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Table A1.

Input and output values used in DEA of regional court efficiency in years 2002-2021 (DMU02-DMU21)

DMU/YEAR	JUDGES	OUTLAYS	CASELOAD	CRIME	CIVIL	FAMILY	LABOUR	INSURANCE	COMMERCE	RESOLVED
DMU02	2253.0	1224.8	1378.3	297.1	247.5	87.6	28.7	278	93.5	1032.4
DMU03	2311.0	1401.7	1346.1	318.9	267.6	90.9	27.8	214.7	94	1013.9
DMU04	2370.0	1513.8	1447.1	331.5	299.1	104.7	38.3	211.1	90.2	1074.9
DMU05	2428.0	1614.3	1360.6	335.1	324	128.8	36.4	182.6	90	1096.9
DMU06	2487.0	1730.2	1295.8	344.3	302.3	114.5	30.3	176.6	43.7	1011.7
DMU07	2480.0	1822.0	1222.8	363.3	277	100.9	19.6	191	37.1	996.9
DMU08	2604.0	1843.0	1139.3	347.7	264.3	105.2	15.6	137.8	34.7	905.3
DMU09	2672.0	1838.0	1155.1	357.5	275.2	103.1	14.1	126	40.4	916.3
DMU10	2719.0	1921.8	1166.7	365.6	282.1	98.4	14.7	115.4	39.4	915.6
DMU11	2703.0	1893.0	1185.4	364.5	285.5	96.7	13.9	128.7	42.3	931.7
DMU12	2718.0	1866.7	1264.2	381.8	296.1	95.2	14.5	136.2	49.5	973.3
DMU13	2761.0	1903.5	1342.2	395.7	314.0	93.3	15.0	149.9	59.6	1027.6
DMU14	2791.0	1968.8	1344.3	382.7	322.7	92.6	16.1	138.5	57.4	1010.0
DMU15	2785.0	2033.8	1327.1	375.4	333.7	93.0	15.2	141.1	58.2	1016.6
DMU16	2761.0	2110.4	1304.0	352.6	341.6	92.5	13.9	127.5	63.0	991.0
DMU17	2657.0	2126.2	1304.6	366.7	339.5	90.2	12.1	108.3	66.9	983.7
DMU18	2520.0	2216.0	1329.6	361.7	331.8	88.9	11.3	96.1	65.7	955.5
DMU19	2538.0	2381.9	1400.0	365.5	333.3	89.1	11.0	108.4	69.8	977.1
DMU20	2547.0	2549.7	1344.7	344.3	291.5	73.8	8.4	94.8	68.1	880.9
DMU21	2684.0	2623.8	1464.3	376.5	327.8	85.0	8.9	106.8	71.1	976.1
Average rate of growth as a percentage	0.93	4.09	0.32	1.26	1.49	-0.16	-5.98	-4.91	-1.43	-0.29

Note: Judges – number of judges in a given year; *Outlays* – expenditure on regional courts, million PLN, constant 2015 prices; *Caseload* – number of cases to be handled in regional courts in a given year, in thousands. Outputs: *Crime*: number of criminal law cases handled, in thousands; *Civil*: number of civil law cases handled, in thousands; *Family*: number of family law cases handled, in thousands; *Labour* - number of labour law cases handled, in thousands; *Insurance* - number of insurance law cases handled, in thousands; *Commerce* - number of business law cases handled, in thousands; *Resolved* – number of all cases handled in regional courts, in thousands.

Source: Own work based on the data described in section 4

Table A2.
Pearson's linear correlation coefficients between the variables used in the DEA analysis

Variable	*JUDGES*	*OUTLAYS*	*CASELOAD*	*CRIME*	*CIVIL*	*FAMILY*	*LABOUR*	*INSURANCE*	*COMMERCE*
JUDGES	1.0000	0.5525	-0.3249	0.8640	0.4648	-0.1977	-0.6913	-0.7172	-0.6078
OUTLAYS		1.0000	0.1370	0.6020	0.5937	-0.5105	-0.8061	-0.8765	-0.2474
CASELOAD			1.0000	-0.1560	0.4411	-0.2755	0.2558	0.2112	0.8069
CRIME				1.0000	0.5322	-0.1474	-0.6554	-0.7005	-0.5613
CIVIL					1.0000	-0.0973	-0.2835	-0.5446	0.1250
FAMILY						1.0000	0.6497	0.3405	-0.1602
LABOUR							1.0000	0.8221	0.4873
INSURANCE								1.0000	0.4654
COMMERCE									1.0000

Source: Own work based on the data in table 1

Table A3.
Average disposition time (in months) in Polish regional courts system by subject of law

Subject of law	DMU/YEAR																				MIN	MAX
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		
CRIME	1.591	1.554	1.303	1.221	1.206	1.179	1.515	1.339	1.244	1.249	1.321	1.262	1.247	1.161	1.284	1.304	1.410	1.529	1.744	1.579	1.161	1.744
CIVIL	4.567	4.534	5.200	4.289	3.727	3.730	4.018	4.007	4.016	4.244	4.648	4.754	4.862	4.616	4.797	5.207	6.008	6.752	8.936	9.603	3.727	9.603
FAMILY	6.438	6.627	8.241	6.009	5.167	5.289	5.464	5.307	5.500	5.726	6.017	6.387	6.586	6.244	6.434	6.864	7.467	7.415	9.754	8.188	5.167	9.754
LABOUR	3.136	4.532	4.324	3.462	2.139	2.388	2.462	2.553	2.286	2.254	2.855	3.182	3.097	3.099	3.202	3.509	4.111	3.959	5.943	5.694	2.139	5.943
COMMERCE	3.427	3.294	2.594	1.560	2.197	1.973	2.248	2.287	2.893	3.142	4.391	3.839	4.503	4.694	4.822	4.734	5.778	6.662	7.234	6.794	1.560	7.234
INSURANCE	5.659	5.779	5.599	3.706	6.197	3.110	3.832	4.638	6.374	5.132	5.728	6.068	7.550	6.006	5.669	5.786	9.323	10.125	11.583	8.293	3.110	11.583

Source: Own work based on the data in table 1 and equation (22)

Table A4.
Fractions of workloads by subject of law in Polish regional courts system by subject of law

Subject of law	DMU/YEAR																				MIN	MAX
	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21		
CRIME	0.114	0.124	0.097	0.116	0.123	0.156	0.188	0.168	0.151	0.149	0.144	0.132	0.119	0.117	0.120	0.124	0.114	0.110	0.108	0.102	0.097	0.188
CIVIL	0.272	0.304	0.351	0.395	0.333	0.375	0.378	0.388	0.376	0.398	0.394	0.396	0.391	0.414	0.436	0.459	0.444	0.443	0.468	0.537	0.272	0.537
FAMILY	0.136	0.151	0.195	0.220	0.175	0.209	0.205	0.193	0.180	0.182	0.164	0.158	0.152	0.156	0.158	0.161	0.148	0.130	0.129	0.119	0.119	0.220
LABOUR	0.022	0.032	0.037	0.036	0.019	0.017	0.014	0.013	0.011	0.010	0.012	0.013	0.012	0.013	0.012	0.011	0.010	0.009	0.009	0.009	0.009	0.037
COMMERCE	0.077	0.078	0.053	0.040	0.028	0.027	0.028	0.033	0.038	0.044	0.062	0.061	0.064	0.073	0.081	0.082	0.085	0.092	0.088	0.082	0.027	0.092
INSURANCE	0.379	0.311	0.267	0.192	0.323	0.216	0.188	0.206	0.244	0.217	0.223	0.241	0.261	0.228	0.192	0.163	0.200	0.216	0.197	0.151	0.151	0.379

Source: Own work based on the data in table 1 and equation (23)

Table A5.
Efficiency scores obtained by classical DEA

DMU/YEAR	EFFICIENCY SCORES					
	1 input: Judges	1 input: Outlays	2 inputs: Judges & Outlays	2 inputs: Judges & Caseload	2 inputs: Outlays & Caseload	3 inputs
DMU02	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
DMU03	1.0000	0.9448	1.0000	1.0000	1.0000	1.0000
DMU04	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
DMU05	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
DMU06	0.9780	0.8786	0.9780	1.0000	1.0000	1.0000
DMU07	1.0000	0.8296	1.0000	1.0000	1.0000	1.0000
DMU08	0.9133	0.7891	0.9231	1.0000	1.0000	1.0000
DMU09	0.9153	0.8019	0.9331	1.0000	1.0000	1.0000
DMU10	0.9189	0.7843	0.9296	1.0000	1.0000	1.0000
DMU11	0.9230	0.7938	0.9351	1.0000	1.0000	1.0000
DMU12	0.9640	0.8432	0.9801	1.0000	1.0000	1.0000
DMU13	0.9876	0.8571	0.9990	1.0000	1.0000	1.0000
DMU14	0.9451	0.8111	0.9584	0.9798	0.9905	0.9905
DMU15	0.9375	0.8119	0.9498	0.9984	1.0000	1.0000
DMU16	0.9271	0.8010	0.9271	1.0000	1.0000	1.0000
DMU17	0.9681	0.7901	0.9729	1.0000	1.0000	1.0000
DMU18	1.0000	0.7410	1.0000	1.0000	0.9669	1.0000
DMU19	1.0000	0.6924	1.0000	1.0000	0.9418	1.0000
DMU20	0.9411	0.5658	0.9411	0.9507	0.9338	0.9507
DMU21	0.9738	0.6183	0.9738	0.9751	0.9246	0.9751

Source: Own computations using data from Table 1 and *pydea* software (https://pypi.org/project/pyDEA)

Table A6.
Efficiency scores and rescaled efficiency scores obtained by super-efficiency DEA

DMU/YEAR	SE-DEA EFFICIENCY SCORES											
	1 input: Judges		1 input: Outlays		2 inputs: Judges & Outlays		2 inputs: Judges & Caseload		2 inputs: Outlays & Caseload		3 inputs	
	Scores	Rescaled	Scores	Rescaled	Scores	Rescaled	Scores	Rescaled	Scores	Rescaled	Scores	Rescaled
DMU02	1.328	1.000	1.482	1.000	1.482	1.000	1.328	1.000	1.482	1.000	1.482	1.000
DMU03	1.018	0.767	0.945	0.638	1.018	0.687	1.040	0.783	1.040	0.702	1.040	0.702
DMU04	1.098	0.827	1.080	0.729	1.114	0.752	1.098	0.827	1.105	0.745	1.114	0.752
DMU05	1.184	0.892	1.116	0.753	1.184	0.799	1.223	0.921	1.222	0.825	1.223	0.825
DMU06	0.978	0.736	0.879	0.593	0.978	0.660	1.009	0.760	1.009	0.681	1.009	0.681
DMU07	1.039	0.783	0.830	0.560	1.039	0.701	1.086	0.817	1.071	0.723	1.086	0.733
DMU08	0.913	0.688	0.789	0.532	0.923	0.623	1.025	0.771	1.025	0.691	1.025	0.691
DMU09	0.915	0.689	0.802	0.541	0.933	0.630	1.012	0.762	1.015	0.685	1.015	0.685
DMU10	0.919	0.692	0.784	0.529	0.930	0.627	1.015	0.764	1.015	0.685	1.015	0.685
DMU11	0.923	0.695	0.794	0.536	0.935	0.631	1.002	0.755	1.003	0.677	1.003	0.677
DMU12	0.964	0.726	0.843	0.569	0.980	0.661	1.001	0.754	1.007	0.680	1.007	0.680
DMU13	0.988	0.744	0.857	0.578	0.999	0.674	1.017	0.766	1.010	0.682	1.018	0.687
DMU14	0.945	0.712	0.811	0.547	0.958	0.647	0.980	0.738	0.990	0.668	0.990	0.668
DMU15	0.938	0.706	0.812	0.548	0.950	0.641	0.998	0.752	1.007	0.679	1.007	0.679
DMU16	0.927	0.698	0.801	0.541	0.927	0.626	1.025	0.772	1.025	0.692	1.025	0.692
DMU17	0.968	0.729	0.790	0.533	0.973	0.657	1.031	0.777	1.030	0.695	1.031	0.696
DMU18	1.001	0.754	0.741	0.500	1.004	0.678	1.014	0.763	0.967	0.652	1.014	0.684
DMU19	1.006	0.757	0.692	0.467	1.006	0.679	1.006	0.757	0.942	0.636	1.006	0.679
DMU20	0.941	0.709	0.566	0.382	0.941	0.635	0.951	0.716	0.934	0.630	0.951	0.642
DMU21	0.974	0.733	0.618	0.417	0.974	0.657	0.975	0.734	0.925	0.624	0.975	0.658

Source: Own computations using data from Table 1 and *pydea* software (https://pypi.org/project/pyDEA)

Table A7.
Efficiency scores and rescaled efficiency scores along with and absolute weights obtained in the super-efficiency DEA with three inputs

DMU/YEAR	Efficiency Scores	Rescaled Scores	ABSOLUTE WEIGHTS								
			INPUTS			OUTPUTS					
			CASELOAD	*JUDGES*	*OUTLAYS*	*CIVIL*	*INSURANCE*	*COMMERCE*	*LABOUR*	*CRIME*	*FAMILY*
DMU02	1.482	1.000	0	0	0.000551	0	0.0035971	0	0	0	0
DMU03	1.040	0.702	0.0007145	0	0	0	0	0.0089658	0	0.000493	0
DMU04	1.114	0.752	0	6.878E-05	0.0004853	0	0	0	0.0261097	0	0
DMU05	1.223	0.825	0.0005348	3.702E-05	0	0	0	0.0028618	0	0	0.0057643
DMU06	1.009	0.681	0.0007647	0	0	0	2.658E-07	0	0.0097125	0.0020496	0
DMU07	1.086	0.733	0.0003709	0.0001886	0	0	0.0009776	0	0	0.0020741	0.0005486
DMU08	1.025	0.691	0.0008567	0	0	0	0.0002083	0	0	0.0006803	0.0069842
DMU09	1.015	0.685	0.000559	0	0.0001845	0	0	0.0011263	0	0.0021101	0.0019413
DMU10	1.015	0.685	0.0008443	0	0	0.001389	0	0	0.0061628	0.0014157	0
DMU11	1.003	0.677	0.0008048	0	2.291E-05	0.0016149	0.0007395	0.0009851	0	0.0011032	0
DMU12	1.007	0.680	0.0004573	0	0.0002221	0	0	0	0	0.0026193	0
DMU13	1.018	0.687	0.0002737	0.0002108	1.749E-05	3.991E-05	0	0.0016031	0	0.0022538	0
DMU14	0.990	0.668	0.0005256	0	0.0001539	0.0017508	0	0	0.000692	0.0011077	0
DMU15	1.007	0.679	0.0005578	0	0.0001244	0.0018581	0.000328	0	0	0.0008889	0
DMU16	1.025	0.692	0.0007481	0	0	0.0025668	0.0009664	0	0	0	0
DMU17	1.031	0.696	0.0006865	2.786E-05	0	0.0009199	0	0.0026027	0	0.0014007	0
DMU18	1.014	0.684	0.0001574	0.0002769	3.578E-05	0.0010679	0	0	0	0.0017849	0
DMU19	1.006	0.679	0	0.0003917	0	0	0	0.000793	0	0.0025846	0
DMU20	0.951	0.642	0.0002007	0.000307	0	0	0	0.0017296	0	0.0025623	0
DMU21	0.975	0.658	0.0001283	0.0003121	0	0	0	0.0013931	0	0.0023926	0

Source: Own computations using data from table 1 and *pydea* software (https://pypi.org/project/pyDEA)

Table A8.

Efficiency scores and rescaled efficiency scores along with virtual weights obtained in the super-efficiency DEA variant with minority/majority relationships imposed on output and input weights as well as with constraints put on virtual output weights

DMU/YEAR	Efficiency Scores	Rescaled Scores	VIRTUAL WEIGHTS								
			INPUTS			OUTPUTS					
			CASELOAD	*JUDGES*	*OUTLAYS*	*CIVIL*	*INSURANCE*	*COMMERCE*	*LABOUR*	*CRIME*	*FAMILY*
DMU02	1.103	1.000	0.2732048	0.5020451	0.1317597	0.272	0.379	0.092	0.0121565	0.1259435	0.119
DMU03	0.944	0.856	0.2073674	0.6284612	0.2240306	0.272	0.2182302	0.0894636	0.0163888	0.188	0.2159174
DMU04	0.968	0.878	0.2085492	0.6001818	0.2242788	0.2772306	0.1956649	0.0836048	0.0354996	0.188	0.22
DMU05	0.986	0.894	0.2151926	0.5949653	0.2040448	0.3030142	0.1707728	0.0841706	0.0340423	0.188	0.22
DMU06	0.887	0.804	0.2515084	0.6645609	0.2119085	0.3448323	0.2014469	0.027	0.0187280	0.188	0.22
DMU07	0.860	0.780	0.2730588	0.6832278	0.2061677	0.3284092	0.2264482	0.027	0.0101426	0.188	0.22
DMU08	0.754	0.684	0.3090134	0.8026033	0.2149065	0.3654563	0.1905417	0.027	0.009	0.188	0.22
DMU09	0.746	0.676	0.3061801	0.8192043	0.2146499	0.3819899	0.1746162	0.027	0.009	0.188	0.22
DMU10	0.721	0.654	0.3237692	0.6420507	0.2211259	0.3945851	0.1641418	0.027	0.009	0.188	0.22
DMU11	0.743	0.674	0.3109741	0.8162637	0.2190895	0.3810009	0.1726965	0.0272945	0.009	0.188	0.22
DMU12	0.762	0.691	0.2957796	0.791676	0.2253617	0.3782164	0.174017	0.0307666	0.009	0.188	0.22
DMU13	0.783	0.710	0.2864249	0.7637147	0.227217	0.3704962	0.1768292	0.0356746	0.009	0.188	0.22
DMU14	0.765	0.694	0.2988743	0.7798569	0.2295804	0.3854926	0.1654466	0.0321208	0.009	0.188	0.22
DMU15	0.773	0.701	0.3044632	0.7663988	0.223503	0.3855509	0.1630901	0.034359	0.009	0.188	0.22
DMU16	0.757	0.687	0.3221157	0.7746775	0.2239297	0.4045751	0.151	0.0408988	0.009	0.188	0.22065411
DMU17	0.741	0.672	0.3384109	0.7773813	0.2336046	0.4732794	0.151	0.0495674	0.009	0.188	0.1291531
DMU18	0.712	0.645	0.3731972	0.7801371	0.2519074	0.5214374	0.151	0.0524538	0.009	0.1264006	0.1397082
DMU19	0.721	0.654	0.383363	0.7508852	0.2534989	0.4643731	0.151	0.0569973	0.009	0.188	0.1306296
DMU20	0.624	0.566	0.4674259	0.8583272	0.2773952	0.4643321	0.151	0.0733029	0.009	0.183365	0.119
DMU21	0.661	0.600	0.4309174	0.8103115	0.2705516	0.4605702	0.151	0.0719828	0.009	0.188	0.119447

Source: Own computations using data from table 1 and *pydea* software (https://pypi.org/project/pyDEA)

Table A9.
Outcomes of statistical analysis with respect to efficiency scores generated by SE-DEA and constrained SE-DEA with three inputs

Test / Measure	Test for two means			Test for two variances			Spearman's rank test			Pearson correlation coefficient		
Sample range	2002-2021	2002-2011	2012-2021	2002-2021	2002-2011	2012-2021	2002-2021	2002-2011	2012-2021	2002-2021	2002-2011	2012-2021
Null hypothesis	Difference of means = 0			Population variances are equal			No non-Linear correlation			No linear correlation		
Test value / Measure value	-0.5397	-0.959	0.925599	1.9277	1.33809	8.16634	rho = 0.690225	rho = 0.8330	rho = 0.41818	r = 0.8347	r =0.8191	r =0.7749
***p*-value (two-tailed test) / critical value (for 5% s.l.)**	p = 0.5926	p = 0.3504	p = 0.3669	p = 0.1617	p = 0.6714	p = 0.004474	p = 0.0026	p = 0.0127	p = 0.2096	cv = 0.4438	cv=0.6319	cv=0.6319
Test conclusion	Non-rejection	Non-rejection	Non-rejection	Non-rejection	Non-rejection	Rejection	Rejection	Rejection	Non-rejection	Rejection	Rejection	Rejection

Source: Own computations