Financing Innovation: Evidence from R&D Grants

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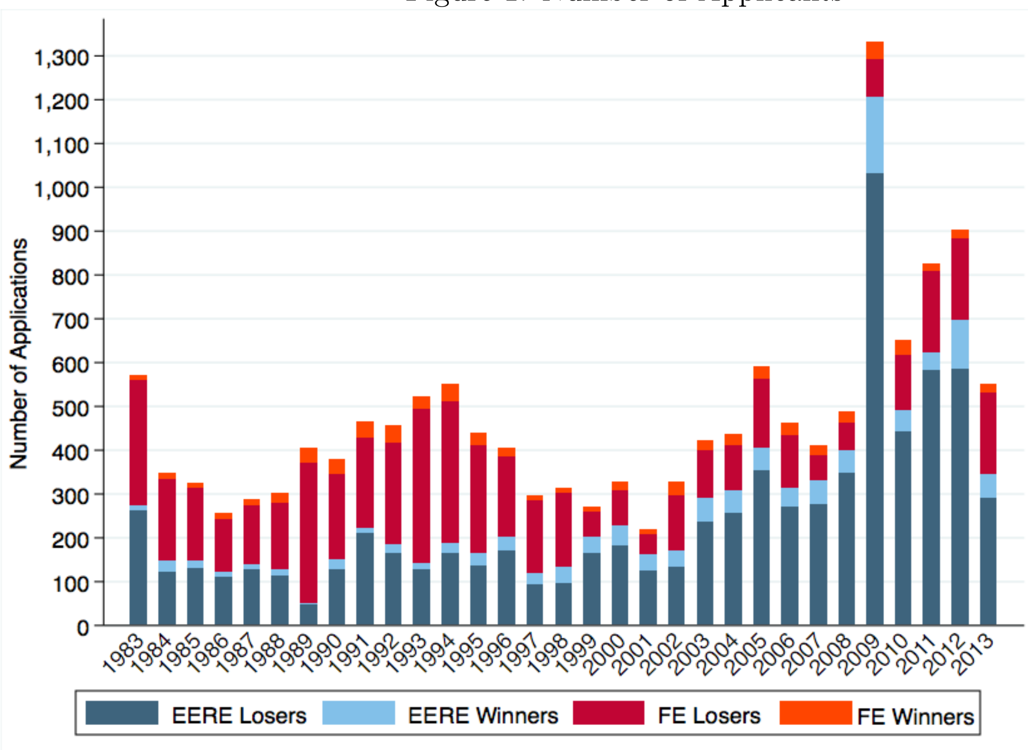
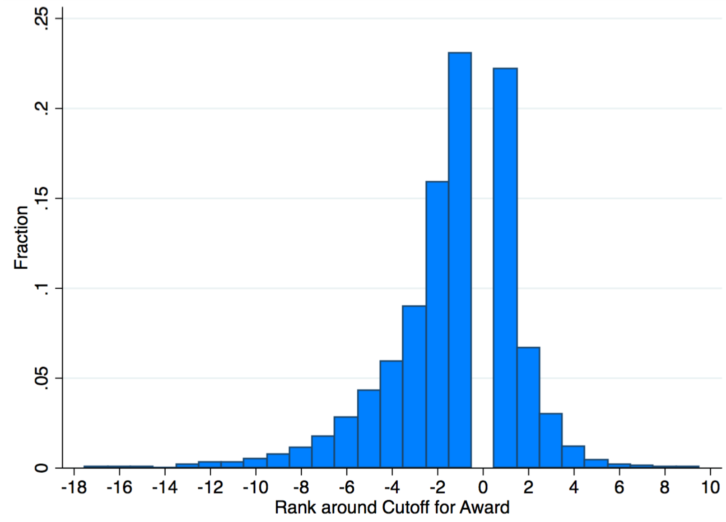
Online Appendix

Figure 1: Number of Applicants



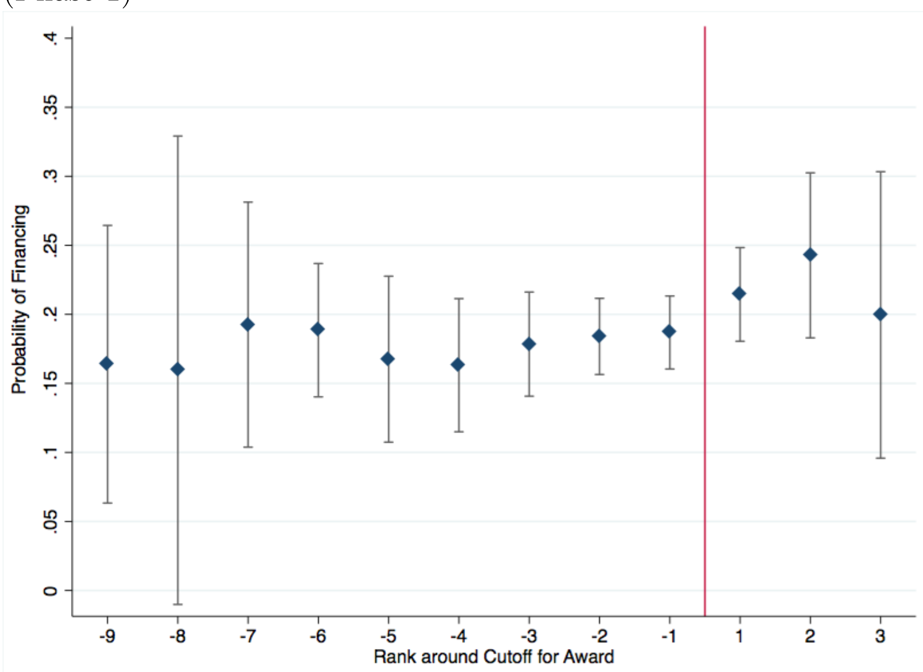
Note: This figure shows the number of losing and winning Phase 1 grant applicants over time by office (Energy Efficiency & Renewable Energy and Fossil Energy). Note that firms may appear more than once.

Figure 2: Density of Applicants by Normalized Rank



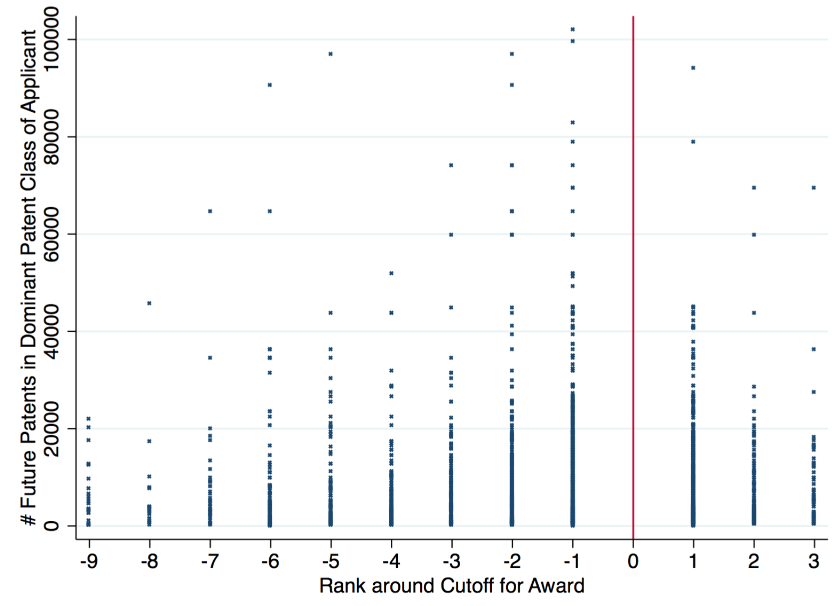
Note: This figure shows applicant density by normalized rank.

Figure 3: Baseline Covariate Predicted Probability of VC Financing after Grant by Rank (Phase 1)



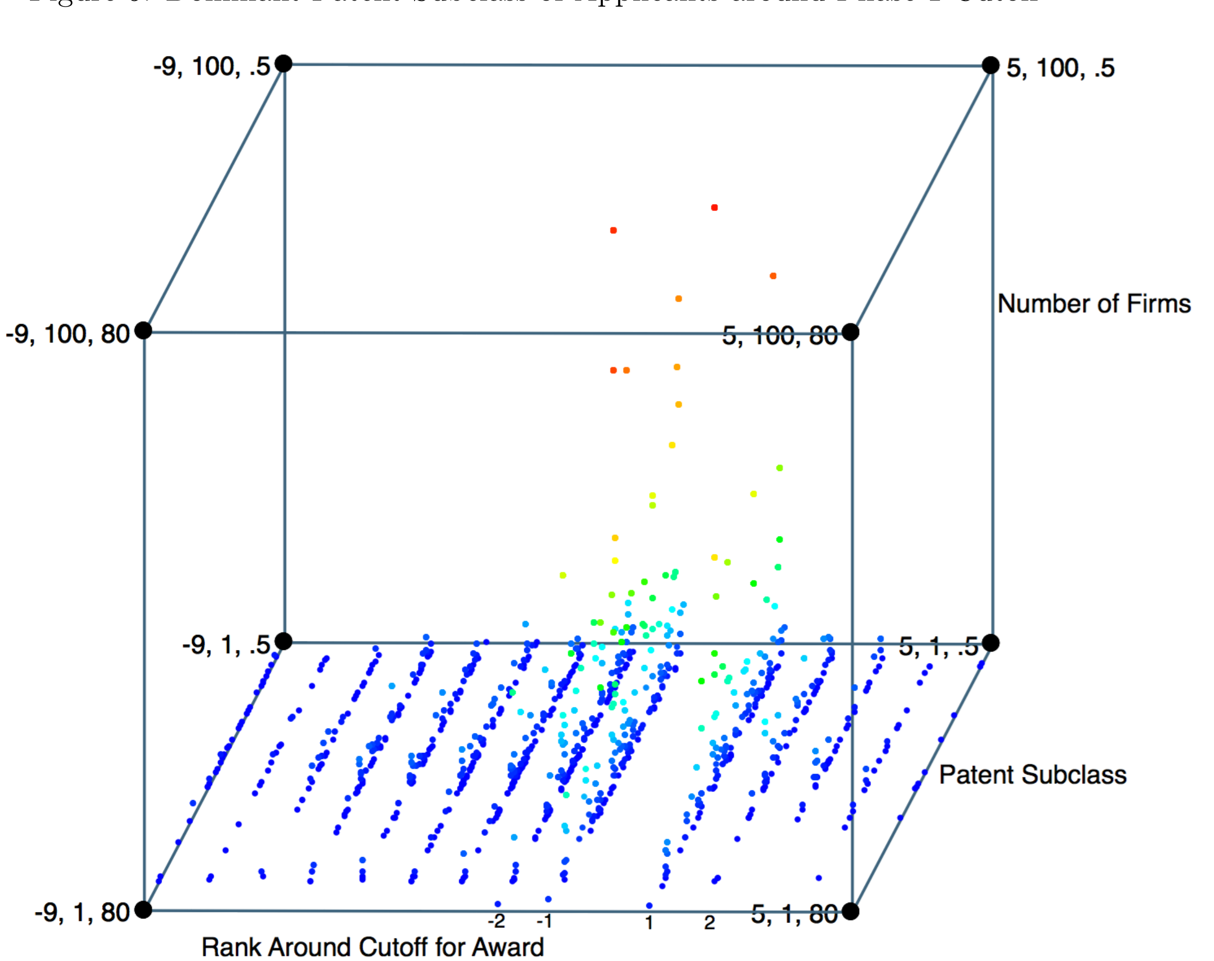
Note: Ranks higher than 0 awarded a grant. Data for phase 1 awards (1st time winners) after 1994. 95% confidence intervals shown. Covariates include VC^Prev, MSA, Age, Minority_owned, Woman_owned, Exit^Prev, #SBIR^Prev, Patents^Prev, Citations^Prev.

Figure 4: Future Patents in Dominant Patent Subclass of Applicants around Phase 1 Cutoff



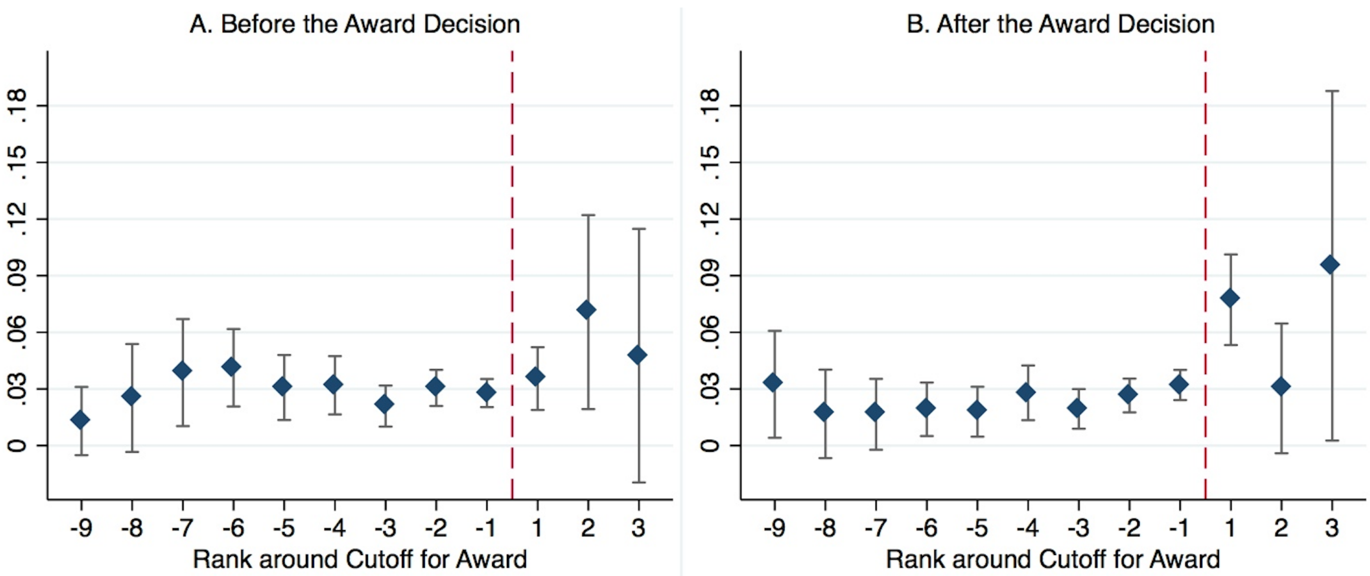
Note: This figure shows the distribution of firms by the number of future patents in the firm's dominant patent subclass, grouped by rank around the cutoff. Each dot is the dominant subclass for an applicant at a particular rank.

Figure 5: Dominant Patent Subclass of Applicants around Phase 1 Cutoff



Note: This figure shows the distribution of patent subclasses around the cutoff. Each dot's x-coordinate is its rank around the cutoff, the z-coordinate is the firm's dominant patent subclass (the subclass in which it most frequently patents), and the y-coordinate is the number of firms that occupy that x-z bin (the number of firms in a certain rank with a certain dominant subclass). The graph shows that the same subclasses in similar concentrations are present on both sides of the cutoff.

Figure 6: Probability of Exit (IPO or Acquisition) Before and After Grant Decision by Rank



Note: This figure shows the fraction of applicants who ever experienced an exit (IPO or acquisition) ever prior to (5A) and ever after (5B) the Phase 1 grant award decision. The applicants are binned by their DOE assigned rank, which I have centered so that Rank > 0 indicates a firm won an award. Capped lines indicate 95% confidence intervals. N=4,816.

Figure 7: Probability of VC After Phase 1 Grant by Rank and Number of Awards in Competition

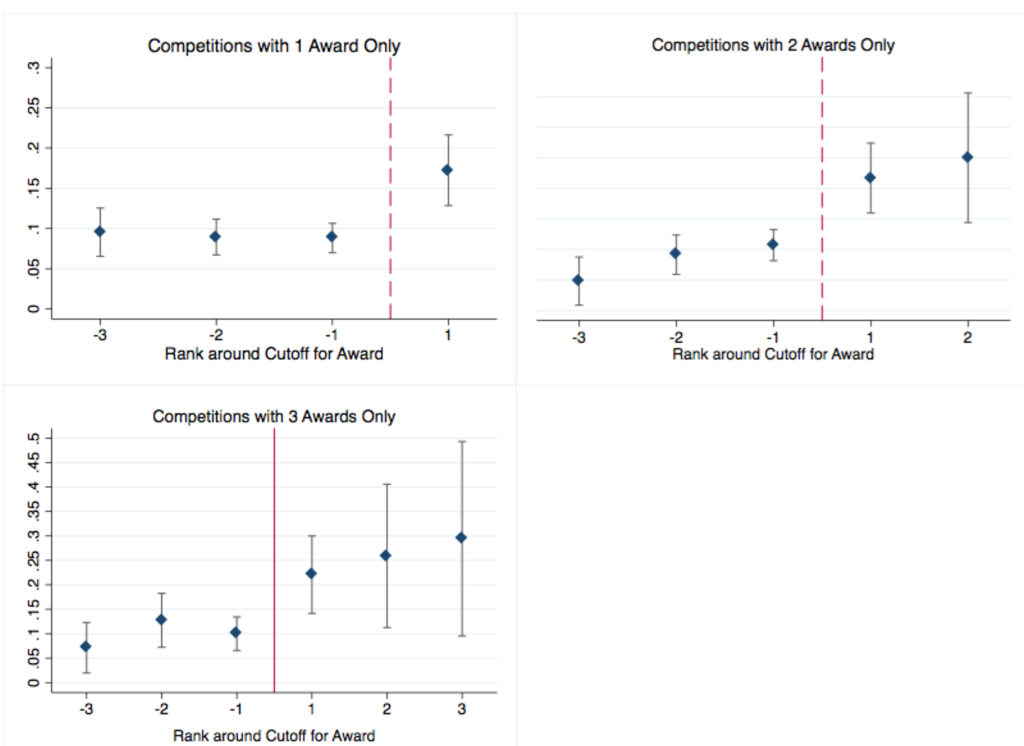


Table 1: Summary Statistics for Private Financing Matches (Number of Deals or Firms)

Applicant firms matched to ≥ 1 PF deal	838
Applicant firms matched to ≥ 1 VC deal	683
PF deals matched to applicant firms (Some companies have multiple funding events)	3,751
VC deals	2,638
Seed/Angel	178
Series A	1,313
Series B	561
Series C+	587
Acquisitions	221
IPOs	27
Debt deals	196
PE Buyout deals	59
Project Finance	61
PF deals with data on deal size (amount)	2,141
VC deals with data on deal size (amount)	1,728
Unique applicants with ≥ 1 PF deal & 0 grant wins	565
Unique applicants with ≥ 1 VC deal & 0 grant wins	451
Unique applicants with ≥ 1 PF deal & ≥ 1 grant wins	273
Unique applicants with ≥ 1 VC deal & ≥ 1 grant wins	232

Note: PF= all private finance; VC=venture capital (subset of PF). Sources: ThompsonOne VentureSource, Preqin, Cleantech Group's i3 Platform, CrunchBase, and CapitalIQ

Table 2: Rank Production Function

Dependent Variable: R_i	I. All Covs	II. Select Covs
VC_i^{Prev}	0.0498	0.0717**
	(0.0321)	(0.0304)
$\#SBIR_i^{\text{Prev}}$	0.00212**	0.00256***
	(0.000950)	(0.000827)
MSA_i	0.165	0.121
	(0.137)	(0.0971)
Age_i	-0.00141	
	(0.00345)	
$Exit_i^{\text{Prev}}$	0.124	
	(0.211)	
$Patent_i^{\text{Prev}}$	0.0368	0.0895
	(0.117)	(0.0797)
$Citation_i^{\text{Prev}}$	0.0730	0.0438
	(0.102)	(0.0715)
Competition f.e.	Y	Y
N	3871	5848
R^2	0.606	0.629

Note: This table reports regression estimates of the effect of the baseline covariates on the Phase 1 rank. Column I includes all observables while column II uses only variables available for the full dataset. Standard errors are robust and clustered at topic-year level. *** $p < .01$. Year$\geq$ 1995

Table 3: T-tests for difference of means immediately around cutoff

Covariate	N	$\bar{X}_1$	$\bar{X}_{-1}$	t-statistic	H_1 p-value	H_2 p-value
MSA_i	1872	0.333	0.304	-1.68	0.243	0.122
Age_i	1272	9.42	10.4	-1.26	0.208	0.896
$Minority_i$	919	0.0749	0.103	-1.50	0.134	0.933
$Woman_i$	919	0.070	0.087	-0.962	0.337	0.832
$Exit_i^{\text{Prev}}$	1872	0.0411	0.0289	1.220	0.223	0.112
$\#SBIR_i^{\text{Prev}}$	1872	15.2	14.2	0.439	0.661	0.330
PF_i^{Prev}	1872	0.111	0.103	0.48	0.630	0.315
VC_i^{Prev}	1872	0.0905	0.0837	0.46	0.648	0.324
$Patent_i^{\text{Prev}}$	1872	0.475	0.469	0.153	0.879	0.439
$Citation_i^{\text{Prev}}$	1872	0.483	0.412	1.42	0.156	0.078

Note: This table tests for continuity of all baseline covariates immediately around the cutoff for the Phase 1 award, comparing centered ranks $R_i = 1$ and $R_i = -1$. First-time winners only; test performed without assuming equal variance. Year$\geq$ 1995

Table 4: Patent Class Growth

Panel 1: T-tests of Future Patents in Firm's Dominant Patent Class Around Award Cutoff

	Grantees		Losers		p-value
	Mean (s.e.)	N	Mean (s.e.)	N	
Phase 1; Bandwidth=1	10,118 (741)	231	11,462 (521)	514	0.15
Phase 1; Bandwidth=all	9,926 (677)	297	9,616 (303)	1,498	0.68
Phase 2	8,019 (566)	276	8,790 (707)	266	0.39

Panel 2: Regressions of Award Status on Future Patents in Applicant Dominant Patent Subclass

Dependent variable: Award

Phase:	Phase 1				Phase 2
Bandwidth:	All			1	All
	I.	II.	III.	IV.	V.
Future Patents in Class/10,000	-.014	-.012	-.0063	-.024	-.018
	(.01)	(.0074)	(.0066)	(.015)	(.02)
Normalized rank		.12***	.09***		
		(.026)	(.015)		
N	2861	2861	2861	1778	542
R^2	0.273	0.584	0.363	0.359	0.001

Note: This table uses the classes in which firms patent and all future patents in that class (from whole USPTO database) to test whether awardees disproportionately patent in technological growth areas. I assign each firm with ≥1 patent its modal class. Panel 1: t-tests for differences around the cutoff in average future patents for firm's dominant class. Panel 2: OLS regressions in which award is regressed on the future patents in dominant class variable, to assess whether future patents can predict awards. *** $p < .01$. Year≥ 1995.

Table 5: Impact of Grant Interacted with Firm's Previous SBIR Awards

Dependent variable:	I. VC_i^{post}	II. $\ln\left(1+Cites_i^{post}\right)$	III. $Revenue_i$	IV. $In\ Bus_i^{\text{Post}}$	V. $Exit_i^{post}$
Award· Norm. $SBIR_i^{prev}$	-.041*	-.19*	-.3	-.044*	-.03**
	(.023)	(.097)	(1)	(.023)	(.013)
Award	.12***	.54***	.27	.18***	.035***
	(.019)	(.075)	(.2)	(.028)	(.011)
Norm. $SBIR_i^{prev}$	.063***	.79***	1.6***	.089***	.032***
	(.018)	(.085)	(.26)	(.02)	(.011)
Competition f.e.	Y	Y	Y	Y	Y
N	3368	3915	1780	2357	3368
R^2	0.285	0.433	0.12	0.362	0.237

Note: This table is an RD estimating via OLS the impact of the Phase 1 grant ($\mathbf{1} \mid R_i > 0$) interacted with the number of previous non-DOE SBIR awards (from other government agencies, e.g. DOD, NSF), normalized by demeaning and dividing by 100. All models use bandwidth 2. The full ZINB model is shown for revenue (column III). Standard errors robust and clustered at topic-year level. *** $p < .01$. Year$\geq$ 1995

Table 6: Impact of Grant on Subsequent Private Finance with Linear and Quadratic Control Functions

Dependent Variable: PF_i^{Post}							
Bandwidth:	1	2		3		All	
	I.	II.	III.	IV.	V.	VI.	VII.
Award	0.12***	0.12***	0.23***	0.13***	0.29***	0.12***	0.11***
	(0.037)	(0.028)	(0.0623)	(0.027)	(0.051)	(0.023)	(0.037)
Norm. rank			-0.045**		-0.12***		0.0051
			(0.022)		(0.029)		(0.0081)
Norm. rank^2					0.034***		0.000072
					(0.0085)		(0.00059)
Controls†	Y	Y	Y	Y	Y	Y	Y
Competition f.e.	Y	Y	Y	Y	Y	Y	Y
N	1872	2836	2836	3368	3368	5021	5021
R^2	0.47	0.39	0.4	0.35	0.36	0.28	0.29

Note: This table reports regression estimates of the effect of the Phase 1 grant ($\mathbf{1} \mid R_i > 0$) on all private finance. The specifications are variants of the model in Equation 1. The dependent variable ${PF^{\text{Post}}}_i$ is 1 if the company ever received PF after the award decision, and 0 if not. †Controls: previous VC, previous all-gov't SBIR awards. Standard errors robust and clustered at topic-year level. *** $p < .01$. Year$\geq$ 1995

Table 7: Estimating Spillovers with the Number of Awards in a Competition

Dependent Variable: VC_i^{post}	Comparing effect on VC, among losers, of competitions with 1 award vs. > 1 award		Comparing effect on VC, among losers, of competitions with ≤ 2 award vs. > 2 awards		Same MSA	Different MSAs	V & VI
	I.	II.	III.	IV.	V.	VI.	VII.
$(\mathbf{1} \mid \# \text{ Awards} > 1)$	.0017	.0081					
	(.01)	(.011)					
$(\mathbf{1} \mid \# \text{ Awards} > 2)$			.014	.019			
			(.011)	(.011)			
Award					.11**	.078***	.078***
					(.052)	(.025)	(.025)
Award$\cdot \left(\mathbf{1} \mid \text{Same MSA}_i^{\text{Prev}}\right)$							.029
							(.056)
$\mathbf{1} \mid \text{Same MSA}_i^{\text{Prev}}$							-.11***
							(.013)
Normalized rank, Normalized rank^2	N	Y	N	Y	Y	Y	Y
Controls[†]	Y	Y	Y	Y	Y	Y	Y
Year f.e.	Y	Y	Y	Y	N	N	N
Competition f.e.	N	N	N	N	Y	Y	Y
N	4374	4374	4374	4374	1214	3807	5021
R^2	.12	.12	.12	.12	0.13	0.11	0.11

Note: This table reports regression estimates of the effect of having multiple awards in the competition for losers, using a bandwidth of all the data. The sample only includes losing firms. I control for rank in columns II and IV, and do not in columns I and III. I expect that negative spillovers will cause the indicators for more winners to have positive coefficients. [†]Controls are normalized rank, normalized rank squared, previous VC investment and previous SBIR awards from all gov't agencies, which are the only covariates with predictive power over the outcome and rank, respectively. V & VI include firms from the same and different cities (MSAs), respectively, within a topic. In the MSA analysis, I use a bandwidth of all and control for rank and its interaction with the same MSA indicator. Standard errors are robust and clustered at the topic-year level. *** $p < .01$. Year$\geq$ 1995

Table 8: Correlation of Characteristics Used in Heterogeneity Analysis

	$\mathbf{1} \mid Age_i \leq 2$	$\mathbf{1} \mid No\ Cites_i^{Prev}$	$\mathbf{1} \mid Emerging\ Sector_i$	$\mathbf{1} \mid Hardware_i$
$\mathbf{1} \mid Age_i \leq 2$	-			
$\mathbf{1} \mid No\ Cites_i^{prev}$	0.19	-		
$\mathbf{1} \mid Emerging\ Sector_i$	0.01	0.07	-	
$\mathbf{1} \mid Hardware_i$	0.05	-0.004	-0.001	-

Note: This table shows correlation coefficients between variables used in the heterogeneity analysis.

Table 9: Impact of Phase 1 Grant Amount on Subsequent Venture Capital (VC) Investment

Dependent Variable: VC_i^{Post}	I. 2008-09 (Grant= \$100,000)	II. 2010-11 (Grant= \$150,000)	III. I vs. II	IV. Interaction w/ grant amount (whole sample)
Award	.086***	.18***	.086***	-.15
	(.033)	(.045)	(.028)	(.13)
Award$\cdot\mathbf{1} \mid Year \in [2010, 2011]$			.093**	
			(.045)	
$\mathbf{1} \mid Year \in [2010, 2011]$			-.038	
			(.059)	
Norm. Rank	.0032	.0051	.0032	.011
	(.0029)	(.0036)	(.0028)	(.015)
Norm. Rank$\cdot\mathbf{1} \mid Year \in [2010, 2011]$			.0019	
			(.0046)	
Award·Grant Amt†				.2**
				(.099)
Grant Amt†				-.058
				(.036)
Norm. Rank·Grant Amt				-.0066
				(.011)
Sector f.e.	Y	Y	Y	N
Year-sector f.e.	N	N	N	Y
N	991	1352	2343	5021
R^2	0.201	0.176	0.187	0.033

Note: This table reports regression estimates of the effect of the Phase 1 grant ($\mathbf{1} \mid R_i > 0$) on VC. Specifications are variants of Equation 1, using BW=all. In columns I-III I also control for previous VC, and in column III also interact it with the dummy for 2010-11. In column III, sector f.e. are interacted w/$\mathbf{1} \mid Year \in [2010, 2011]$, and in column IV year-sector f.e. are interacted with the grant amount. Note that here the Award coefficient is the effect of treatment when the grant amount is zero, which obviously does not occur in the data. In columns I-III, standard errors robust; in subsequent columns clustered by topic-year.†Grant amount is divided by 100,000 to make the coefficients of reasonable size. *** $p < .01$.

Table 10: Grant Use Survey Response Sample Selection Tests

Panel 1: Surveyed Firms

	Non-responders Mean (std dev)	N	Responders Mean (std dev)	N	2-tailed t-test p-value for diff of means	1-tailed t-test p-value for diffof means
First year won Phase 1	2008.0 (3.7)	253	2008.9 (3.4)	94	.036**	.018**
Last year won Phase 1	2009.8 (2.27)	253	2010.3 (2.25)	94	.041**	.020**
Number Phase 1 awards	1.9 (2.5)	253	1.97 (3.0)	94	.90	.45
Number Phase 2 awards	.56 (1.0)	253	.61 (1.3)	94	.78	.39
$LnCites_i^{post}$	.41 (1.1)	253	.25 (.79)	94	.13	.067
$Cites_i^{post}$	6.6 (35)	253	2.4 (16)	94	.12	.061*
VC_i^{post}	.27 (.44)	253	.32 (.47)	94	.27	.14

Panel 2: All Grantees

	Surveyed Mean (std dev)	N	Non-surveyed Mean (std dev)	N	Two-tailed t-test p-value for difference of means	One-tailed t-test p-value for difference of means
First year won Phase 1	2008. 9 (3.6)	347	2005.03 (5.6)	184	.00***	.00***
Last year won Phase 1	2009.9 (2.3)	347	2009.4 (2.5)	184	.019**	.001***
Number Phase 1 awards	3.07 (3.4)	347	1.9 (2.7)	184	.00***	.00***
Number Phase 2 awards	.58 (1.1)	347	.79 (1.3)	184	.0049**	.025**
$LnCites_i^{post}$	.36 (1.0)	347	1.07 (1.7)	184	.00***	.00***
$Cites_i^{post}$	5.5 (31)	347	25 (84)	184	.0033***	.0017***
VC_i^{post}	.29 (.45)	347	.20 (.40)	184	.019***	.010***

Note: This table tests whether the responders to the grant use survey were systematically different from the non-responders. All 347 firms that received a Phase 1 grant in 2005 or later and are still in business ($In\ Bus_i^{post}$=1) were contacted. Responses were obtained for 94 firms. I report the smaller one-tailed p-value.

Table 11: Impact of Grant on Subsequent VC by Cutoff Point (by Number of Awards in Competition)

Dependent Variable: VC_i^{Post}					
Bandwidth:	1		All		
# Awards:	I. 1	II. > 1	III. 2	IV. 3	V. > 3
$\mathbf{1} \mid R_i > 0$	.11**	.088**	.14**	.18**	.13
	(.05)	(.041)	(.054)	(.089)	(.086)
Normalized rank			-.012	-.034	.0044
			(.014)	(.027)	(.017)
Normalized rank^2			.0018	.0061***	-.00033
			(.0012)	(.0021)	(.00072)
Controls†	Y	Y	Y	Y	Y
Comp. f.e.	Y	Y	Y	Y	Y
N	860	1012	1386	720	680
R^2	0.52	0.44	0.30	0.30	0.23

Note: This table reports regression estimates of the effect of the Phase 1 grant ($\mathbf{1} \mid R_i > 0$) on VC, where each column includes only competitions with the designated number of awards. The specifications are variants of the model in Equation 1. † Controls are previous VC investment and previous all-gov't SBIR awards. Standard errors are robust and clustered at topic-year level. *** $p < .01$. Year$\geq$ 1995

Table 12: Impact on VC with Absolute Rank (Non-Centered) Dummies

Dependent Variable: VC_i^{Post}	I. Rank Dummies	II. Award Dummy & Rank Dummies	III. Award Dummy, Controls & Rank Dummies
$\mathbf{1} \mid R_i > 0$		0.143***	0.139***
		(0.0402)	(0.0406)
VC_i^{Prev}			0.323***
			(0.0295)
$\#SBIR_i^{\text{Prev}}$			0.000939***
			(0.000204)
$R_i = 1$	0.0825***	-0.0560	-0.0834*
	(0.0274)	(0.0466)	(0.0472)
$R_i = 2$	0.0237	0.0100	-0.0131
	(0.0188)	(0.0176)	(0.0178)
$R_i = 3$	-0.0154	-0.0123	-0.0289
	(0.0239)	(0.0226)	(0.0217)
$R_i = 4$	-0.0406	-0.0243	-0.0287
	(0.0291)	(0.0283)	(0.0264)
$R_i = 5$	-0.0738**	-0.0505	-0.0568*
	(0.0354)	(0.0344)	(0.0300)
$R_i = 6$	-0.0885**	-0.0595	-0.0541*
	(0.0399)	(0.0375)	(0.0313)
$R_i = 7$	-0.117**	-0.0852*	-0.0769*
	(0.0472)	(0.0450)	(0.0400)
$R_i = 8$	-0.140**	-0.100*	-0.0854
	(0.0568)	(0.0560)	(0.0532)
$R_i = 9$	-0.193***	-0.145**	-0.150***
	(0.0662)	(0.0650)	(0.0555)
$R_i = 10$	-0.139	-0.0949	-0.0679
	(0.101)	(0.0960)	(0.0841)
$R_i = 11$	-0.137	-0.0850	-0.0542
	(0.0976)	(0.0928)	(0.0782)
$R_i = 12$	-0.179***	-0.145**	-0.0791
	(0.0603)	(0.0565)	(0.0480)
$R_i = 13$	-0.0907	-0.0452	0.00922
	(0.244)	(0.234)	(0.229)
$R_i = 14$	0.300	0.345	0.346
	(0.485)	(0.473)	(0.485)
N	5671	5671	5671
R^2	0.176	0.181	0.261

Note: This table reports regression estimates using absolute rank dummies rather than centered/percentile continuous rank variables. Column I projects VC finance on only the rank dummies, and subsequent columns include Phase 1 treatment ($\mathbf{1} \mid R_i > 0$) Standard errors are robust and clustered at topic-year level. *** $p < .01$. Year$\geq$ 1995

Table 13: Impact of Grant on VC with Logit Model

Dependent Variable: VC_i^{post}								
Bandwidth:	1		2		3		All	
	I.	II.	III.	IV.	V.	VI.	VII.	VIII.
$\mathbf{1} \mid R_i > 0$	1.35***	1.11***	1.18***	1.04***	1.25***	1.12***	1.16***	1.04***
	(0.35)	(0.245)	(0.25)	(0.19)	(0.23)	(0.17)	(0.18)	(0.16)
VC_i^{Prev}	2.633***	2.3***	2.76***	2.41***	2.54***	2.25***	2.44***	2.29***
	(0.4)	(0.3)	(0.29)	(0.21)	(0.26)	(0.19)	(0.18)	(0.15)
$\#SBIR_i^{\text{Prev}}$	0.013***	0.0095***	0.009***	0.0075***	0.0096***	0.0076***	0.0075***	0.0073***
	(0.0027)	(0.0025)	(0.0023)	(0.0018)	(0.0021)	(0.0017)	(0.0014)	(0.0013)
Competition f.e.	Y	N	Y	N	Y	N	Y	N
Topic f.e.	N	Y	N	Y	N	Y	N	Y
N	700	1194	1250	2054	1614	2528	3450	4672
Pseudo-R^2	0.25	0.232	0.241	0.21	0.23	0.19	0.21	0.18

Note: This table reports logit regression estimates of the effect of the Phase 1 grant ($\mathbf{1} \mid R_i > 0$) on VC. The specifications are variants of the model in Equation 1. Standard errors are robust and clustered at topic-year level. *** $p < .01$. Year$\geq$ 1995

Table 14: Impact of Grant on All Outcomes with Alternative Fixed Effects

Panel 1

Dep. Variable:	VC_i^{post}			$\ln\left(1+Cites_i^{post}\right)$			$Revenue_i$		
	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.
Award	.099***	.094***	.1***	.34***	.34***	.28***	.97*	1.02**	1.2**
	(.021)	(.021)	(.021)	(.09)	(.091)	(.1)	(.50)	(.49)	(.47)
Sector f.e.	N	Y	Y	N	Y	Y	N	Y	Y
Year f.e.	Y	Y	N	Y	Y	N	Y	Y	N
N	1872	1872	1872	1872	1872	1872	1108	1108	1108
R^2	0.036	0.062	0.043	0.165	0.183	0.027	0.028	0.049	0.023

Panel 2

Dep. Variable:	$In\ Bus_i^{post}$			$Exit_i^{post}$		
	I.	II.	III.	IV.	V.	VI.
Award	.12***	.12***	.11***	.044***	.044***	.044***
	(.033)	(.033)	(.032)	(.014)	(.014)	(.013)
Sector f.e.	N	Y	Y	N	Y	Y
Year f.e.	Y	Y	N	Y	Y	N
N	1212	1212	1212	1872	1872	1872
R^2	0.067	0.078	0.025	0.027	0.038	0.016

Note: This table reports regression estimates of the effect of the Phase 1 grant $(\mathbf{1} \mid R_i > 0)$ on all outcomes using bandwidth 1. The specifications are variants of the model in Equation 1, with alternative fixed effects. Standard errors are robust and clustered at topic-year level. *** $p < .01$. Year$\geq$ 1995

Table 15: Impact of Grant on All Outcomes with Alternative Standard Errors

Panel 1

Dependent Variable:	VC_i^{post}			$\ln\left(1+Cites_i^{post}\right)$			$Revenue_i$		
Bandwidth:	1	All	1	1	All	1	1	All	1
Std error clustering:	Rank		Competition	Rank		Competition	Rank		Competition
	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.
Award	.1***	.061**	.1***	.33***	.2*	.33**	1.7*	0.67*	1.7*
	(.0034)	(.028)	(.034)	(.027)	(.11)	(.15)	(0.17)	(0.38)	(0.93)
Norm. rank, Norm. rank^2	N	Y	N	N	Y	N	N	Y	N
Competition f.e.	Y	Y	Y	Y	Y	Y	Y	Y	Y
N	1872	5021	1872	1872	5021	1872	1108	3583	1108
R^2	0.42	0.19	0.42	0.46	0.350	0.46	0.402	0.15	0.40

Panel 2

DependentVariable:	$In\ Bus_i^{post}$			$Exit_i^{post}$		
Bandwidth:	1	All	1	1	All	1
Std error clustering:	Rank		Competition	Rank		Competition
	I.	II.	III.	IV.	V.	VI.
Award	.15*	.14***	.15***	.046	.046**	.046*
	(.02)	(.025)	(.058)	(.016)	(.019)	(.025)
Norm. rank, Norm. rank^2	N	Y	N	N	Y	N
Competition f.e.	Y	Y	Y	Y	Y	Y
N	1212	3880	1212	1872	5021	1872
R^2	0.46	0.25	0.46	0.38	0.17	0.38

Note: This table reports regression estimates of the effect of the Phase 1 grant ($\mathbf{1} \mid R_i > 0$) on all outcomes using bandwidth 1 or all. The specifications are variants of the model in Equation 1. Standard errors are robust and clustered as specified. *** $p < .01$. Year$\geq$ 1995

Table 16: Variation in Covariates, Rank Control, and Dependent Variable

Dependent Variable:	VC_i^{post}				$\ln\left(1 + \text{VC Amt}_i^{post}\right)$	VC Deals_i^{post}
	I.	II.	III.	IV.	V.	VI.
Award	.11**	.083**	.089***	.064*	1.8**	.8***
	(.045)	(.042)	(.023)	(.036)	(.89)	(.29)
Age	-.0017					
	(.0022)					
$Hardware_{\text{i}}$	-.0017					
	(.032)					
In Major MSA	-.0012					
	(.059)					
Prev. non-DOE SBIRs	-.0013***					
	(.00048)					
VC_i^{prev}	.44***					
	(.06)					
$Cites_i^{prev}$	.00039					
	(.0004)					
MSA VC investment	.000027*					
	(.000015)					
MSA median income	-.0029*					
	(.0015)					
Minority-owned		.012				
		(.068)				
Woman-owned		-.069				
		(.082)				
$\ln(1 + \text{VC Amt}_i^{prev})$			-.0077***			
			(.0016)			
Norm. rank | lose				.021	-.56	-.051
				(.016)	(.5)	(.14)
Norm. rank | win				.043	.21	.11**
				(.042)	(.14)	(.043)
Competition f.e.	Y	Y	Y	Y	Y	Y
N	1147	1365	3174	3368	3368	3368
R^2	0.604	0.45	0.30	0.28	0.36	0.038 (Pseudo-R^2)

Note: This table reports regression estimates of the effect of the Phase 1 grant $(\mathbf{1} \mid R_i > 0)$ using variants of the model in Equation 1 with a bandwidth of 3. Standard errors are robust and clustered at the sector-year level. *** $p < .01$. Year$\geq$ 1995