

ONLINE APPENDIX TO

**THE TRILLION DOLLAR CONUNDRUM:
COMPLEMENTARITIES AND HEALTH INFORMATION TECHNOLOGY**

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NOT FOR PUBLICATION

Appendix Table A.1: Comparing Hospitals With and Without IT Data

Variable	Reports Data on Basic EMR Adoption	Does Not Report Data on Basic EMR Adoption	Difference Significant?
Total costs per admit	9137.7	9497.4	**
Total hospital beds	222.2	151.0	***
Residency or Member of Council Teaching Hospitals	0.247	0.148	***
MSA dummy	0.673	0.509	***
Total admissions	8662.9	5308.6	***
Independent practice association hospital	0.264	0.238	**
Management service organization hospital	0.222	0.183	
Equity model hospital	0.075	0.080	
Foundation hospital	0.157	0.155	
Inpatient days	51540.7	32979.0	***
Outpatient visits	118441.2	74780.9	***
Births	1075.7	638.0	***

Columns 1 and 2 report mean 1996 values for each of the variables for hospitals who do and do not report whether they have adopted basic EMR. Column 3 reports whether the means are statistically different from one another. * significant at 10%; ** significant at 5%; *** significant at 1%

Appendix Table A.2: Leads and lags to get timing of impact

	(1)	(2)	(3)	(4)	(5)	(6)
Technology	Basic EMR adoption			Advanced EMR adoption		
Sample	All firms	Bottom 3 quartiles IT-intensive counties	Top quartile IT-intensive counties	All firms	Bottom 3 quartiles IT-intensive counties	Top quartile IT-intensive counties
Will adopt in 3 years	-0.0034 (0.0072)	-0.0100 (0.0105)	0.0038 (0.0096)	0.0016 (0.0081)	0.0031 (0.0122)	-0.0019 (0.0103)
Will adopt in 2 years	-0.0055 (0.0083)	-0.0147 (0.0120)	0.0025 (0.0112)	0.0093 (0.0104)	0.0040 (0.0159)	0.0095 (0.0129)
Will adopt in 1 year	-0.0011 (0.0099)	-0.0025 (0.0150)	0.0040 (0.0128)	0.0088 (0.0136)	0.0083 (0.0221)	0.0100 (0.0164)
Adopt this year	-0.0060 (0.0111)	-0.0013 (0.0159)	-0.0085 (0.0147)	0.0134 (0.0145)	0.0264 (0.0239)	-0.0043 (0.0168)
Adopt 1 year earlier	-0.0101 (0.0120)	-0.0172 (0.0171)	-0.0008 (0.0165)	0.0209 (0.0159)	0.0315 (0.0238)	0.0042 (0.0208)
Adopt 2 years earlier	-0.0080 (0.0133)	-0.0085 (0.0187)	-0.0066 (0.0187)	0.0182 (0.0183)	0.0325 (0.0269)	-0.0031 (0.0246)
Adopt 3 years earlier	-0.0137 (0.0144)	-0.0033 (0.0203)	-0.0221 (0.0198)	0.0114 (0.0203)	0.0388 (0.0298)	-0.0224 (0.0274)
Adopt 4 years earlier	-0.0271 (0.0160)*	-0.0129 (0.0233)	-0.0360 (0.0211)*	0.0135 (0.0225)	0.0504 (0.0331)	-0.0276 (0.0301)
Adopt 5 years earlier	-0.0311 (0.0175)*	-0.0154 (0.0251)	-0.0407 (0.0240)*	0.0113 (0.0258)	0.0489 (0.0374)	-0.0302 (0.0349)
Adopt at least 6 years earlier	-0.0393 (0.0198)**	-0.0220 (0.0291)	-0.0478 (0.0259)*	-0.0278 (0.0283)	0.0171 (0.0413)	-0.0750 (0.0391)*
Observations	21086	11002	10084	11178	5375	5803
# of hospitals	1934	1052	882	1009	501	508
R-squared	0.62	0.65	0.60	0.64	0.67	0.62

Dependent variable is total operating costs per admit. Unit of observation is a hospital-year. Sample includes annual data from 1996 to 2009. Sample restricted to those that eventually adopt. Regressions include hospital-specific fixed effects, differenced out at means. Robust standard errors, clustered by hospital, in parentheses. All regressions include the same set of controls as in Table 3. * significant at 10%; ** significant at 5%; *** significant at 1%

Appendix Table A.3: Other specifications of controls

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	No controls				Add controls for concurrent levels of hospital characteristics			
Technology	Basic EMR adoption	Advanced EMR adoption	Basic EMR adoption	Advanced EMR adoption	Basic EMR adoption	Advanced EMR adoption	Basic EMR adoption	Advanced EMR adoption
Adopt in previous 3 year period	0.2597 (0.0068)***	0.3060 (0.0083)***	0.2805 (0.0084)***	0.3323 (0.0112)***	0.0151 (0.0056)***	0.0327 (0.0060)***	0.0263 (0.0079)***	0.0445 (0.0092)***
Adopt at least 3 years earlier	0.5075 (0.0072)***	0.5026 (0.0096)***	0.5515 (0.0097)***	0.5580 (0.0153)***	0.0074 (0.0080)	0.0244 (0.0089)***	0.0346 (0.0111)***	0.0490 (0.0129)***
Adopt in previous 3 year period x IT-intensive county			-0.2809 (0.0142)***	-0.3127 (0.0166)***			-0.0235 (0.0111)**	-0.0223 (0.0120)*
Adopt at least 3 years earlier x IT-intensive county			-0.5862 (0.0175)***	-0.5622 (0.0208)***			-0.0566 (0.0158)***	-0.0462 (0.0173)***
Observations	24284	35733	24284	35733	23361	34262	23361	34262
# of hospitals	2247	3334	2247	3334	2228	3306	2228	3306
R-squared	0.27	0.10	0.36	0.25	0.73	0.71	0.73	0.71

Dependent variable is total operating costs per admit. Unit of observation is a hospital-year. Sample includes annual data from 1996 to 2009. Regressions include hospital-specific fixed effects, differenced out at means. Robust standard errors, clustered by hospital, in parentheses. Columns 3, 4, 7, and 8 include time trends for IT-intensive location. Columns 5-8 include the same set of controls as in Table 3 plus the concurrent values by year for all hospital-level controls from Table 3. * significant at 10%; ** significant at 5%; *** significant at 1%

Appendix Table A.4: Labor costs and direct costs

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable	Total labor costs per admit				Total direct costs per admit			
Technology	Basic EMR adoption	Advanced EMR adoption	Basic EMR adoption	Advanced EMR adoption	Basic EMR adoption	Advanced EMR adoption	Basic EMR adoption	Advanced EMR adoption
Adopt in previous 3 year period	-0.0029 (0.0063)	0.0261 (0.0072)***	0.0052 (0.0085)	0.0365 (0.0105)***	0.0063 (0.0063)	0.0255 (0.0070)***	0.0121 (0.0085)	0.0380 (0.0103)***
Adopt at least 3 years earlier	-0.0152 (0.0092)*	0.0150 (0.0100)	0.0121 (0.0128)	0.0454 (0.0149)***	-0.0082 (0.0089)	0.0037 (0.0097)	0.0154 (0.0123)	0.0322 (0.0146)**
Adopt in previous 3 year period x IT-intensive county			-0.0171 (0.0127)	-0.0196 (0.0145)			-0.0123 (0.0126)	-0.0238 (0.0141)*
Adopt at least 3 years earlier x IT-intensive county			-0.0566 (0.0186)***	-0.0572 (0.0194)***			-0.0488 (0.0178)***	-0.0536 (0.0190)***
Observations	23416	34405	23416	34405	23418	34407	23418	34407
# of hospitals	2228	3306	2228	3306	2228	3306	2228	3306
R-squared	0.53	0.50	0.53	0.50	0.56	0.54	0.56	0.54

Unit of observation is a hospital-year. Sample includes annual data from 1996 to 2009. Regressions include hospital-specific fixed effects, differenced out at means. Robust standard errors, clustered by hospital, in parentheses. All regressions include the same set of controls as in Table 3 plus time trends for IT-intensive location (columns 3, 4, 7, 8). * significant at 10%; ** significant at 5%; *** significant at 1%

Appendix Table A.5: Include adjustments for difficulty of the Medicare case mix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Add Medicare case mix index as control				Weight dependent variable by the Medicare case mix index			
Technology	Basic EMR adoption	Advanced EMR adoption	Basic EMR adoption	Advanced EMR adoption	Basic EMR adoption	Advanced EMR adoption	Basic EMR adoption	Advanced EMR adoption
Adopt in previous 3 year period	0.0045 (0.0063)	0.0269 (0.0068)***	0.0125 (0.0087)	0.0371 (0.0108)***	0.0034 (0.0064)	0.0248 (0.0069)***	0.0090 (0.0088)	0.0286 (0.0109)***
Adopt at least 3 years earlier	-0.0070 (0.0090)	0.0137 (0.0097)	0.0208 (0.0125)*	0.0410 (0.0149)***	-0.0055 (0.0091)	0.0151 (0.0097)	0.0195 (0.0127)	0.0383 (0.0145)***
Adopt in previous 3 year period x IT-intensive county			-0.0163 (0.0124)	-0.0188 (0.0137)			-0.0117 (0.0125)	-0.0070 (0.0139)
Adopt at least 3 years earlier x IT-intensive county			-0.0562 (0.0177)***	-0.0503 (0.0190)***			-0.0507 (0.0178)***	-0.0427 (0.0190)**
Medicare case mix index	0.2013 (0.0303)***	0.1899 (0.0309)***	0.1977 (0.0304)***	0.1871 (0.0309)***				
Observations	20214	29545	20214	29545	20214	29545	20214	29545
# of hospitals	1642	2403	1642	2403	1642	2403	1642	2403
R-squared	0.62	0.60	0.62	0.60	0.62	0.60	0.62	0.60

In columns 1-4, dependent variable is total operating costs per admit. In columns 5-8, dependent variable is total operating costs per admit, weighted by the Medicare case mix index. Note that the Medicare case mix is a weak proxy for the total case mix. Unit of observation is a hospital-year. Sample includes annual data from 1996 to 2009, subject to having data on the Medicare case mix (eliminating over 25% of hospitals in the sample).

Regressions include hospital-specific fixed effects, differenced out at means. Robust standard errors, clustered by hospital, in parentheses. All regressions include the same set of controls as in Table 3 plus time trends for IT-intensive location (columns 3, 4, 7, 8). * significant at 10%; ** significant at 5%; *** significant at 1%

Appendix Table A.6: Balanced panel of only hospitals that appear in all years

	(1)	(2)	(3)	(4)
Technology	Basic EMR adoption	Advanced EMR adoption	Basic EMR adoption	Advanced EMR adoption
Adopt in previous 3 year period	0.0026 (0.0083)	0.0323 (0.0082)***	0.0093 (0.0111)	0.0396 (0.0130)***
Adopt at least 3 years earlier	-0.0097 (0.0119)	0.0132 (0.0118)	0.0189 (0.0156)	0.0447 (0.0183)**
Adopt in previous 3 year period x IT-intensive county			-0.0146 (0.0164)	-0.0141 (0.0168)
Adopt at least 3 years earlier x IT-intensive county			-0.0608 (0.0231)***	-0.0612 (0.0228)***
Observations	11788	20160	11788	20160
# of hospitals	842	1440	842	1440
R-squared	0.65	0.64	0.65	0.64

Dependent variable is total operating costs per admit. Unit of observation is a hospital-year. Sample includes annual data from 1996 to 2009. Regressions include hospital-specific fixed effects, differenced out at means. Robust standard errors, clustered by hospital, in parentheses. All regressions include the same set of controls as in Table 3 plus time trends for IT-intensive location (columns 3, 4). * significant at 10%; ** significant at 5%; *** significant at 1%

Appendix Table A.7: Drop locations where hospital IT employment is over 10% of IT employment

	(1)	(2)	(3)	(4)	(5)	(6)
Technology	Basic EMR adoption	Advanced EMR adoption	Basic EMR adoption	Advanced EMR adoption	Basic EMR adoption	Advanced EMR adoption
Adopt in previous 3 year period	0.0067 (0.0066)	0.0230 (0.0073)***	0.0138 (0.0089)	0.0368 (0.0107)***	0.0148 (0.0090)*	0.0384 (0.0108)***
Adopt at least 3 years earlier	-0.0066 (0.0092)	0.0054 (0.0100)	0.0172 (0.0128)	0.0372 (0.0151)**	0.0186 (0.0129)	0.0395 (0.0152)***
Adopt in previous 3 year period x IT-intensive county			-0.0145 (0.0131)	-0.0259 (0.0147)*	-0.0009 (0.0141)	-0.0080 (0.0159)
Adopt at least 3 years earlier x IT-intensive county			-0.0476 (0.0184)***	-0.0593 (0.0196)***	-0.0300 (0.0198)	-0.0378 (0.0215)*
Adopt in previous 3 yr pd x top quartile HIT workers					-0.0310 (0.0180)*	-0.0375 (0.0178)**
Adopt at least 3 yrs earlier x top quartile HIT workers					-0.0419 (0.0244)*	-0.0455 (0.0233)*
Observations	21193	31336	21193	31336	21193	31336
# of hospitals	2000	2980	2000	2980	2000	2980
R-squared	0.59	0.57	0.59	0.57	0.59	0.57

Dependent variable is total operating costs per admit. Unit of observation is a hospital-year. Sample includes annual data from 1996 to 2009. Regressions include hospital-specific fixed effects, differenced out at means. Robust standard errors, clustered by hospital, in parentheses. All regressions include the same set of controls as in Table 3 plus time trends for IT-intensive location (columns 3, 4, 5, 6). * significant at 10%; ** significant at 5%; *** significant at 1%

Appendix Table A.8: Comparison of coefficients when only eventual adopters included in the estimation

	(1)	(2)	(3)	(4)
Technology	Basic EMR adoption		Advanced EMR adoption	
	All data	Only adopters	All data	Only adopters
Adopt in previous 3 year period	0.0128 (0.0085)	0.0106 (0.0087)	0.0403 (0.0102)***	0.0338 (0.0118)***
Adopt at least 3 years earlier	0.0170 (0.0123)	0.0125 (0.0125)	0.0382 (0.0145)***	0.0363 (0.0173)**
Adopt in previous 3 year period x IT-intensive county	-0.0157 (0.0126)	-0.0141 (0.0123)	-0.0285 (0.0140)**	-0.0304 (0.0161)*
Adopt at least 3 years earlier x IT-intensive county	-0.0513 (0.0178)***	-0.0474 (0.0173)***	-0.0597 (0.0189)***	-0.0617 (0.0228)***
Observations	23418	21086	34407	11178
# of hospitals	2228	1934	3306	1009
R-squared	0.58	0.62	0.56	0.64
CONTROLS				
IT-intensive county x year	0.00004 (0.0019)	-0.0006 (0.0020)	-0.0013 (0.0014)	0.0016 (0.0027)
Log inpatient days	-0.4578 (0.1870)**	-0.4134 (0.2109)*	-0.6154 (0.1426)***	-0.6742 (0.2969)**
Log outpatient visits	-0.0600 (0.1191)	-0.2506 (0.1525)	-0.0590 (0.0902)	-0.0770 (0.2072)
Log inpatient days x Log inpatient days	0.0304 (0.0086)***	0.0367 (0.0094)***	0.0301 (0.0069)***	0.0331 (0.0151)**
Log outpatient visits x Log outpatient visits	0.0170 (0.0067)**	0.0329 (0.0101)***	0.0103 (0.0050)**	0.0130 (0.0098)
Log inpatient days x Log outpatient visits	-0.0306 (0.0143)**	-0.0463 (0.0146)***	-0.0163 (0.0118)	-0.0191 (0.0196)
Log total costs per admit in 1996 x year	-0.0202 (0.0030)***	-0.0202 (0.0028)***	-0.0231 (0.0024)***	-0.0285 (0.0047)***
Log total hospital beds x year	-0.0081 (0.0023)***	-0.0069 (0.0024)***	-0.0098 (0.0020)***	-0.0056 (0.0038)
Independent practice assn. hospital x year	-0.0009 (0.0015)	-0.0010 (0.0015)	0.0001 (0.0013)	-0.0011 (0.0020)
Mngmt service org. hospital x year	-0.0022 (0.0015)	-0.0020 (0.0015)	-0.0030 (0.0013)**	-0.0010 (0.0020)
Equity model hospital x year	-0.0025	-0.0002	-0.0017	-0.0036

	(0.0032)	(0.0031)	(0.0025)	(0.0043)
Foundation hospital x year	0.0019	0.0022	0.0014	-0.0005
	(0.0019)	(0.0020)	(0.0016)	(0.0027)
Log admissions x year	0.0023	-0.0005	0.0039	0.0008
	(0.0022)	(0.0024)	(0.0020)**	(0.0040)
Births (000s) x year	0.0019	0.0024	0.0018	0.0017
	(0.0008)**	(0.0008)**	(0.0007)**	(0.0009)*
For-profit ownership x year	-0.0101	-0.0092	-0.0097	-0.0210
	(0.0022)**	(0.0022)**	(0.0019)**	(0.0037)**
Non-secular nonprofit ownership x year	0.0006	0.0006	-0.0004	-0.0007
	(0.0016)	(0.0016)	(0.0014)	(0.0023)
Non-profit church ownership x year	-0.0003	0.0001	0.00002	-0.0036
	(0.0021)	(0.0021)	(0.0018)	(0.0027)
Number of discharges Medicare (000s) x year	0.0001	0.0001	0.0002	0.0000
	(0.0004)	(0.0004)	(0.0003)	(0.0005)
Number of discharges Medicaid (000s) x year	0.0002	0.00004	0.0005	0.0001
	(0.0005)	(0.0005)	(0.0004)	(0.0006)
Residency/Mmbr Council Teaching Hosps x year	0.0036	0.0039	0.0032	0.0056
	(0.0018)**	(0.0018)**	(0.0015)**	(0.0025)**
Log population in 2000 census x year	-0.0009	-0.0007	-0.0011	-0.0017
	(0.0007)	(0.0007)	(0.0006)*	(0.0009)*
% Black in 2000 census x year	-0.0192	-0.0160	-0.0173	-0.0211
	(0.0046)**	(0.0049)**	(0.0041)**	(0.0075)**
% age 65+ in 2000 census x year	-0.0301	-0.0261	-0.0319	-0.0383
	(0.0189)	(0.0194)	(0.0167)*	(0.0248)
% age 25-64 in 2000 census x year	-0.0306	-0.0246	-0.0163	0.0177
	(0.0135)**	(0.0132)*	(0.0138)	(0.0230)
% university education in 2000 census x year	0.0343	0.0488	0.0565	0.0685
	(0.0157)**	(0.0156)**	(0.0134)**	(0.0216)**
Log median hh income in 2000 census x year	0.0109	0.0076	0.0075	-0.0033
	(0.0045)**	(0.0045)*	(0.0040)*	(0.0067)

Dependent variable is total operating costs per admit. Unit of observation is a hospital-year. Sample includes annual data from 1996 to 2009. Regressions include hospital-specific fixed effects, differenced out at means and year fixed effects. Robust standard errors, clustered by hospital, in parentheses. The controls are the same as those listed in Table 3. * significant at 10%; ** significant at 5%; *** significant at 1%

Appendix Table A.9: Baseline specification to help interpretation of instrumental variable results

	(1)	(2)	(3)	(4)
Technology	Basic EMR adoption	Advanced EMR adoption	Basic EMR adoption	Advanced EMR adoption
Adopted EMR at least 3 years earlier	-0.0127 (0.0060)**	-0.0091 (0.0080)	0.0052 (0.0082)	0.0134 (0.0118)
Adopted EMR at least 3 years earlier x IT-intensive county			-0.0366 (0.0118)***	-0.0425 (0.0156)***
Observations	23418	34407	23418	34407
# of hospitals	2228	3306	2228	3306
R-squared	0.58	0.56	0.58	0.56

Dependent variable is total operating costs per admit. Unit of observation is a hospital-year.

Sample includes annual data from 1996 to 2009. Regressions include hospital-specific fixed effects, differenced out at means. Robust standard errors, clustered by hospital, in parentheses. All regressions include the same set of controls as in Table 3 plus time trends for IT-intensive location (columns 3,4). * significant at 10%; ** significant at 5%; *** significant at 1%

Appendix Table A.10: First stage of Table 8 instrumental variables results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(3a)	(4a)	(7a)	(8a)
	First stage for EMR adoption						First stage for EMR adoption x IT-intensive county					
	All three instruments				Two instruments		All three instruments				Two instruments	
Technology	Basic EMR adoption	Advanced EMR adoption	Basic EMR adoption	Advanced EMR adoption	Basic EMR adoption	Advanced EMR adoption	Basic EMR adoption	Advanced EMR adoption	Basic EMR adoption	Advanced EMR adoption	Basic EMR adoption	Advanced EMR adoption
EMR adoption by competitors in other markets	0.1959 (0.0314)***	0.0942 (0.0472)**	0.1776 (0.0436)***	0.0551 (0.0507)	0.1981 (0.0313)***	0.0875 (0.0474)*	0.1802 (0.0435)***	0.0499 (0.0510)	0.00086 (0.0066)	-0.0052 (0.0120)	0.00004 (0.0066)	-0.0047 (0.0125)
EMR adoption by competitors in other markets x IT-intensive county			0.0350 (0.0603)	0.0898 (0.0963)			0.0339 (0.0603)	0.0857 (0.0970)	0.2024 (0.0428)***	0.1411 (0.0820)*	0.2057 (0.0427)***	0.1298 (0.0827)
Distance to nearest EMR vendor	-0.0014 (0.0006)**	0.0005 (0.0005)	-0.0036 (0.0013)***	0.0023 (0.0010)**	-0.0014 (0.0006)**	0.0004 (0.0005)	0.0036 (0.0013)***	0.0022 (0.0010)**	0.0004 (0.0002)	0.0008 (0.0002)***	0.0003 (0.0002)	0.0010 (0.0002)***
Distance to nearest EMR vendor x IT-intensive county			-0.0027 (0.0014)*	-0.0023 (0.0011)**			-0.0028 (0.0014)*	-0.0023 (0.0011)**	-0.00027 (0.00068)	-0.0012 (0.0006)**	-0.0003 (0.0007)	-0.0015 (0.0006)***
Percent in alliance adopting	-0.0303 (0.0299)	0.1746 (0.0350)***	-0.0311 (0.0400)	0.1089 (0.0437)*					0.008309 (0.0106)	-0.0530 (0.0125)***		
Percent in alliance adopting x IT-intensive county			0.0047 (0.0575)	0.1469 (0.0671)*					-0.0409 (0.0421)	0.3311 (0.0518)***		
Partial R-squared	0.006	0.005	0.007	0.006	0.006	0.001	0.006	0.002	0.006	0.012	0.006	0.002
F-statistic	15.78	9.85	8.63	6.22	23.23	2.00	12.67	2.17	4.49	11.60	6.41	6.83

Dependent variable is total operating costs per admit. Unit of observation is a hospital-year. Sample includes annual data from 1996 to 2009. Regressions include hospital-specific fixed effects, differenced out at means. Robust standard errors, clustered by hospital, in parentheses. All regressions include the same set of controls as in Table 3 plus time trends for IT-intensive location (columns 3a, 4a, 7a, 8a). * significant at 10%; ** significant at 5%; *** significant at 1%

Appendix Table A.11: Second stage for running the instruments separately (i.e. just-identified models)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Percent competitors adopt in related markets				Distance to nearest vendor				Percent members of alliance adopt			
Technology	Basic EMR adoption	Advanced EMR adoption	Basic EMR adoption	Advanced EMR adoption	Basic EMR adoption	Advanced EMR adoption	Basic EMR adoption	Advanced EMR adoption	Basic EMR adoption	Advanced EMR adoption	Basic EMR adoption	Advanced EMR adoption
Adopted EMR at least 3 years earlier	-0.1037 (0.1169)	0.3007 (0.5196)	0.0327 (0.1735)	0.6984 (1.0850)	0.1897 (0.2629)	1.2022 (1.5925)	0.5236 (0.3123)*	0.9436 (0.7253)	0.1198 (0.5019)	0.1016 (0.1808)	0.2348 (0.4803)	0.1739 (0.2583)
Adopted EMR at least 3 years earlier x IT- intensive county			-0.2382 (0.2364)	-0.6982 (1.2692)			-0.9678 (0.8224)	-0.2605 (1.0469)			-0.2769 (0.6898)	-0.1239 (0.2378)
Observations	23407	34385	23407	34385	23407	34385	23407	34385	23407	34385	23407	34385
# of hospitals	2217	3284	2217	3284	2217	3284	2217	3284	2217	3284	2217	3284
Hausman test (p-value)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
R-squared	0.57	0.52	0.57	0.47	0.54	0.29	0.38	0.29	0.56	0.55	0.56	0.55
1 st stage F-stat	40.51	3.44	20.20	1.76	6.06	0.73	4.88	2.60	2.45	24.11	1.33	13.58
1 st stage interaction F	N/A	N/A	11.82	1.33	N/A	N/A	1.12	12.90	N/A	N/A	1.19	27.72

Dependent variable is total operating costs per admit. Unit of observation is a hospital-year. Sample includes annual data from 1996 to 2009. Regressions include hospital-specific fixed effects, differenced out at means. Robust standard errors, clustered by hospital, in parentheses. All regressions include the same set of controls as in Table 3 plus time trends for IT-intensive location (columns 3,4,7,8,11,12). * significant at 10%; ** significant at 5%; *** significant at 1%