The International Foundation for Research in Experimental Economics

Final Progress Report for “Endogenous Institution Formation”

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All research funds have been expended. Over the course of 7 experimental sessions, spanning April 2016 to December 2016 a total of $8055 has been paid out to research participants and another $2326.50 has been paid out for use of the Cleve E. Willis experimental laboratory at the University of Massachusetts Amherst.

I look forward to writing up the results for publication and acknowledging the support of IFREE. Here I provide a rough version of the results as they currently stand. I recognize that this format is primarily for my consumption and am happy to write up something for broader audience or to send published versions of the paper(s) as they become available. I expect to be submitting this work in spring 2017.

Abstract of research produced from this grant:

Institutions evolve to solve social dilemmas within groups. Institutions can broadly be described as informal, suggesting the peer to peer enforcement of social norms; or formal, suggesting a central authority which enforces established rules. Research suggests that homogenous groups within public good experiments self-select into informal rather than formal institutions when the formal institution imposes a modest, fixed, cost. This result is intuitive, when groups are able to tacitly agree on contribution norms peer punishment is rarely needed and thus the informal institution imposes little cost and improves welfare. This research investigates whether normative conflict, established through endowment heterogeneity, increases the proportion of groups which self-select into formal institutions. Results suggest that endowment heterogeneity reduces the effectiveness of the peer punishment mechanism. Heterogeneous groups recognize this and are more likely to self-impose the formal institution despite the fixed cost. This choice is rational as heterogeneous groups operating within the formal institution make significantly more than heterogeneous groups operating within the informal institution. This research suggests that central authority institutions emerge from within to solve social dilemmas in heterogeneous groups. More broadly, this research suggests that complex modern societies require centralized authority, in part, because social norms become ambiguous in heterogeneous groups.

Design

The experiment consisted of 18 periods broken into 6 phases 3 periods each and was coded in Z-tree (Fischbacher, 2007). Instructions for each phase were distributed at the beginning of each phase and required each participant to correctly answer a set of comprehension questions before the experiment would continue.[1] Groups of five subjects were randomly formed at the beginning and maintained for all 18 periods.

In the homogenous endowment treatments each subjects began each period with an endowment of $e_i = 20$ EDs. In the heterogeneous endowment treatments 2 subjects began each period with an endowment of $e_h = 30$ EDs , 1 subject began each period with an endowment of $e_m = 20$ EDs, and 2 subjects began each period with an endowment of $e_l = 10$ EDs. Note that the total number of EDs available to the group is equivalent across treatments.

Phase 1 (periods 1 - 3) in all treatment introduced the standard VCM, wherein subjects decide how much to contribute to a group account. The payoff π_i for subject i is:

$$\pi_i = e_i - x_i + \alpha \sum_{j=1}^{n} x_j$$

where x_i is the subject's contribution and $\alpha = 0.4$ is the MPCR from the group account. As is standard, the unique Nash equilibrium suggests complete free-riding and the social optimum requires contributing one's entire endowment. After all subjects made their contribution decisions they were shown the aggregate contribution to the group account, the individual contributions of their group members by random ID, and their individual period earnings. Subjects were also shown their total earnings, equal to the sum of their individual period earnings, and a history of outcomes in previous periods.

Phases 2 and 3, periods 4 – 6 and 7 – 9 respectively, exogenously impose the informal and formal institutions. Across treatments the order of impositions is altered to control for order effects.

The informal institution employed a ratio 1:4, allowed subjects to impose up to 10 reduction points per period, and capped profits at zero unless the subject imposed punishment. The costs associated with imposing Reduction Points were referred to as Administrative Costs and costs associated with receiving Reduction Points were referred to as Reduction Costs.

The formal institution employed $c = 6$ and is referred to as the Administrative Cost. The formal, central authority, institution monitored all contributions with certainty $(p = 1)$ and would impose a fine of $s = 1.2$ for each ED the group member kept in their private account$\big(s(e_i - x_i)\big)$.

After these institutions were exogenously imposed each group had three opportunities to choose their institution before phases 4, 5, and 6. Voting was by majority and each subject had to vote for either the informal or formal institution.

[1] Complete experimental instructions are available in the supplemental online materials.

	Endowments	Endowments Observed	Order of Imposed	Name
Treatment 1	Homogenous	n/a	Informal Formal	Hom_IF
Treatment 2	Homogenous	n/a	Formal Informal	Hom_FI
Treatment 3	Heterogeneous	No	Informal Formal	Het_N_IF
Treatment 4	Heterogeneous	No	Formal Informal	Het_N_FI
Treatment 5	Heterogeneous	Yes	Informal Formal	Het_Y_IF
Treatment 6	Heterogeneous	Yes	Formal Informal	Het_Y_FI

Results

Data

Data was collected in spring and fall 2016 at the University of Massachusetts Amherst Cleve E. Willis Experimental Economics Laboratory.

	Groups (Obs.)	Earnings	High	Middle	Low
Hom_IF	11 (990)	$16.94			
Hom_FI	12 (1080)	$17.14			
Het_N_IF	11 (990)	$15.89	$17.09	$15.66	$14.81
Het_N_FI	12 (1080)	$15.24	$16.08	$15.15	$14.44
Het_Y_IF	12 (1080)	$17.52	$17.76	$17.46	$17.30
Het_Y_FI	12 (1080)	$16.57	$17.00	$16.56	$16.14

Order Effects

First I want to check if order effects matter. Look across groups. Contributions and earnings depending on order of imposed institution.

Homogenous

Homogenous Endowment – Exogenous Institutions									
	Contributions					Earnings			
	VCM	Informal	Formal	Signrank		VCM	Informal	Formal	Signrank
Hom_IF	12.54	13.31	18.73			32.54	25.86	31.44	
(n = 11)	(3.25)	(3.95)	(1.41)			(3.25)	(6.53)	(2.38)	
Hom_FI	13.27	15.51	18.84			33.27	29.05	31.20	
(n = 12)	(2.93)	(3.05)	(1.08)			(2.93)	(5.59)	(3.10)	
Ranksum	0.616	1.385	0.185			0.616	1.262	0.185	
	(p=0.54)	(p=0.17)	(p=0.85)			(p=0.54)	(p=0.21)	(p=0.85)	
Overall	12.92	14.46	18.78			32.92	27.52	31.32	
(n = 23)	(3.04)	(3.61)	(1.24)			(3.04)	(6.14)	(2.72)	

No significant difference across homogenous treatments

Heterogeneous Unobserved

Heterogeneous Endowment Unobserved Endowment – Exogenous Institutions										
	Contributions						Earnings			
	VCM		Informal	Formal	Signrank		VCM		Informal	Formal	Signrank
Het_N_IF	10.07		11.08	18.59			30.07		25.22	30.91	
(n = 11)	(5.06)		(5.52)	(1.07)			(5.06)		(7.75)	(2.35)	
Het_N_FI	10.68		12.57	17.34			30.68		23.06	28.16	
(n = 12)	(5.20)		(3.19)	(1.76)			(5.20)		(4.81)	(3.87)	
Ranksum	0.154		0.277	**1.880**			0.154		0.862	**1.91**	
	(p=0.88)		(p=0.78)	**(p=0.06)**			(p=0.88)		(p=0.39)	**(p=0.06)**	
Overall	10.39		11.86	17.94			30.39		24.10	29.47	
(n = 23)	(5.03)		(4.42)	(1.57)			(5.03)		(6.33)	(3.46)	

Low Endowment Unobserved Endowment – Exogenous Institutions										
	Contributions						Earnings			
	VCM		Informal	Formal	Signrank		VCM		Informal	Formal	Signrank
Het_N_IF	6.73		7.44	9.58			23.42		18.35	31.10	
(n = 11)	(2.76)		(2.92)	(0.64)			(7.87)		(9.66)	(2.15)	
Het_N_FI	5.32		7.19	9.17			26.04		18.28	28.52	
(n = 12)	(2.68)		(2.87)	(1.20)			(8.70)		(6.66)	(3.58)	
Ranksum	1.112		0.498	0.565			0.831		0.062	**1.910**	
	(p=0.27)		(p=0.62)	(p=0.57)			(p=0.41)		(p=0.95)	**(p=0.06)**	
Overall	5.99		7.31	9.36			24.78		18.32	29.76	
(n = 23)	(2.75)		(2.83)	(0.98)			(8.23)		(8.04)	(3.20)	

Middle Endowment Unobserved Endowment – Exogenous Institutions										
	Contributions						Earnings			
	VCM		Informal	Formal	Signrank		VCM		Informal	Formal	Signrank
Het_N_IF	12.76		12.18	18.88			27.39		24.73	30.96	
(n = 11)	(6.43)		(7.39)	(1.96)			(7.30)		(10.98)	(2.42)	
Het_N_FI	12.50		14.78	16.94			28.86		22.48	28.08	
(n = 12)	(6.28)		(4.94)	(5.70)			(6.34)		(5.72)	(3.89)	
Ranksum	0.062		1.048	0.688			0.647		1.139	**1.910**	
	(p=0.95)		(p=0.30)	(p=0.49)			(p=0.52)		(p=0.26)	**(p=0.06)**	
Overall	12.62		13.54	17.87			28.15		23.56	29.46	
(n = 23)	(6.21)		(6.23)	(4.36)			(6.70)		(8.51)	(3.52)	

High Endowment Unobserved Endowment – Exogenous Institutions										
	Contributions						Earnings			
	VCM		Informal	Formal	Signrank		VCM		Informal	Formal	Signrank
Het_N_IF	12.08		14.17	27.47			38.07		32.34	30.68	
(n = 11)	(8.64)		(8.70)	(2.14)			(3.78)		(6.27)	(2.53)	
Het_N_FI	15.13		16.85	25.72			36.23		28.13	27.83	
(n = 12)	(8.96)		(6.81)	(4.37)			(3.38)		(6.33)	(4.26)	
Ranksum	0.801		0.801	0.528			1.108		1.385	**1.847**	
	(p=0.42)		(p=0.42)	(p=0.60)			(p=0.27)		(p=0.17)	**(p=0.07)**	
Overall	13.68		15.57	26.56			37.11		30.14	29.20	
(n = 23)	(8.75)		(7.71)	(3.53)			(3.61)		(6.52)	(3.75)	

Overall that are marginally significant differences across heterogeneous treatments without observed endowments. Groups which participate in the formal institution second appear to contribute and earn slightly more. This overall difference comes from each type in these groups contributing insignificantly more when the formal institution is second. The slight increase in contributions increases average earnings. This likely stems from some continued learning that occurs during the informal institution for these groups. Note that the standard deviations are quite small.

On average groups who participate in the formal institution second contribute an average of 1.25 more EDs to the group account.

Heterogeneous Observed

Heterogeneous Endowment Observed Endowment – Exogenous Institutions										
	Contributions						Earnings			
	VCM		Informal	Formal	Signrank		VCM		Informal	Formal	Signrank
Het_Y_IF	12.31		16.66	19.47			32.31		30.61	31.08	
(n = 12)	(4.18)		(3.57)	(0.57)			(4.19)		(7.13)	(2.74)	
Het_Y_FI	9.97		15.62	18.67			29.97		28.43	32.83	
(n = 12)	(3.84)		(3.56)	(1.52)			(3.84)		(5.61)	(1.25)	
Ranksum	1.443		0.953	**1.668**			1.443		0.664	**1.668**	
	(p=0.15)		(p=0.34)	**(p=0.10)**			(p=0.15)		(p=0.51)	**(p=0.10)**	
Overall	11.14		16.14	19.07			31.14		29.52	31.95	
(n = 24)	(4.11)		(3.53)	(1.03)			(4.11)		(6.37)	(2.27)	

Low Endowment Observed Endowment – Exogenous Institutions										
	Contributions						Earnings			
	VCM		Informal	Formal	Signrank		VCM		Informal	Formal	Signrank
Het_Y_IF	7.24		8.72	9.40			27.39		31.10	32.81	
(n = 12)	(2.49)		(2.21)	(1.02)			(6.47)		(7.69)	(1.27)	
Het_Y_FI	6.90		8.68	8.99			23.03		28.19	31.14	
(n = 12)	(2.44)		(1.27)	(1.86)			(7.01)		(7.06)	(2.72)	
Ranksum	0.376		0.693	0.066			1.386		1.097	1.549	
	(p=0.71)		(p=0.49)	(p=0.95)			(p=0.17)		(p=0.27)	(p=0.12)	
Overall	7.07		8.70	9.19			25.21		29.64	31.98	
(n = 24)	(2.42)		(1.76)	(1.48)			(6.97)		(7.37)	(2.25)	

Middle Endowment Observed Endowment – Exogenous Institutions										
	Contributions						Earnings			
	VCM		Informal	Formal	Signrank		VCM		Informal	Formal	Signrank
Het_Y_IF	14.03		17.69	19.89			30.59		30.88	32.91	
(n = 12)	(6.30)		(3.15)	(0.26)			(6.10)		(7.77)	(1.15)	
Het_Y_FI	10.92		13.94	18.72			29.02		29.49	31.09	
(n = 12)	(7.85)		(8.54)	(1.79)			(6.30)		(6.80)	(2.66)	
Ranksum	1.079		0.842	1.584			0.635		0.462	**1.814**	
	(p=0.28)		(p=0.40)	(p=0.11)			(p=0.53)		(p=0.64)	**(p=0.07)**	
Overall	12.47		15.82	19.31			29.81		30.19	32.00	
(n = 24)	(7.14)		(6.58)	(1.38)			(6.12)		(7.17)	(2.21)	

High Endowment Observed Endowment – Exogenous Institutions										
	Contributions						Earnings			
	VCM		Informal	Formal	Signrank		VCM		Informal	Formal	Signrank
Het_Y_IF	16.53		24.08	29.32			38.09		29.98	32.80	
(n = 12)	(6.77)		(5.81)	(1.01)			(3.38)		(7.54)	(1.28)	
Het_Y_FI	12.56		23.40	28.33			37.38		28.15	31.01	
(n = 12)	(6.66)		(6.13)	(2.25)			(3.48)		(6.12)	(2.84)	
Ranksum	1.329		0.319	0.851			0.606		0.549	1.550	
	(p=0.18)		(p=0.75)	(p=0.40)			(p=0.54)		(p=0.58)	(p=0.12)	
Overall	14.54		23.74	28.83			37.74		29.06	31.90	
(n = 24)	(6.88)		(5.85)	(1.78)			(3.37)		(6.78)	(2.34)	

Like in the heterogeneous endowment unobserved treatments groups which participated in the formal institution after the informal institution tend to contribute slightly more, perhaps reflecting additional learning throughout phase 2. On average, across types, these groups tend to contribute an additional .80 EDs to the groups account. In this case the effect is only marginally significant overall and for the earnings among middle endowment groups members.

There are no significant order effects. Treatments can be combined.

Across Treatments. Do Institutions Matters?

Homogenous versus the heterogeneous treatments

Homo v. Unobserved								
	Contributions					Earnings		
	VCM	Informal	Formal			VCM	Informal	Formal
Homo.	12.92	14.46	18.78			32.92	27.52	31.32
(n = 23)	(3.04)	(3.61)	(1.24)			(3.04)	(6.14)	(2.72)
Unobserved	10.39	11.86	17.94			30.39	24.10	29.47
(n = 23)	(5.03)	(4.42)	(1.57)			(5.03)	(6.33)	(3.46)
Ranksum	**1.670**	**2.143**	**1.826**			**1.659**	**1.736**	**1.815**
	p=0.10	**p=0.03**	**p=0.07**			**p=0.10**	**p=0.08**	**p=0.07**

In each institution homogenous groups contribute significantly more than in unobserved. Difference is only marginal except for the informal. This carries over to earnings. Endowment heterogeneity lowers cooperation across the board and renders the informal institution ineffective. Have to look within treatment to see if earnings are different across institutions.

Homo v. Observed								
	Contributions					Earnings		
	VCM	Informal	Formal			VCM	Informal	Formal
Homo.	12.92	14.46	18.78			32.92	27.52	31.32
(n = 23)	(3.04)	(3.61)	(1.24)			(3.04)	(6.14)	(2.72)
Observed	11.14	16.14	19.07			31.14	29.52	31.95
(n = 24)	(4.11)	(3.53)	(1.03)			(4.11)	(6.37)	(2.27)
Ranksum	1.447	**1.842**	0.836			1.437	1.022	0.836
	p=0.15	**p=0.07**	p=0.40			p=0.15	p=0.31	p=0.40

Very similar results across these treatments. Only marginally more contributions in the informal.

Unobserved v. Observed								
	Contributions					Earnings		
	VCM	Informal	Formal			VCM	Informal	Formal
Unobserved	10.39	11.86	17.94			30.39	24.10	29.47
(n = 23)	(5.03)	(4.42)	(1.57)			(5.03)	(6.33)	(3.46)
Observed	11.14	16.14	19.07			31.14	29.52	31.95
(n = 24)	(4.11)	(3.53)	(1.03)			(4.11)	(6.37)	(2.27)
Ranksum	0.383	**3.619**	**2.714**			0.383	**2.597**	**2.703**
	p=0.70	**p<0.01**	**p<0.01**			p=0.70	**p<0.01**	**p<0.01**

No difference in VCM. This makes sense. Observing endowments has big effect in the informal institution. Still significant increase in formal which is not intuitive.

Should I look at this in last exogenous period? Perhaps Formal difference will be gone?

Unobserved versus Observed Treatments by type

Unobserved v. Observed High						
	Contributions			Earnings		
	VCM	Informal	Formal	VCM	Informal	Formal
Unobserved	13.67	15.57	26.56	37.11	30.14	29.20
(n = 23)	(8.75)	(7.71)	(3.53)	(3.61)	(6.52)	(3.75)
Observed	14.54	23.74	28.83	37.74	29.06	31.90
(n = 24)	(6.88)	(5.85)	(1.78)	(3.37)	(6.78)	(2.34)
Ranksum	0.309	**3.656**	**2.612**	0.660	0.543	**2.649**
	p=0.76	**p<0.01**	**p<0.01**	p=0.51	p=0.59	**p<0.01**

Observing endowments has large effect in the informal institutions. Although the effect is significant in the formal the impact is small. Note that even with contributing substantially more in the observed treatment their earnings are not significantly different. This suggests substantial levels of punishment in the unobserved treatment.

Unobserved v. Observed Middle								
	Contributions					Earnings		
	VCM	Informal	Formal			VCM	Informal	Formal
Unobserved	12.62	13.54	17.87			28.15	23.56	29.46
(n = 23)	(6.21)	(6.23)	(4.36)			(6.70)	(8.51)	(3.52)
Observed	12.47	15.82	19.31			29.81	30.19	32.00
(n = 24)	(7.14)	(6.58)	(1.38)			(6.12)	(7.17)	(2.21)
Ranksum	0.011	1.135	0.785			0.947	**2.831**	**2.629**
	p=0.99	p=0.26	p=0.43			p=0.34	**p<0.01**	**p<0.01**

Unobserved v. Observed - Low								
	Contributions					Earnings		
	VCM	Informal	Formal			VCM	Informal	Formal
Unobserved	5.99	7.31	9.36			24.78	18.32	29.76
(n = 23)	(2.75)	(2.83)	(0.98)			(8.23)	(8.04)	(3.20)
Observed	7.07	8.70	9.19			25.21	29.64	31.98
(n = 24)	(2.42)	(1.76)	(1.48)			(6.97)	(7.37)	(2.25)
Ranksum	1.344	1.632	0.378			0.170	**4.012**	**2.660**
	p=0.18	p=0.11	p=0.71			p=0.87	**p<0.01**	**p<0.01**

For both middle and low, the story is in the earnings in the informal. They make significantly more when endowments are observed. Given that their contributions are not significantly different this increases stems from the higher contributions elicited from the high endowment members.

Will have to look within treatments across institutions.

Homogenous versus the heterogeneous treatments

Homo v. Unobserved Late									
	Contributions					Earnings			
	VCM	Informal	Formal			VCM	Informal	Formal	
Homo.	12.92	15.19	19.04			32.92	30.02	31.90	
(n = 23)	(3.04)	(4.61)	(1.41)			(3.04)	(8.74)	(3.09)	
Unobserved	10.39	11.57	18.17			30.39	22.90	29.96	
(n = 23)	(5.03)	(4.72)	(2.32)			(5.03)	(7.28)	(5.10)	
Ranksum	**1.670**	**2.587**	**1.672**			**1.659**	**3.022**	**1.672**	
	p=0.10	**p<0.01**	**p=0.10**			**p=0.10**	**p<0.01**	**p=0.10**	

Homo v. Observed Late									
	Contributions					Earnings			
	VCM	Informal	Formal			VCM	Informal	Formal	
Homo.	12.92	15.19	19.04			32.92	30.02	31.90	
(n = 23)	(3.04)	(4.61)	(1.41)			(3.04)	(8.74)	(3.09)	
Observed	11.14	17.53	19.02			31.14	32.99	31.84	
(n = 24)	(4.11)	(3.74)	(1.41)			(4.11)	(8.13)	(3.10)	
Ranksum	1.447	**2.227**	0.172			1.437	1.467	0.172	
	p=0.15	**p=0.03**	p=0.86			p=0.15	p=0.14	p=0.86	

Unobserved v. Observed Late									
	Contributions					Earnings			
	VCM	Informal	Formal			VCM	Informal	Formal	
Unobserved	10.39	11.57	18.17			30.39	22.90	29.96	
(n = 23)	(5.03)	(4.72)	(2.34)			(5.03)	(7.28)	(5.10)	
Observed	11.14	17.53	19.02			31.14	32.99	31.84	
(n = 24)	(4.11)	(3.74)	(1.41)			(4.11)	(8.13)	(3.10)	
Ranksum	0.383	**4.176**	**1.711**			0.383	**3.840**	**1.711**	
	p=0.70	**p<0.01**	**p=0.08**			p=0.70	**p<0.01**	**p=0.09**	

Should I look at this in last exogenous period? Perhaps Formal difference will be gone?

No VCM late analysis. Do I need?

Unobserved versus Observed Treatments by type

Unobserved v. Observed High Late						
	Contributions			Earnings		
	VCM	Informal	Formal	VCM	Informal	Formal
Unobserved	13.67	14.39	27.11	37.11	29.67	29.75
(n = 23)	(8.75)	(7.77)	(5.21)	(3.61)	(8.81)	(5.61)
Observed	14.54	23.90	28.92	37.74	33.36	31.82
(n = 24)	(6.88)	(6.35)	(2.55)	(3.37)	(8.53)	(3.22)
Ranksum	0.309	**4.420**	**1.635**	0.660	**1.642**	**1.763**
	p=0.76	**p<0.01**	**p=0.102**	p=0.51	**p=0.10**	**p=0.08**

Unobserved v. Observed Middle Late								
	Contributions					Earnings		
	VCM	Informal	Formal			VCM	Informal	Formal
Unobserved	12.62	13.70	18.13			28.15	22.32	29.96
(n = 23)	(6.21)	(8.06)	(4.20)			(6.70)	(8.78)	(4.78)
Observed	12.47	17.38	19.29			29.81	33.05	31.89
(n = 24)	(7.14)	(6.74)	(2.26)			(6.12)	(9.98)	(2.91)
Ranksum	0.011	**1.806**	0.927			0.947	**9.955**	**1.764**
	p=0.99	**p=0.07**	p=0.35			p=0.34	**p<0.01**	**p=0.08**

Unobserved v. Observed – Low Late								
	Contributions					Earnings		
	VCM	Informal	Formal			VCM	Informal	Formal
Unobserved	5.99	7.70	9.24			24.78	16.43	30.18
(n = 23)	(2.75)	(3.51)	(1.54)			(8.23)	(10.10)	(4.81)
Observed	7.07	9.23	8.98			25.21	32.59	31.83
(n = 24)	(2.42)	(1.97)	(2.22)			(6.97)	(8.70)	(3.13)
Ranksum	1.344	**1.809**	0.189			0.170	**4.555**	**1.622**
	p=0.18	**p=0.07**	p=0.85			p=0.87	**p<0.01**	**p=0.11**

In the formal institution contributions are equivalent across types in the late periods. The high and middle types do have higher contributions and as a result average earnings increase slightly. Marginally significant. This may make sense given that the sanction is 1.2 times the contribution difference.

In the informal institutions contributions of all types are higher in the last period. The earnings of each type are higher as well although marginally for high types.

Seems that informal much more effective when endowment is observed. It is equivalent to homogenous groups. It is not simply normative conflict. Self-Governance requires information.

Institution Choice

Homogenous v. Unobserved

Institution Choice – Overall

	Unobserved	Homogenous	Total
Informal	23	49	72
Formal	46	20	68
Total	69	69	138
Chi-Squared	19.631	$p < 0.01$	
Fishers Exact		$p < 0.01$	$p < 0.01$

Institution Choice – Phase 4

	Unobserved	Homogenous	Total
Informal	7	16	23
Formal	16	7	23
Total	23	23	46
Chi-Squared	7.044	$p < 0.01$	
Fishers Exact		$p = 0.02$	$p<0.01$

Institution Choice – Phase 5

	Unobserved	Homogenous	Total
Informal	7	17	24
Formal	16	6	22
Total	23	23	46
Chi-Squared	8.712	$p<0.01$	
Fishers Exact		$p<0.01$	$p<0.01$

Institution Choice – Phase 6

	Unobserved	Homogenous	Total
Informal	9	16	25
Formal	14	7	21
Total	23	23	46
Chi-Squared	4.293	$p=0.04$	
Fishers Exact		$p=0.08$	$p=0.04$

Homogenous v. Observed

Institution Choice – Overall

	Observed	Homogenous	Total
Informal	54	49	103
Formal	18	20	38
Total	72	69	141
Chi-Squared	0.284	p=0.594	
Fishers Exact		p=0.705	p=0.366

Institution Choice – Phase 4

	Observed	Homogenous	Total
Informal	17	16	33
Formal	7	7	14
Total	24	23	47
Chi-Squared	0.009	p=0.924	
Fishers Exact		p = 1.00	p=0.588

Institution Choice – Phase 5

	Observed	Homogenous	Total
Informal	18	17	35
Formal	6	6	12
Total	24	23	47
Chi-Squared	0.007	p=0.932	
Fishers Exact		p=1.00	p=0.598

Institution Choice – Phase 6

	Observed	Homogenous	Total
Informal	19	16	35
Formal	5	7	12
Total	24	23	47
Chi-Squared	0.570	p=0.45	
Fishers Exact		p=0.517	p=0.337

Observed v. Unobserved

Institution Choice – Overall

	Unobserved	Observed	Total
Informal	23	54	77
Formal	46	18	64
Total	69	72	141
Chi-Squared	24.678	$p < 0.01$	
Fishers Exact		$p < 0.01$	$p < 0.01$

Institution Choice – Phase 4

	Heterogeneous	Observed	Total
Informal	7	17	24
Formal	16	7	23
Total	23	24	47
Chi-Squared	7.671	$p < 0.01$	
Fishers Exact		$p<0.01$	$p<0.01$

Institution Choice – Phase 5

	Heterogeneous	Observed	Total
Informal	7	18	25
Formal	16	6	22
Total	23	24	47
Chi-Squared	9.368	$p<0.01$	
Fishers Exact		$p<0.01$	$p<0.01$

Institution Choice – Phase 6

	Heterogeneous	Observed	Total
Informal	9	19	28
Formal	14	5	19
Total	23	24	47
Chi-Squared	7.817	$p<0.01$	
Fishers Exact		$p<0.01$	$p<0.01$

Voting by type

Observed v. Unobserved

Institution Choice – Overall

	Unobserved	Observed	Total
Informal	23	54	77
Formal	46	18	64
Total	69	72	141
Chi-Squared	24.678	p < 0.01	
Fishers Exact		p < 0.01	p < 0.01

Institution Choice – Phase 4

	Heterogeneous	Observed	Total
Informal	7	17	24
Formal	16	7	23
Total	23	24	47
Chi-Squared	7.671	p < 0.01	
Fishers Exact		p<0.01	p<0.01

Institution Choice – Phase 5

	Heterogeneous	Observed	Total
Informal	7	18	25
Formal	16	6	22
Total	23	24	47
Chi-Squared	9.368	p<0.01	
Fishers Exact		p<0.01	p<0.01

Institution Choice – Phase 6

	Heterogeneous	Observed	Total
Informal	9	19	28
Formal	14	5	19
Total	23	24	47
Chi-Squared	7.817	p<0.01	
Fishers Exact		p<0.01	p<0.01