WINNING BY BEING BORING: UNCERTAINTY REDUCTION AS ENTREPRENEURIAL STRATEGY IN NASCENT MARKETS

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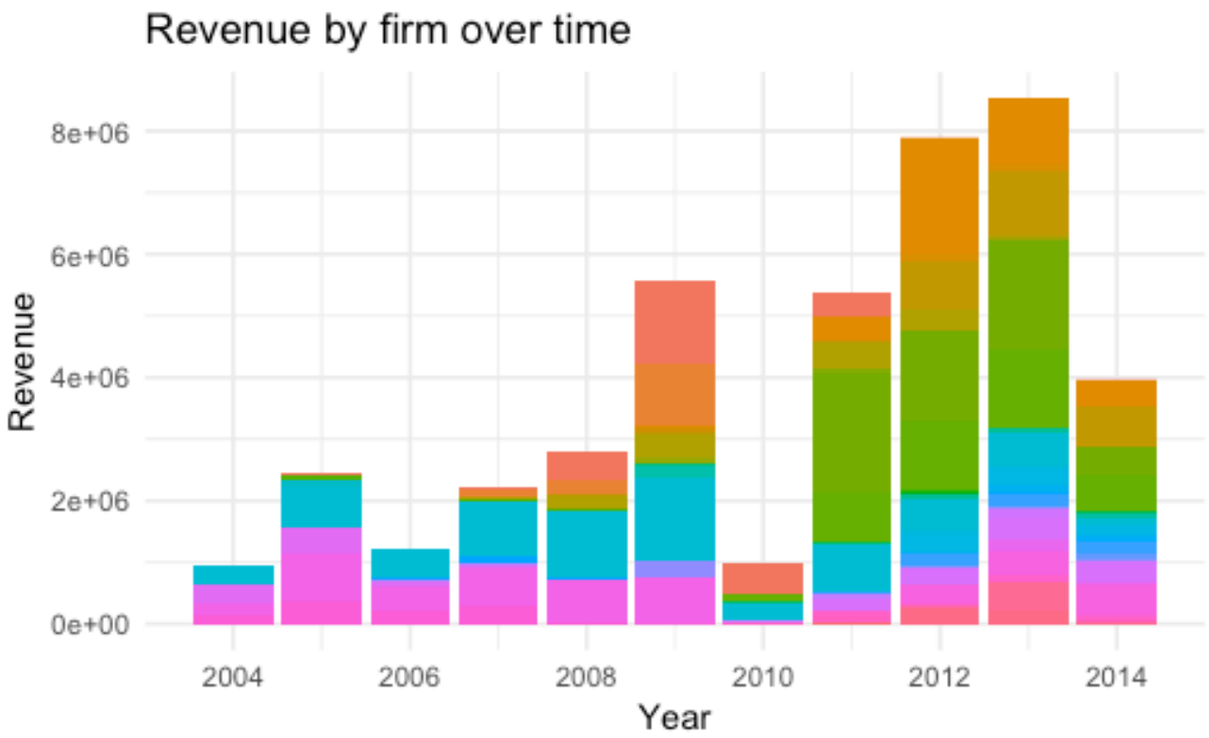
$24 BILLION

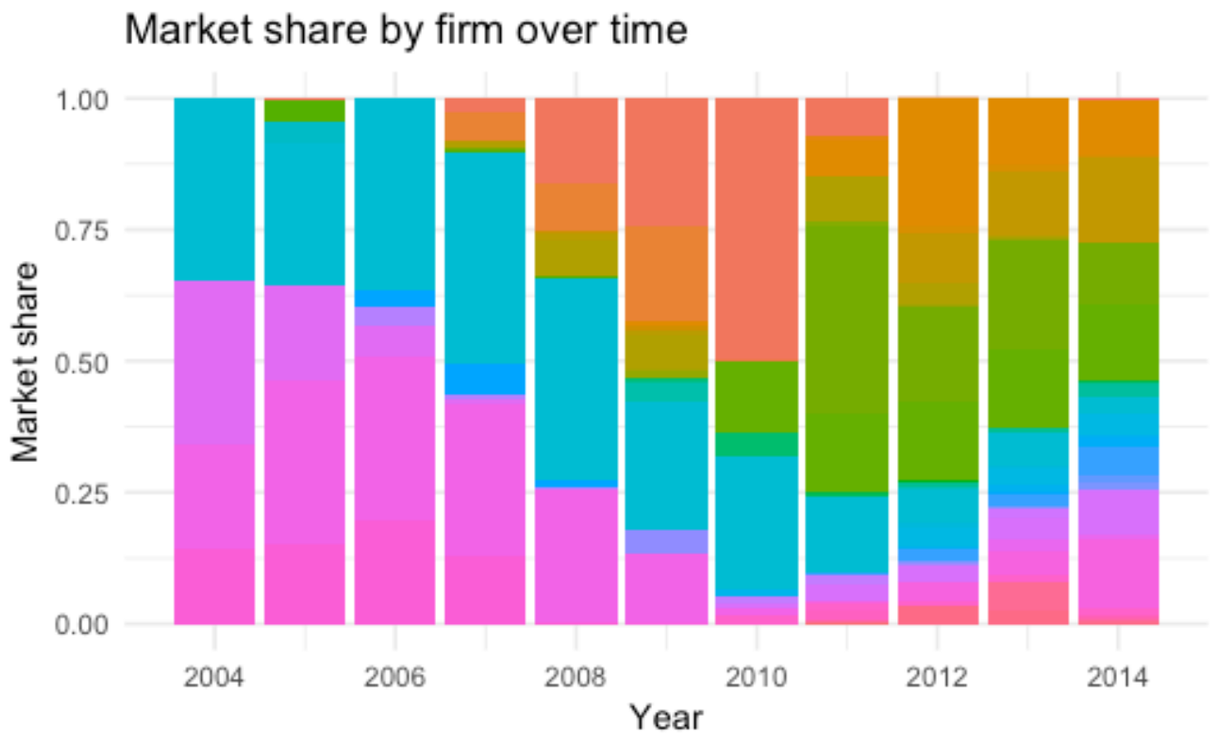
Could we spend it better?

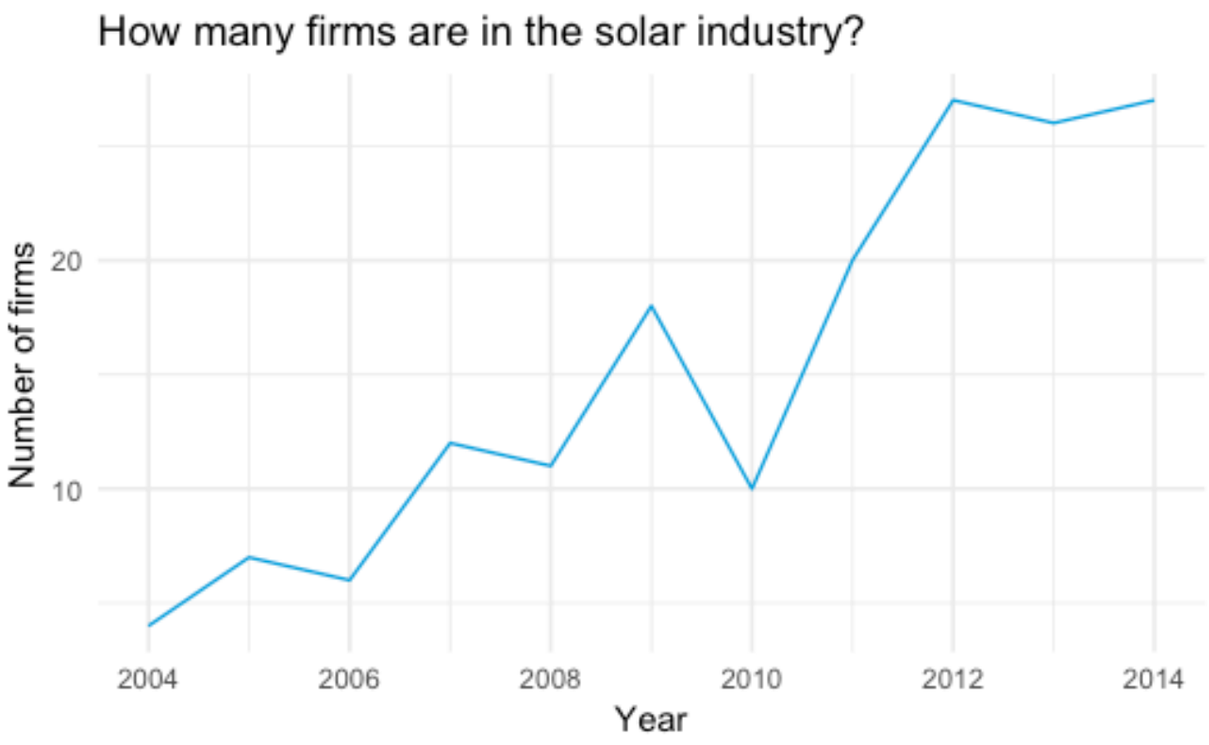
LITERATURE REVIEW AND CONTRIBUTION

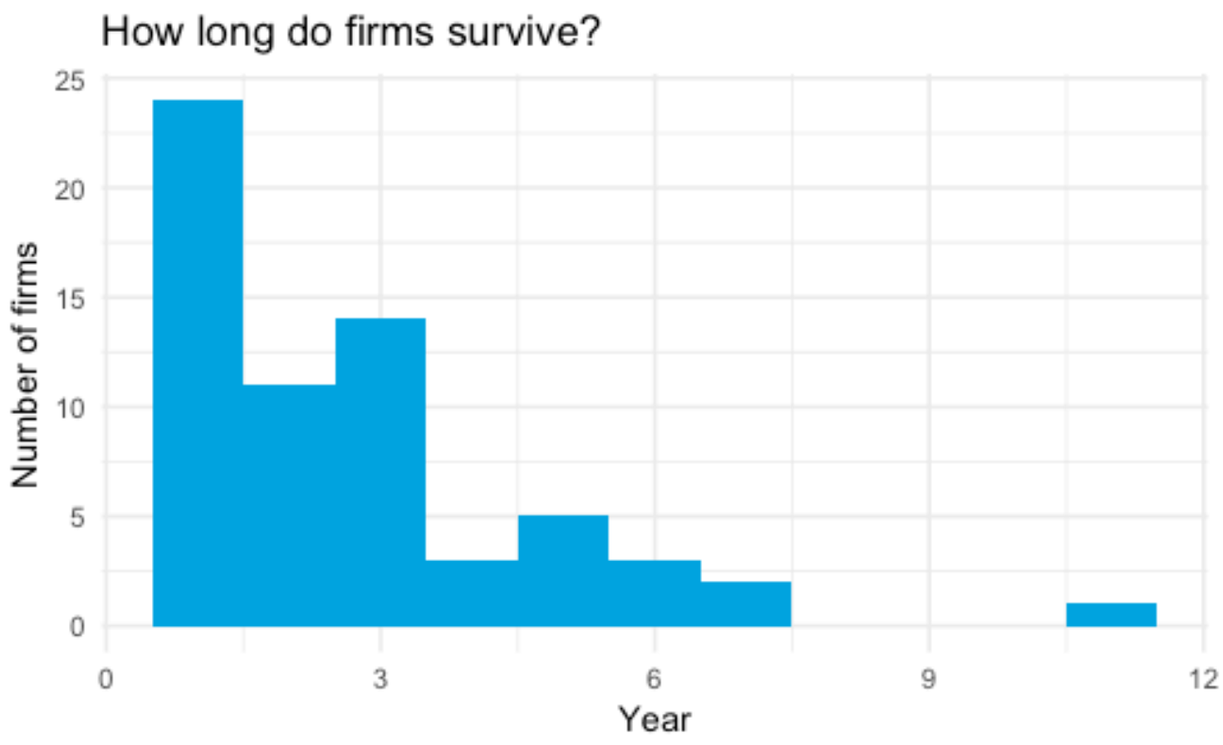
- What we know (and don't)
  - What leads to entrepreneurial success? 🤷 *(Song et al 2008)*
  - Entrepreneurial strategy, maybe? *(Ott et al 2017)*
  - And esp. as expressed through bricolage and effectuation *(Baker and Nelson 2005, Sarasvathy 2001, Fisher 2012)*
    - And as reflected in parallel work on organizational ambidexterity: exploring and exploiting *(O'Reilly and Tushman 2013)*
- What I hypothesize
  - In the early days of the solar panel industry, standardization (in cost estimating, pricing, and installation efficiency) will be associated with firm success (in revenue, market share and firm survival)

THE SOLAR PANEL INDUSTRY IN AUSTIN AT A GLANCE



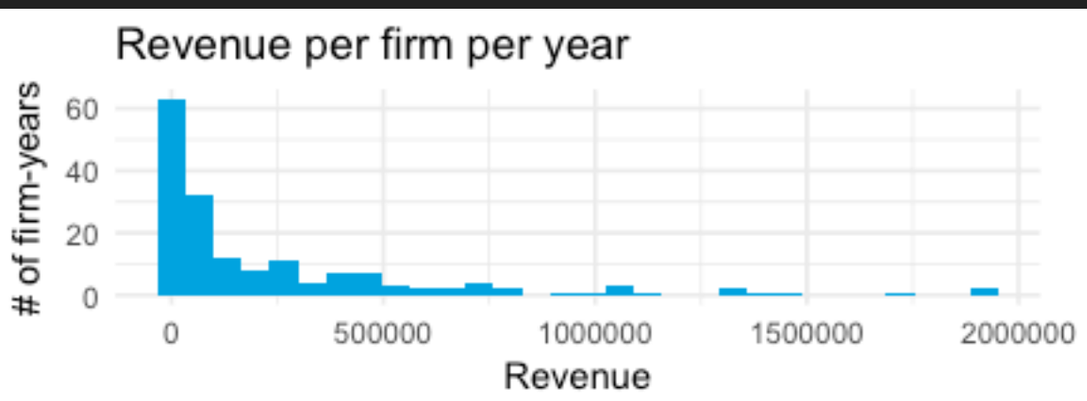


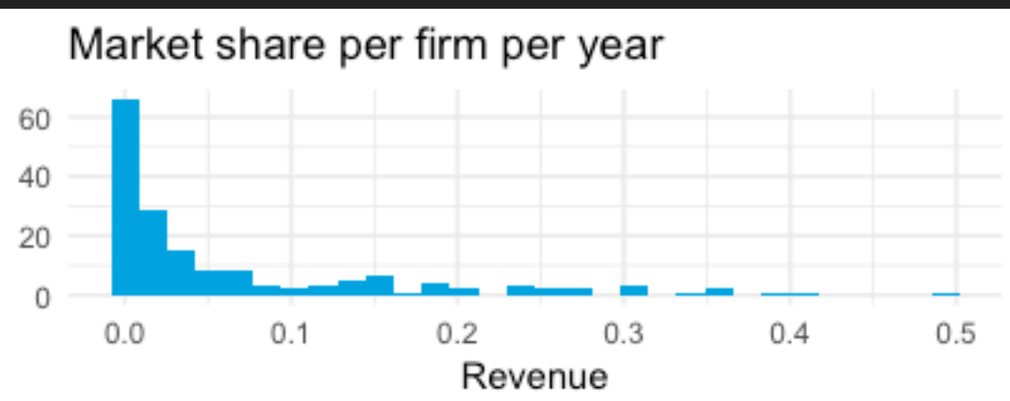


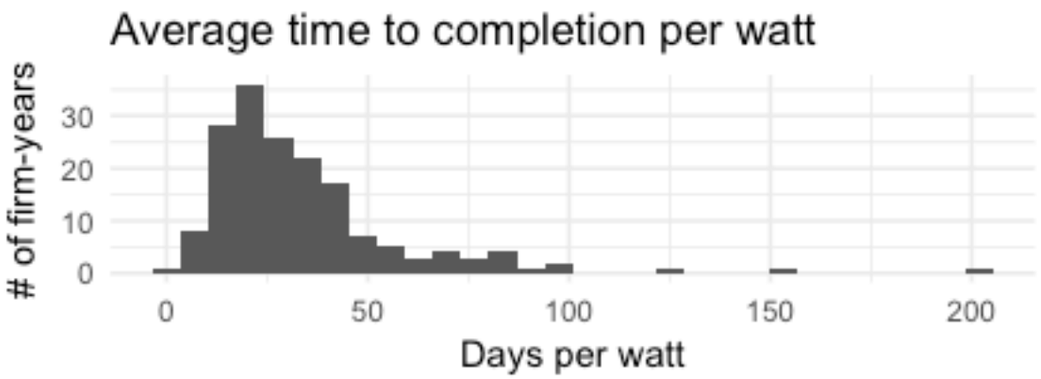


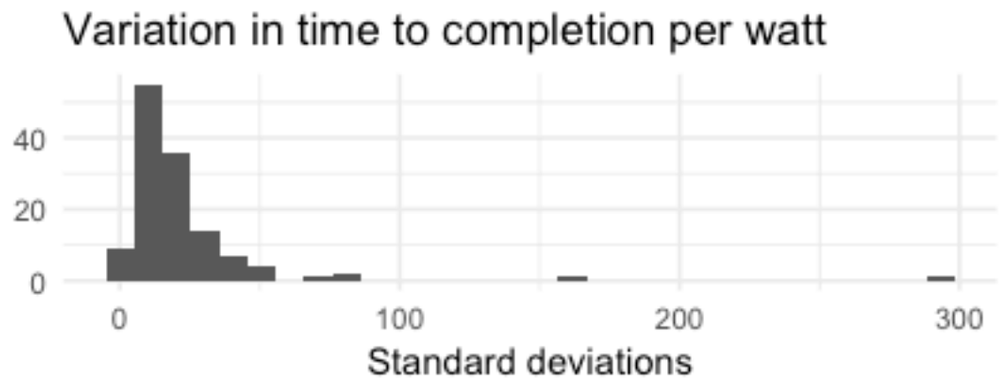
THE MODEL

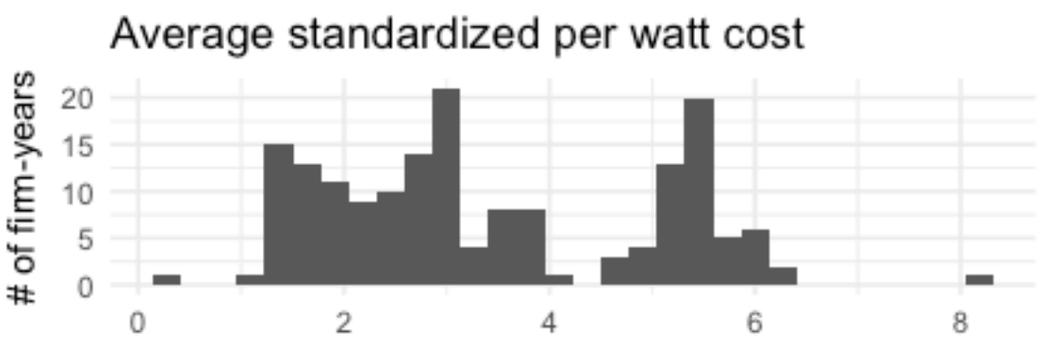
- A set of lagged linear regression models of the relationships among…
- Dependent variables
  - Revenue
  - Market share
  - Firm survival (TBD)
- Independent variables
  - Time to completion (mean and standard deviation)
  - Per watt cost (mean and sd)
  - Cost estimate error (mean and sd)

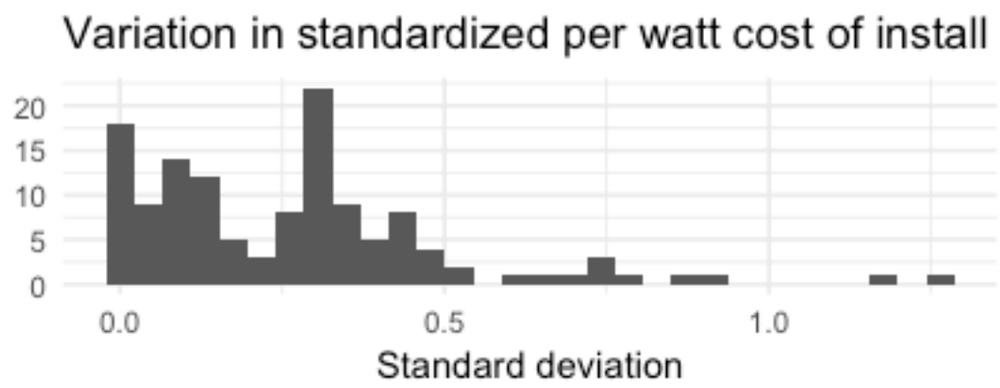

Revenue per firm per year
# of firm-years
60
40
20
0
0
500000
1000000
1500000
2000000
Revenue

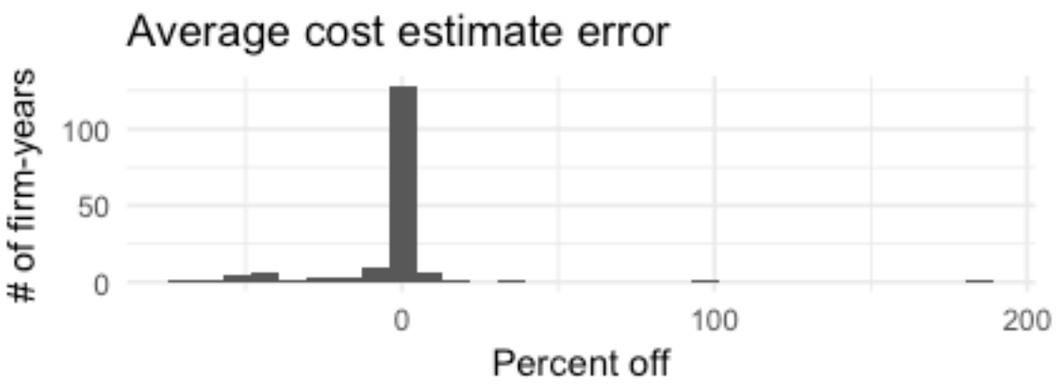

Market share per firm per year
60
40
20
0
0.0
0.1
0.2
0.3
0.4
0.5
Revenue

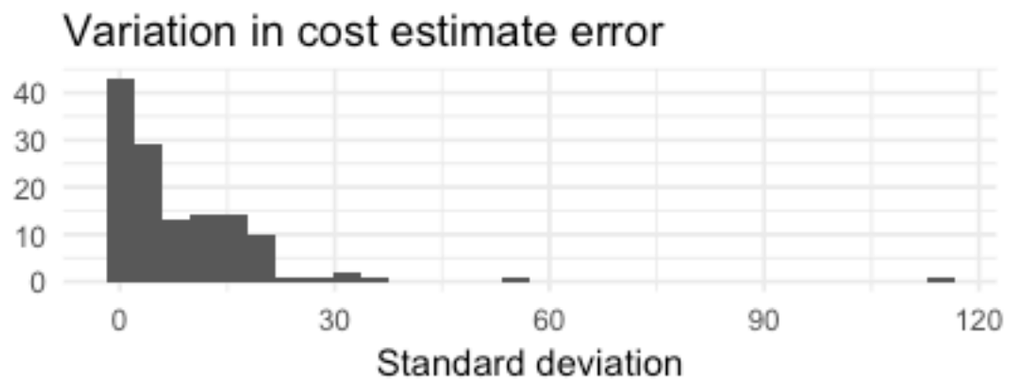

Average time to completion per watt
# of firm-years
30
20
10
0
0
50
100
150
200
Days per watt


Variation in time to completion per watt
40
20
0
0
100
200
300
Standard deviations


Average standardized per watt cost
# of firm-years
20
15
10
5
0
0
2
4
6
8


Variation in standardized per watt cost of install
20
15
10
5
0
0.0
0.5
1.0
Standard deviation


Average cost estimate error
# of firm-years
100
50
0
0
100
200
Percent off


Variation in cost estimate error
40
30
20
10
0
0
30
60
90
120
Standard deviation

DATA

RESULTS AT A GLANCE

- Revenue models
  - No stars!
- Market share models
  - No stars!
- Firm survival models
  - Under construction, maybe

(WORKING) CONCLUSIONS AND (DEFINITE) QUESTIONS

- At least in the first ten years of the solar industry in Austin, standardization as measured here isn't associated with business success, as measured by revenue growth or market share.
- But…
  - Did I miss something on fixed effects?
  - Panel logistic regressions in R?
  - Alternative specifications?

REVENUE MODELS

	Dependent variable:		
	revenue		
	(1)	(2)	(3)
Mean time to completion	-460.237		
	(1,999.113)		
Mean per watt cost	178,053.300***		
	(54,688.470)		
Mean cost estimate error	-337.617	7,297.942	
	(5,676.323)	(6,063.696)	
Mean time to completion (per watt)		5,524.700	
		(7,035.971)	
Mean per watt cost		-72,056.960	
		(129,038.600)	
Variation in time to completion	-2,480.510		
	(2,489.019)		
Variation in per watt cost	-22,579.470		
	(27,913.920)		
Variation in cost estimate error	4,123.217	1,571.802	7,411.158
	(8,215.928)	(10,200.120)	(11,541.260)
Variation in average time to completion (per watt)		-7,325.135	-2,744.149
		(5,495.359)	(3,890.074)
Variation in standardized per watt cost		-68,117.360	-72,511.970
		(142,254.300)	(140,211.600)
Average time to completion (per watt)			985,095.600
			(1,001,394.000)
Average time to completion (per watt, squared)			-734,247.500
			(692,493.600)
Avg standardized per watt cost			-710,899.900
			(982,094.000)
Avg standardized per watt cost (squared)			-1,432,780.000
			(1,767,597.000)
Avg cost estimate error			-8,284,094.000
			(12,616,193.000)
Avg cost estimate error(squared)			-12,125,759.000
			(13,327,171.000)
Observations	81	81	81
R^2	0.278	0.075	0.166
Adjusted R^2	-0.409	-0.805	-0.756
F Statistic	2.632** (df = 6; 41)	0.554 (df = 6; 41)	0.839 (df = 9; 38)
Note:			*p<0.1; **p<0.05; ***p<0.01

MARKET SHARE MODELS

	Dependent variable:		
	market_share		
	(1)	(2)	(3)
Mean time to completion	0.0003		
	(0.001)		
Mean per watt cost	0.062***		
	(0.014)		
Mean cost estimate error	-0.0003	0.001	
	(0.001)	(0.002)	
Mean time to completion (per watt)		0.003	
		(0.002)	
Mean per watt cost		-0.017	
		(0.035)	
Variation in time to completion	-0.001		
	(0.001)		
Variation in per watt cost	-0.011		
	(0.007)		
Variation in cost estimate error	0.005**	0.002	0.001
	(0.002)	(0.003)	(0.003)
Variation in average time to completion (per watt)		-0.002	0.0004
		(0.001)	(0.001)
Variation in standardized per watt cost		0.028	0.032
		(0.038)	(0.036)
Average time to completion (per watt)			0.176
			(0.255)
Average time to completion (per watt, squared)			-0.294
			(0.176)
Avg standardized per watt cost			-0.279
			(0.250)
Avg standardized per watt cost (squared)			-0.499
			(0.450)
Avg cost estimate error			1.705
			(3.214)
Avg cost estimate error(squared)			2.718
			(3.395)
Observations	81	81	81
R^2	0.371	0.140	0.299
Adjusted R^2	-0.228	-0.678	-0.476
F Statistic	4.027*** (df = 6; 41)	1.115 (df = 6; 41)	1.801 (df = 9; 38)
Note:			*p<0.1; **p<0.05; ***p<0.01