



Research Activities Tax Credit

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Outline of Remarks

- Background on the Iowa Research Activities Tax Credit (RAC)
- Other R&D tax credits in the United States
- R&D expenditures, claims, and refunds
- Evaluation of Research Activities Tax Credit Programs

Background on the Iowa Research Activities Tax Credit (RAC)

- Tax credit for increases in qualifying expenditures associated with research conducted in Iowa
 - Available since tax year 1985
 - Applicable to corporate income tax, individual income tax, and fiduciary tax
 - Based on rules governing the federal Research and Experimentation Tax Credit
 - Refundable
- Limited to certain industries: manufacturing, life sciences, software engineering, aviation/aerospace, and agriscience industries.

RAC Calculation Methods

- Regular Method (Form IA 128)
 - 6.5 percent of incremental basic research in Iowa, and
 - 6.5 percent of incremental qualified research expenditures apportioned to Iowa over larger of the base period amount or 50 percent of current year research expenditures
- Alternative Simplified Method (Form IA 128S)
 - Available since 2010
 - 6.5 percent of incremental basic research in Iowa, and
 - 4.55 percent of qualified research expenditures above 50 percent of average qualified research expenditures in Iowa over the prior three years; or,
 - 1.95 percent of total qualified research expenditures in Iowa in the current year when no prior research has been conducted

Supplemental Research Activities Tax Credit (SRAC)

- May be awarded by the Iowa Economic Development Authority (EDA) to companies participating in the High Quality Jobs Program
- Initially SRAC allowed taxpayer to double the RAC for up to five years
- Since 2011 the tax credit rate varies by recipient's gross revenues and can be claimed over five years up to the total amount of the award

SRAC Calculation Methods

- Gross revenues of \$20 million or more:
 - Regular method: 3 percent of incremental QREs
 - Alternative method: 2.1 or 0.9 percent of QREs
- Gross revenues of \$20 million or less:
 - Regular method: 10 percent of incremental QREs
 - Alternative: 7 or 3 percent of QREs

Other R&D Tax Credits in the United States

- **Federal Research and Experimentation Tax Credit**
 - Enacted in 1981, extended 16 times, made permanent by PATH Act in 2015
 - Nonrefundable
 - Methods: Regular (20 percent), Alternative (14 percent)
- **35 states offer R&D tax credit**
 - Midwest states were among the first states to adopt RAC
 - Spread: 11 states (1991); 32 states (2001)
 - Nine Midwest states (75 percent of the region) have RAC programs

Other R&D Tax Credits in the United States

- **Credit Rates**
 - Rates vary from 3 to 33 percent
 - Many states have tiered system
 - Midwestern states tend to offer higher rates
- **Caps and other Limitations**
 - 16 states limit amount of tax credit
 - Dollar amount (e.g. Maryland, New Hampshire, Arkansas)
 - Percentage of liability (e.g. Virginia, Florida, South Carolina)
 - 7 states impose statewide caps
 - New Hampshire = \$7 million
 - New York = \$250 million
- **Broadly Refundable:** DE, IA, HI, NE, LA, MA, NY, VA

R&D Tax Credits in Iowa and Neighboring States

- IA, IL, MN, NE, and WI offer R&D tax credits
 - Iowa and Illinois tie for highest overall rate (6.5 percent)
 - Fully refundable in IA and NE; partially refundable in WI
 - MN was refundable 2010-2012 only

- MO and SD do not offer R&D tax credits
 - IL expired previously but was renewed to 2027
 - MO tax credit expired in 2005

Historical Business Research Expenditures in Iowa

Year	Total R&D (\$ Millions)	Total R&D (State Rank)	Percent Change since 1997	R&D Per Capita (\$)	R&D Per Capita (State Rank)	Percent Change Since 1997
2010	\$2,123	26	161.01%	\$696	20	144.20%
2011	\$2,468	25	203.42%	\$805	19	182.41%
2012	\$1,846	28	126.93%	\$600	28	110.52%
2013	\$2,111	26	159.58%	\$682	24	139.49%
2014	\$2,119	26	160.53%	\$681	24	139.07%
2015	\$2,539	26	212.17%	\$813	18	185.36%
2016	\$2,834	25	248.39%	\$904	19	217.39%
2017	\$2,855	24	250.98%	\$908	17	218.68%
2018	\$3,146	24	286.78%	\$999	14	250.49%

Source: National Center for Science and Engineering Statistics

Research Expenditures

Tax Year	Firms	Total IA Expenditures (\$ Millions)
2010	414	\$1,368.13
2011	466	\$1,508.01
2012	521	\$1,728.94
2013	569	\$2,250.92
2014	614	\$2,123.63
2015	659	\$2,368.88
2016	700	\$2,453.78
2017	598	\$2,351.01
2018	517	\$2,287.71

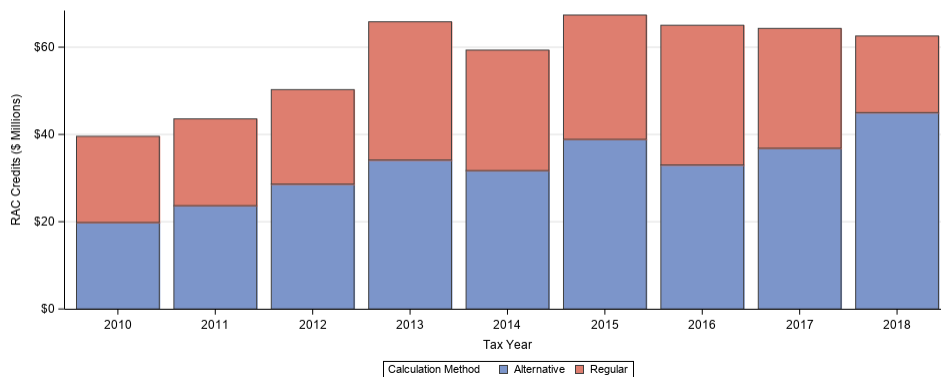
Source: Iowa Department of Revenue Credit Award, Claim, and Transfer Administration System (CACTAS), Form IA 128 and 128S

Note: Data for tax year 2018 is incomplete



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Credits by Tax Year and RAC Calculation Method



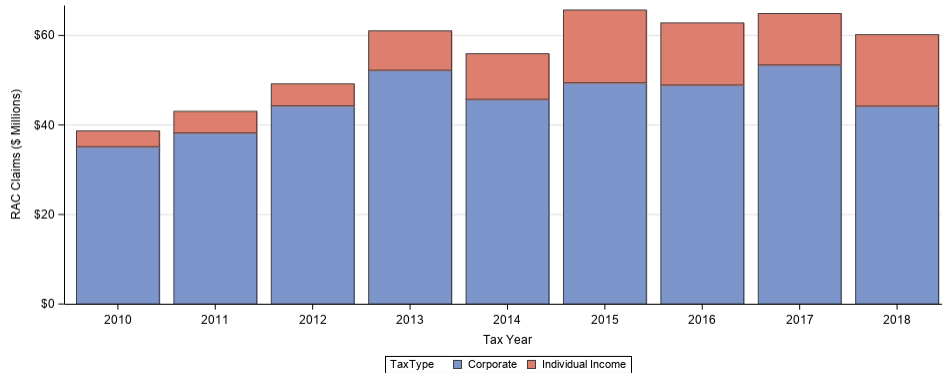
Source: Iowa Department of Revenue Credit Award, Claim, and Transfer Administration System (CACTAS), Form IA 128 and 128S

Note: Data for tax year 2018



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RAC Claims by Tax Type



Source: Iowa Department of Revenue Credit Award, Claim, and Transfer Administration System (CACTAS), Form IA 148

Note: Data for tax year 2018 is incomplete

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RAC Claims by Fiscal Year

Fiscal Year	RAC		SRAC		Total	
	Number	Millions (\$)	Number	Millions (\$)	Number	Millions (\$)
2010	1,030	\$14.23	174	\$3.80	1,204	\$18.03
2011	993	\$41.55	157	\$20.24	1,150	\$61.79
2012	2,054	\$38.44	200	\$14.59	2,254	\$53.04
2013	1,505	\$29.33	151	\$12.36	1,656	\$41.69
2014	1,598	\$48.16	159	\$16.18	1,757	\$64.34
2015	1,885	\$39.60	170	\$6.66	2,055	\$46.25
2016	2,401	\$48.67	98	\$5.13	2,499	\$53.80
2017	5,612	\$67.18	120	\$7.50	5,732	\$74.68
2018	5,428	\$69.29	110	\$3.36	5,538	\$72.64
2019	8,040	\$82.16	56	\$2.58	8,096	\$84.74
2020	7,787	\$79.60	52	\$2.34	7,839	\$81.94

Source: Iowa Department of Revenue Credit Award, Claim, and Transfer Administration System (CACTAS), Form IA 148

Note: Verified claims only; Tax credit claim numbers are preliminary

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RAC and SRAC Claims Paid as Refunds

Tax Year	Corporation Income Tax			Individual Income Tax		
	Claims	Refunds	Percent	Claims	Refunds	Percent
2010	\$35.15	\$25.73	73.2%	\$3.81	\$3.79	99.4%
2011	\$38.22	\$26.20	68.6%	\$5.21	\$5.16	99.2%
2012	\$44.29	\$29.47	66.5%	\$5.10	\$4.88	95.6%
2013	\$52.19	\$43.02	82.4%	\$9.24	\$3.56	38.5%
2014	\$45.70	\$38.68	84.6%	\$10.87	\$4.41	40.6%
2015	\$48.77	\$40.75	83.6%	\$16.82	\$10.19	60.6%
2016	\$48.85	\$42.86	87.7%	\$14.35	\$4.97	34.6%
2017	\$54.10	\$46.37	85.7%	\$12.03	\$4.87	40.5%
2018	\$42.42	\$28.26	66.6%	\$16.80	\$6.94	41.3%

Source: Iowa Department of Revenue Credit Award, Claim, and Transfer Administration System (CACTAS), Form IA 148

Note: Data for tax year 2018 is incomplete

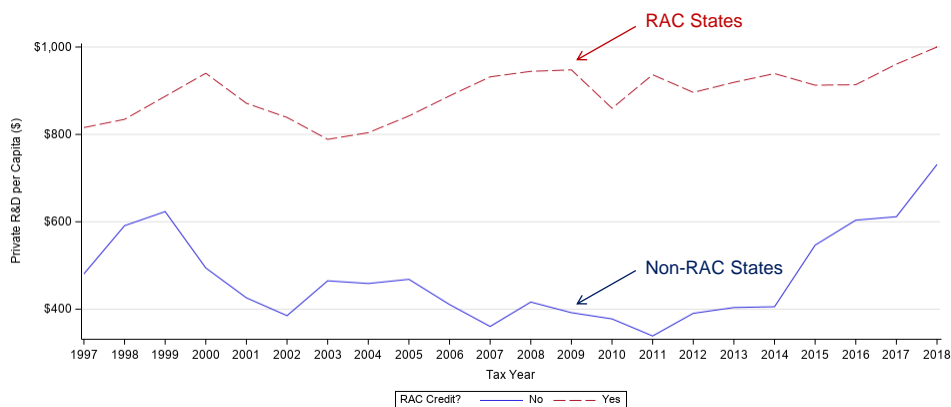
Research Questions

- Research Question 1: Do incremental research activity tax credit programs stimulate research inputs and outputs?
- Research Question 2: What specific program features (if any) are effective at stimulating research inputs and outputs?

Research Design

- Unit of analysis: State-Years, 1969-2019
- Dependent Variables:
 - Research Inputs: Private Research Expenditures per Capita (\$)
 - Research Outputs: Utility Patents per 1,000 Residents
- Independent Variables
 - Does the state have a RAC Program?
 - Highest Percentage Rate of Credit
 - Does the state have a refundable credit?
- Methodology:
 - Test the **difference of means** in research inputs and outputs across RAC and Non-RAC states
 - Estimate effect of RAC using **multiple regression analysis** which controls for other factors
 - Predict economic outcomes under different scenarios to assess RAC impact

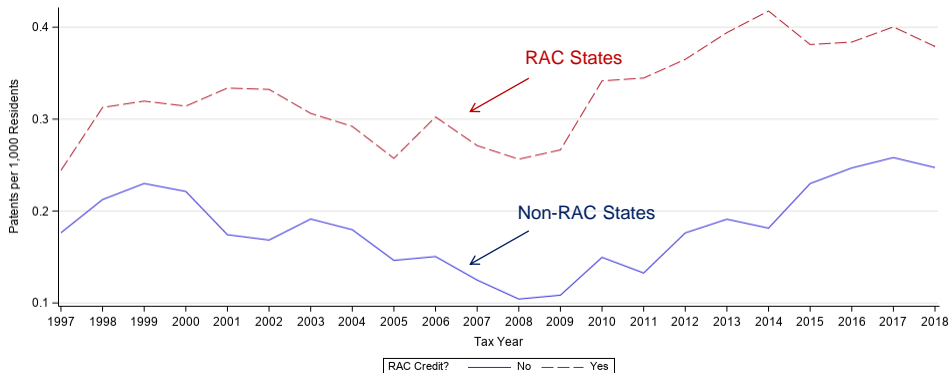
RAC Program: Private R&D



Source: National Center for Science and Engineering Statistics

T-Value = 9.61, Probability = less than 0.01 percent

RAC Program: Utility Patents

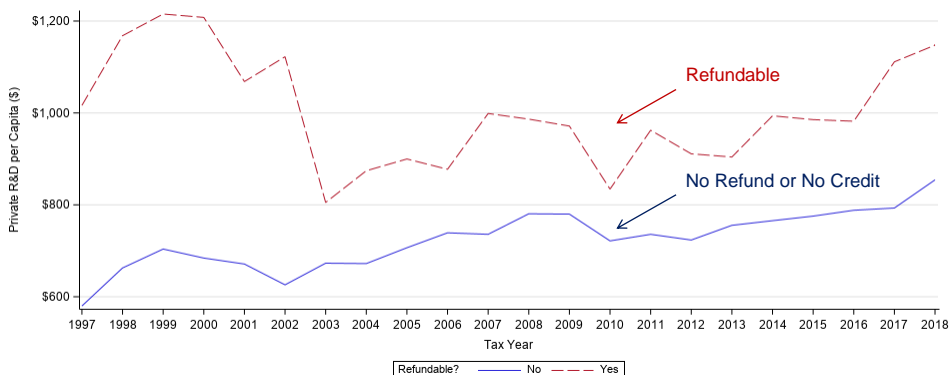


Source: U.S. Patent and Trademark Office

T-Value = 21.4, Probability = less than 0.01 percent



Refundable RAC: Private R&D

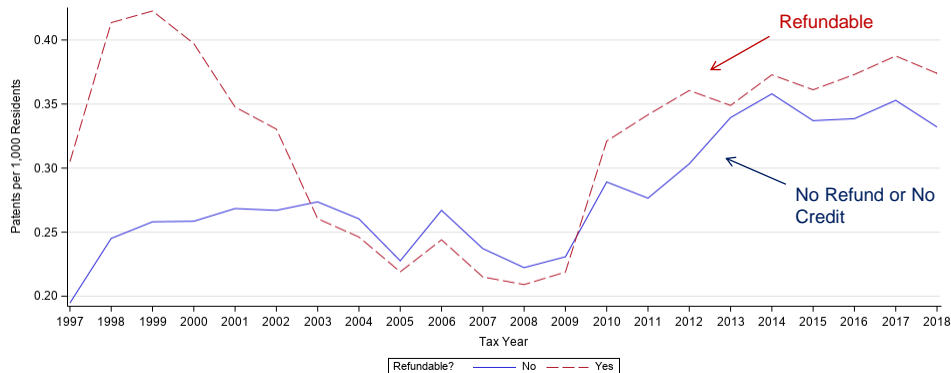


Source: National Center for Science and Engineering Statistics

T-Value = 4.70, Probability = less than 0.01 percent



Refundable RAC: Utility Patents



Source: U.S. Patent and Trademark Office

T-Value = 8.38, Probability = less than 0.01 percent

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Multiple Regression: RAC Program

Variable	Model 1: R&D	Model 2: Patents
RAC State (0 = "No", 1 = "Yes")	-1.749***	0.008
	0.229	0.007
Observations	1,100	2,050
R^2	0.917	0.748

Note: *p<0.10 **p<0.05 ***p<0.01

- Existence of RAC program is associated with **less R&D** → statistically significant
- Existence of RAC program is associated with **more patents** → not statistically significant

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Multiple Regression: Program Features

Variable	Model 1: R&D	Model 2: Patents
Highest Rate of RAC Credit	-0.093***	0.001**
	0.028	0.001
Partially or Fully Refundable (0 = "No", 1 = "Yes")	-0.384	-0.060***
	0.487	0.014
Observations	1,100	2,600
R ²	0.914	0.722

Note: *p<0.10 **p<0.05 ***p<0.01

- RAC rate is associated with **less R&D** (significant) but **more patents** (significant)
- Refundability is associated with **less R&D** (not significant) and **fewer patents** (significant)

Predicted Economic Outcomes

- What if Iowa did not have a RAC program in 2015?
 - Without the RAC, the model predicted Iowa to have \$175 **more** private R&D per capita—an increase of 28.6 percent
 - Without the RAC, the model predicted Iowa to have 0.01 **fewer** utility patents per 1,000 residents—a decrease of 2.6 percent
- What if Iowa did not have a refundable RAC in 2015?
 - Without a refundable RAC, the model predicted Iowa to have \$41.30 **more** private R&D per capita—an increase of 6.8 percent.
 - Without a refundable RAC, the model predicted Iowa to have 0.01 **more** utility patents per 1,000 residents—an increase of 2.9 percent
- What if Iowa had 10 percent credit rate in 2015?
 - Increasing the credit rate, the model predicted Iowa to have \$90.04 **fewer** private R&D per capita—an decrease of 15.6 percent
 - Increasing the credit rate, the model predicted Iowa to have 0.01 **more** utility patents per 1,000 residents—an increase of 2.4 percent

Conclusion

- Iowa's RAC is competitive compared to other states
- RAC Claims in Iowa:
 - For TY 2018, credit earners reported approx. \$2.3 billion in research expenditures
 - Based on past five years
 - 75% of claims are against corporation income tax
 - 82% of corporation income tax claims are refunded
 - 80% of RAC refunds are paid to corporation taxpayers
 - Fiscal impact of \$81.9 million for FY 2020

Conclusion

- Limited evidence that RAC programs increase research inputs and outputs
 - RAC programs associated with fewer R&D but marginally more patents
 - Neither refundability nor credit rate appear to positively impact inputs and outputs
- Limitations:
 - R&D data is imperfect;
 - Binary data complications
 - All private industries rather than R&D heavy firms
 - Causal direction is unclear

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Thank You!