

Online Appendix to
Instrumental Variables Estimation of a Simple Dynamic Model
of Bidding Behavior in Private Value Auctions

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**Online Table A1: Alternative Estimates of the Bidding Equation
When the Lagged Signal is the Only IV**

Estimator	OLS (1)	FE (2)	IV (3)	OLS (4)	FE (5)	IV (6)	RE IV (7)
	Assumes <i>iid</i> errors			Assumes unrestricted errors			
Lagged Discount Rate	0.499*** (0.0158)	0.238*** (0.018)	-0.610* (0.349)	0.499*** (0.0445)	0.238*** (0.040)	-0.610* (0.314)	-0.610* (0.349)
Six-Bidder Session Indicator	-0.348*** (0.0725)	Omitted since subject invariant	-1.055*** (0.254)	-0.348** (0.140)	Omitted since subject invariant	-1.055** (0.495)	-1.055*** (0.254)
Periods 1–5 Indicator	-0.194 (0.132)	0.054 (0.121)	0.662* (0.350)	-0.194 (0.138)	0.054 (0.172)	0.662 (0.488)	0.662* (0.351)
Periods 6–10 Indicator	-0.0772 (0.122)	-0.090 (0.111)	-0.212 (0.212)	-0.0772 (0.0972)	-0.090 (0.127)	-0.212 (0.253)	-0.212 (0.212)
Periods 11–15 Indicator	-0.224* (0.123)	-0.245** (0.112)	-0.456** (0.223)	-0.224** (0.0903)	-0.245** (0.126)	-0.456* (0.261)	-0.456** (0.223)
Periods 16–20 Indicator	-0.0295 (0.121)	-0.044 (0.111)	-0.155 (0.211)	-0.0295 (0.0852)	-0.044 (0.121)	-0.155 (0.226)	-0.155 (0.211)
Periods 21–25 Indicator	0.00096 (0.121)	0.014 (0.110)	0.0254 (0.207)	0.000967 (0.0697)	0.014 (0.088)	0.0254 (0.171)	0.0254 (0.207)
Constant	1.644*** (0.107)	2.189*** (0.093)	5.149*** (1.113)	1.644*** (0.151)	2.189*** (0.129)	5.149*** (1.073)	5.149*** (1.115)
<i>F</i> -test on joint significance of period indicators ^a	1.22 [0.296]	1.71 [0.130]	1.68 [0.136]	1.99* [0.087]	1.63 [0.159]	1.66 [0.152]	4.195 [0.136]
Observations	2,570	2,570	2,570	2,570	2,570	2,570	2,570

Note: See notes to Table 2.

^a *F*-statistics in parentheses and *p*-values in parentheses. These *F*-statistics should be compared to the critical value of $F(5,2565) = 2.22$ for the *iid* case at the 5% level, and to the critical value of $F(5,91) = 2.31$ for the clustered case; the latter is a conservative critical value since it ignores the fact that the observations for the same individual are not perfectly correlated.

Online Table A2: Table 3: First-Stage Regressions and Tests of Instrument Strength When the Lagged Signal is the Only Instrument

	OLS	OLS	RE
<i>Error Structure</i>	Assumes <i>iid</i> errors		Assumes unrestricted errors
Lagged Signal Linear	0.000672*** (0.000171)	0.000672*** (0.000191)	0.000910*** (0.000141)
Six-Bidder Session Indicator	-0.636*** (0.0894)	-0.636** (0.278)	-0.610** (0.268)
Periods 1–5 Indicator	0.777*** (0.164)	0.777*** (0.293)	0.840*** (0.134)
Periods 6–10 Indicator	-0.129 (0.151)	-0.129 (0.159)	-0.103 (0.124)
Periods 11–15 Indicator	-0.229 (0.153)	-0.229 (0.167)	-0.186 (0.126)
Periods 16–20 Indicator	-0.0615 (0.152)	-0.0615 (0.142)	-0.0198 (0.124)
Periods 21–25 Indicator	0.0522 (0.151)	0.0522 (0.117)	0.0691 (0.123)
Constant	2.804*** (0.148)	2.804*** (0.224)	2.651*** (0.219)
Appropriate <i>F</i> -Statistic to compare to the rule-of-thumb critical value of 10^a	15.46	15.46	41.80
Observations	2,570	2,570	2,570

Notes: See notes to Table 2.

a We use the fact that $F(1,n) = \text{Chi-Square}(1)$ for a large n .