

Equality of Opportunity and Efficiency in Secondary Education before and after Covid-19 Pandemic

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Supplementary Material

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Point estimates of inequality of opportunity

Table 1a Math 2018

country_code	country_name	n_obs	best_alpha	cv_mse	iop_share	best_alpha_ctree	cv_mse_ctree	iop_share_ctree
40	Austria	6802	1	6579.7301965258	0.249559274829565	0.05	7156.42840657243	0.273523678034144
56	Belgium	8475	1	6332.89464401613	0.287318431697523	0.05	6687.18566063339	0.302024391070114
152	Chile	7621	1	5537.73168955974	0.209905287565205	1	5852.46732130463	0.211208963522236
208	Denmark	7657	1	5623.71385802387	0.181947708384025	0.01	5871.98114859515	0.188559495923821
233	Estonia	5316	1	5478.98281145371	0.165687833846483	0.05	5764.99718846173	0.180723778919231
246	Finland	5649	1	5633.20892312288	0.178013442886804	0.01	5860.48718040267	0.202892882737008
276	Germany	5451	1	6428.98775337687	0.262262571282001	0.01	6839.94210389793	0.284351032112624
300	Greece	6403	1	6250.41247338444	0.185355328675334	0.01	6659.47425078354	0.199007873471869
348	Hungary	5132	1	5415.39668917228	0.305233770732762	0.01	5739.08605705816	0.347629155790661
380	Italy	11785	1	7100.38711458118	0.187780234780631	0.05	7524.45258131694	0.188666646584696
392	Japan	6109	1	6094.68894943828	0.164045495820547	0.01	6475.49859073764	0.186477384383193
410	Korea	6650	1	8224.23502289546	0.156735228169263	1	8704.33591739754	0.180961464587707
428	Latvia	5303	1	5384.74444988018	0.156761199346868	0.05	5640.82356092107	0.186197588587986
440	Lithuania	6885	1	6697.20092107078	0.182731162866927	0.05	7073.23696712358	0.198068396662229
554	New Zealand	6173	1	6789.43484611731	0.193682435737466	0.01	7171.56598390683	0.204214257083753
578	Norway	5813	1	6832.4965677679	0.168947229772222	0.01	7103.54755109409	0.199463222184961
616	Poland	5625	1	6638.52935730786	0.175340535214809	0.01	6948.24042015276	0.209811696767223
620	Portugal	5932	1	6904.88153360742	0.224352995409284	0.05	7509.7528810541	0.249948609468999
703	Slovak Republic	5965	1	6701.31414854503	0.275862263211766	0.05	7291.31188479207	0.278315794662417
724	Spain	35943	1	6245.5073428738	0.197214459393732	0.01	6509.86123297823	0.181000354903921
752	Sweden	5504	1	6122.48735289354	0.246969166393193	0.01	6556.49865668664	0.27776560946598
756	Switzerland	5822	1	6566.5361270981	0.248384935310378	1	7102.35623459444	0.258525790135543
792	Turkey	6890	1	6038.82974378885	0.201380783522386	1	6531.63426398549	0.210662836415439
826	United Kingdom	13818	1	7044.58561008303	0.18912065662103	0.01	7420.67364566361	0.191030580627528

Table 1b Math 2022

country_code	country_name	n_obs	best_alpha	cv_mse	iop_share	best_alpha_ctree	cv_mse_ctree	iop_share_ctree
40	Austria	6151	1	5873.12099126014	0.296091438973013	0.01	6403.11707340793	0.317576217622705
56	Belgium	8286	1	5974.01043855168	0.33686209812959	1	6500.84416712372	0.341452520522636
152	Chile	6488	1	4366.16801165589	0.224100356856207	0.05	4745.13343235547	0.222634072499909
208	Denmark	6200	1	5116.48758849941	0.220771867611731	0.01	5485.30185439477	0.226954527559572
233	Estonia	6392	1	5680.10941390282	0.203524625940048	1	6139.36102464116	0.214423983938403
246	Finland	10239	1	6046.90109230169	0.236072906586299	0.01	6319.08591177112	0.243158197461027
276	Germany	6116	1	5931.4258752921	0.313935524221703	0.01	6619.58749845846	0.322898368330797
300	Greece	6403	1	5269.5589081477	0.215509019735857	0.05	5764.06463747687	0.219187831693577
348	Hungary	6198	1	5416.82708907166	0.341013975869938	1	5966.57272361938	0.371813756145924
380	Italy	10552	1	6137.15281578145	0.239700961448857	0.01	6562.4155439666	0.230082202684681
392	Japan	5760	1	7117.90770207171	0.167167629158586	0.01	7600.58382901522	0.19002601032144
410	Korea	6453	1	9258.36227026409	0.162555126026507	1	9667.54785467507	0.18485223186606
428	Latvia	5373	1	5242.25421235678	0.181621769696708	0.05	5446.38729031868	0.195035708299217
440	Lithuania	7257	1	5595.05620046646	0.234936863680663	0.05	5919.35750448302	0.250604039081503
554	New Zealand	4682	1	6998.76231702194	0.260496025749666	0.01	7640.25037771869	0.29587705678558
578	Norway	6611	1	7015.75824461888	0.192602335980756	1	7385.89905134812	0.212943613947895
616	Poland	6011	1	5941.58165823701	0.242577636587047	0.05	6364.18705352936	0.277926346106233
620	Portugal	6793	1	5721.74185004472	0.270548547868808	0.05	6143.81313428736	0.296001512280349
703	Slovak Republic	5824	1	5898.22343599427	0.391158317784107	0.05	6424.6353986191	0.413594199450398
724	Spain	30800	1	5579.40148377228	0.252683122356395	0.05	6013.50069874364	0.228315149222616
752	Sweden	6072	1	6438.0604066729	0.268447334488151	1	6883.85124387433	0.280314438836588
756	Switzerland	6829	1	6229.7652870041	0.304703008958003	0.05	6778.85642715514	0.320065812909564
792	Türkiye	7250	1	5907.14227983064	0.238169549142683	1	6380.51954231487	0.256070180888909
826	United Kingdom	12972	1	7220.79232238443	0.227526959350158	1	7905.81854666628	0.205830094655469

Table 2a Reading 2018

country_code	country_name	n_obs	best_alpha	cv_mse	iop_share	best_alpha_ctree	cv_mse_ctree	iop_share_ctree
40	Austria	6802	1	7160.30138883957	0.261037082325029	0.01	7742.26341248267	0.284481124543305
56	Belgium	8475	1	7454.76167379837	0.270262916247425	0.01	7907.14973758546	0.281512386214312
152	Chile	7621	1	6713.7132632633	0.199787762500544	1	7113.0265701077	0.200710465606148
208	Denmark	7657	1	6892.2805982839	0.18794891055193	1	7250.17049421091	0.199085677889381
233	Estonia	5316	1	6928.66752256822	0.179512778868238	0.05	7439.63106304169	0.180973622219685
246	Finland	5649	1	7383.12613334625	0.23564514807696	0.05	7870.07994388874	0.26547105914779
276	Germany	5451	1	7857.49296092883	0.279540058798758	0.01	8438.01008458777	0.310061666699707
300	Greece	6403	1	7361.39673965462	0.215754488822106	0.05	7797.51288214505	0.230772049704576
348	Hungary	5132	1	6425.19860736462	0.292214347441019	1	6795.84067199023	0.333162181371458
380	Italy	11785	1	7389.26561577986	0.209103469349761	1	8150.01082803446	0.205541167576802
392	Japan	6109	1	7709.01761475644	0.163567289735018	0.05	8008.3722246653	0.192881885297898
410	Korea	6650	1	8848.97459901732	0.136217084530378	0.05	9355.68702949664	0.159516126143966
428	Latvia	5303	1	6370.25210134178	0.18187224355796	0.05	6757.11780508976	0.204453918247707
440	Lithuania	6885	1	6730.75025804951	0.211888182037441	0.01	7232.28425653201	0.228348491221459
554	New Zealand	6173	1	8278.31368383481	0.232060814338091	0.05	8809.9849808098	0.244876455274629
578	Norway	5813	1	8798.5074061774	0.192590326991033	0.05	9319.27131964534	0.222274010045636
616	Poland	5625	1	7514.46085696045	0.184799558526969	0.01	7930.18537893828	0.225477059235429
620	Portugal	5932	1	7084.74262330999	0.217139500957002	1	7583.81395015601	0.238930762067776
703	Slovak Republic	5965	1	6800.17145140882	0.293063745106934	1	7399.5968217798	0.3048021174312
724	Spain	35943	1	6979.13935841468	0.183137845149446	1	7298.60907789111	0.177603229408855
752	Sweden	5504	1	8288.09552774444	0.255798033770997	0.01	8889.13541160945	0.288517682015727
756	Switzerland	5822	1	7400.23681023063	0.283285668968269	0.05	8167.68821017463	0.299125069845384
792	Turkey	6890	1	5814.51534744469	0.217918229724046	1	6404.40341846583	0.225660989069939
826	United Kingdom	13818	1	7997.12246110036	0.200878734086294	0.01	8592.53920708905	0.198072084923461

Table 2b Reading 2022

country_code	country_name	n_obs	best_alpha	cv_mse	iop_share	best_alpha_ctree	cv_mse_ctree	iop_share_ctree
40	Austria	6151	1	6982.77579373878	0.319213824079507	1	7560.10275713187	0.345742800084415
56	Belgium	8286	1	7507.80987661993	0.313664817293444	0.05	8024.01930107856	0.324334643066431
152	Chile	6488	1	7045.008312199	0.196353452023038	0.05	7486.06801566767	0.206088001439798
208	Denmark	6200	1	6398.16638209104	0.226099532097532	1	6839.81729953437	0.241967233041413
233	Estonia	6392	1	6701.06358676691	0.193104920676103	0.05	7193.76360136213	0.192020591964082
246	Finland	10239	1	7560.86306692367	0.274940395394396	0.01	8152.99304711845	0.273759604549037
276	Germany	6116	1	7439.74059387507	0.316082383266704	0.05	8231.4490396097	0.330626440914809
300	Greece	6403	1	6569.17519544577	0.228835310879099	0.01	7222.10730407918	0.242092600251567
348	Hungary	6198	1	6592.45163563321	0.331097535328269	0.05	7060.68501786583	0.37201536365823
380	Italy	10552	1	6879.33181099958	0.223479175326927	1	7326.56275340192	0.218011043868383
392	Japan	5760	1	7748.75201858703	0.147152932503939	0.01	8210.99838070446	0.171368935295866
410	Korea	6453	1	9156.73699756508	0.149353074796767	1	9893.96515545067	0.19328589800259
428	Latvia	5373	1	6229.33059520341	0.211169316956628	0.05	6700.6799064011	0.223533835051364
440	Lithuania	7257	1	6553.12640459288	0.238243825168952	0.01	7054.06475831579	0.252561132567016
554	New Zealand	4682	1	8737.7387759628	0.235218367174094	1	9415.87575313322	0.266574846349108
578	Norway	6611	1	9727.58846600133	0.210013154929457	0.01	10404.7532910923	0.227167264378653
616	Poland	6011	1	7783.97861334065	0.238948128123038	1	8368.5922887808	0.273844822009975
620	Portugal	6793	1	6756.47302823194	0.224897026651528	0.05	7250.34362790665	0.252702496126053
703	Slovak Republic	5824	1	6866.81973247048	0.33883837915847	1	7531.92565735123	0.363439448985087
724	Spain	30800	1	7381.71479999203	0.230126675025956	0.05	7923.06934973306	0.205173925509037
752	Sweden	6072	1	8145.19490947719	0.308948198640469	1	9041.67704264148	0.32399986113904
756	Switzerland	6829	1	7319.10743069546	0.310935962234439	0.05	8080.24592871197	0.324340663121671
792	Türkiye	7250	1	5591.02808303765	0.233796750525457	0.05	6079.46873949774	0.236533205932391
826	United Kingdom	12972	1	8688.92693899202	0.23009256493023	0.01	9450.69455246075	0.22076075651889

Table 3a Science 2018

country_code	country_name	n_obs	best_alpha	cv_mse	iop_share	best_alpha_ctree	cv_mse_ctree	iop_share_ctree
40	Austria	6802	1	6637.91642989571	0.259970412816957	0.05	7045.2712412281	0.284261574105161
56	Belgium	8475	1	6713.99599495725	0.290623246122553	0.01	7104.98997499026	0.29998329995047
152	Chile	7621	1	5280.0272313237	0.212220209419091	0.01	5550.18440681817	0.216453988793698
208	Denmark	7657	1	6866.1605555455	0.18249885096921	1	7152.48198283095	0.194229457998053
233	Estonia	5316	1	6475.32299486775	0.169441610392225	0.05	6956.8083107843	0.173459897800634
246	Finland	5649	1	7348.03924429685	0.186799009777222	0.05	7650.08852494844	0.210802086608205
276	Germany	5451	1	7332.40593542339	0.281622595287515	0.01	7888.7016679504	0.309799064054222
300	Greece	6403	1	6078.6321322692	0.1787239080885	1	6387.74846395078	0.190911568807152
348	Hungary	5132	1	6038.93788738878	0.295852443145653	1	6423.83727448204	0.337022199276415
380	Italy	11785	1	6660.44705191222	0.185203400497879	0.01	7036.24303891688	0.180983075492368
392	Japan	6109	1	7039.68417402388	0.156910366722646	0.01	7408.70869415315	0.182779764303818
410	Korea	6650	1	8232.95989251502	0.141231956804796	1	8667.52613543625	0.171121413301583
428	Latvia	5303	1	5818.89801471981	0.156023013191867	0.01	6009.77779568175	0.181057936465232
440	Lithuania	6885	1	6437.39458166273	0.186565444055594	0.05	6746.59779873543	0.19673136795125
554	New Zealand	6173	1	8033.06915908309	0.219658805921819	1	8391.93729621252	0.230305431925817
578	Norway	5813	1	7928.15605760283	0.169193428255894	1	8294.63110866837	0.191223975089195
616	Poland	5625	1	6852.48400421708	0.178526141769184	0.01	7190.83098190482	0.217697952110082
620	Portugal	5932	1	6295.09898169826	0.217285833813179	0.01	6828.29304184256	0.243958498457345
703	Slovak Republic	5965	1	6229.17946930611	0.281246823067158	0.05	6657.7262256353	0.295654439103683
724	Spain	35943	1	6686.79480664869	0.173604538488754	1	6896.9588452413	0.163109373093268
752	Sweden	5504	1	7148.49358477779	0.244876796496015	0.01	7609.60508075754	0.275231786168444
756	Switzerland	5822	1	6603.98146408336	0.275341731692114	0.01	7009.22408435746	0.29421663894517
792	Turkey	6890	1	5353.7086934295	0.207414758315095	0.05	5898.44572805859	0.226924037263708
826	United Kingdom	13818	1	7826.4588435177	0.198669490300662	1	8190.92562835701	0.196252714066678

Table 3b Science 2022

country_code	country_name	n_obs	best_alpha	cv_mse	iop_share	best_alpha_ctree	cv_mse_ctree	iop_share_ctree
40	Austria	6151	1	6490.93310054863	0.337192152961114	1	7139.52335537751	0.365206492059188
56	Belgium	8286	1	6618.24054802228	0.335482521571281	0.01	7137.6062709305	0.345568457075137
152	Chile	6488	1	6615.06591076906	0.219637862891833	0.05	7166.47025787734	0.22758684792779
208	Denmark	6200	1	6908.88435997098	0.223780184026713	0.01	7315.87004118074	0.234782836523535
233	Estonia	6392	1	6239.86576700366	0.188841754964132	0.01	6614.44659917181	0.195509534069791
246	Finland	10239	1	8571.75367101914	0.236235677242528	1	8894.84945289252	0.247704846232937
276	Germany	6116	1	7280.49122183384	0.32724498384168	0.05	8073.33882124736	0.340164757068105
300	Greece	6403	1	5969.18827783699	0.242718203217152	0.01	6635.86300749952	0.261169575496342
348	Hungary	6198	1	5761.61487051844	0.346310507582308	1	6156.5528080916	0.382942471353792
380	Italy	10552	1	6724.2222231904	0.231220095926499	1	7195.58517378031	0.230490590627707
392	Japan	5760	1	7080.06901254794	0.146427589973038	0.05	7482.86144009744	0.174640133283992
410	Korea	6453	1	9697.0622849594	0.138600748797347	1	10208.981335819	0.170775212656718
428	Latvia	5373	1	5845.42506658473	0.19194598513585	1	6191.93536391069	0.213013617715964
440	Lithuania	7257	1	6270.08372663428	0.239923158355976	0.01	6630.86993753189	0.255922411141829
554	New Zealand	4682	1	8513.87869562722	0.255097779324305	0.05	9078.8742366742	0.290449825059998
578	Norway	6611	1	8890.41424158592	0.200969395039396	0.01	9257.25509454396	0.222848144806236
616	Poland	6011	1	6773.6663338362	0.236336530557866	0.01	7291.78047421337	0.270195000242135
620	Portugal	6793	1	6337.77625198504	0.231355793057917	0.01	6652.30216478782	0.26298287532316
703	Slovak Republic	5824	1	6250.6407517963	0.389684310817972	0.01	6859.5452108578	0.414634345928937
724	Spain	30800	1	6596.63952523078	0.219690977641592	0.01	6965.56162491779	0.19577337067467
752	Sweden	6072	1	7813.78420441748	0.29902568216159	0.01	8465.46684251983	0.314107668371607
756	Switzerland	6829	1	6592.78784798948	0.307022468661742	1	7169.44307646607	0.320583540338392
792	Türkiye	7250	1	5966.42160614153	0.227259405215235	0.01	6400.21442222719	0.24100326060318
826	United Kingdom	12972	1	8388.43145446382	0.227215219494582	0.05	9110.55004784488	0.215574707237876