

Figure 1. Distribution of p -values

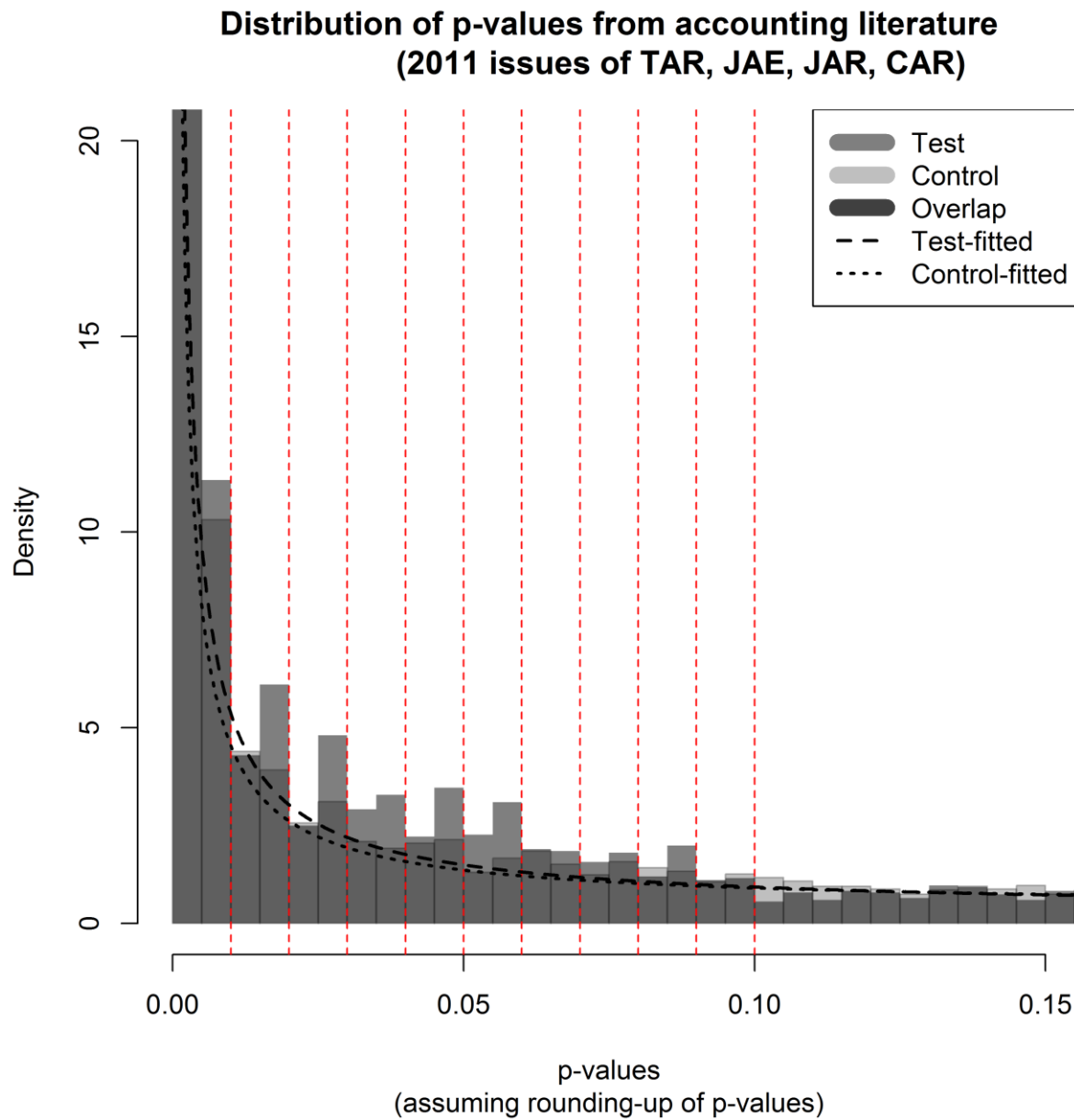


Figure 1 shows the distribution of p -values. Test indicates p -values from test variables and Control represents p -values from control variables. The dashed line represents the estimated distribution of p -values from Test variables and the dotted line represents the estimated distribution of control variables. The estimated distribution fits p -value data to a beta-uniform mixture distribution that is theoretical distribution of p -values from testing true null (uniform) and false null (beta).

Table 1. Excess and shortage of p -values in the area just below and above the critical values

The table tests excess and shortage of p -value in the area just below and above critical values. O indicates observed frequency. E indicates the expected frequency. Z-statistic is from test of residuals in cross-classified tables indicating excess or shortage (Haberman 1973). Diff (A) – (B) indicates the relative excess or shortage of the area below and above the critical values. t -statistic is from bootstrap with 10,000 replications.

Panel A. All p -values*All p -values*

p-value	O	E	Excess/ Shortage (A)	Z-stat	p-value	O	E	Excess/ Shortage (B)	Z-stat	Diff (A) - (B)	t-stat
< 0.01	703	338	107.9%	25.99***	≥ 0.01	288	247	16.7%	3.19***	91.2%	8.85***
< 0.02	306	208	47.3%	8.55***	≥ 0.02	168	186	-9.5%	-1.51	56.9%	5.24***
< 0.03	242	171	41.1%	6.71***	≥ 0.03	156	162	-3.4%	-0.50	44.5%	3.71***
< 0.04	160	154	3.8%	0.59	≥ 0.04	139	148	-6.3%	-0.88	10.2%	0.89
< 0.05	170	144	18.2%	2.69***	≥ 0.05	107	140	-23.6%	-3.20***	41.8%	3.56***
< 0.06	141	137	2.9%	0.42	≥ 0.06	123	134	-8.5%	-1.12	11.4%	0.94
< 0.07	89	132	-32.6%	-4.60***	≥ 0.07	107	130	-17.8%	-2.31**	-14.8%	-1.40
< 0.08	109	128	-15.2%	-2.11**	≥ 0.08	89	127	-29.9%	-3.83***	14.7%	1.34
< 0.09	102	126	-18.8%	-2.58***	≥ 0.09	71	124	-42.9%	-5.44***	24.1%	2.34**
< 0.10	53	123	-57.0%	-7.74***	≥ 0.10	92	122	-24.8%	-3.11***	-32.2%	-3.39***

Panel B. Test and Control variables

Test p-values

p-value	O	E	Excess/ Shortage (A)	Z-stat	p-value	O	E	Excess/ Shortage (B)	Z-stat	Diff (A) - (B)	t-stat
< 0.01	245	122	100.1%	14.55***	≥ 0.01	93	91	2.3%	0.26	97.8%	5.98***
< 0.02	132	77	70.4%	7.87***	≥ 0.02	54	70	-22.7%	-2.19**	93.1%	5.17***
< 0.03	104	65	60.1%	6.12***	≥ 0.03	63	62	2.4%	0.21	57.7%	2.87***
< 0.04	72	59	22.1%	2.12**	≥ 0.04	48	57	-15.8%	-1.35	37.9%	2.01**
< 0.05	75	55	35.3%	3.29***	≥ 0.05	49	54	-9.5%	-0.79	44.8%	2.24**
< 0.06	67	53	26.2%	2.39**	≥ 0.06	41	52	-21.4%	-1.75*	47.6%	2.44**
< 0.07	32	51	-37.7%	-3.35***	≥ 0.07	42	51	-17.2%	-1.38	-20.5%	-1.22
< 0.08	39	50	-22.2%	-1.95*	≥ 0.08	26	50	-47.6%	-3.76***	25.4%	1.57
< 0.09	43	49	-12.5%	-1.09	≥ 0.09	24	49	-50.8%	-3.98***	38.2%	2.30**
< 0.10	16	48	-66.9%	-5.73***	≥ 0.10	21	48	-56.3%	-4.35***	-10.6%	-0.84

Control p-values

p-value	O	E	Excess/ Shortage (A)	Z-stat	p-value	O	E	Excess/ Shortage (B)	Z-stat	Diff (A) - (B)	t-stat
< 0.01	458	216	112.4%	21.59***	≥ 0.01	195	156	25.2%	3.86***	87.2%	6.54***
< 0.02	174	130	33.6%	4.77***	≥ 0.02	114	116	-1.6%	-0.20	35.2%	2.56**
< 0.03	138	107	29.5%	3.76***	≥ 0.03	93	100	-7.0%	-0.82	36.5%	2.48**
< 0.04	88	95	-7.6%	-0.91	≥ 0.04	91	91	-0.5%	-0.06	-7.1%	-0.49
< 0.05	95	88	7.4%	0.85	≥ 0.05	58	86	-32.6%	-3.48***	40.0%	2.83***
< 0.06	74	84	-11.9%	-1.34	≥ 0.06	82	82	-0.4%	-0.04	-11.6%	-0.78
< 0.07	57	81	-29.5%	-3.23	≥ 0.07	65	80	-18.3%	-1.87*	-11.2%	-0.82
< 0.08	70	78	-10.8%	-1.16	≥ 0.08	63	77	-18.7%	-1.89*	7.9%	0.54
< 0.09	59	77	-23.0%	-2.44	≥ 0.09	47	76	-38.0%	-3.78***	15.0%	1.12
< 0.10	37	75	-50.7%	-5.35	≥ 0.10	71	74	-4.7%	-0.46	-46.1%	-3.29***

Panel C. Rounded and Non-rounded *p*-values

Rounded p-values

p-value	O	E	Excess/ Shortage (A)	Z-stat	p-value	O	E	Excess/ Shortage (B)	Z-stat	Diff (A) - (B)	t-stat
< 0.01	284	139	103.7%	16.87***	≥ 0.01	64	103	-37.7%	-4.56***	141.4%	10.39***
< 0.02	93	83	11.8%	1.39	≥ 0.02	37	71	-47.6%	-4.49***	59.4%	4.14***
< 0.03	72	62	17.0%	1.71*	≥ 0.03	31	55	-43.3%	-3.57***	60.3%	3.53***
< 0.04	57	49	15.6%	1.40	≥ 0.04	23	45	-48.8%	-3.63***	64.4%	3.45***
< 0.05	59	41	42.7%	3.51***	≥ 0.05	22	38	-42.6%	-2.93***	85.3%	3.85***
< 0.06	55	36	53.6%	4.10***	≥ 0.06	24	34	-28.6%	-1.84*	82.3%	3.29***
< 0.07	23	32	-27.6%	-1.98	≥ 0.07	40	30	32.7%	1.98**	-60.3%	-2.32**
< 0.08	40	29	39.3%	2.67***	≥ 0.08	15	27	-45.4%	-2.62***	84.7%	3.25***
< 0.09	30	26	13.6%	0.89	≥ 0.09	19	25	-25.3%	-1.41	39.0%	1.46
< 0.10	15	25	-39.0%	-2.45	≥ 0.10	31	24	29.9%	1.61	-69.0%	-2.55**

Non-rounded p-values

p-value	O	E	Excess/ Shortage (A)	Z-stat	p-value	O	E	Excess/ Shortage (B)	Z-stat	Diff (A) - (B)	t-stat
< 0.01	419	262	60.2%	12.46***	≥ 0.01	224	185	21.1%	3.51***	39.1%	3.50***
< 0.02	213	152	39.8%	6.06***	≥ 0.02	131	134	-2.3%	-0.31	42.1%	3.30***
< 0.03	170	122	39.0%	5.30***	≥ 0.03	125	114	9.7%	1.21	29.4%	2.03**
< 0.04	103	108	-4.5%	-0.57	≥ 0.04	116	103	12.5%	1.48	-17.0%	-1.21
< 0.05	111	99	11.8%	1.42	≥ 0.05	85	96	-11.7%	-1.33	23.4%	1.64*
< 0.06	86	94	-8.2%	-0.96	≥ 0.06	99	92	8.2%	0.91	-16.4%	-1.12
< 0.07	66	90	-26.4%	-3.01	≥ 0.07	67	88	-23.9%	-2.58***	-2.5%	-0.19
< 0.08	69	87	-20.4%	-2.29	≥ 0.08	74	85	-13.3%	-1.42	-7.0%	-0.51
< 0.09	72	84	-14.6%	-1.61	≥ 0.09	52	83	-37.6%	-3.94***	23.0%	1.74*
< 0.10	38	82	-53.9%	-5.87	≥ 0.10	61	82	-25.2%	-2.61***	-28.6%	-2.35**

Panel D. *p*-values by research topics

Financial p-values

p-value	O	E	Excess/ Shortage (A)	Z-stat	p-value	O	E	Excess/ Shortage (B)	Z-stat	Diff (A) - (B)	t-stat
< 0.01	567	274	106.8%	23.16***	≥ 0.01	226	200	13.2%	2.27**	93.6%	8.09***
< 0.02	241	168	43.6%	7.09***	≥ 0.02	138	150	-7.9%	-1.13	51.6%	4.27***
< 0.03	187	138	35.2%	5.15***	≥ 0.03	122	130	-6.3%	-0.83	41.5%	3.19***
< 0.04	127	124	2.3%	0.31	≥ 0.04	108	120	-9.6%	-1.21	11.9%	0.95
< 0.05	137	116	18.3%	2.43**	≥ 0.05	86	113	-23.8%	-2.89***	42.0%	3.23***
< 0.06	112	110	1.6%	0.20	≥ 0.06	97	108	-10.3%	-1.23	11.9%	0.90
< 0.07	70	106	-34.2%	-4.32	≥ 0.07	96	105	-8.4%	-0.97	-25.8%	-2.11**
< 0.08	94	103	-9.1%	-1.13	≥ 0.08	69	102	-32.5%	-3.73***	23.4%	1.89*
< 0.09	90	101	-10.9%	-1.35	≥ 0.09	57	100	-43.1%	-4.89***	32.1%	2.65***
< 0.10	46	99	-53.6%	-6.53	≥ 0.10	78	98	-20.8%	-2.33**	-32.9%	-2.90***

Managerial p-values

p-value	O	E	Excess/ Shortage (A)	Z-stat	p-value	O	E	Excess/ Shortage (B)	Z-stat	Diff (A) - (B)	t-stat
< 0.01	181	59	208.6%	22.25***	≥ 0.01	30	42	-27.8%	-2.21**	236.4%	9.06***
< 0.02	41	34	20.2%	1.51	≥ 0.02	19	30	-36.3%	-2.25**	56.6%	2.37**
< 0.03	33	27	22.0%	1.46	≥ 0.03	25	25	-0.4%	-0.02	22.3%	0.77
< 0.04	17	24	-28.0%	-1.72	≥ 0.04	17	22	-24.4%	-1.29	-3.7%	-0.14
< 0.05	32	22	48.4%	2.86***	≥ 0.05	15	21	-27.9%	-1.44	76.3%	2.38**
< 0.06	21	20	4.0%	0.23	≥ 0.06	10	20	-49.1%	-2.44**	53.2%	1.93*
< 0.07	12	19	-37.5%	-2.07	≥ 0.07	16	19	-14.9%	-0.72	-22.6%	-0.81
< 0.08	12	18	-35.0%	-1.89	≥ 0.08	15	18	-17.3%	-0.82	-17.6%	-0.62
< 0.09	10	18	-44.0%	-2.34	≥ 0.09	14	18	-20.6%	-0.96	-23.5%	-0.84
< 0.10	10	17	-42.6%	-2.25	≥ 0.10	23	17	33.6%	1.56	-76.2%	-2.32**

Audit p-values

p-value	O	E	Excess/ Shortage (A)	Z-stat	p-value	O	E	Excess/ Shortage (B)	Z-stat	Diff (A) - (B)	t-stat
< 0.01	68	48	43.1%	3.81***	≥ 0.01	58	35	64.8%	4.65***	-21.8%	-0.79
< 0.02	54	30	80.5%	5.51***	≥ 0.02	29	27	7.7%	0.47	72.9%	2.28**
< 0.03	40	25	59.9%	3.69***	≥ 0.03	17	24	-28.2%	-1.59	88.1%	2.87***
< 0.04	31	23	36.8%	2.15**	≥ 0.04	24	22	9.6%	0.52	27.1%	0.82
< 0.05	22	21	3.4%	0.19	≥ 0.05	19	21	-8.5%	-0.45	11.9%	0.40
< 0.06	29	20	42.5%	2.35**	≥ 0.06	21	20	5.0%	0.26	37.5%	1.07
< 0.07	15	20	-23.8%	-1.28	≥ 0.07	14	19	-27.9%	-1.41	4.1%	0.15
< 0.08	15	19	-21.8%	-1.16	≥ 0.08	12	19	-36.8%	-1.84*	15.0%	0.55
< 0.09	7	19	-62.8%	-3.27	≥ 0.09	5	19	-73.2%	-3.59***	10.4%	0.56
< 0.10	7	18	-62.2%	-3.22	≥ 0.10	7	18	-61.9%	-3.01***	-0.3%	-0.01

Table 2. Estimation of FDR by method, topic, journal, rounding, and test/control variables

FDR (False Discovery Rate) is the proportion of false rejection of true null hypotheses among all null hypothesis rejections. The standard errors in parentheses are calculated by bootstrap with 10,000 replications. Only classifications of p -values by rounding, the variable types (test and control variables), and measure of economic significance are mutually exclusive. *Archival* and *Experimental* indicate research methodology. *Others* indicates field-study method. *Financial*, *Managerial*, *Audit*, and *Tax*, *AIS* indicate research topics. *Test* and *Control* indicates test and control variables respectively. *Some* indicates that a paper discusses economic significance with an ad-hoc measure. *None* indicates that paper does not discuss economic significance with a measure. *Practitioner/Regulator* indicates that papers' target audience is either practitioner or regulator. *Academic* indicates that papers' target audience is academics. *TAR*, *JAE*, *JAR*, and *CAR* indicates the journals.

		<i># of p-values</i>	<i>FDR</i>	<i>Log(sample size)</i>
<i>Method</i>	Experimental	142	0.499 (0.072)	4.81
	Archival	5753	0.298 (0.009)	8.40
	Others	165	0.126 (0.053)	6.26
<i>Topic</i>	Financial	4946	0.286 (0.013)	8.54
	Managerial	832	0.343 (0.033)	7.40
	Audit	835	0.352 (0.026)	7.94
	Tax	180	0.190 (0.051)	7.18
	AIS	45	0.317 (0.099)	7.72
<i>Rounding</i>	Rounded	951	0.309 (0.102)	7.77
	Non-rounded	5064	0.230 (0.012)	8.44
<i>Test/Control</i>	Test	2157	0.343 (0.016)	8.06
	Control	3858	0.267 (0.013)	8.46
<i>Measure of Economic Significance</i>	Some	712	0.403 (0.028)	8.96
	None	5303	0.293 (0.012)	8.24
<i>Target Audience</i>	Practitioner/Regulator	1511	0.242 (0.018)	8.36
	Academic	5691	0.307 (0.009)	8.31
	All	6015	0.305 (0.010)	8.33

Table 3. Cross-sectional analysis of FDR

Table 3 reports results of a regression explaining FDR. FDR (False Discovery Rate) is the proportion of false rejection of true null hypotheses among all rejections of null hypotheses. Each observation represents one replication of FDR estimate from resampled p -values obtained by bootstrapping. We generate 100 replications for each strata. We use bootstrap to obtain variations of FDR estimate by holding one characteristics (membership of each strata) and randomizing all other characteristics. This procedure allows identification of relative explanatory power of each characteristic (See Table S.1.3. in online supporting information for detail for estimation and strata definitions). *Power* is the estimated probability of rejecting the null hypothesis when the null hypothesis is false. We estimate *Power* as the proportion of p -values from testing false null in the rejection region among all p -values from testing false null in each replication. *Log(Sample Size)* is log of average sample size of the resampled p -values for each replication. *Non-Rounded* indicates p -values without rounding of p -values via t -statistics and standard errors. *Rounded* indicates p -values reported in rounded format. *Control* indicates control variables. *Test* indicates test variables. *Archival* and *Experimental* indicate research methodology. *Financial*, *Managerial*, *Audit*, and *Tax*, *AIS* indicate research topics. *Economic Significance* indicates that a paper discusses economic significance with an ad-hoc measure. *No Economic Significance* indicates that paper does not discuss economic significance with a measure. *Practitioner/Regulator* indicates that papers' target audience is either practitioner or regulator. *Academic* indicates that papers' target audience is academics. *TAR*, *JAE*, *JAR*, and *CAR* indicates the journals. Each observation is weighted by the inverse of variance of FDR estimates of each strata to account for relative precision of FDR estimate over different strata. Standard errors are robust to heteroscedasticity (MacKinnon and White 1985). ***, **, and * indicate statistical significance at 5%, 1%, and 0.1% level.

VARIABLES	(1) FDR
<i>Power</i>	-0.194*** (0.021)
<i>Log(Sample Size)</i>	-0.041*** (0.008)
<i>Non-Rounded</i>	0.045*** (0.008)
<i>Rounded</i>	0.063*** (0.002)
<i>Control</i>	-0.029*** (0.003)
<i>Test</i>	0.034*** (0.002)
<i>Archival</i>	-0.006 (0.029)
<i>Experimental</i>	0.003* (0.001)
<i>Financial</i>	0.034*** (0.008)
<i>Managerial</i>	0.036*** (0.004)
<i>Audit</i>	0.062*** (0.004)
<i>Tax</i>	-0.102*** (0.006)
<i>AIS</i>	0.016*

	(0.007)
<i>Economic Significance</i>	0.024***
	(0.002)
<i>No Economic Significance</i>	-0.131***
	(0.006)
<i>Practitioner/Regulator</i>	-0.008***
	(0.002)
<i>Academic</i>	0.051***
	(0.002)
<i>TAR</i>	0.059***
	(0.003)
<i>JAE</i>	0.027***
	(0.005)
<i>JAR</i>	0.045***
	(0.002)
<i>CAR</i>	-0.092***
	(0.004)
Intercept	0.635***
	(0.036)
Adj. R ²	0.883
