

Innovation Crisis in Public Theater? A Longitudinal Study of Theaters in North Rhine-Westphalia, 1995-2018

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Online Appendix

Supplementary Material

Supplementary Material

Table A1 Figures for municipal and regional (Länder) theaters in Germany

	1995/ 1996	2000/ 2001	2005/ 2006	2010/ 2011	2015/ 2016	2017/ 2018
Number of theaters	154	150	143	140	143	143
Number of venues	655	728	793	890	815	838
Number of seats (in thousands)	242	260	278	278	258	266
On-site performances	61,914	62,989	62,749	67,755	67,257	65,794
Full-price/day tickets (in thousands)	6,720	7,321	6,813	7,968	8,337	8,097
Subscriptions (in thousands)	4,727	4,392	3,885	3,423	3,205	3,131
On-site audience size (in thousands)	20,550	20,057	18,769	19,017	19,078	18,529
Real operating revenue	315,131	344,740	353,454	376,889	386,665	378,589
Funding from private institutions	7,615	11,462	16,307	23,769	26,858	27,080
Real subsidies (federal + state)	1,988,545	1,925,869	1,827,501	1,836,607	1,908,026	1,940,139
Total revenue	2,328,403	2,294,059	2,214,431	2,254,708	2,344,159	2,303,723

Source: DBV (1997-2019a); Financial data in thousands of euros, inflation-adjusted (base year: 1995)

Table A2 Number and proportion of new plays at NRW theaters, 1995-2018

Theater	Number of new plays	Share of new plays in all pieces	Rank number	Rank share
Düsseldorfer Schauspielhaus	140	0.152	1	5
Köln Bühnen der Stadt	128	0.201	2	1
Dortmund Theater	125	0.177	3	3
Bonn Theater der Bundesstadt	90	0.155	4	4
Bochum Schauspielhaus	90	0.088	5	16
Bielefeld Bühne und Orchester der Stadt	85	0.180	6	2
Oberhausen Theater	80	0.135	7	7
Essen Schauspiel	65	0.109	8	13
Münster Städtische Bühne	58	0.120	9	10
Aachen Stadttheater	53	0.127	10	8
Neuss Rheinisches Landestheater	35	0.092	11	15
Krefeld und Mönchengladbach Theater	32	0.079	12	18
Castrop-Rauxel Westfälisches Landestheater	30	0.057	13	19
Wuppertaler Bühnen	29	0.088	14	17
Hagen Theater	28	0.111	15	12
Detmold Landestheater	25	0.047	16	20
Moers Schlosstheater	25	0.102	17	14
Aachen Grenzlandtheater	21	0.117	18	11
Duisburg Theater	20	0.126	19	9
Dinslaken Landestheater Burghofbühne	18	0.045	20	21
Mülheim an der Ruhr Theater an der Ruhr	11	0.025	21	22
Gelsenkirchen Musiktheater im Revier	7	0.137	22	6

Source: DBV (1997-2019b).

Table A3 Changes in supply and demand per season

Season	Total number of visitors to new plays and innovations	Total number of visitors to plays (excluding new plays and innovations)	Total number of visitors	Total number of new plays and innovations	Total number of plays (excluding new plays and innovations)	Total number of plays
1995/1996	113,596	1,411,247	1,524,843	42	319	361
1996/1997	189,197	1,410,212	1,599,409	50	310	360
1997/1998	117,903	1,421,726	1,539,629	55	341	396
1998/1999	116,415	1,427,689	1,544,104	53	335	388
1999/2000	137,192	1,274,482	1,411,674	61	335	396
2000/2001	179,516	1,224,306	1,403,822	66	298	364
2001/2002	234,985	1,302,162	1,537,147	75	322	397
2002/2003	184,940	1,387,371	1,572,311	70	316	386
2003/2004	144,062	1,259,891	1,403,953	64	342	406
2004/2005	108,462	1,179,240	1,287,702	61	334	395
2005/2006	116,628	1,215,698	1,332,326	61	412	473

2006/2007	127,934	1,255,683	1,383,617	62	423	485
2007/2008	140,664	1,321,316	1,461,980	74	463	537
2008/2009	191,184	1,208,931	1,400,115	89	432	524
2009/2010	184,131	1,243,732	1,427,863	111	418	530
2010/2011	202,097	1,176,860	1,378,957	108	400	508
2011/2012	194,284	1,115,956	1,310,240	113	384	498
2012/2013	179,590	1,083,464	1,263,054	118	415	538
2013/2014	201,528	1,019,488	1,221,016	106	362	472
2014/2015	151,720	1,225,303	1,377,023	94	380	482
2015/2016	119,806	1,222,275	1,342,081	107	399	514
2016/2017	221,435	1,044,669	1,266,104	123	334	463
2017/2018	201,476	998,939	1,200,415	110	339	454

Source: DBV (1997-2019b).

Table A4 Correlation analysis

	DV1	Performances	Subsidies	Competition	Venues	Subscriptions	Plays	Private theaters
DV1	1.000							
Performances	0.499*	1.000						
Subsidies	0.472*	0.384*	1.000					
Competition	0.370*	0.606*	0.219*	1.000				
Venues	0.298*	0.084	0.569*	0.042	1.000			
Subscriptions	0.049	0.125*	0.524*	0.009	0.252*	1.000		
Plays	0.334*	0.742	0.335*	0.817*	0.175*	0.075	1.000	
Private theaters	0.389*	0.359*	0.703*	0.171*	0.261*	0.309	0.312*	1.000

Note: *p < 0.05.

Table A5 OLS regression: share of premieres or first performances in total plays (DV1)

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Number of plays	-0.002** (0.001)	-0.002*** (0.001)	-0.005*** (0.001)	-0.006*** (0.001)	-0.009*** (0.001)	-0.01*** (0.001)	-0.01*** (0.001)
Venues	-	0.01*** (0.002)	0.011*** (0.002)	0.006* (0.003)	0.008** (0.003)	0.007** (0.003)	0.011*** (0.002)
Performances (in hundreds)	-	-	0.032*** (0.004)	0.027*** (0.004)	0.027*** (0.004)	0.028*** (0.001)	0.029*** (0.004)
Subsidies (in million euros)	-	-	-	0.002** (0.001)	0.002*** (0.006)	0.003*** (0.001)	-
Competition	-	-	-	-	0.148*** (0.024)	0.144*** (0.024)	0.161*** (0.023)
Subscriptions (in ten thousands)	-	-	-	-	-	-0.001* (0.000)	-0.001 (0.000)
Number of private theaters	-	-	-	-	-	-	0.007*** (0.002)
N	454	454	454	453	453	435	435
Prop > F	0.001	0.000	0.000	0.000	0.000	0.000	0.000
(adj) R-squared	0.027	0.089	0.179	0.206	0.259	0.261	0.263
RMSE	0.106	0.102	0.097	0.096	0.093	0.093	0.093

Note: *p < 0.05, **p < 0.01, ***p < 0.001. Standard errors are given in parentheses.

Table A6 OLS regression of DV1 with 3-year moving averages

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Number of plays	0.115*** (0.011)	0.103*** (0.011)	0.006 (0.012)	0.008 (0.011)	-0.039* (0.018)	-0.047** (0.017)	-0.063*** (0.016)
Venues	-	0.241*** (0.035)	0.261*** (0.032)	0.133*** (0.037)	0.155*** (0.039)	0.151*** (0.036)	0.286*** (0.032)
Performances (in hundred)s	-	-	0.817*** (0.084)	0.669*** (0.087)	0.685*** (0.089)	0.698*** (0.091)	0.008*** (0.001)
Subsidies (in million euros)	-	-	-	0.055*** (0.011)	0.054*** (0.011)	0.087*** (0.011)	-
Competition	-	-	-	-	1.735*** (0.487)	1.677*** (0.453)	2.151*** (0.412)
Subscriptions (in ten thousands)	-	-	-	-	-	-0.025*** (0.003)	-0.016*** (0.003)
Number of private theaters	-	-	-	-	-	-	0.165*** (0.035)
N	418	418	418	418	415	402	405
Prop > F	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(adj) R-squared	0.254	0.337	0.46	0.497	0.514	0.551	0.528
RMSE	1.874	1.769	1.598	1.546	1.521	1.467	1.502

Note: *p < 0.05, **p < 0.01, ***p < 0.001. Standard errors are given in parentheses.

Table A7 OLS regression of DV1 with 5-year moving averages

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Number of plays	0.124*** (0.011)	0.112*** (0.01)	0.015 (0.011)	0.019 (0.01)	-0.021 (0.017)	-0.031* (0.016)	-0.04* (0.018)
Venues	-	0.248*** (0.034)	0.268*** (0.031)	0.128*** (0.035)	0.148*** (0.037)	0.142*** (0.033)	0.38*** (0.036)
Performances (in hundreds)	-	-	0.792*** (0.083)	0.632*** (0.089)	0.652*** (0.09)	0.66*** (0.092)	0.009*** (0.001)
Subsidies (in million euros)	-	-	-	0.057*** (0.01)	0.057*** (0.01)	0.092*** (0.011)	-
Competition	-	-	-	-	1.393** (0.469)	1.416** (0.43)	1.757*** (0.461)
Subscriptions (in ten thousands)	-	-	-	-	-	-0.026*** (0.003)	-0.006 (0.003)
Number of private theaters	-	-	-	-	-	-	0.114*** (0.023)
N	380	380	380	375	375	366	371
Prop > F	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(adj) R-squared	0.317	0.407	0.525	0.569	0.581	0.622	0.564
RMSE	1.717	1.601	1.435	1.373	1.356	1.29	1.382

Note: *p < 0.05, **p < 0.01, ***p < 0.001. Standard errors are given in parentheses.

Table A8 OLS regression of DV1 (exclusive Köln)

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Number of plays	0.086*** (0.012)	0.079*** (0.012)	-0.028* (0.014)	-0.027* (0.014)	-0.11*** (0.02)	-0.113*** (0.019)	-0.128*** (0.019)
Venues	-	0.179*** (0.039)	0.209*** (0.038)	0.131** (0.049)	0.178** (0.051)	0.163** (0.052)	0.254*** (0.044)
Performances (in hundreds)	-	-	0.946*** (0.105)	0.849*** (0.109)	0.877*** (0.107)	0.875*** (0.108)	0.888*** (0.115)
Subsidies (in million euros)	-	-	-	0.043** (0.016)	0.035* (0.016)	0.074*** (0.019)	-
Competition	-	-	-	-	3.325*** (0.596)	3.033*** (0.574)	3.432*** (0.554)
Subscriptions (in ten thousands)	-	-	-	-	-	-0.023*** (0.004)	-0.014*** (0.003)
Number of private theaters	-	-	-	-	-	-	0.244** (0.072)
N	431	431	431	430	430	412	412
Prop > F	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(adj) R-squared	0.129	0.168	0.321	0.333	0.383	0.404	0.403
RMSE	2.28	2.232	2.018	2.004	1.93	1.913	1.915

Note: *p < 0.05, **p < 0.01, ***p < 0.001. Standard errors are given in parentheses.

Table A9 OLS regression of DV1 (exclusive Dinslaken)

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Number of plays	0.083*** (0.012)	0.074*** (0.012)	-0.045** (0.014)	-0.043** (0.014)	-0.13*** (0.02)	-0.129*** (0.019)	-0.144*** (0.019)
Venues	-	0.21*** (0.047)	0.27*** (0.046)	0.148** (0.051)	0.188*** (0.052)	0.169** (0.05)	0.291*** (0.045)
Performances (in hundreds)	-	-	1.054*** (0.111)	0.905*** (0.112)	0.918*** (0.110)	0.902*** (0.109)	0.975*** (0.112)
Subsidies (in million euros)	-	-	-	0.058*** (0.014)	0.058*** (0.013)	0.089*** (0.015)	-
Competition	-	-	-	-	3.428*** (0.593)	3.242*** (0.571)	3.723*** (0.55)
Subscriptions (in ten thousands)	-	-	-	-	-	-0.024*** (0.004)	-0.014*** (0.003)
Number of private theaters	-	-	-	-	-	-	0.184*** (0.435)
N	431	431	431	430	430	430	430
Prop > F	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(adj) R-squared	0.108	0.152	0.315	0.35	0.402	0.434	0.491
RMSE	2.44	2.381	2.143	2.091	2.009	1.956	1.982

Note: *p < 0.05, **p < 0.01, ***p < 0.001. Standard errors are given in parentheses.

Table A10 Fixed-effects regression of DV1 with Driscoll-Kraay standard errors

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Number of plays	-0.029 (0.017)	-0.035 (0.018)	-0.076*** (0.017)	-0.076** (0.017)	-0.486*** (0.039)	-0.488*** (0.037)	-0.487*** (0.03)
Venues	-	0.178** (0.061)	0.217** (0.068)	0.207** (0.066)	0.203* (0.078)	0.19* (0.074)	0.216* (0.043)
Performances (in hundreds)	-	-	0.752*** (0.182)	0.773** (0.201)	0.672** (0.203)	0.717** (0.203)	0.677** (0.145)
Subsidies (in million euros)	-	-	-	0.041 (0.05)	0.055 (0.031)	0.089* (0.036)	-
Competition	-	-	-	-	23.114*** (2.383)	22.838*** (2.213)	22.719*** (1.449)
Subscriptions (in ten thousands)	-	-	-	-	-	-0.023*** (0.005)	-0.016** (0.006)
Number of private theaters	-	-	-	-	-	-	-0.024 (0.064)
N	454	454	454	453	453	435	435
Prop > F	0.103	0.015	0.000	0.000	0.000	0.000	0.000
Within R-squared	0.008	0.033	0.071	0.073	0.425	0.444	0.435

Note: *p < 0.05, **p < 0.01, ***p < 0.001. Standard errors are given in parentheses.

Table A11 OLS regression for premieres or first performances (DV1) and measurement of competition in km

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Number of plays	0.085*** (0.012)	0.074*** (0.012)	-0.038** (0.014)	-0.037** (0.013)	-0.116*** (0.019)	-0.120*** (0.019)	-0.137*** (0.019)
Venues	-	0.23*** (0.043)	0.255*** (0.04)	0.129** (0.047)	0.159** (0.048)	0.155** (0.048)	0.276*** (0.043)
Performances (in hundreds)	-	-	1.010*** (0.106)	0.858*** (0.107)	0.861*** (0.105)	0.883*** (0.107)	0.95*** (0.11)
Subsidies (in million euros)	-	-	-	0.058*** (0.014)	0.059*** (0.013)	0.089*** (0.015)	-
Competition	-	-	-	-	8.402*** (1.506)	7.84*** (1.453)	9.311*** (1.387)
Subscriptions (in ten thousands)	-	-	-	-	-	-0.024*** (0.004)	-0.014*** (0.003)
Number of private theaters	-	-	-	-	-	-	0.19*** (0.042)
N	454	454	454	453	453	435	435
Prop > F	0.000	0.000	0.000	0.000	0.000	0.000	0.000
(adj) R-squared	0.111	0.171	0.326	0.361	0.408	0.432	0.419
RMSE	2.412	2.332	2.105	2.053	1.978	1.953	1.975

Note: *p < 0.05, **p < 0.01, ***p < 0.001. Standard errors are given in parentheses.

Table A12 Poisson regression of DV2 with 3-year moving averages

Variable	(1)	(2)
Plays per year	-0.006* (0.003)	-0.007** (0.003)
Number of premieres or first performances (DV1)	-	0.319*** (0.063)
N	260	258
Prop > chi ²	0.029	0.000
LR chi ²	4.77	28.00
Pseudo R ²	0.018	0.107

Note: *p < 0.05, **p < 0.01, ***p < 0.001. Standard errors are given in parentheses.

Table A13 Poisson regression of DV2 with 5-year moving averages

Variable	(1)	(2)
Plays per year	-0.006* (0.003)	-0.008** (0.003)
Number of premieres or first performances (DV1)	-	0.296*** (0.064)
N	260	260
Prop > chi ²	0.027	0.000
LR chi ²	4.91	23.87
Pseudo R ²	0.02	0.095

Note: *p < 0.05, **p < 0.01, ***p < 0.001. Standard errors are given in parentheses.

Table A14 Negative binominal regression of DV2

Variable	(1)	(2)
Plays per year	-0.006* (0.003)	-0.006 (0.003)
Number of premieres or first performances (DV1)	-	0.343*** (0.05)
N	260	254
Prop > chi ²	0.029	0.000
LR chi ²	4.78	46.57
Pseudo R ²	0.016	0.158

Note: *p < 0.05, **p < 0.01, ***p < 0.001. Standard errors are given in parentheses.