by the Census Bureau between 2008 and 2010.

The equation used to estimate the propensity score is as follows:

$HQJ_i = \beta_0 + \beta_1 S_i + \varepsilon_i$ (1)

- HQJ_i is the binary variable to indicate whether the county i is an Iowa county with projects participating in the HQJ program, where one means participation and zero means non-participation;
- S_i is a set of economic variables of county i, including total county employment, the number of establishments, annual payroll, the share of manufacturing employment to the total employment in county i, and the average annual wage;

The propensity scores estimated from equation (1) contrast the outcomes of Iowa counties with outcomes of counties from other states. If the estimated propensity score of a county from other states is the closest to that of an Iowa county, then this county from other states is considered a similar county and selected as a matching partner to the Iowa county.

Estimation of HQJ Program on County-Industry Employment

Summary statistics of 3-digit NAICS code industry employment in Iowa counties with HQJ projects and counties from other states from 2010 used in the propensity score matching is shown in Table 9. There were 83 observations from Iowa counties entailing employment of industries the same as those of HQJ projects. The average number of employees was 581, the average annual payroll was $28.4 million, and the average wage was $33,947.

Before the propensity matching, there were 38,285 observations from other states entailing employment of industries the same as those of HQJ projects. The average number of employees was 289, the average annual payroll was $12.7 million, and the average wage was $32,411. After the propensity matching, 83 industries in counties from other states were selected as similar industries to ones in the focus group. The average number of employees was 619, the average annual payroll was $27.2 million, and the average wage was $33,392.

The 83 industries at the 3-digit NAICS code level from counties from other states selected through the PSM formed the control group in the difference-in-differences model. The focus group included those industries from Iowa counties with HQJ projects. The equation to be estimated is as follows:

$$E_{it}=\beta_0+ \beta_1 Time_{it}+ \beta_2 Group_{it}+ \beta_3 HQJeffect_{it}+\beta_4 W_{it}+ \beta_5 S_{it}+ \beta_6 U_{it}+\varepsilon_{it} \quad (2)$$

where,

- E_{it} is the log value of the county's industry i's total employment during period t and the log transformation reduces the skewness of the original employment data;
- $Time_{it}$ is a binary variable that equals one when it is after 2016 and equals zero when it is before 2011;
- $Group_{it}$ is a binary variable that equals one for industry i with HQJ projects and equals zero for industry i without HQJ projects;
- $HQJeffect_{it}$ is the multiplication of $Group_{it}$ and $Time_{it}$, which indicates the impact of the HQJ program on industry employment;
- W_{it} is the log value of annual average wage per worker in industry i's during period t and the log transformation reduces the skewness of the original wage data;
- S_{it} is the share of the number of small establishments to the number of all establishments in industry i's during period t, indicating the economic structure of the industry;
- U_{it} is a binary variable that equals one for urban county and equals zero for rural county, where "rural county" is defined to mean any county with a population of 50,000 or less, based on the 2010 census data from the Census Bureau.

Industry wage in a county was calculated at the 3-digit NAICS code level from the County Business Pattern from the Census Bureau. Wage level is chosen to be an independent variable to control for economic development disparity between the focus group and the control group.The number of establishments in the industry in a county also comes from the County Business Pattern. Small establishments are defined as establishments with 50 or fewer employees. S_{it} was calculated as the number establishments with 50 or fewer employees divided by the total number of establishments in a county. When $Time_{it}$ equals zero, it represents the period between 2008 and 2010. When $Time_{it}$ equals one, it represents the period between 2017 and 2019.

The descriptive statistics of economic indicators of counties selected to the sample for the difference-in-differences model estimation is shown in Table 10. The average industry employment of Iowa counties increased from 622 from the 2008-2010 period to 1,173 during the 2017-2019 period, while the average industry employment of out-of-state counties increased from 670 to 923. For the period between 2008 and 2010, the average annual wage per worker for Iowa counties was $44,628. The average annual wage for out-of-state counties was $42,149 between 2008 and 2010. For the period between 2017 and 2019, the average annual wage per worker in Iowa counties was above $55,000 and the average annual wage per worker in out-of-state counties was under $50,000. Using t-test to examine the differences of industry employment and wage between Iowa counties and counties from other states, we found that there were no significant differences between industry employment and wage of the focus group and the control group.

The coefficient β_3 is the parameter of interest in equation (2), which is the interaction between the binary variable $Time_{it}$ and the binary variable $Group_{it}$. This coefficient assesses whether industries of HQJ projects in Iowa counties experience a greater increase of employment after the HQJ projects. A positive and statistically significant coefficient means that the estimated industry employment growth is larger after the county received HQJ projects. A zero coefficient, or statistically insignificant coefficient, means that the employment growth is the same for all counties, which would suggest that HQJ projects have no meaningful impact on industry employment.

The estimation provides evidences to support the argument that HQJ program increases employment on the 3-digit NAICS code industry level. Table 11 reports estimates of equation (2). The coefficient of interest is the estimate for HQJeffect, indicating the impact of HQJ program on industry employment. The estimated coefficient of HQJeffect is a positive 0.68 and the p-value of this estimated coefficient is 0.032. Since the dependent variable is the log value of industry employment, it means that the binary variable indicating HQJ awards increased industry employment by an average of 97 percent compared to the same industries in counties in the control group. The average industry employment prior to HQJ awards was 622 for counties in the focus group. The estimated industry employment increase induced by the HQJ awards was about 603 jobs.

Since this estimation compared the average employment between 2017 and 2019 and that between 2008 and 2010 in both the focus group and the control group, this result suggested that HQJ program helped industries in Iowa counties with awarded projects increase employment over the decade. This estimated industry employment gain exceeded the promised employment from the awarded projects, implying these were likely supporting staff and positions from suppliers.

For other parameters, the estimated coefficient of wage is 0.56 and the p-value is less than 0.0001, suggesting that for every one percent of increase in wage, there is likely a 0.56 percent of increase in industry employment. The estimated coefficient of the binary variable urban is 0.69 and the p-value is less than 0.0001, suggesting that urban counties experienced a faster employment growth than rural counties.

Estimation of HQJ Program on County Wide Employment

Table 12 presents the descriptive statistics of all counties before the propensity score matching, and the descriptive statistics of selected counties after the propensity score matching. There were 39 Iowa counties with HQJ projects between 2011 and 2016. The average county employment in 2010 was 25,780 and the standard error was 6,669. The average share of manufacturing employment was 17 percent. The average number of establishments in the county was 1,526 and the standard error was 329. The average annual payroll was $958.0 million and the average annual wage was $32,948.

Before the propensity score matching, there were 1,792 counties from other states which could potentially be selected to compare with Iowa counties with HQJ projects. The average county employment was 23,573, the standard error was 724. The average share of manufacturing employment was 14.38 percent. The average number of establishments in the county was 1,741 and the standard error was 48. The average annual payroll was $819.3 million and the average annual wage was $32,153.

After the propensity score matching, there were 39 counties selected to compare with Iowa counties with HQJ projects. The average county employment of these 39 counties was 24,366 the standard error was 4,519. The average share of manufacturing employment was 11.30 percent. The average number of establishments in the county was 1,669 and the standard error was 241. The average annual payroll was $824.3 million and the average annual wage was $32,096.

The 39 counties from other states selected through the PSM formed the control group in the difference-in-differences model. The focus group includes those Iowa counties with HQJ projects. The equation to be estimated is as follows:

$$E_{it}=\beta_0+ \beta_1 Time_{it}+ \beta_2 Group_{it}+ \beta_3 HQJeffect_{it}+\beta_4 W_{it}+ \beta_5 S_{it}+ \beta_6 MEst_{it}+ \beta_7 U_{it}+\varepsilon_{it} \quad (3)$$

where,

- E_{it} is the log value of the county i's total employment during period t and the log transformation reduces the skewness of the original employment data;
- $Time_{it}$ is a binary variable that equals one when it is after 2016 and equals zero when it before 2011;
- $Group_{it}$ is a binary variable that equals one for county i with HQJ projects and equals zero for county i without HQJ projects;

- HQJeffect$_{it}$ is the multiplication of Group$_{it}$ and Time$_{it}$, which indicates the impact of the HQJ program on county employment;
- W$_{it}$ is the log value of annual average wage per worker in county i's during period t and the log transformation reduces the skewness of the original wage data;
- S$_{it}$ is the share of the number of small establishments to the number of all establishments in county i's during period t, indicating the economic structure of the county;
- MEst$_{it}$ is the share of the manufacturing employment to the total employment in county i's during period t;
- U$_{it}$ is binary variable that equals one for urban county and equals zero for rural county, where "rural county" is defined to mean any county with a population of 50,000 or less, based on the 2010 census data from the Census Bureau.

County wage was calculated from the County Business Pattern from the Census Bureau. The number of establishments in a county also comes from the County Business Pattern. Small establishments are defined as establishments with 50 or fewer employees. S$_{it}$ was calculated as the number establishments with 50 or fewer employees divided by the total number of establishments in a county. MEst$_{it}$ was calculated as the number of manufacturing establishments divided by the total number of establishments in a county. When Time$_{it}$ equals zero, it represents the period between 2008 and 2010. When Time$_{it}$ equals one, it represents the period between 2017 and 2019.

The descriptive statistics of economic indicators of counties selected to the sample for the difference-in-differences model estimation is shown in Table 13. The average county employment of Iowa counties increased from 25,761 to 27,498 from the 2008-2010 period to the 2017-2019 period, while the average county employment of out-of-state counties increased from 25,159 to 27,130. Manufacturing employment of Iowa counties increased from 4,649 to 6,381 from the 2008-2010 period to the 2017-2019 period. For out-of-state counties, manufacturing employment increased from 4,537 to 5,388 during the same period. For the period between 2008 and 2010, the average annual wage per worker for Iowa counties and out-of-state counties were both under $32,000. For the period between 2017 and 2019, the average annual wage per worker in Iowa counties was slightly above $41,000 and the average annual wage per worker in out-of-state counties was above $40,000. Using t-test to examine the differences of total employment, wage, and manufacturing employment between Iowa counties and counties from other states, we found that there were no significant differences between total employment, wage, and manufacturing employment of the focus group and the control group.

The coefficient β_3 is the parameter of interest in equation (3), which is the interaction between the binary variable Time$_{it}$ and the binary variable Group$_{it}$. This coefficient assesses whether Iowa counties with HQJ projects experience a greater increase in county employment after the HQJ projects. A positive and statistically significant

coefficient means that the estimated total employment growth is larger after the county received HQJ projects. A zero coefficient, or statistically insignificant coefficient, means that the employment growth is the same for all counties, which would suggest that HQJ projects have no meaningful impact on county employment.

The estimation does not provide evidences to support the argument that HQJ program increases employment on the county level. Table 14 reports estimates of equation (3). The coefficient of interest is the estimate for HQJeffect, indicating the impact of HQJ program on county employment. The estimated coefficient of HQJeffect is a positive 0.06, which means the HQJ program helped increase the county employment by about 6.2 percent over a decade, compared to that of the control group. However, the p-value of this estimated coefficient is 0.695, meaning that there is also a more than 50 percent chance that this coefficient could be zero.

For other parameters, the estimated coefficient of wages is 1.06 and the p-value is 0.043, suggesting that for every one percent of increase in wages, there is likely a 1.06 percent of increase in county employment. The estimated coefficient of the share of small establishments is -30.25 and the p-value is less than 0.0001, suggesting that an increase in the share of small establishments to total establishments is correlated with a decrease in county employment. The estimated coefficient of the share of manufacturing employment is -0.64 and the p-value is 0.098, suggesting that an increase of the share of manufacturing employment is correlated with a decrease in county employment. These results might be related to the long-term trends of the decline in manufacturing employment and the number of small businesses. The estimated coefficient of the binary variable urban is 0.94 and the p-value is less than 0.0001, suggesting that urban counties experienced a faster employment growth than rural counties.

The estimated positive and significant impact of the HQJ program on industry employment suggested that the tax incentives helped induce job creation in the industries of awarded businesses, probably adding jobs in supporting positions and supply chains. However, evidence was not found that the HQJ program had a spillover impact on county-wide total employment. These results are consistent with that from Slattery and Zidar (2020). One probable reason could be that some awards helped small businesses. If the industry of the HQJ project had a small employment base before the award, the HQJ project could have a large impact on the industry employment growth. At the same time, the investment was also not large enough to lead to identifiable spillovers at the county level.

Impacts of HQJ Program on Rural Communities

One of the concerns of decision makers on the HQJ program is whether the program provided sufficient supports to local economy of rural Iowa counties. In Iowa, based on the 2010 census data from the Census Bureau, counties with a population of more than 50,000 are Black Hawk, Dallas, Dubuque, Johnson, Linn, Polk, Pottawattamie, Scott, Story, and Woodbury Counties. All other 89 counties are considered rural counties.

There was evidence that rural communities experienced slower economic and employment growth than urban communities in Iowa, even with the supports provided by the HQJ program. Between fiscal year 2011 and 2016, there were 30 rural counties in Iowa with HQJ projects out of a total of 89 rural counties.[2] There were also 36 rural counties in Iowa without any HQJ projects. Between 2008 and 2010, the average county employment in rural counties in Iowa without any HQJ projects was about 3,519. Between 2017 and 2019, that average employment for rural counties without any HQJ projects was 3,464, slightly lower than a decade ago. For the 30 rural counties with HQJ projects, between 2008 and 2019, the average county employment was 9,472. Between 2017 and 2019, the average county employment was 9,687, only 2.3 percent higher than a decade ago. The differences between HQJ counties and counties without HQJ projects are also statistically significant. As a comparison, Iowa statewide employment increased by 6.1 percent during the same period.

To support economic development in rural communities, the HQJ program needs to provide higher tax benefits to businesses choosing to locate in a rural community over an urban community since rural communities are often lacking the necessary infrastructure, availability of talents, and amenities of an urban community (Slattery and Zidar, 2020). Between 2011 and 2016, rural counties received 37.4 percent of HQJ tax incentives and only 27.0 percent of total investments under the HQJ program. For every dollar of investment, HQJ projects in urban counties received 2.8 cents of tax incentives, while HQJ projects in rural counties received 4.6 cents.

To examine the impact of HQJ projects on employment beyond the projects themselves, employment multipliers in rural counties and urban counties were estimated to measure the number of jobs created in other businesses associated with the HQJ projects. In previous sections, it is shown that the HQJ program has a positive and statistically significant impact on industry employment at the 3-digit NAICS code level in a county. Thus, the estimated employment multipliers were defined as the ratio of employment beyond the HQJ projects from industries at the 3-digit NAICS code level, which were the same as the industries of HQJ projects, to the direct employment reported by HQJ projects.

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[2] There are also 23 rural counties in Iowa with HQJ projects awarded after fiscal year 2016.

The industry employment beyond the HQJ projects was calculated as the difference between the average industry employment during the 2017-2019 period and during the 2008-2010 period, minus the direct employment reported by HQJ projects. Employment multipliers for Iowa rural counties and urban counties were estimated by regressing the industry employment beyond the HQJ projects on the direct employment reported by HQJ projects (see Table 15).[3] For rural counties, the estimated employment multiplier is 3.13 with a p-value of 0.148, suggesting that there is an 85 percent chance that 3 additional jobs in the same industry as the HQJ project were created when one job was created by the HQJ project. For urban counties, the estimated employment multiplier is 1.16 with a p-value of 0.110, suggesting that there is a close to 90 percent chance that one additional job in the same industry as the HQJ project were created when one job was created by the HQJ project in urban counties.

While p-values for both estimated employment multipliers were not statistically significant at the 90 percent confidence level used in academic literature, they are considerably close to that threshold. The estimated results were consistent with the previous literature (Bartik, 2018). The rural and low-income counties had higher employment multipliers and would receive a higher share of economic benefits brought by HQJ projects, compared to their share under the scenario without HQJ projects. It is suggested that HQJ incentives directed at rural counties came with a higher cost but also provided a relatively higher employment benefit.

V. Conclusion

HQJ program has provided substantial resources toward attracting investment and employment in Iowa. This report has described the program including award and claim information and analyzed the effects on local employment.

Between FY 2011 and 2021, about $496.6 million of HQJ incentives have been awarded and $274.8 million have been claimed. HQJ tax incentives will be claimed over five years and can be carried forward for seven years, thus many of the awards issued during the past decade will be claimed in the future. Manufacturing industries received more than 60 percent of the tax incentives. Close to 50 percent of tax incentives have been claimed against Iowa corporation income tax.

Using employment data from the Census Bureau and the difference-in-differences modeling with the propensity score matching, this study found that industry employment in the county with the HQJ project experienced a 97 percent increase over the span of a decade, compared to that in the control group. It implied that the HQJ awards not only induce direct employment from the projects themselves, but also help create additional

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[3] The estimated method is similar to that in Bartik and Sotherland (2019).

employment in the same industry, possibly as support staff at the business claiming the credit and staff at suppliers. However, the report does not find evidence that the HQJ program increased county-wide employment probably because some HQJ awards were for small businesses and their employment impacts at the county level were not large enough to impact overall county employment.

This report also analyzed the employment impact in rural and urban counties. The industry employment multipliers were estimated to examine how HQJ projects affect local economy. Using industry employment data of those counties with HQJ projects, the estimated employment multiplier of rural counties was higher than that for urban counties, while the confidence levels of both estimates were slightly lower than 90 percent. The results suggest that HQJ projects in rural areas had a larger spillover employment impact than those in urban areas.

The report did not estimate the effects of HQJ tax incentives on investment decisions of businesses because information regarding a company's site selection process was not available to us. Discussion with business developers and industry representatives suggested that tax incentives are usually one out of many factors for a business to consider when it decides on the location of new investment.

This report also only focused on the employment effect of the HQJ program and did not fully address the question of return on investment of the HQJ program for the State. Future evaluation studies could estimate the net fiscal revenue impacts of the HQJ program and calculate the return on investment of this tax incentive for the policymakers to better measure the efficiency and effectiveness of the program.

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Iowa High Quality Jobs Program

Tax Credits Program Evaluation Study

Tables and Figures

Table 1. Similar Programs from All States

State	Tax Incentives Based on Capital Investment	Tax Incentives Based on Employment
Alabama	1.5% of eligible capital investment for 10 years	
Arizona		$3,000 per new job (max. 400) for 3 years
Arkansas	10% of eligible capital investment	1% of new payroll for 5 years
Colorado	1% of eligible capital investment	3.725% of new payroll for 1 year
Connecticut	5% of eligible capital investment	
Delaware	0.5% of eligible capital investment for 10 years, 10-year phase-in of gross receipts tax for firms qualifying for investment tax credit	$500 per new job for 10 years
Florida	5% of eligible capital investment for 20 years	
Georgia		Varies from $1,250-$5,000 per new job for 5 years
Hawaii	4% of depreciable equipment excise tax refund	
Idaho	3% of eligible capital investment	
Indiana	10% of eligible capital investment	
Iowa	Varies from 1-10% of eligible capital investment, sales tax refund, and research activity tax credit	
Kansas	10% of eligible capital investment over $1,000,000	
Louisiana		25% of payroll and 18% of production costs for software development
Maryland		$3,000 per new job for 1 year ($1M cap per company per year)
Massachusetts	3% of eligible capital investment	
Mississippi	5% of eligible capital investment if in business >2 years	2.5% of new payroll for 5 years
Missouri		Varies from 3-7% of new payroll for 5 years
Montana		1% of new payroll for 3 years
Nebraska	Varies from 4-7% of eligible capital investment , and refund of sales tax paid on capital investment	Varies from 4-9% of new payroll (based on pay level of each job) for 7 years
New Jersey	2% of qualifying investment capped at $1M, plus up to $1,000 per job for 2 years	Based on job creation, 0.1% to 1.0% of qualifying investment for 5 years
New Mexico	5.125% of cap investment up to $500,000	8.5% of new payroll (up to $12,750) per job paying $60,000+ per year for 4 years
New York	2% of eligible capital investment, refundable	5% of new payroll for 10 years
North Dakota	Sales tax exemption for machinery for new firms	
Oklahoma	2% of eligible capital investment for 5 years	
Rhode Island	10% of eligible capital investment	
South Carolina	2.5% of eligible capital investment and 20% of qualifying investment	Varies from $1,500-$2,750 per new job
Tennessee	Varies from 1-5% of eligible capital investment	$4,500 per new job
Virginia		$1,000 over 2 years per new job in excess of 50 jobs
West Virginia	2% of eligible capital investment for 10 years	
Wisconsin	1.5% of personal property and 2.5% of real property, minimum of $1M capital investment, refundable	Varies from 6.1-7.8% of total wages for 3 years, refundable
District of Columbia		$3,000 per new job for 2 year (no carry-forward)

Source: Tax Foundation

Table 2. High Quality Jobs Program Approved Incentives, Fiscal Years 2011-2021

Fiscal Year	Total Number of Approved Projects	Total Pledged Business Investment (in Billion $)	Approved Investment Tax Credits (in Million $)	Approved Sales and Use Tax Refunds (in Million $)	Approved Supplemental Research Activities Tax Credits (in Million $)	Total Approved Tax Incentives (in Million $)	Approved Direct Funding Assistance (in Million $)	Total Approved HQJ Incentives (in Million $)
2011	35	$0.6	$6.8	$4.8	$7.2	$18.9	$10.8	$29.7
2012	87	$24.1	$121.2	$49.8	$5.0	$176.0	$39.7	$215.7
2013	127	$22.0	$60.1	$48.1	$1.4	$109.6	$17.9	$127.5
2014	98	$2.9	$10.8	$22.9	$0.4	$34.1	$4.9	$39.1
2015	162	$6.3	$28.4	$14.4	$1.2	$44.0	$15.5	$59.5
2016	190	$4.8	$28.5	$16.3	$15.2	$60.0	$23.1	$83.2
2017	184	$5.1	$22.1	$19.4	$0.6	$42.1	$23.0	$65.1
2018	208	$12.1	$48.5	$12.6	$0.5	$61.5	$12.6	$74.1
2019	131	$4.7	$21.8	$15.6	$4.2	$41.6	$17.0	$58.5
2020	117	$4.8	$15.9	$6.7	$0.0	$22.7	$4.5	$27.2
2021	178	$5.1	$22.4	$7.9	$0.3	$30.6	$8.1	$38.6
Total	1,517	$92.5	$386.4	$218.5	$36.1	$641.0	$177.1	$818.1

Source: High Quality Jobs Program Records from Iowa Economic Development Authority

Table 3. High Quality Jobs Program Incentives on Awarded Contracts, Fiscal Years 2011-2021

Award Fiscal Year	Total Number of Awards	Total Business Investment (in Billion $)	Investment Tax Credit Awards (in Million $)	Sales and Use Refund Awards (in Million $)	Supplemental Research Activities Tax Credit Awards (in Million $)	Total Tax Incentives (in Million $)	Direct Funding Assistance (in Million $)	Total HQJ Awards (in Million $)	Ratio of HQJ Awards to Approved Incentives
2011	35	$0.6	$6.8	$4.8	$7.2	$18.9	$10.8	$29.7	100.0%
2012	87	$24.1	$121.2	$49.8	$5.0	$176.0	$39.7	$215.7	100.0%
2013	97	$17.1	$48.5	$37.6	$1.4	$87.4	$15.8	$103.3	81.0%
2014	86	$2.8	$10.5	$22.9	$0.4	$33.9	$3.7	$37.5	96.0%
2015	135	$5.9	$26.4	$11.8	$1.2	$39.4	$12.4	$51.8	87.0%
2016	157	$4.1	$26.4	$15.8	$1.2	$43.4	$20.3	$63.6	76.5%
2017	163	$2.9	$12.5	$11.2	$0.6	$24.3	$22.7	$47.0	72.2%
2018	144	$3.5	$21.0	$7.8	$0.4	$29.2	$9.8	$39.0	52.7%
2019	80	$3.5	$15.5	$12.1	$1.6	$29.3	$6.5	$35.7	61.1%
2020	42	$2.6	$7.7	$2.9	$0.0	$10.7	$0.0	$10.7	39.2%
2021	36	$0.5	$3.1	$1.1	$0.0	$4.2	$0.0	$4.2	11.0%
Total	1,062	$67.6	$299.7	$177.9	$19.0	$496.6	$141.6	$638.2	
			Ratio of Awards to Approved Amount from Applications						
Ratio:	70.0%	73.1%	77.6%	81.4%	52.6%	77.5%	80.0%	78.0%	

Source: High Quality Jobs Program Records from Iowa Economic Development Authority

Figure 1. Distribution of the High Quality Jobs Program Incentives on Awarded Contracts, Fiscal Years 2011-2021

Source: High Quality Jobs Program Records from Iowa Economic Development Authority

Table 4. High Quality Jobs Program Business Investment and Jobs on Awarded Contracts, Fiscal Years 2011-2021

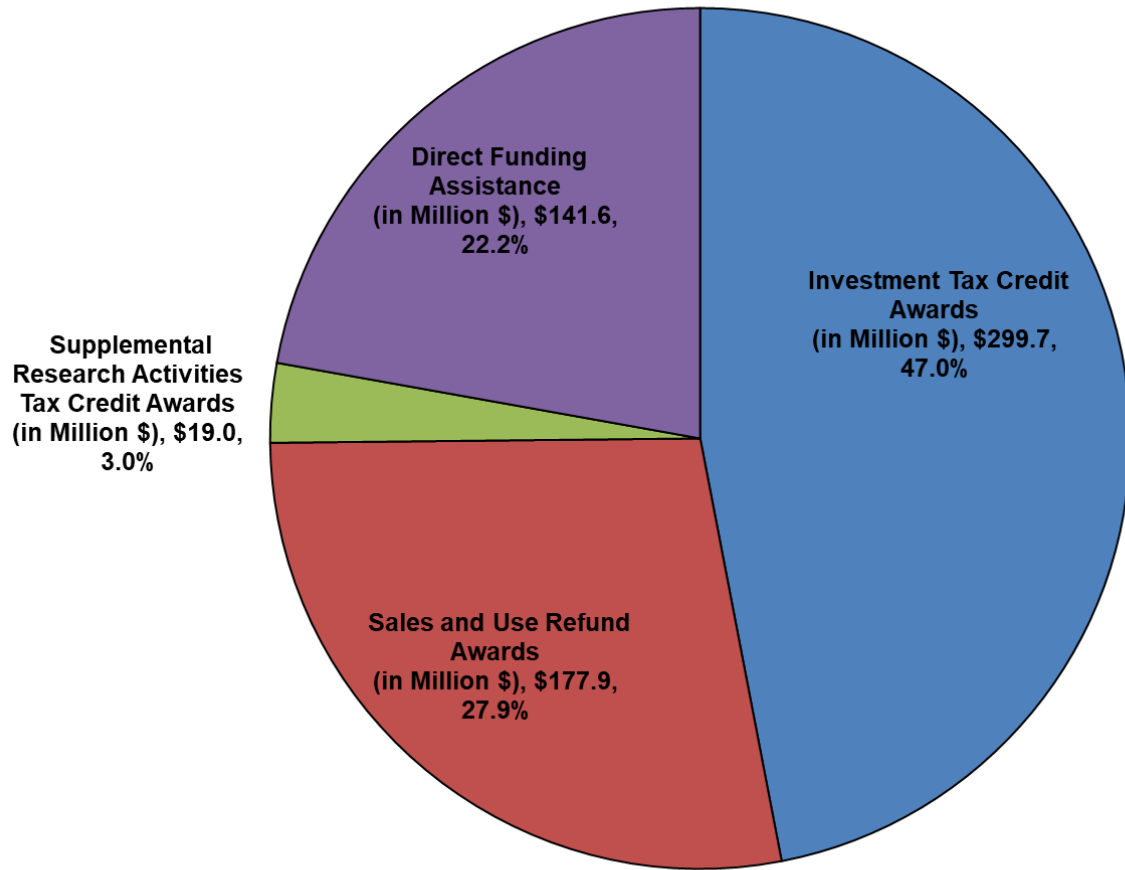| Award Fiscal Year	Total Number of Awards	Number of Awards with Only Created Jobs	Number of Awards with Only Retained Jobs	Number of Awards with Both Created and Retained Jobs	Pledged Business Investment (in Billion $)	Total Projected Jobs Creation	Total Projected Jobs Retention
2011	35	0	0	35	$0.6	836	305
2012	87	0	0	87	$24.1	4,734	2,709
2013	97	0	0	97	$17.1	2,233	10,440
2014	86	0	0	86	$2.8	996	516
2015	135	0	0	135	$5.9	6,005	624
2016	157	0	0	157	$4.1	4,762	1,689
2017	163	0	0	163	$2.9	4,167	342
2018	144	0	0	144	$3.5	4,583	414
2019	80	37	0	43	$3.5	5,150	240
2020	42	42	0	0	$2.6	610	0
2021	36	36	0	0	$0.5	666	0
Total	1,062	115	0	947	$67.6	34,742	17,279

Source: High Quality Jobs Program Records from Iowa Economic Development Authority

Table 5. High Quality Jobs Program Incentives on Awarded Contracts by Industry, Fiscal Years 2011-2021

Industry	Total Number of Awards	Total Business Investment (in Billion $)	Distribution of Business Investment	Investment Tax Credit Awards (in Million $)	Sales and Use Refund Awards (in Million $)	Supplemental Research Activities Tax Credit Awards (in Million $)	Direct Funding Assistance (in Million $)	Total HQJ Awards (in Million $)	Distribution of HQJ Awards
Manufacturing	736	$33.2	49.1%	$198.1	$67.0	$13.3	$110.3	$388.6	60.9%
Wholesale Trade	87	$1.5	2.3%	$9.6	$4.3	$0.0	$8.2	$22.1	3.5%
Professional, Scientific, and Technical Services	77	$3.6	5.3%	$23.9	$11.2	$0.0	$3.9	$38.9	6.1%
Finance and Insurance	25	$0.1	0.1%	$0.6	$0.2	$0.0	$1.4	$2.3	0.4%
Information	22	$15.8	23.4%	$18.1	$68.0	$0.4	$2.3	$88.8	13.9%
Transportation and Warehousing	30	$0.8	1.1%	$9.6	$4.2	$0.0	$1.1	$15.0	2.3%
Agriculture, Forestry, Fishing and Hunting	13	$0.5	0.8%	$2.6	$1.5	$5.0	$1.2	$10.4	1.6%
Construction	18	$0.1	0.2%	$0.8	$0.4	$0.0	$3.6	$4.8	0.8%
Management of Companies and Enterprises	30	$10.9	16.2%	$22.2	$13.8	$0.1	$9.0	$45.1	7.1%
Other Services	6	$0.0	0.1%	$0.1	$0.1	$0.0	$0.6	$0.8	0.1%
Retail Trade	12	$0.9	1.4%	$14.1	$7.0	$0.0	$0.0	$21.1	3.3%
Administrative and Support and Waste Management	6	$0.0	0.0%	$0.1	$0.0	$0.0	$0.0	$0.2	0.0%
Total	1,062	$67.6	100.0%	$299.7	$177.9	$19.0	$141.6	$638.2	100.0%

Source: High Quality Jobs Program Records from Iowa Economic Development Authority

Table 6. High Quality Jobs Program Pledged Investment and Jobs on Awarded Contracts by Industry, Fiscal Years 2011-2021

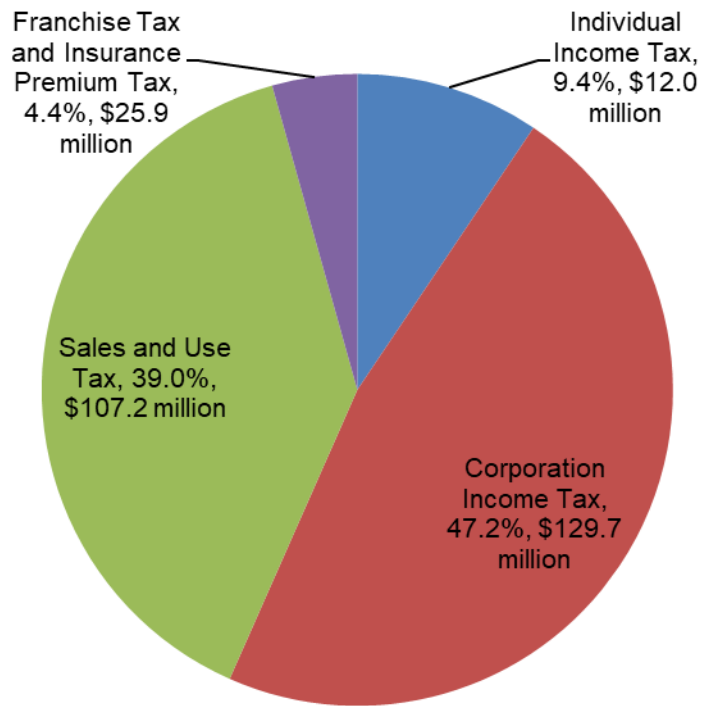| Industry	Total Number of Awards	Total Projected Jobs Creation	Distribution of Created Jobs	Total Projected Jobs Retention	Distribution of Retained Jobs	Total HQJ Awards (in Million $)	Average Awards Per Job
Manufacturing	736	23,256	66.9%	4,616	26.7%	$388.6	$13,944
Wholesale Trade	87	2,932	8.4%	381	2.2%	$22.1	$6,672
Professional, Scientific, and Technical Services	77	2,757	7.9%	11,160	64.6%	$38.9	$2,797
Finance and Insurance	25	360	1.0%	0	0.0%	$2.3	$6,494
Information	22	1,179	3.4%	6	0.0%	$88.8	$74,904
Transportation and Warehousing	30	1,288	3.7%	0	0.0%	$15.0	$11,636
Agriculture, Forestry, Fishing and Hunting	13	594	1.7%	1,050	6.1%	$10.4	$6,300
Construction	18	486	1.4%	0	0.0%	$4.8	$9,968
Management of Companies and Enterprises	30	906	2.6%	66	0.4%	$45.1	$46,424
Other Services	6	240	0.7%	0	0.0%	$0.8	$3,417
Retail Trade	12	648	1.9%	0	0.0%	$21.1	$32,624
Administrative and Support and Waste Management	6	96	0.3%	0	0.0%	$0.2	$1,563
Total	1,062	34,742	100.0%	17,279	100.0%	$638.2	$12,268

Source: High Quality Jobs Program Records from Iowa Economic Development Authority

Table 7. Claims of High Quality Jobs Tax Incentives, Fiscal Years 2011-2021

Fiscal Year	Amount of ITC Applied in Current Tax Year	Share of ITC	Amount of Sales and Use Tax Refunds	Share of Sales and Use Tax Refunds	Amount of SRAC Claims	Share of SRAC	Total Claimed HQJ Incentives
2011	$5,032,844	29.5%	$2,316,456	13.6%	$9,690,722	56.9%	$17,040,022
2012	$8,496,728	69.1%	$659,917	5.4%	$3,134,223	25.5%	$12,290,868
2013	$11,234,238	77.4%	$2,935,645	20.2%	$351,080	2.4%	$14,520,963
2014	$10,085,197	47.3%	$2,683,331	12.6%	$8,538,520	40.1%	$21,307,048
2015	$9,154,479	44.1%	$10,525,410	50.7%	$1,089,640	5.2%	$20,769,529
2016	$24,190,579	53.3%	$16,798,254	37.0%	$4,385,017	9.7%	$45,373,850
2017	$13,292,316	44.0%	$10,110,909	33.5%	$6,799,543	22.5%	$30,202,768
2018	$12,317,544	43.6%	$13,886,898	49.1%	$2,059,404	7.3%	$28,263,846
2019	$9,532,154	23.9%	$28,133,244	70.4%	$2,300,549	5.8%	$39,965,947
2020	$15,983,671	59.8%	$8,814,864	33.0%	$1,914,662	7.2%	$26,713,197
2021	$7,909,537	43.0%	$10,372,942	56.5%	$92,091	0.5%	$18,374,570
Total	$127,229,287	46.3%	$107,237,870	39.0%	$40,355,451	14.7%	$274,822,608

Source: IA 148 Tax Credit Schedule information from Iowa Department of Revenue

Figure 2. Distribution of the High Quality Jobs Program Incentive Claims by Tax Type, Fiscal Years 2011-2021

Franchise Tax and Insurance Premium Tax, 4.4%, $25.9 million

Individual Income Tax, 9.4%, $12.0 million

Sales and Use Tax, 39.0%, $107.2 million

Corporation Income Tax, 47.2%, $129.7 million

Source: IA 148 Tax Credit Schedule information from Iowa Department of Revenue

Table 8. Claims of High Quality Jobs Tax Incentives by Tax Type, Fiscal Years 2011-2021

Tax Type	Amount of ITC Applied in Current Tax Year	Distribution of ITC Claims	Sales and Use Tax Refunds	Distribution of Sales and Use Tax Refunds	SRAC Claims	Distribution of SRAC Claims	Total HQJ Claims	Distribution of Total HQJ Claims
Individual Income Tax	$23,956,731	18.8%	$0	0.0%	$1,955,653	4.8%	$25,912,384	9.4%
Corporation Income Tax	$91,314,406	71.8%	$0	0.0%	$38,399,798	95.2%	$129,714,204	47.2%
Sales and Use Tax	$0	0.0%	$107,237,870	100.0%	$0	0.0%	$107,237,870	39.0%
Franchise Tax and Insurance Premium Tax	$11,958,150	9.4%	$0	0.0%	$0	0.0%	$11,958,150	4.4%
Total	$127,229,287	100.0%	$107,237,870	100.0%	$40,355,451	100.0%	$274,822,608	100.0%

Source: IA 148 Tax Credit Schedule information from Iowa Department of Revenue

Figure 3. Employment of Rejected HQJ Applicants, 2011-2019
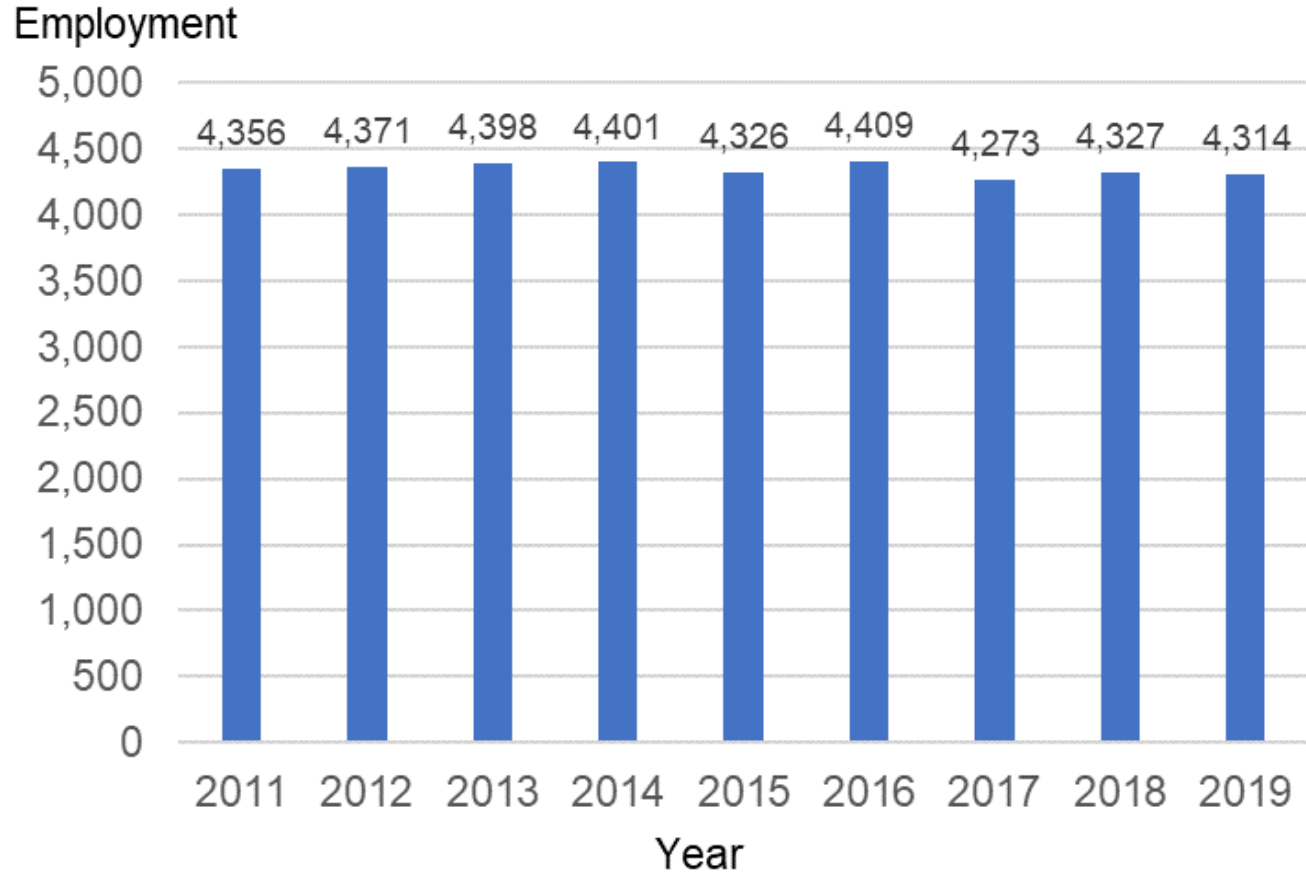
Source: Iowa Workforce Development Unemployment Insurance Data

Table 9. Descriptive Statistics of Economic Indicators of Counties in 2010, Before and After Propensity Matching

County-Industry Economic Indicators	Iowa Counties (83 Observations)		Other Counties Before Propensity Score Matching (38,285 Observations)		Other Counties After Propensity Score Matching (83 Observations)	
	Average	Standard Error	Average	Standard Error	Average	Standard Error
Total Employment	581	109.1	289	4.4	619	195.9
Number of Establishments	28	6.3	28	0.4	41	16.4
Annual Payroll ($ Thousand)	$28,405	6,093.9	$12,698	215.7	$27,244	9,549.7
Wage Per Worker	$33,947	443.8	$32,411	22.3	$33,392	492.0

t Test Results for Total Employment in Iowa Counties and Other Counties After Propensity Score Matching: t value is 0.17, p value is 0.8650

Source: County Business Pattern from the U.S. Census Bureau

Table 10. Descriptive Statistics of Economic Indicators of Counties for Difference-in-Differences Estimation

County-Industry Economic Indicators	Iowa Counties		Other Counties	
	2008-2010 Average	2017-2019 Average	2008-2010 Average	2017-2019 Average
Total Employment	622	1,173	670	923
Number of Establishments	28	34	41	49
Annual Payroll ($ Thousand)	$30,249	$70,640	$28,248	$51,628
Wage Per Worker	$44,628	$55,487	$42,149	$49,791
Share of Small Business Employment	73.49%	47.22%	82.92%	60.07%

For the 2008-2010 period, t Test Results of Industry Employment: t value is 0.21, p value is 0.8344

For the 2008-2010 period, t Test Results of Wage: t value is -0.88, p value is 0.3798

Source: County Business Pattern from the Census Bureau

Table 11. Estimation of Impacts of the HQJ Program on Industry Employment

Parameters	Estimates	Standard Error	t Value	P-Value
Intercept	-0.38	0.25	-1.5	0.128
Time	-0.48	0.30	-1.6	0.108
Group	0.33*	0.20	1.7	0.100
HQJeffect	0.68**	0.31	2.2	0.032
W	0.56***	0.01	37.4	<.0001
S	-0.21	0.25	-0.9	0.393
U	0.69***	0.15	4.6	<.0001

* indicates p-value less than 10%

** indicates p-value less than 5%

*** indicates p-value less than 1%

Note: Dependent variable is the log value of county employment.

Note: Time is a binary variable that equals one when it is after 2016 and equals zero when it before 2011; Group is a binary variable that equals one for a county with HQJ projects and equals zero for a county without HQJ projects; HQJeffect is the multiplication of Group and Time, which indicates the impact of the HQJ program on county employment; W is the log value of annual average wage per worker; S is the share of the number of small establishments to the number of all establishments; U is binary variable that equals one for urban county and equals zero for rural county.

Table 12. Descriptive Statistics of Economic Indicators of Counties in 2010, Before and After Propensity Matching

County Economic Indicators	Iowa Counties (39 Counties)		Other Counties Before Propensity Score Matching (1,792 Counties)		Other Counties After Propensity Score Matching (39 Counties)	
	Average	Standard Error	Average	Standard Error	Average	Standard Error
Total Employment	25,780	6,669	23,573	724	24,366	4,519
Number of Establishments	1,526	329	1,741	48	1,669	241
Annual Payroll ($ Thousand)	$957,959	$287,342	$819,291	$27,678	$824,302	$163,117
Wage Per Worker	$32,948	$690	$32,153	$103	$32,096	$655
Share of Manufacturing Employment	17.00%	1.60%	14.38%	0.26%	11.30%	1.32%

t Test Results for Total Employment in Iowa Counties and Other Counties After Propensity Score Matching: t value is 0.69, p value is 0.4953

Source: County Business Pattern from the U.S. Census Bureau

Table 13. Descriptive Statistics of Economic Indicators of Counties for Difference-in-Differences Estimation

County Economic Indicators	Iowa Counties (39 Counties)		Other Counties (39 Counties)	
	2008-2010 Average	2017-2019 Average	2008-2010 Average	2017-2019 Average
Total Employment	25,761	27,498	25,159	27,230
Number of Establishments	1,502	1,550	1,688	1,714
Annual Payroll ($ Thousand)	$929,677	$1,273,154	$837,857	$1,155,686
Wage Per Worker	$31,797	$41,302	$31,465	$40,698
Manufacturing Employment	4,649	6,381	4,537	5,488
Number of Manufacturing Establishments	117	103	138	120
Share of Manufacturing Employment	21.93%	30.86%	17.35%	21.10%
Share of Small Business Employment	95.26%	95.16%	95.82%	95.53%

For the 2008-2010 period, t Test Results of Total Employment: t value is -0.07, p value is 0.9418

For the 2008-2010 period, t Test Results of Wage: t value is -0.38, p value is 0.7229

For the 2008-2010 period, t Test Results of Manufacturing Employment: t value is -0.08, p value is 0.9326

Source: County Business Pattern from the Census Bureau

Table 14. Estimation of Impacts of the HQJ Program on County Employment

Parameters	Estimates	Standard Error	t Value	P-Value
Intercept	27.25***	7.33	3.7	0.000
Time	-0.27*	0.16	-1.7	0.098
Group	-0.06	0.12	-0.5	0.601
HQJeffect	0.06	0.16	0.4	0.695
W	1.06**	0.52	2.0	0.043
S	-30.25***	3.56	-8.5	<.0001
MEst	-0.64*	0.38	-1.7	0.098
U	0.94***	0.11	8.8	<.0001

* indicates p-value less than 10%

** indicates p-value less than 5%

*** indicates p-value less than 1%

Note: Dependent variable is the log value of county employment.

Note: Time is a binary variable that equals one when it is after 2016 and equals zero when it before 2011; Group is a binary variable that equals one for a county with HQJ projects and equals zero for a county without HQJ projects; HQJeffect is the multiplication of Group and Time, which indicates the impact of the HQJ program on county employment; W is the log value of annual average wage per worker; S is the share of the number of small establishments to the number of all establishments; MEst is the share of manufacturing employment to the total employment; U is binary variable that equals one for urban county and equals zero for rural county.

Table 15. Estimation of Employment Multipliers of the HQJ Program in Rural and Urban Counties

Location	Parameters	Estimates	Standard Error	t Value	P-Value
	Intercept	-30.34	221.29	-0.14	0.892
Rural	Employment Multiplier	3.13	2.10	1.49	0.148
	Intercept	67.89	187.02	0.36	0.718
Urban	Employment Multiplier	1.16	0.71	1.63	0.110

* indicates p-value less than 10%

** indicates p-value less than 5%

*** indicates p-value less than 1%

Note: Dependent variable is the industry employment beyond the HQJ projects.

Appendix I: High Quality Jobs Program Description

The legislature enacted the High Quality Jobs Program (HQJ) in 2005 to replace the New Jobs and Income Program (NJIP) which they created in 1994. The program provides various incentives to eligible businesses that meet certain job creation and capital investment requirements.

Components of the HQJ

While HQJ awards can include direct financial assistance, including loans and forgivable loans, this study focuses on state tax incentives available under the HQJ program.

- Investment Tax Credit (ITC): This is an income tax credit equal to a percentage of the new qualifying investment directly related to jobs created or retained by the business' project (see Table A). Qualifying investment is defined as a capital investment in real property including the purchase price of land, existing buildings and structures; site preparation; improvements to real property; building construction and long-term lease costs. It also includes capital investment in depreciable assets. The maximum credit percentage depends on the amount of pledged investment and jobs. The ITC is nonrefundable, which means the tax credit cannot reduce tax liability below zero in any year of claim.[4] The ITC is nontransferable, which means it cannot be sold to another taxpayer. The ITC should be amortized equally over five years, which means at most one-fifth of the award can be claimed in each of the five years of the project. Any credits not used in the first year of claim can be carried forward for seven tax years or until used, whichever is earlier. The ITC can be claimed against individual income, corporation income, insurance premium, franchise, and moneys and credits tax. If the participating business is organized as a pass-through entity, the claims for the ITC will be made by shareholders based on their ownership share of the business.

- Supplemental Research Activities Tax Credit (SRAC): If the eligible business is increasing research and development activities in the state and eligible to claim the Research Activities Tax Credit (RAC), the business may be eligible for a supplemental tax credit during the period if this business is also participating in the HQJ program. The SRAC is refundable which means if the claim exceeds tax liability, the taxpayer receives that amount of the tax credit as a refund from the State. The award is based on the estimated amount of research that the business will conduct during the five years covered by the contract. Claims to the tax credit in any tax year are a function of incremental qualifying research expenditures in that year and the business's gross revenues. Companies with annual gross

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[4] Beginning in fiscal year 2006, a limited refundable ITC was available, allowing IEDA to award up to $4 million per fiscal year for businesses engaged in value-added agricultural products or biotechnology-related processes; that credit is no longer available after 2010.

revenues exceeding $20 million can claim a credit of 3 percent of their incremental qualified in-house research expenses and 3 percent of their payments for incremental contract research conducted in Iowa. Companies with annual gross revenues of $20 million or less can claim a credit of 10 percent of their incremental qualified in-house research expenses and 10 percent of their payments for incremental contract research conducted in Iowa. The SRAC can only be claimed against individual income and corporation income tax. If the participating business is organized as a pass-through entity, the claims for the SRAC will be made by shareholders based on their ownership share of the business.

- Sales and Use Tax Refund: A sales and use tax refund may be awarded for taxes paid on gas, electricity, water, or sewer utility services, goods, wares, or merchandise, or on certain services related to the investment in construction or equipping of the facility covered under the HQJ contract. For warehouses and distribution center projects, a refund of sales and use taxes paid on racks, shelving, and conveyor equipment can also be awarded, but claims for those refunds are limited to $500,000 per fiscal year.

- Third Party Developer Tax Credit: This is an income tax credit awarded for sales taxes paid by certain third-party developers on gas, electricity, water, or sewer utility services, goods, wares, or merchandise, or on certain services related to the construction or equipping of the business' facility. This credit is awarded as an alternative to a sales and use tax refund when the participating business is not building the facility, but instead will lease the new facility. Because this business would not have paid any of the sales tax during the construction of the facility, the business is instead awarded an income tax credit that equals the taxes paid by the lessor. The income tax credit is refundable and can be claimed against corporation income, individual income, insurance premium, franchise, and moneys and credits tax.

- Property Tax Exemption: The property tax exemption is a local tax incentive. The participating local community may exempt all, or a portion, of the actual value added by improvements to real property from property taxation directly related to the new jobs created by the project. The exemption cannot exceed 20 years from the year the improvements are first assessed for taxation.

History of HQJ Regulation

Iowa Economic Development Authority administers the HQJ. At the time of enactment, the program was initially called the High Quality Job Creation Program and required businesses to create new jobs in order to be eligible. Effective July 1, 2009, the program was renamed by dropping "Creation" as businesses could become eligible by retaining jobs. At that time, IEDA administered the HQJ program under a cumulative tax credit cap of $185 million per fiscal. IEDA also has the ability to award 20 percent of next year's cap

in advance so that it has the flexibility to negotiate for large projects. Facing a tight State budget, the legislature reduced the IEDA cap to $120 million per fiscal year on July 1, 2010. In addition, the provision that allowed up to $4 million of refundable Investment Tax Credits awards per fiscal year for projects involving value-added agricultural products or biotechnology-related processes was repealed effective on April 15, 2010. Effective July 1, 2012, the legislature increased the IEDA cap to $170 million per fiscal year, including $130 million in available awards for HQJ. During the 2016 session, the legislature temporarily reduced the award cap for HQJ by $25 million per year to offset the creation of the Renewable Chemical Production Tax Credit, allowing only $105 million in HQJ awards during fiscal years 2017 through 2021. During FY 2022, IEDA shall not allocate more than $105 million to this program if the Renewable Chemical Production Tax Credit awards equal or exceed $27 million from July 1, 2018 and before July 1, 2021.

HQJ Awarding Process

Businesses interested in making capital investments in Iowa with the intent of either creating or retaining high-quality jobs must apply to IEDA to be considered for an award prior to the beginning of the project. IEDA negotiates an incentive package under the rules of program. If the investment is over $10 million, the investment project must be approved by the local community where the business plans to undertake the project before negotiations with IEDA are completed. The proposed incentives, business activities, and local support are compiled into a project report which is presented to the IEDA Board for approval. If the approval is granted, the business must sign a contract with IEDA specifying the incentives offered by the State in anticipation of the investment completed and jobs created or retained by the business over the next three years, the performance period specified under the program. Unlike every other State tax credit program where tax credits are only awarded after the incentivized activity is completed, applicants under HQJ are allowed to claim tax credits during the performance of that investment and job creation. The business must also maintain those jobs during the two years following the project completion, the maintenance period specified under the program.

To be eligible for the tax incentives and financial assistance available under HQJ, the business must meet high-quality job creation or job retention requirements, where jobs are considered high-quality by meeting specified wage thresholds and benefit levels. The qualifying wage threshold equals the laborshed wage estimated for the geographic area surrounding the employment center in which the business is locating or expanding. Iowa Workforce Development (IWD) determines the employment centers and defines the boundaries of each laborshed area. The tax incentives are contractually tied to the job requirements and the business must meet them in order to retain all of the awarded incentives. Eligible businesses must demonstrate that they have not closed or substantially reduced operations in another area of the state. The business cannot be a retail business, a business that levies a cover charge for entrance or has a membership

requirement, or a service business with a consumer market that does not have a significant portion of sales from outside of Iowa.

If the business is creating jobs, all created jobs must pay 100 percent of the qualifying wage threshold at the start of the project, at least 120 percent by the end of the project performance period, and at least 120 percent during the maintenance period. If the business is retaining jobs, the requirement is those jobs pay 120 percent of the qualifying wage threshold at all times during the contract period. A business locating in a brownfield or grayfield site or in an economically distressed area may be awarded incentives for jobs that will pay less than 120 percent of the qualifying wage threshold. The business must also provide a sufficient benefits package to all full-time employees that includes at least one of the following: 80 percent of medical premiums for single coverage plans, 50 percent of medical premiums for family coverage plans, or some level of medical and dental coverage and provides the monetary equivalent value through other employee benefits.

The maximum ITC rates are established by Iowa Code, but IEDA can negotiate with a business and award tax incentives below the maximum levels.[5] Actual award amounts are based on the business's level of need, the quality of the jobs, the percentage of created or retained jobs defined as high-quality, and the economic impact of the project. Once a contract is signed, IEDA monitors the progress of each project during the performance period and the maintenance period. If IEDA determines that the business has not met the terms of the contract, the business can be placed into default with a warning that incentives will be recaptured if the business does not make adjustments to meet those terms. If the business cannot cure the shortfall in either jobs or investment, IEDA determines the share of incentives that must be repaid and notifies the Iowa Department of Revenue (IDR) about the default. IDR then bills the taxpayers who have made tax credit claims or refund claims under that contract, where a full 100% default would require full repayment.

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[5] Iowa Economic Development Authority, The High Quality Jobs Program: A Report to the Legislative Tax Expenditure Committee, 2016

Table A. High Quality Jobs Program Maximum Tax Credit Awards Available to a Business

Amount of Qualifying Investment	Number of Jobs Created or Retained That Meet Wage Threshold Requirements for the Laborshed plus Sufficient Benefits				
	No Jobs	1-5	6-10	11-15	16 or More
Less than $100,000	Up to 1% ITC	Up to 2% ITC	Up to 3% ITC	Up to 4% ITC	Up to 5% ITC
$100,000 - $499,999	Up to 1% ITC, Sales Tax Refund	Up to 2% ITC, Sales Tax Refund	Up to 3% ITC, Sales Tax Refund	Up to 4% ITC, Sales Tax Refund	Up to 5% ITC, Sales Tax Refund
$500,000 or More	Up to 1% ITC, Sales Tax Refund, Supplemental Research Activities Tax Credit	Up to 2% ITC, Sales Tax Refund, Supplemental Research Activities Tax Credit	Up to 3% ITC, Sales Tax Refund, Supplemental Research Activities Tax Credit	Up to 4% ITC, Sales Tax Refund, Supplemental Research Activities Tax Credit	Up to 5% ITC, Sales Tax Refund, Supplemental Research Activities Tax Credit

Amount of Qualifying Investment	Number of Jobs Created or Retained That Meet Wage Threshold Requirements for the Laborshed plus Sufficient Benefits				
	31-40	41-60	61-80	81-100	101 or More
$10,000,000 or More	Up to 6% ITC, Sales Tax Refund, Supplemental Research Activities Tax Credit, Property Tax Exemption	Up to 7% ITC, Sales Tax Refund, Supplemental Research Activities Tax Credit, Property Tax Exemption	Up to 8% ITC, Sales Tax Refund, Supplemental Research Activities Tax Credit, Property Tax Exemption	Up to 9% ITC, Sales Tax Refund, Supplemental Research Activities Tax Credit, Property Tax Exemption	Up to 10% ITC, Sales Tax Refund, Supplemental Research Activities Tax Credit, Property Tax Exemption

"Amount of Qualifying Investment" means a capital investment in real property including the purchase price of land, existing buildings and structures, site preparation, improvements to real property, building construction, and long-term lease costs. It also includes capital investment in depreciable assets. "ITC" means Investment Tax Credit. "Sales Tax Refund" means Sales and Use Tax Refund or refundable Corporation Tax Credit for Third Party Sales Tax.
Source: Iowa Economic Development Authority website