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Multifunctional Activities in New England Farms: Success and Continuation



Research Questions:

What factors are associated with the **perceived success** of Multifunctional Activities (MFAs)? Does the presence of other MFA farms in the area affect the perceived success?

- Does a high level of perceived success among other farms in the area impact a farmer's level of perceived success?
- Do self-reported personal characteristics impact the perceived success of MFAs?

What factors are associated with the desire for continued participation in MFAs?

The Data:

This research is based on a survey of farm operators in New England addressing farm practices, farmer characteristics, and MFA participation.

What are the fa	armers like?					
Self-reported farmer						
characteristics	Description	Obs	Mean	Std. Dev.	Min	Max
	Takes a value of 1 if the farmer reports					
optimist	being optimistic	946	2.690275	2.189018	0	6
	Takes a value of 1 if the farmer reports					
confident	being confident	946	0.721987	0.448257	0	1
	Takes a value of 1 if the farmer reports					
resonablerisks	being willing to take reasonable risks	946	0.711417	0.453344	0	1
	Takes a value of 1 if the farmer reports					
notafraidfailure	not being afraid of failure	946	0.662791	0.473007	0	1
	Takes a value of 1 if the farmer prefers					
considerbothsides	to consider all sides of a decision	946	0.662791	0.473007	0	1
	Takes a value of 1 if the farmer reports					
certainty	needing certainty in a decision	946	0.77907	0.415093	0	1
	Takes a value of 1 if the farmer reports					
cautious	being cautious	946	0.783298	0.412216	0	1
	Takes a value of 1 if the farmer reports					
	needing all of the information before					
infobeforedecide	making a decision	946	0.834038	0.372243	0	1
	Takes a value of 1 if the farmer reports					
creativeinnov	being creative or innovative	946	0.786469	0.410016	0	1
	Takes a value of 1 if the farmer reports					
newopportunities	seizing new opportunities	946	0.846723	0.360445	0	1

What is success?

Survey of New England Farmers:

To analyze the **farmers' perceived level of MFA success**, we focus on the following survey question:

"As the result of participating in agri-tourism, direct sales, value added, and off-farm work, I believe: 1) My family's financial situation has been improved; 2) My family's quality of life has been improved; 3) My family and I are happy and satisfied with our current farming operations; 4) I have a more positive outlook for my future as a farmer; 5) My family has a more positive outlook for our farming operation; 6) It has been more time consuming than I have expected; 7) I would continue participating in agri-tourism, direct sales, value added and/or off-farm work in the future."

for each of the seven options.

What do surrounding farmors do?

vvnat u	io surround					_		success?						
Variable		Description	Obs	Mean	Std. Dev.	Min	Max	Logit Regression*						
wnummfazii	n	Weighted* number of farms in the zipcode who participate in MFAs (based on survey responses)	946	2 705082	2 105192	0.077223	12 97342	Variable	improvedfinance	improvedquallife	satisfiedcurrentfarming	morepositiveoutlookfarme	r familypositivefarm	success
	٢	Weighted number of farms in the		21/03002	2.103132	0.077223	12.37312	college	0.14887221	-0.10189974	-0.2294757	-0.21004928	-0.16858892	0.02862005
		zipcode where the farmer reports t	that					yearfarm	-0.00331912	.0080505*	0.00656126	0.00407415	0.00716709	0.00796669
wsumother		MFAs were a success	946	0.971258	1.34376	0	9.266731	age65plus	-0.21332915	-0.10159705	0.2344195	-0.20841246	32586965*	-0.1331957
	po	pulation_farms _z /total	l_popula	tion_farm	S			age35_54	0.14181586	-0.18853991	-0.1985402	0.12924293	-0.00372074	-0.03641757
* V	veignt _z = <u>n</u>	umber respondents_/	total res	spondents	_			age35less	0.3547889	-0.82674756	-0.13920878	0.41502834	0.40470747	-1.1587712
Who n	long to com		inction ²)				hhsize	0.00823962	-0.07187535	13654321**	-0.09739769	-0.002237	-0.05988269
who p	lians to con	linue with MFA partic	apation					female	58519701***	0.00525615	-0.0476342	-0.11420138	-0.14480331	-0.03808216
X7 • 11	h			b .c	G(1 1			solepropri~r	.38131589**	.36655633**	0.18642495	-0.17031842	-0.13679443	0.31753523
Variable		Description Fakes a value of 1 if the farmer ren	Obs	Mean	Std. I	Dev. Min	Max	totalacres	00083604**	00159607***	00083733**	00067658*	-0.00055162	00124433***
	1	hat he/she plans to continue MFA	0105					dist_from_~y	9.26E-07	7.35E-06	-4.06E-06	-8.41E-06	-6.15E-06	-4.81E-06
continuedpa	articipation	participation	946	0.5792	281 0.49	93936 0	1	naturalame~e	-0.03278246	0.00984358	0.00649244	15114587*	-0.04256774	-0.06553476
								wnummfazip	0.03550472	0.01588006	-0.06785494	0.06642448	0.03660348	-0.02575977
			10					wsumother	-0.00359284	0.02080764	0.10979376	-0.05827483	-0.02022213	0.03745062
ciated v	with the	How an	re self-r	eported	charact	teristic	S	family	1.0590937***	1.3801947***	.88106702***	1.0508034***	.89894912***	1.6952023***
pation	in MFAs?	associa	ted wit	h succes	s of MF	As?		govprog	.49011794***	0.20766304	-0.02153297	0.14700529	0.0759021	0.18295723
								mktinfo	-0.05300676	-0.30066634	-0.18305451	-0.34109927	0.04879558	-0.28238194
								friendfama~e	0.03735865	0.18832061	-0.08778308	0.11171727	0.17038206	0.14632162
ression	dy/dx	Variable	Logi	stic Regressic	on	dy/dx		_cons	5.3236309	-16.302444*	-12.924482	-8.5328529	-15.091231	-15.37949
0.024668	0.004687	college		0.00	1416	0.0002	249			тт			· · · · · · · · · · · · · · · · · · ·	
0.005083	0.000966	yearfarm		0.00	6335	0.0011	14	aic	1212.5983	1195.7835	1276.6706	1198.2985	1155.3953	1066.0125
	06342846*	age65plus		-0.2	0578	-0.03	362	bic	1299.9386	1283.1239	1364.011	1285.6389	1242.7357	1153.3528
0.17931	0.034069	age35_54		-0.0	1697	-0.002	299	Corresponding						
0.084158	0.01599	age35less	-1.38	36496*	2433	39473*		Marginal Effects						

ariable		Description	Obs	Mean	Std. Dev.	Min	Max	Logit Regression*						
		Weighted* number of farms in the zipcode who participate in MFAs	:								· · · · · · · · · · · · · · · · · · ·		for	
nummfazij)	(based on survey responses)	94	6 2.705082	2.105192	0.077223	12.97342	variable	Improvedfinance	Improvedqualite	satisfiedcurrentfarming	morepositiveoutiookfarmer	ramilypositivefarm	success
		Weighted number of farms in the						college	0.14887221	-0.10189974	-0.2294757	-0.21004928	-0.16858892	0.02862005
		zipcode where the farmer reports t	hat					yearfarm	-0.00331912	.0080505*	0.00656126	0.00407415	0.00716709	0.00796669
sumother		MFAs were a success	94	6 0.971258	1.34376	0	9.266731	age65plus	-0.21332915	-0.10159705	0.2344195	-0.20841246	32586965*	-0.1331957
	pop	oulation_farms _z /total	l_popul	ation_farm.	5			age35_54	0.14181586	-0.18853991	-0.1985402	0.12924293	-0.00372074	-0.03641757
* V	$vergnt_z = -\frac{1}{n}$	umber respondents ₇ /	total r	espondents	_			age35less	0.3547889	-0.82674756	-0.13920878	0.41502834	0.40470747	-1.1587712
	lana ta aant		- 	-)				hhsize	0.00823962	-0.07187535	13654321**	-0.09739769	-0.002237	-0.05988269
wno p	lans to cont	inue with wirA partic	ipatio	n <i>:</i>				female	58519701***	0.00525615	-0.0476342	-0.11420138	-0.14480331	-0.03808216
		× • /•			G() 7			solepropri~r	.38131589**	.36655633**	0.18642495	-0.17031842	-0.13679443	0.31753523
ariable	<u>ц</u> г	Jescription Takes a value of 1 if the farmer ren	Obs orts	Mean	Std. 1	Dev. Min	Max	totalacres	00083604**	00159607***	00083733**	00067658*	-0.00055162	00124433***
	tl	hat he/she plans to continue MFA	ons					dist_from_~y	9.26E-07	7.35E-06	-4.06E-06	-8.41E-06	-6.15E-06	-4.81E-06
ontinuedpa	rticipation p	articipation	9	46 0.5792	81 0.49	3936 0	1	naturalame~e	-0.03278246	0.00984358	0.00649244	15114587*	-0.04256774	-0.06553476
								wnummfazip	0.03550472	0.01588006	-0.06785494	0.06642448	0.03660348	-0.02575977
	101. 01							wsumother	-0.00359284	0.02080764	0.10979376	-0.05827483	-0.02022213	0.03745062
ated v	vith the	How ar	e self	-reported	cnaract	eristic	S	family	1.0590937***	1.3801947***	.88106702***	1.0508034***	.89894912***	1.6952023***
oation	in MFAs?	associa	ted w	ith succes	s of MF	As?		govprog	.49011794***	0.20766304	-0.02153297	0.14700529	0.0759021	0.18295723
								mktinfo	-0.05300676	-0.30066634	-0.18305451	-0.34109927	0.04879558	-0.28238194
								friendfama~e	0.03735865	0.18832061	-0.08778308	0.11171727	0.17038206	0.14632162
ssion	dy/dx	Variable	Lo	gistic Regressio	n	dy/dx		_cons	5.3236309	-16.302444*	-12.924482	-8.5328529	-15.091231	-15.37949
0.024668	0.004687	college		0.001	1416	0.0002	249			1		· · · · · · · · · · · · · · · · · · ·		
0.005083	0.000966	yearfarm		0.006	5335	0.001	114	aic	1212.5983	1195.7835	1276.6706	1198.2985	1155.3953	1066.0125
	06342846*	age65plus		-0.20)578	-0.03	362	bic	1299.9386	1283.1239	1364.011	1285.6389	1242.7357	1153.3528
0.17931	0.034069	age35_54		-0.01	1697	-0.002	299	Corresponding						
004170	0.01500	0.00251000	1	2826406*	2/22	0/72*		Marginal Effects						

Methodology

(Cameron and Trivedi 2005)

Factors affecting presence of success:

Logit:

When F is the cdf for \mathcal{E}_{i} ,

 $\Pr[y_i = 1] = F[x, \beta].$

Where y_i takes on a value of 1 if the farmer reports success associated with MFAs and 0 otherwise. When $arepsilon_i$ follows a logistic distribution, the model is a logit.

Factors affecting success rate:

Ordered Logit:

For the ordered logit regression, consider the following linear model

 $y_i^* = \mathbf{x}_i' \boldsymbol{\beta} + \varepsilon_i$,

where y_i^* is a latent variable that might reflect the actual but unobserved value of success, and **x** is a vector of farm and zipcode-specific attributes (Cameron and Trivedi, 2005).

The observed variable y_i is defined as the following:

$$y_i = j$$
 for $j = 0, 1, 2, 3, 4$ or 5 if $\alpha_{j-1} < y_i^* \le \alpha_j$,

where $\alpha_0 = -\infty\infty$ and $\alpha_5 = \infty$. When *F* is the cdf for ε_i ,

$$\Pr[y_i = j] = \Pr[\alpha_{j-1} < y_i^* \le \alpha_j] = \Pr[\alpha_{j-1} < \mathbf{x}_i'\boldsymbol{\beta} + \varepsilon_i \le \alpha_j]$$
$$= F(\alpha_j - \mathbf{x}_i'\boldsymbol{\beta}) - F(\alpha_{j-1} - \mathbf{x}_i'\boldsymbol{\beta})$$

When ε_i follows a logistic distribution, the model is an ordered logit.

What factors are asso continuation of partic

Variable	Logistic Regression	dy/dx
college	0.024668	0.004687
yearfarm	0.005083	0.000966
age65plus	33383246*	06342846*
age35_54	0.17931	0.034069
age35less	0.084158	0.01599
hhsize	-0.10994	-0.02089
female	0.12702	0.024134
solepropri~r	0.179862	0.034174
totalacres	00102567***	00019488***
dist_from_~y	00002035**	-3.867e-06***
naturalame~e	-0.06788	-0.0129
family	1.6939617***	.3218542***
govprog	0.264042	0.050168
wnummfazip	0.06487	0.012325
wsumother	-0.07197	-0.01367
mktinfo	-0.08824	-0.01677
friendfama~e	0.079582	0.015121
optimist	.40193651**	.07636829**
confident	0.004081	0.000775
resonabler~s	0.291194	0.055327
notafraidf~e	44074326**	0837416**
considerbo~s	0.355778	0.067598
certainty	.4571538*	.08685962*
cautious	4173828*	07930309*
infobefore~e	0.059068	0.011223
creativein~v	.6377631***	.12117554***
newopportu~s	-0.00775	-0.00147
_cons	-11.1841	
aic	1117.386	
bic	1253.248	

	Variable
	college
	yearfarm
	age65plus
	age35_54
	age35less
	hhsize
	female
	solepropri~r
	totalacres
	dist_from_~y
	naturalame~e
	family
	govprog
	wnummfazip
	wsumother
	mktinfo
	friendfama~e
ļ	optimist
	confident
	resonabler~s
	notafraidf~e
	considerbo~s
	certainty
	cautious
	infobefore~e
	creativein~v
	newopportu~s
ŀ	_cons
	aic

Multifunctional Activities in New England Farms: Success and Continuation

Ioana (Julia) I. Marasteanu, The Pennsylvania State University; Dr. Chyi-Lyi (Kathleen) Liang, University of Vermont (Principal Investigator); Dr. Stephan Goetz, The Pennsylvania State University, Northeast Regional Center for Rural Development In collaboration with Dr. Mary Ahearn (USDA ERS), and Dr. Jason Brown (Federal Reserve Bank) Project Funded by USDA AFRI Foundational Grant# 2011-67023-30106

Respondents were prompted to choose a number from 1-5, with 1 representing "Strongly Agree" and 5 representing "Strongly Disagree,"

Variable	Description	Obs	Mean	Std. Dev.	Min	Max
	Takes a value of 1 if the farmer answered "strongly					
	agree" or "agree" (1 or 2) to "My family's financial					
improvedfinance	situation has been improved"	946	0.403806	0.490919	0	1
	Takes a value of 1 if the farmer answered "strongly					
	agree" or "agree" (1 or 2) to "My family's quality of					
improvedquallife	life has been improved"	946	0.53277	0.499189	0	1
	Takes a value of 1 if the farmer answered "strongly					
	agree" or "agree" (1 or 2) to "My family and I are					
	happy and satisfied with our current farming					
satisfiedcurrentfarming	operations"	946	0.478858	0.499817	0	1
	Takes a value of 1 if the farmer answered "strongly					
	agree" or "agree" (1 or 2) to "I have a more					
morepositiveoutlookfarmer	positive outlook on my future as a farmer"	946	0.37315	0.483897	0	1
	Takes a value of 1 if the farmer answered "strongly					
	agree" or "agree" (1 or 2) to "My family has a more					
familypositivefarm	positive outlook for our farming operation"	946	0.32241	0.467646	0	1
	The number of the above mentioned questions to					
successrate	which the farmer answered 1 or 2	946	2.110994	1.869653	0	5
	Takes a value of 1 if the farmer answered "strongly					
	agree" or "agree" (1 or 2) to any of the 5 categories					
success	above	946	0.678647	0.467243	0	1

Advice

Family

Ownership

Risk

Gender Resources

Market Access/Urban Sprawl development

Logistic Regression	dy/dx
0.001416	0.000249
0.006335	0.001114
-0.20578	-0.0362
-0.01697	-0.00299
-1.3836496*	24339473*
-0.06878	-0.0121
-0.05277	-0.00928
0.296945	0.052235
0013274***	0002335***
-6.22E-06	-1.10E-06
-0.08568	-0.01507
1.7598767***	.309576***
0.193821	0.034095
-0.03086	-0.00543
0.047935	0.008432
-0.26212	-0.04611
0.149942	0.026376
.70506186***	.12402586***
0.32091	0.056451
0.180553	0.031761
-0.26642	-0.04687
0.230964	0.040628
0.433485	0.076253
-0.02768	-0.00487
0.024593	0.004326
0.194492	0.034213
360504*	06341546*
-13.2558	
1049.612	
1185.475	

What factors are correlated with high levels of different types of perceived success? Does the perceived success of surrounding farms or the participation of surrounding farms in MFAs impact perceived

Results

0						
Variable	improvedfinance	improvedquallife	satisfiedcurrentfarming	morepositiveoutlookfarmer	familypositivefarm	success
college	0.03216642	-0.02161802	-0.05322103	-0.04466061	-0.03412634	0.00525636
yearfarm	-0.00071715	.00170791*	0.00152172	0.00086624	0.00145079	0.00146316
age65plus	-0.04609346	-0.0215538	0.05436762	-0.04431259	06596363*	-0.02446274
age35_54	0.03064178	-0.03999872	-0.04604633	0.02747959	-0.00075316	-0.00668846
age35less	0.07665829	-0.17539439	-0.03228592	0.08824319	0.08192225	-0.21282012
hhsize	0.00178031	-0.01524835	03166771**	-0.02070867	-0.00045282	-0.01099806
female	12644196***	0.00111509	-0.01104754	-0.02428146	-0.02931157	-0.00699418
solepropri~r	.08238991**	.07776488**	0.04323651	-0.03621305	-0.02769039	.05831857*
totalacres	00018064**	00033861***	0001942**	00014385*	-0.00011166	00022853***
dist_from_~y	2.00E-07	1.56E-06	-9.42E-07	-1.79E-06	-1.24E-06	-8.84E-07
naturalame~e	-0.00708322	0.00208831	0.00150576	03213658*	-0.0086167	-0.01203613
wnummfazip	0.00767141	0.00336895	-0.01573722	0.01412315	0.0074094	-0.00473104
wsumother	-0.0007763	0.00441434	0.02546386	-0.01239038	-0.00409343	0.00687819
family	.22883556***	.29280813***	.20434101***	.22342147***	.18196831***	.31134114***
govprog	.10589848***	0.04405569	-0.00499402	0.03125622	0.01536436	0.03360196
mktinfo	-0.01145303	-0.06378633	-0.04245482	-0.07252441	0.00987737	-0.05186231
friendfama~e	0.00807198	0.03995219	-0.02035905	0.02375329	0.03448931	0.02687345
legend: * p<.1; **						

p<.05; *** p<.01

*Note, we ran a Wald test for the endogeneity of nummultiw and sumother, but were not able to reject the null hypothesis of exogeneity; Instrumental variable probit models with the aforementioned two variables as endogenous yield similar results

nat drives MFA success?

rature on factors affecting the success of small farms: Sample of Sources Description Higher sales and acreage associated with (Duffy and Nanhou, 2002) age higher levels of success There are mixed results, with some papers reporting that youth and inexperience are associated with greater success, and others reporting that older and more experienced (Duffy and Nanhou, 2002), (Safdar et al., 2004), ience farmers are associated with greater success (Mishra et al., 1999) Some papers suggest that higher reliance on market services for advice is associated with greater success, while others argue that higher reliance on friends and family is (Duffy and Nanhou, 2002), (Safdar et al., 2004) associated with greater success In a study, more successful farmers picked answers related to family when asked what was most important; family support is also (Duffy and Nanhou, 2002), (McLean-Meyinsse shown to be important and Brown, 1994) Being the sole proprietor is associated with greater success (Safdar et al., 2004) (Mishra et al., 1999) Participating in crop insurance programs, as a form of risk management, is associated (Mishra et al., 1999) with greater success Some research suggests that male-owned businesses are more successful, particuarly in rural communities (Bird and Sapp, 2004) Favorable conditions can boost success (Mishra et al., 2004), (Ilberry, 1991) Farms may benefit from proximity to urban centers/population centers because of market access, but may also benefit from being far away from sprawling (Mishra et al., 2004), (Brown et al., 2012)

Variable	Description	Obs	Mean	Std. Dev.	Min	Max	Rationale
college	Takes a value of 1 if principle operator has						
	completed college and beyond	946	0.22833	0.419978	0	1	Age and Experience
yearfarm	Year started working on any farm	946	1974.766	16.61343	1912	2011	Age and Experience
age65plus	Takes a value of 1 if the principle operator is over 65	946	0.384778	0.4868	0	1	Age and Experience
age35_54	Takes a value of 1 if the principle operator aged 35-54	946	0.217759	0.412941	0	1	Age and Experience
age35less	Takes a value of 1 if the principle operator is under35	946	0.012685	0.11197	0	1	Age and Experience
hhsize	Household size	946	2.540503	1.232925	0	9	Family
female	Takes a value of 1 if the principle operator is female	946	0.197674	0.398456	0	1	Gender
soleproprietor	Takes a value of 1 if the farmer reports the legal business structure as "sole proprietor"	946	0.744285	0.402834	0	1	Ownership
totalacres	Total number of acres in the farm operation	946	166.1756	237.5486	0	2120	Sales and Acreage
dist_from_majorcity	Distance of the centroid of the zipcode in which the farm is located to the nearest major	946	5689.05	10240 98	0	76231.01	Market Access/Urban Sprawl
naturalamenScale	Natural Amenities Scale (zincode-level)	946	0.520962	0.830571	-1.16	2.89	Resources
family	Takes a value of 1 if the farmer reports at least one reason connected to family for being involved in MFAs	946	0.44926	0.497682	0	1	Family
govprog	Takes a value of 1 if the farmer reports participating in government or university farm programs	946	0.40592	0.491329	0	1	Risk
mktinfo	Takes a value of 1 if the farmer reports using the USDA or state agency statistical market information	946	0.12685	0.332981	0	1	Advice
friendfamadvice	Takes a value of 1 if the farmer reports getting advice from friends and family	946	0.343552	0.475145	0	1	Advice

What factors are associated with the level of MFA success?

	Ordered Logisic Regression			Success Levels	(dv/dx)		
		0	1	2	3	4	5
ollege	-0.14728	0.027627	0.003148	-0.00033	-0.0044	-0.00783	-0.01822
earfarm	0.004761	-0.00089	-0.0001	1.07E-05	0.000142	0.000253	0.000589
ge65plus	-0.16568	0.031079	0.003542	-0.00037	-0.00495	-0.0088	-0.0205
ge35_54	0.024992	-0.00469	-0.00053	0.000056	0.000747	0.001328	0.003092
ge35less	-0.00227	0.000426	4.86E-05	-5.1E-06	-6.8E-05	-0.00012	-0.00028
hsize	-0.0799	0.014989	0.001708	-0.00018	-0.00239	-0.00425	-0.00989
emale	31943657**	0.0599227**	0.0068287**	-0.00072	-0.0095417**	-0.0169728**	-0.0395219**
oleproprietor	0.105994	-0.01988	-0.00227	0.000237	0.003166	0.005632	0.013114
otalacres	00120171***	0.0002254***	0.0000257***	-2.7E-06	-0.0000359***	-0.0000639***	-0.0001487***
ist_from_majorcity	-5.06E-06	9.5E-07	1.08E-07	-1.1E-08	-1.5E-07	-2.7E-07	-6.3E-07
aturalamenScale	-0.08394	0.015747	0.001795	-0.00019	-0.00251	-0.00446	-0.01039
amily	1.2506382***	-0.2346057***	-0.0267353***	0.0028	0.037357***	0.0664507***	0.1547336***
ovprog	0.22588	-0.04237	-0.00483	0.000506	0.006747	0.012002	0.027947
vnummfazip	-0.01489	0.002793	0.000318	-3.3E-05	-0.00044	-0.00079	-0.00184
vsumother	0.042873	-0.00804	-0.00092	0.000096	0.001281	0.002278	0.005305
nktinfo	-0.18395	0.034507	0.003932	-0.00041	-0.00549	-0.00977	-0.02276
riendfamadvice	0.136856	-0.02567	-0.00293	0.000306	0.004088	0.007272	0.016932
ewopportunities	0.03695	-0.00693	-0.00079	8.27E-05	0.001104	0.001963	0.004572
ptimist	.83802919***	-0.1572049***	-0.0179148***	0.001876	0.0250322***	0.0445274***	0.103684***
onfident	0.080599	-0.01512	-0.00172	0.00018	0.002408	0.004283	0.009972
esonablerisks	0.140887	-0.02643	-0.00301	0.000315	0.004208	0.007486	0.017431
otafraidfailure	-0.15749	0.029544	0.003367	-0.00035	-0.0047	-0.00837	-0.01949
onsiderbothsides	0.002589	-0.00049	-5.5E-05	5.79E-06	7.73E-05	0.000138	0.00032
ertainty	.38990175*	-0.0731412*	-0.0083351*	0.000873	0.0116465*	0.0207168*	0.0482401*
autious	0.121842	-0.02286	-0.0026	0.000273	0.00364	0.006474	0.015075
nfobeforedecide	0.060735	-0.01139	-0.0013	0.000136	0.001814	0.003227	0.007514
reativeinnov	.30414733*	-0.0570546*	-0.0065019*	0.000681	0.009085*	0.0161604*	0.0376302*
ic	3096.187						
ic	3251.459						

Some estimation issues to address in the future:

The self-identified characteristics may be endogenous. Unfortunately, because they are in the form of binary variables, we were unable to use an instrumental variable probit model, which only works for continuous endogenous regressors. We, therefore, attempted to estimate two equations via Seemingly Unrelated Bivariate Probit regression, in which one of the dependent variables was success, and the other was a self-identified characteristic. However, in all cases, we were unable to reject the null hypothesis of no correlation between the residuals of the two equations, which implies that the two equations can be estimated separately. In the future, we need to examine in greater depth our model specification and the endogeneity of the aforementioned variables.





