

## The effect of the secret ballot on voter turnout rates\*

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**Abstract.** Secrecy in the voting process eliminated an important motivation for voting. No longer able to verify the voters' choices, political parties stopped offering payments in return for votes. Within the rational voter framework, it will be shown that these payments were a prime impetus for people to vote. Without a vote market to cover their voting costs, many voters were rational to stay away from the polls.

This hypothesis is supported through a series of empirical tests culminating in a multivariate legislative regression. When other electoral laws are controlled for, the secret ballot accounts for 7 percentage points lower Gubernatorial turnout.

### 1. Bribery and the paradox of voting

Rational economic agents evaluate their decisions in a benefit-cost analysis. According to Downs (1957), voters are rational economic agents. Thus, they engage in these same sort of calculations when deciding if and how to vote. Downs expressed his calculus of voting model as:

$$R = P * B - C \quad (1)$$

where  $R$  is the net benefit from voting in utils,  $B$  is the net benefit from a particular candidate winning the election (usually referred to as the party differential), discounted by the probability,  $P$ , of the voter's action influencing the election, and  $C$  is the cost of voting. The net benefit of the party differential must be discounted because the voter will receive  $B$  regardless of his particular action as long as the candidate wins. This is the normal free-rider problem inherent in various collective-action situations.<sup>1</sup>

Tullock (1967) concluded that with the benefits from voting near zero, small

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costs leave net benefits less than zero. This can be seen formally by substituting  $P = 0$  into equation (1).<sup>2</sup> We are left now with only  $R = -C$  and the net benefit from voting is negative regardless of the size of  $C$ . Even Downs (1957: 265) recognized that “since the returns from voting are often minuscule, even low voting costs may cause many partisan voters to abstain.” Thus the paradox; voting appears to be an irrational act (Mueller, 1989: 350).

Downs (1957) was forced outside his model to find a rationale for voting. Voting is viewed as “one form of insurance” (p. 268) against the possibility that no one votes and democracy collapses. “Rational men are motivated to some extent by a sense of social responsibility” (p. 267). Downs recognized the free-rider problem in voting but conveniently ignored it for the preservation of democracy. If one man is unable to change an election, then he is not able to save democracy with his single vote, either.<sup>3</sup>

There have been numerous attempts to save the Downsian rational voter model from itself.<sup>4</sup> The calculus of voting models put forth all have one thing in common; they failed to incorporate monetary incentives. This can be remedied by introducing another simple variable into Downs’ original equation:

$$R = P * B - C + \$ \quad (2)$$

where  $\$$  represents the amount received through bribes.<sup>5</sup> As long as  $\$ > C$ , which means the bribe covers all voting costs,  $R > 0$ . Since  $R$  is now positive, it is rational to vote.<sup>6</sup> The bribe value is not discounted because the voter receives the money only if he votes, and regardless of the outcome.

Secrecy in the voting act, ensured by the Australian (or secret) Ballot,<sup>7</sup> eliminated the monitoring mechanism, thereby ending the bribes. Candidates were not willing to risk their money on voters who were now able to cheat them without fear of retribution.<sup>8</sup> Having an Australian Ballot meant  $\$ = 0$  for all voters, whereas prior to this,  $\$$  was positive for those receiving bribes. Thus, for at least some voters,  $R$  was higher under the open balloting system. The secret ballot destroyed the vote market but in doing so eliminated a powerful voting incentive.<sup>9</sup>

Did the secret ballot reduce turnout? For this to have occurred, there must have been a strong vote market under the open ballot system. If the market was small, the secret ballot would not be expected to have had much effect in the aggregate.<sup>10</sup>

Anecdotal evidence that elections were routinely bought and sold is contained in most works concerning historical voting. This evidence suggests the vote market was, in fact, quite active. Harris (1929, 1934) provides detailed case studies and testimonials of rampant corruption. These include not only an active vote market, but strongarm tactics as well. Voters were often threatened, kidnapped, and killed.<sup>11</sup> McCook (1892) chronicles venal voters in various

small towns and city wards in Connecticut. Vote prices ranged from two to twenty dollars for an estimated 20,000 purchasable votes. In New York City, Speed (1905) found evidence that 170,000 vote sellers were “employed for the day” at a cost of five dollars. Argersinger (1985) details several other literary and legal sources for fraud evidence.

The importance of the secret ballot is not limited to its role in reducing turnout. Anderson and Tollison (1990) test for the impact of this law on government growth. They argue that the poor used the secrecy provided by the Australian Ballot to vote in their own interest. As rational wealth-maximizers, they voted for expansionary government policies in the form of redistribution. This reasoning would be supported by Converse (1974: 281) who notes the potential for a secret ballot to reduce corruption thus affecting *how* one voted, but decided “(t)here is, however, no obvious connection between the Australian Ballot reform and . . . any effect of the reform on turnout.”<sup>12</sup>

The analysis here would not support such a conjecture. If voters accepting bribes were mainly the poor, they would certainly be more likely to vote in their own interest when bribery and coercion ended, but this applies only to those who remained active voters. Many of the voters who no longer were paid to vote responded by abstaining. It is therefore unlikely that the Australian Ballot was responsible for governmental growth. The focus of this paper remains on turnout changes, but the effect on turnout clearly has other implications as well that will not be pursued here.

In testing for the effect of various electoral laws, historical voter turnout studies have often relied solely upon simple correlations and bivariate regression analysis (Burnham, 1970, 1971, 1974; Rusk, 1970; Converse, 1972; Rusk and Stucker, 1978; Kleppner and Baker, 1980; Kleppner, 1982a).<sup>13</sup> Normally, hypothesis testing employs multivariate regression analysis which has two distinct advantages. First, economic theories usually involve more than one variable and the effect of each variable is easier to separate in this format. Second, other factors need to be controlled to account for possible spurious correlation. The contribution of equation (2), though, turns on only one key piece of legislation. Evidence that multivariate analysis is warranted can be shown by first testing for the influence of the Australian Ballot by itself. These tests support the notion that the secret ballot may have reduced turnout, thereby requiring further investigation.

## 2. Data sources

The data needed to test this hypothesis can be divided into three categories: population, vote totals, and the year the law was first adopted. I define turnout as the total number of votes cast in a gubernatorial election divided by the

age-eligible population. The census provides population figures in decade intervals. Non-census year populations are estimated using geometric interpolation.<sup>14</sup>

The Inter-University Consortium for Political and Social Research (ICPSR) has made state-level voting estimates for gubernatorial elections from 1824–1972 available on tape (Burnham, Clubb and Flanigan, 1971). I began my sample in 1870 as this was the first census year after passage of the Fifteenth Amendment which made discrimination at the polls based on race illegal. Similarly, 1910 was the last census year before the so-called “Anthony Amendment” gave women full suffrage in 1919. A few Western states allowed women to vote prior to this, and have been accounted for by a simple adjustment of their population base.

The ICPSR tape also provides various census figures, including the total and age-eligible male populations in each state, but the off-decade estimates are based upon linear interpolations so they are not used in this paper.<sup>15</sup> Female population figures, when needed, were taken directly from the various censuses since the ICPSR numbers are labeled as estimates and do not match the census figures.

Ludington (1909), Evans (1917), and Albright (1948), have all included partial, and often conflicting, dates for adoption of the law in different states. They have been the principal sources used by others, including Rusk (1970) who studied the effect of the law on split ticket voting. Unfortunately, none of these sources have complete listings. Since he examined Presidential elections, Rusk’s coding was not annual,<sup>16</sup> which is often needed for the gubernatorial election analysis.

Where the various sources all agreed, I have accepted their dating. For the remaining states, I supplemented these sources with various law code books.<sup>17</sup> The final dating used most closely resembles Rusk except for Mississippi and Vermont.

### 3. Before and after tests

Table 1 shows the election turnout for each state adopting a secret ballot between the years 1870–1910.<sup>18</sup> A comparison is made between the gubernatorial elections immediately before (Ante) and after (Post) the law took effect.

The table shows that 2/3 of the states recorded a fall in turnout immediately after adopting a secret ballot. The mean fall-off is 5.22 percentage points, or an 8.2% drop compared to the previous election. The t-statistics at the bottom of the table are significant for both mean and percent changes.

The results in Table 1 give a strong indication that forces were at work to reduce turnout during this time. It could, however, be argued that the recorded



Table 1. Before and after test of secret ballot

ST	Law	Ante	Turnout	Post	Turnout	Change	% Change
AL	1893	1892	71.28	1894	54.26	-17.02	-23.88
AR	1891	1890	74.24	1892	58.23	-16.01	-21.56
CA	1891	1890	54.61	1894	57.67	3.06	5.60
CO	1891	1890	50.61	1892	54.98	4.37	8.64
CT	1909	1908	56.78	1910	47.80	-8.98	-15.82
DE	1891	1890	74.22	1894	78.19	3.97	5.35
FL	1895	1892	39.31	1896	33.94	-5.36	-13.65
IA	1892	1891	79.16	1893	75.27	-3.90	-4.92
ID	1892	1890	57.83	1892	57.25	-0.58	-1.00
IL	1891	1888	74.05	1892	77.16	3.10	4.19
IN	1889	1888	93.47	1892	88.81	-4.66	-4.98
KS	1893	1892	83.46	1894	75.98	-7.48	-8.96
LA	1896	1896	69.53	1900	23.58	-45.94	-66.08
MA	1888	1888	54.57	1889	40.69	-13.88	-25.43
ME	1891	1890	56.61	1892	63.72	7.12	12.57
MI	1891	1890	64.44	1892	73.60	9.17	14.23
MO	1891	1888	77.42	1892	73.76	-3.66	-4.73
MS	1890	1889	31.73	1895	21.14	-10.59	-33.38
ND	1891	1890	65.19	1892	58.08	-7.11	-10.90
NE	1891	1890	71.01	1892	65.52	-5.49	-7.74
NH	1891	1890	73.00	1892	72.19	-0.81	-1.11
NV	1891	1890	59.15	1894	53.46	-5.68	-9.61
NY	1895	1894	65.92	1896	69.73	3.81	5.78
OH	1891	1889	77.89	1891	76.91	-0.98	-1.26
OR	1891	1890	65.05	1894	70.34	5.29	8.14
PA	1891	1890	63.49	1894	59.76	-3.73	-5.87
RI	1889	1888	41.77	1889	44.25	2.48	5.93
SD	1891	1890	80.16	1892	70.58	-9.57	-11.95
VA	1894	1893	53.89	1897	40.08	-13.81	-25.62
VT	1890	1888	69.11	1890	53.02	-16.09	-23.28
WV	1891	1888	91.67	1892	88.72	-2.95	-3.22
			Mean			Std. error	T-statistic
Change			-5.22			1.87	2.80
% Change			-8.21			2.93	2.80

*Note.* Law refers to the year the secret ballot was adopted. Ante is the last election prior to adoption and Post is the first election after adoption.

drop in turnout is simply the continuation of a downward trend. This trend was first documented by Burnham (1965). Others have found fault in his reasoning for the trend but the trend itself is not in doubt (Rusk, 1971, 1974; Converse, 1974). Thus, Table 1 might be the result of mere timing.

Kleppner and Baker (1980) devised a detrending test for the passage of

registration requirements. Regressing turnout againsts time, they are able to construct time trends to compute confidence intervals for turnout predictions.<sup>19</sup> If the actual turnout in the election after passage is lower than the lowest bound on the predicted value, turnout is concluded to be affected by the law in a way not accounted for by the time trend. This is done by comparing the difference between the predicted and the actual values, which should be positive and larger than the standard deviation. Kleppner (1982a) also used this procedure to test the impact of female suffrage.

A similar yet more straightforward test is to compute the law's effect directly in a regression format.<sup>20</sup> Accounting for the time trend, the law coefficient should be negative and significant. The time trend component is computed by regressing the election year interacted by a state code variable; the same is done for the first election after the law went into effect. In this way, each state is tested independently. A dummy variable is used to account for the higher turnout typically associated with presidential elections (Barzel and Silberberg, 1973); this is the only connection between the states.

$$\text{Turnout}_{it} = \alpha + \beta_{1i}\text{Secret}_{it} + \beta_2\text{Pres}_t + \beta_{3i}\text{Year}_t \quad (3)$$

where variables are subscripted for state  $i$  at time  $t$ , Secret is a dummy variable coded 1 for the first election after the law and 0 otherwise, Pres is a dummy variable for presidential election years, and Year is the year in which a gubernatorial election was held. Both Secret and Year are interacted with the state code dummy variables. Following Kleppner and Baker (1980), each state vector consists of the five elections prior to adoption of the Australian Ballot, as well as the first election after. The hypothesis predicts  $\beta_{1i} < 0$ .

The results generated from this approach, reported in Table 2, are not much more hopeful than Kleppner and Baker's results in their study on registration. The coefficients imply that secrecy reduced turnout in 20 of the 28 states, but the  $t$ -statistics reveal that only 1/4 of these are significant. Forty percent of Kleppner and Baker's sample was found to be unsupportive of their hypothesis under this test.

The problem with this approach can be found in the standard error column. The standard errors are large and nearly identical. By computing this statistic on a state-by-state basis, the sample size is effectively restricted to  $T = 5$ , resulting in large standard errors. Analogously, the large standard deviations for each state meant the prediction differences in Kleppner's tests had to be unrealistically large.

Pooling the data allows estimation of a national average, reducing the standard errors on the law coefficient while still accounting for the individual state trends:

Table 2. State by state effect of secret ballot<sup>a</sup>

State	Estimate	Std. err	T-stat
AL	-0.00805	0.08957	0.09
AR*	-0.21587	0.08949	2.41
CA	0.09312	0.09017	1.03
CO	-0.04837	0.08949	0.54
CT	-0.04086	0.08956	0.46
DE	0.16541	0.09031	1.83
FL*	-0.39493	0.09030	4.37
IA	0.02066	0.08871	0.23
IL	0.03699	0.09031	0.41
IN	-0.04575	0.09031	0.51
KS	-0.02633	0.08957	0.29
LA*	-0.43921	0.09146	4.80
MA	-0.01324	0.08868	0.15
ME	-0.09880	0.08949	1.10
MI	-0.02487	0.08949	0.28
MO	0.01857	0.09023	0.21
MS*	-0.24086	0.09106	2.65
NE	-0.09161	0.08949	1.02
NH	-0.06583	0.08949	0.74
NV	-0.02714	0.09031	0.30
NY	-0.04249	0.09050	0.47
OH	-0.01066	0.08871	0.12
OR	0.07106	0.09031	0.79
PA	-0.03722	0.09024	0.41
RI	0.15117	0.08868	1.70
VA*	-0.21006	0.09030	2.33
VT	-0.04843	0.08957	0.54
WV	0.03157	0.09031	0.35

Note. Dependent variable is state turnout rate. Regression controls for presidential election years and state time trends.

\*-significant at 5%

<sup>a</sup> Idaho, North Dakota, and South Dakota are not included since they did not have enough Ante observations to develop a trend.

$$\text{Turnout}_{it} = \alpha + \beta_1 \text{Secret}_{it} + \beta_2 \text{Pres}_t + \beta_{3i} \text{Year}_t \quad (3')$$

The regression is the same as equation (3) except the interaction on Secret is replaced by a single Secret variable.

The results are more supportive of the existence of a national secret ballot effect. The state estimates in Table 3 lend support for the notion of a constant downward trend for each state during the five previous elections. The Secret variable implies that there was an immediate drop in turnout after passage of the law, on top of the downward trend.

Table 3. National effect of secret ballot<sup>a</sup>

Variable	Estimate	Std. err	T-stat
Secret*	-0.04920	0.024026	2.05
Pres*	0.08140	0.020483	3.97
AL	-0.00111	0.001727	0.64
AR	-0.00105	0.001729	0.61
CA	-0.00114	0.001731	0.66
CO	-0.00114	0.001729	0.66
CT	-0.00112	0.001712	0.66
DE	-0.00107	0.001731	0.62
FL	-0.00110	0.001730	0.63
IA	-0.00102	0.001728	0.59
IL	-0.00106	0.001733	0.61
IN	-0.00096	0.001733	0.55
KS	-0.00099	0.001727	0.57
LA	-0.00114	0.001725	0.66
MA	-0.00119	0.001729	0.69
ME	-0.00107	0.001729	0.62
MI	-0.00105	0.001729	0.61
MO	-0.00107	0.001733	0.62
MS	-0.00119	0.001732	0.69
NE	-0.00107	0.001729	0.62
NH	-0.00104	0.001729	0.60
NV	-0.00111	0.001731	0.64
NY	-0.00106	0.001726	0.62
OH	-0.00100	0.001729	0.58
OR	-0.00107	0.001731	0.62
PA	-0.00108	0.001731	0.62
RI	-0.00124	0.001729	0.72
VA	-0.00110	0.001728	0.64
VT	-0.00110	0.001731	0.64
WV	-0.00100	0.001733	0.57

Note. Dependent variable is state turnout rate. The state estimates measure the time trend ( $\beta_{3i}$ ) for each state.

\*-significant at 5%

<sup>a</sup>The state estimates still rely on only 5 observations per state and consequently have uniformly small t-statistics. These coefficients were not reported in Table 2

Comparing Tables 2 and 3 reveals an important distinction made earlier. The Secret variable implies that turnout was reduced by an average of 4.9 percentage points after the time trend is accounted for. The estimates generated at the state level in Table 2 reveal larger drops in turnout for many states. Thus, the statistically non-significant t-statistics can be attributed to high standard errors, rather than low coefficient estimates. The pooled Secret variance is less than 1/13 that of the individual state Secret variances.



These tests imply the secret ballot is correlated with lower turnout. Other important legislation, including poll taxes and literacy tests, which has been shown elsewhere to hamper turnout (McGovney, 1949; Kelley, Ayers and Bowen, 1967;<sup>21</sup> Silver, 1973; Kousser, 1974; Rusk, 1974; Rusk and Stucker, 1978; Filer, Kenny and Morton, 1991), has thus far been ignored. A full legal-institutional model is needed to incorporate these and other factors. To my knowledge, this will be the first attempt at simultaneously assessing the true effect of various historical election laws. As noted above, these laws have only been tested independently of one another.

#### 4. The role of the voter's calculus

The role of the secret ballot in the voter's calculus has been shown above. No longer able to verify the voters' choices, political parties left the vote market altogether. Without anyone buying their votes, the monetary incentive for individuals to vote was dissipated. Less incentive implied less voting. For many voters, the benefits no longer outweighed the costs of voting. The secret ballot eliminated bribery, but in doing so removed an important voting catalyst.

The impact of other electoral laws can also be measured within this framework. Poll taxes and literacy tests<sup>22</sup> impose higher costs on voters (Kelley, Ayers and Bowen, 1967; Silver, 1973). In contrast to the Australian Ballot System, the reduction in  $R$  in equation (2) from these laws comes through an increase in  $C$ . The predicted effect on turnout is the same.

The final law included in the regression is female suffrage. The role of this particular law, though, is not unambiguous. Enfranchised women need not have different benefits and costs than male voters. Merriam and Gosnell (1924) surveyed residents of Chicago after the mayoral election of 1923. They found that 1/9 of the women did not believe in voting either out of ignorance or indifference to voting, or believing it to be men's work (p. 109). Kleppner (1982a) found gender-based differences in voting to be very weak in the presence of other short-term stimuli. When these short-run forces were absent, differences in voting between men and women became larger. Others have not been as ambivalent. "(A)s a result of female suffrage there is no question whatever but that over-all statements of turnout were drastically affected as a result" (Converse, 1972: 276).

The traditional female suffrage story is the same as the initial enfranchisement of any group. The older cohorts are not used to voting and the younger women only slowly become socialized to vote. Over time, a larger percentage of the younger group becomes socialized until they eventually reach the same level as men. This notion would be supported by Merriam and Gosnell (1924: 44), who found a disproportionate percentage of the older women were more likely to delegate voting as the man's responsibility.

This would almost certainly be true for most states after adoption of the 19th Amendment, a federal law encompassing all states at once. But for those states that allowed women to vote prior to this, there must have been strong forces within the state compelling their respective legislatures.<sup>23</sup> Thus it is not so obvious that women in these states were less interested in voting. This is consistent with Kleppner's (1982a) finding that women voted less after the 19th Amendment than their franchised cohorts did in prior years.

Furthermore, the novelty of a vote can act as a strong short-term stimulus. Once franchisement has been in place for a *long* time, this group might be less likely to vote since the right has been taken for granted. The initial franchise-ment of other groups did not always lead to a fall in the turnout rate (Kleppner, 1982a).

While it is usually *hypothesized* that women vote less than men,<sup>24</sup> sex variables are commonly found to not be significant in contemporary voting studies (Kelley, Ayers and Bowen, 1967; Silver, 1973; Cassel and Hill, 1981). This result would be consistent with either the notion that gender was never important, or that it is simply no longer important because women by now have become socialized to vote. The percentage of women in a state was, however, found to be inversely correlated with turnout in Silberman and Durden (1975).

## 5. Data II

The sample used in the regressions represent an unbalanced panel covering all gubernatorial elections from 1870–1910. The number of observations differ across states for two reasons. Some states had not gained statehood by 1870 and the remaining states have unequal observations due to the frequency of their elections. For example, Rhode Island has twice as many observations as Arkansas, since Rhode Island held annual elections while Arkansas governors served two year terms.

“Split-states” (see note 18) have been removed from the sample. The only other states not included are Oklahoma, which had only one election prior to 1910, and South Carolina which had “true” turnout rates over 100% for 2 elections. This casts serious doubt on the validity of South Carolina's other election totals.<sup>25</sup>

The years each state had poll taxes and literacy tests in their elections were found in Porter (1918), McGovney (1949), and Kousser (1974). Again, these authors' findings were not entirely consistent, as each stressed different regions or time periods. Female suffrage states are listed in Beeton (1986) and Burnham (1986).

## 6. Econometric estimation

Whenever the dependent variable of a regression is a percentage term, Ordinary Least Squares (OLS) yields biased estimates. The dependent variable must be constrained between zero and one but OLS can yield nonsensical predictions outside this range. To correct for biased and inefficient estimators, I have used the *Minimum Logit Chi-Square Method* (Maddala, 1983: 29–30).<sup>26</sup> The dependent variable is the logit of turnout. Turnout is assumed to represent the aggregation of the individual probabilities of voting. Heteroskedasticity is built into the model so the regression must be weighted.<sup>27</sup> The transformed model is:

$$\ln\left(\frac{P_{it}}{1 - P_{it}}\right) = \alpha + X_{it}\beta \quad (4)$$

where  $P$  is the percent of age-eligible persons that voted, and  $X$  is a regressor matrix of rank  $N = K \times M$  of  $K$  observations on  $M$  state law dummies for a secret ballot, poll taxes, a literacy test requirement, a woman's suffrage law, and a presidential election year. The subscripts represent state  $i$  at time  $t$ .

For simplicity, I will refer to equation (4) as the Logistic regression and the weighted (corrected for heteroskedasticity) version as a Weighted Logistic. The least-squares estimators (LSE) of equation (4) tell us the marginal effect from a given law on the logit of turnout. The LSE's are  $dY/dX$ , where  $Y = \ln(P/1 - P)$ . We are interested in finding  $dP/dX$ .

In the logit model, the derivative is equivalent to  $dP/dX = P(1 - P)\beta$  (Greene, 1993: 639). Unfortunately, the  $X$ 's in equation (4) are all dummy variables. Since  $X$  is not continuous,  $dP/dX$  does not exist mathematically. Instead, differences in predictions are calculated at each observation when the variable in question is assigned a zero or a one and the remaining explanatory variables are evaluated at their true values.<sup>28</sup> The average effect (which I label as Delta in Table 4) is then found by taking the mean of the differences:

$$\text{Delta} = \frac{1}{K} \sum_{k=1}^K [P_k(x_m = 1) - P_k(x_m = 0)].$$

The results are listed in Part 1 of Table 4. Derivates have also been calculated and are included for comparative purposes.

All the legal variables for equation (4) are negative and significant. The secret ballot law, the key variable under consideration here, appears to reduce turnout 4.8 percentage points. This law, while not as strong a disincentive as the other restrictive laws, does impact upon the voter's calculus.



Table 4. State laws

	I. Base model			II. Fixed effect		
	LSE	dp/dx	Delta	LSE	dp/dx	Delta
Intercept	0.726* (.0422)					
Secret	-0.219* (.0475)	-0.048	-0.048	-0.317* (.0344)	-0.069	-0.069
Ballot						
Poll	-0.771* (.0600)	-0.170	-0.180	-0.551* (.0654)	-0.120	-0.125
Tax						
Literacy	-0.694* (.0597)	-0.153	-0.162	-0.579* (.0945)	-0.126	-0.130
Test						
Female	-0.431* (.1543)	-0.095	-0.098	0.353 (.2249)	0.077	0.074
Suffrage						
President	0.449* (.0482)	0.098	0.098	0.446* (.0372)	0.097	0.097
Election						
States <sup>a</sup>				25.53*		
<hr/>						
R <sup>2</sup>	.619			.830		
Adj-R <sup>2</sup>	.615			.817		
F-value	157.53			62.149		

*Note.* Dependent variable is weighted logit of state turnout rate. Each regression contains 588 observations. Standard errors are in parenthesis.

\*-significant at 5%

<sup>a</sup>States represents the joint test that all state coefficients are equal to zero in Model II. This is rejected at 5%. The individual state coefficients are not reported.

7. State effects

Since the laws in question are all state laws, it could be argued that the independent variables are picking up various state effects. Each state has different characteristics which could be accounting for the turnout differences. Education and income, for example, have been found to be powerful determinants of voting (Kim, Petrocik and Enokson, 1975; Wolfinger and Rosenstone, 1980; Cassel and Hill, 1981; Caldeira and Patterson, 1982; Durden and Gaynor, 1987; Filer, Kenny and Morton, 1991).

An inexpensive mechanism to pick up the differences across states<sup>29</sup> is a fixed effects model.<sup>30</sup> State dummies are employed, allowing each state its own intercept term. It is still assumed that the laws would have the same effect (slope) in each state, but the state dummies can capture mean historical voting differences. The results are presented in Part II of Table 4.

Comparing these results to the previous regression, the marginal effects of all the laws are reduced, except for the secret ballot, which is enhanced. This result implies there was less variation across states in the effect of the secret



ballot than from the other laws. The fixed effects model predicts turnout to be 6.9 percentage points lower in the secret ballot states. Literacy tests, which disfranchise the most directly, appear to have the largest affect on state turnout.<sup>31</sup>

A final note concerns the female suffrage variable. Female loses its significance in the fixed effects model. This is consistent with most of the current literature. Non-significance implies that the states which adopted female suffrage did not have a less than proportional female turnout when compared with the male turnout. This supports Kleppner's (1982a) analysis. Apparently these states had lower turnout to begin with, even before allowing women to vote. Women that were allowed to vote went to the polls in roughly the same proportions as the men. If voting under a closed ballot is indeed an act of irrationality as Mueller (1989) postulates, then women are no less irrational than men.

## 8. Conclusions

It has been shown that voting is directly tied to the institutions in place governing its behavior. Institutional arrangements affect the voter's incentives. The secret ballot, by eliminating bribery, greatly reduced the benefit for many voters. Many of these voters responded by abstaining:

Previous research on the secret ballot limited its role to either specific regions (Kousser, 1974; Argersinger, 1980) or affecting only who one chooses to vote for (Rusk, 1970; Converse, 1972). The lack of effect of a regional dummy (see note 29) casts doubt upon the former and the strong results generated in Table 4 suggest the latter is not complete.

Lest anyone think the lessons of the secret ballot are not pertinent to contemporary elections, one need look no further than the June 1993 Los Angeles mayoral election for evidence to the contrary. The Democratic-backed (Michael Woo) and Republican-backed (Richard Riordan) candidates were running dead even on the eve of the election. To bolster its chances, the Democratic party offered bribes in the form of six free doughnuts to anyone providing proof of voting. These bribes cost the Democratic party \$100,000 (Fiore, 1993). Although the Democrats were able to boost overall turnout, they still lost the election by a margin of eight percentage points.

There was a hole in the Democrats' doughnut plan. Since voters today are able to make their choices while cloaked under a shroud of secrecy, these enticements could not be limited to those voting for Woo. There is simply no mechanism to verify the voters' choice. Instead, the doughnuts were offered as payment to anyone who voted, relying upon goodwill to steer voters toward Woo's name once inside the booth. If the pre-election polls were accurate, the

Democrats actually attracted a disproportionate percentage of Republican voters with the doughnut bribes. These bribes proved sufficient inducement to improve Los Angeles' previously abysmal turnout in municipal elections, but Woo was not the beneficiary of these extra votes.

The Democratic party could have saved themselves \$100,000 if they had only remembered this historical adage: You can lead a voter to the polls, but you can't make him vote Democratic. At least not under a secret ballot.

## Notes

1. See for example Olson (1965).
2. A voter is decisive only if his vote causes or breaks a tie. Tullock assumed the probability of any single voter being decisive was equal to the reciprocal of the number of voters. More sophisticated attempts at calculating  $P$  include Barzel and Silberberg (1973), Good and Mayer (1975), Beck (1975), Margolis (1977), Owen and Grofman (1984), and Foster (1984). The conclusion from all of these formulae is that  $P \approx 0$ .
3. For a more elaborate probe into the shortcomings of Downs' analysis, see Barry (1970: 13–23).
4. See Riker and Ordeshook (1968), McKelvey and Ordeshook (1972), Strom (1975), Fiorina (1976), and Aldrich (1993) among others.
5.  $S$  can also be viewed as the amount saved by voting under the intimidation of physical violence or the loss of one's job. In this case,  $S$  represents the saving of a negative amount. The analysis is the same.
6. A psychic income term, alluded to by Downs and formalized as  $D$  by Riker and Ordeshook (1968), has been omitted from equation (2). The merit of this term has been debated (Barry, 1970: 15–19; Tollison and Willett, 1973; Ferejohn and Fiorina, 1974; Strom, 1975; Fiorina, 1976; Mueller, 1989; Aldrich, 1993) and its inclusion does not alter the analysis.
7. The Australian Ballot System replaced separate colored-coded party ballots with a single uniform ballot (Rusk, 1970).
8. Similarly, there is no longer an advantage in forcing voters into the booth through intimidation (Key, 1949: 597).
9. Alternatively, Kousser (1974) claimed the Australian Ballot effect was limited in the South to disfranchising Blacks and illiterate Whites. His argument is based on the inability of illiterates to vote without colored party ballots. However, most ballots contained party emblems to identify candidates (Ludington, 1909) and sample ballots were prominently advertised (and often distributed) prior to the election (Evans, 1917), so name recognition itself would not be problematic even for illiterates. Furthermore, most Southern states already had literacy test requirements for voting, a far more effective mechanism for disfranchisement.
10. Kleppner (1982b: 181, 10ff.) recognized that the elimination of corruption could lead to a decline in voting but doubted the existence of rampant corruption: "The case for the Australian ballot's role in eliminating alleged vote fraud is dubious at best."
11. Harris (1934) also makes the point that it would be an inaccurate view to restrict the corrupt practices to urban areas.
12. Secret ballot advocates at the time often argued that eliminating corruption might actually spur turnout by restoring voters' faith in government (e.g., Evans, 1917).
13. Registration was the only electoral law Kleppner (1982b) included in his turnout regressions, although he controlled for various individual-level characteristics, such as age and wealth.
14. Geometric interpolations are calculated as:

$$\text{Population}_t = \text{Population}_0 * \left( \frac{\text{Population}_{10}}{\text{Population}_0} \right)^{\frac{t}{10}}$$

where subscript  $t$  refers to the  $t$ th year between the census endpoints labeled 0 for the starting year and 10 for the ending year.

15. Similarly, the turnout estimates available on the tape are also based on linear interpolations so they have not been used.
16. Correspondence from Rusk to the author.
17. These states include Maryland, Minnesota, Mississippi, Missouri, North Carolina, Oklahoma, Tennessee, Vermont, Wisconsin, and Wyoming.
18. Kentucky, Maryland, Minnesota, Tennessee, Texas, and Wisconsin are not included because they did not adopt the measure uniformly throughout the state. Missouri was also a "split-state" in 1889 but extended its law to apply to the entire state in 1890. Since there was no gubernatorial election in between these years, this state is included. Montana, Utah, and Wyoming have had the secret ballot since statehood, so a comparison is not possible for these states.
19. The time trends are based on the five previous elections in each state.
20. This is a state-specific model of Greene's proposed variation on Chow (1960) for prediction (Greene, 1993: 196–197).
21. Kelley, Ayers and Bowen (1967) studied the registration decision. The economic incentives are the same.
22. These voting restrictions are often viewed as part of the "Southern system", limiting their application to the South (Burnham, 1970; Converse, 1974; Kousser, 1974; Rusk and Stucker, 1978) even though these laws were enacted by various states outside the South as well (Porter, 1918; Lewinson, 1932; McGovney, 1949; Filer, Kenny and Morton, 1991).
23. These forces are described in Beeton (1986).
24. A notable exception is Durden and Gaynor (1987). They claim a positive relationship between women and voting to be the typical prediction without reason or references. Their results, however, are mixed.
25. Regressions were also run including the other South Carolina elections, but the results remained largely unaffected, so they are not reported.
26. See also Amemiya (1981) for a description of its properties, and Schroeder and Sjoquist (1978) for an application of the technique.
27. Filer, Kenny and Morton (1991) used the unweighted logit for their dependent variable.
28. Since the prediction of  $X\beta$  yields the logit of  $P$ , this value must be transformed via the expression  $e^{X\beta}/(1 + e^{X\beta})$ .
29. A south dummy was also employed prior to the fixed-effects modelling on the thought that all Southern states were equally different from the rest of the nation. None of the variables' signs or  $t$ -statistics were affected.
30. The fixed effects model can also capture possible problems caused by the unbalanced panel.
31. Each of the electoral laws considered here can possibly alter the benefits and costs of voting, which changes the likelihood of voting for any individual. Literacy laws act as an infinite cost to illiterates, removing them from the eligible voting population altogether.

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