

Supplementary online resource for Decentralization and Inequalities in Asia

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Table 1: Summary statistics

Variables	Mean	Std.Dev.	Min.	Max.	Obs.
CV	0.55	0.28	0.141	1.881	391
WCV	0.593	0.337	0.116	1.966	391
GINI	37.293	5.266	26.8	49.1	152
Exp. dec.	0.301	0.336	0	1.821	347
Rev. dec.	0.175	0.204	0	0.949	341
Tax dec.	0.158	0.186	0	0.657	318
VFIB	0.262	0.337	-0.759	0.969	330
Federal	0.189	0.392	0	1	391
Sub-national tiers	4.066	0.723	3	5	391
Autonomy	0.176	0.382	0	1	391
Residual autonomy	0.123	0.329	0	1	391
Autonomy/residual	0.299	0.568	0	2	391
Bottom tier elections	0.34	0.474	0	1	391
Second tier elections	0.182	0.386	0	1	391
Bottom/second tier elec.	0.503	0.713	0	2	391
GDP per capita (log)	7.983	1.217	6.019	10.76	391
Urbanization rate	49.052	19.392	18.226	91.381	391
Unemployment rate	5.023	3.552	0.398	17.41	391
Territorial units	25.379	19.591	4	72	391
Trade openness	71.430	41.777	0	220.407	391
Natural resource rent	5.545	8.252	0.011	34.956	346
Ethnic fractionalization	0.413	0.267	0.004	0.828	317
Concentration Index	0.23	0.267	0.075	2.194	391
Democracy Index	5.417	3.778	0	10	391
Years of dem. (DEMOC18)	0.696	0.461	0	1	391
Democratic acc. (DEMACC)	3.544	1.73	0	6	340
Munic. elec. (MUNELEC)	1.38	0.659	0	2	274
State/Prov. elect. (STATPREL)	0.983	0.761	0	2	289
Govt. stability	7.856	2.032	1	12	340
Corruption index	2.634	0.929	0.08	5	340
Bureaucratic quality (BUREAUQ)	2.393	0.778	0	4	340

Table 2: Robustness test: Cross-section Results (PW-CV)

Models	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Dependent variable: Population Weighted Coefficient of Variation (PW-CV) of regional GDP per capita, (1990-2015)												
Expenditure Decentralization	0.310 (0.168)											
Revenue Decentralization		0.412 (1.061)										
Tax Decentralization			0.541 (0.117)									
Vertical Fiscal Imbalance				0.130 (0.220)								
Federal Govt.					-0.293*** (0.035)							
Sub-national Govt. tiers						0.121 (0.142)						
Autonomy							-0.231 (0.159)					
Residual autonomy								-0.293*** (0.035)				
Autonomy/residual									-0.180** (0.044)	0.187 (0.189)		
Bottom tier elections											0.208 (0.107)	
Second tier elections												0.106 (0.066)
Bottom/second elections												0.002 (0.002)
Trade openness	0.002 (0.001)	0.001 (0.002)	0.004* (0.000)	0.005 (0.001)	0.002*** (0.000)	0.003 (0.002)	0.003 (0.001)	0.002*** (0.000)	0.003** (0.001)	0.002 (0.002)	0.002 (0.001)	0.002 (0.002)
Natural resource rents	0.003 (0.007)	0.000 (0.012)	-0.003 (0.001)	-0.001 (0.002)	-0.001 (0.002)	-0.002 (0.006)	0.003 (0.007)	-0.001 (0.002)	0.003 (0.003)	0.000 (0.009)	-0.002 (0.007)	-0.000 (0.008)
GDPPC	0.403 (0.654)	0.710 (1.187)	1.275* (0.165)	1.186 (0.444)	0.714** (0.142)	0.519 (0.710)	1.163 (0.598)	0.714** (0.142)	0.998** (0.308)	0.570 (0.576)	1.064 (0.523)	0.798 (0.562)
<i>GDPPC</i> ²	-0.024 (0.041)	-0.043 (0.076)	-0.080* (0.010)	-0.074 (0.028)	-0.043** (0.010)	-0.030 (0.048)	-0.076 (0.042)	-0.043** (0.010)	-0.064* (0.020)	-0.038 (0.034)	-0.066 (0.031)	-0.051 (0.034)
Ethnicity	0.302 (0.222)	0.537 (0.355)	0.538* (0.057)	0.470 (0.122)	0.592*** (0.071)	0.519* (0.187)	0.383 (0.202)	0.592*** (0.071)	0.490** (0.096)	0.244 (0.286)	0.260 (0.222)	0.238 (0.243)
Surface area	-0.065 (0.031)	-0.097 (0.118)	-0.076* (0.011)	-0.065 (0.020)	-0.062** (0.013)	-0.071 (0.040)	-0.097 (0.060)	-0.062** (0.013)	-0.090** (0.026)	-0.014 (0.052)	-0.040 (0.034)	-0.024 (0.040)
Urbanization rate	-0.004 (0.004)	-0.002 (0.007)	0.001 (0.001)	0.001 (0.003)	-0.003** (0.001)	-0.002 (0.004)	0.001 (0.005)	-0.003** (0.001)	-0.000 (0.002)	0.000 (0.006)	-0.002 (0.004)	-0.001 (0.005)
Unemployment rate	0.015 (0.017)	0.007 (0.027)	0.003 (0.002)	0.005 (0.007)	-0.013** (0.003)	0.011 (0.021)	-0.002 (0.014)	-0.013** (0.003)	-0.011 (0.007)	0.002 (0.020)	0.008 (0.016)	0.005 (0.018)
Concentration Index	0.097 (0.381)	0.156 (1.010)	0.681 (0.170)	0.878 (0.285)	0.441** (0.116)	0.459 (0.311)	0.722 (0.457)	0.441** (0.116)	0.684** (0.181)	0.178 (0.317)	0.209 (0.296)	0.179 (0.298)
Territorial Units	0.014*** (0.002)	0.014* (0.004)	0.012** (0.000)	0.012** (0.001)	0.013*** (0.000)	0.012*** (0.002)	0.013*** (0.002)	0.011*** (0.000)	0.012*** (0.001)	0.010** (0.003)	0.012*** (0.002)	0.011** (0.002)
Constant	-0.899 (2.296)	-1.734 (5.157)	-4.482* (0.638)	-4.368 (1.722)	-2.074** (0.441)	-1.949 (1.929)	-3.367 (1.659)	-2.074** (0.441)	-2.808* (0.906)	-1.992 (1.843)	-3.642 (1.746)	-2.773 (1.861)
Observations	15	14	13	13	15	15	15	15	15	15	15	15
<i>R</i> ²	0.97	0.93	1.00	0.99	1.00	0.94	0.96	1.00	0.99	0.95	0.96	0.96

Robust Standard errors in parenthesis. Coefficients significant at 1% level *** p<0.01, at 5% level ** p<0.05, at 10% level * p<0.1

Table 3: Robustness test: Cross-section Results (Gini)

Models	Dependent variable: Gini Index											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Expenditure Decentralization	0.080 (0.088)											
Revenue Decentralization		0.126 (0.352)										
Tax Decentralization			0.431 (0.347)									
Vertical Fiscal Imbalance				-0.047 (0.243)								
Federal Govt.					-0.016 (0.077)							
Sub-national Govt. tiers						-0.040 (0.062)						
Autonomy							0.040 (0.088)					
Residual autonomy								-0.016 (0.077)				
Autonomy/residual									0.003 (0.054)			
Bottom tier elections										0.099* (0.044)		
Second tier elections											0.094** (0.034)	
Bottom/second elections												0.058** (0.017)
Trade openness	0.000 (0.001)	0.000 (0.000)	-0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	0.001 (0.001)	0.000 (0.001)	0.000 (0.001)
Natural resource rents	0.001 (0.005)	-0.000 (0.005)	-0.002 (0.004)	-0.002 (0.005)	0.000 (0.004)	-0.000 (0.003)	-0.001 (0.004)	0.000 (0.004)	-0.000 (0.004)	0.002 (0.003)	0.001 (0.004)	0.002 (0.003)
GDP	0.343 (0.476)	0.601 (0.561)	0.518 (0.589)	0.753 (0.695)	0.467 (0.410)	0.588 (0.370)	0.429 (0.432)	0.467 (0.410)	0.473 (0.421)	0.341 (0.246)	0.559 (0.279)	0.448 (0.279)
<i>GDPPC</i> ²	-0.021 (0.031)	-0.037 (0.037)	-0.033 (0.038)	-0.047 (0.044)	-0.029 (0.026)	-0.037 (0.024)	-0.026 (0.029)	-0.029 (0.026)	-0.029 (0.028)	-0.024 (0.016)	-0.035 (0.022)	-0.030 (0.018)
Ethnicity	-0.022 (0.091)	0.089 (0.144)	-0.004 (0.131)	0.117 (0.233)	0.032 (0.136)	-0.011 (0.090)	0.033 (0.117)	0.032 (0.136)	0.020 (0.118)	-0.055 (0.079)	-0.058 (0.059)	-0.073 (0.065)
Surface area	-0.015 (0.033)	-0.030 (0.037)	-0.013 (0.041)	-0.028 (0.046)	-0.018 (0.031)	-0.011 (0.034)	-0.011 (0.035)	-0.011 (0.031)	-0.016 (0.035)	-0.004 (0.017)	-0.009 (0.030)	-0.005 (0.022)
Urbanization rate	0.000 (0.003)	0.001 (0.003)	0.001 (0.004)	0.002 (0.004)	0.001 (0.003)	0.001 (0.003)	0.000 (0.003)	0.001 (0.003)	0.001 (0.003)	0.003 (0.002)	0.001 (0.002)	0.002 (0.002)
Unemployment rate	0.001 (0.007)	0.001 (0.008)	0.001 (0.009)	-0.002 (0.011)	-0.003 (0.010)	-0.004 (0.008)	-0.001 (0.007)	-0.003 (0.010)	-0.002 (0.010)	-0.004 (0.004)	-0.000 (0.006)	-0.002 (0.005)
Concentration Index	0.080 (0.299)	0.207 (0.467)	-0.041 (0.560)	0.357 (0.468)	0.185 (0.238)	0.134 (0.259)	0.125 (0.257)	0.185 (0.238)	0.171 (0.163)	0.146 (0.163)	0.102 (0.252)	0.113 (0.194)
Constant	-0.882 (1.535)	-1.821 (2.150)	-1.521 (2.014)	-2.435 (2.416)	-1.317 (1.301)	-1.633 (1.152)	-1.252 (1.309)	-1.317 (1.301)	-1.357 (1.294)	-0.925 (0.824)	-1.752 (0.987)	-1.346 (0.872)
Observations	15	14	13	13	15	15	15	15	15	15	15	15
R^2	0.55	0.56	0.61	0.43	0.48	0.52	0.49	0.48	0.47	0.74	0.67	0.75

Robust Standard errors in parenthesis. Coefficients significant at 1% level *** p<0.01, at 5% level ** p<0.05, at 10% level * p<0.1

Table 4: Robustness test: Fixed/Random Effect (PW-CV)

Models	Dependent variable: Population weighted Coefficient of Variation (PW-CV) of regional GDP per capita (1990-2015)											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Fixed Effect						Random Effect					
Expenditure Decentralization	-0.160 (0.095)											
Revenue Decentralization	0.212* (0.116)											
Tax Decentralization		0.020 (0.066)										
Vertical Fiscal Imbalance				-0.074 (0.070)								
Federal Govt.												
Sub-national Govt. tiers					0.103 (0.063)							
Autonomy						-0.150** (0.060)						
Residual autonomy							-0.289*** (0.039)					
Autonomy/residual								-0.214*** (0.055)				
Bottom tier elections									0.145 (0.114)			
Second tier elections										0.188*** (0.062)		
Bottom/second elections											0.157 (0.116)	
Trade openness	0.001 (0.001)	0.000 (0.001)	0.001 (0.001)	0.001 (0.001)	0.002*** (0.000)	0.002** (0.001)	0.002*** (0.000)	0.002*** (0.000)	0.002* (0.001)	0.001** (0.001)	0.002* (0.001)	0.002* (0.001)
Natural resource rents	0.006** (0.002)	0.005** (0.002)	0.005* (0.002)	0.005* (0.002)	-0.002 (0.002)	-0.001 (0.002)	-0.002 (0.002)	-0.001 (0.002)	-0.001 (0.003)	-0.001 (0.003)	-0.000 (0.003)	-0.000 (0.003)
GDP/PC	-0.226 (0.575)	-0.437 (0.602)	-0.786 (0.886)	-0.388 (0.635)	0.342 (0.157)	0.541*** (0.204)	0.343** (0.157)	0.413** (0.192)	0.551** (0.246)	0.891*** (0.254)	0.559** (0.260)	0.559** (0.260)
GDP/PC ²	0.019 (0.038)	0.034 (0.040)	0.052 (0.050)	0.031 (0.043)	-0.019* (0.010)	-0.034** (0.013)	-0.019* (0.010)	-0.026** (0.011)	-0.035** (0.016)	-0.054*** (0.016)	-0.035** (0.017)	-0.035** (0.017)
Ethnicity	2.103** (0.896)	1.996** (0.919)	1.947* (1.028)	2.116** (0.969)	0.595*** (0.127)	0.393*** (0.113)	0.595*** (0.057)	0.501*** (0.069)	0.312** (0.153)	0.319*** (0.094)	0.316** (0.157)	0.316** (0.157)
Surface area	-3.147 (18.479)	-16.366 (19.732)	-17.520 (17.545)	-12.699 (20.349)	-0.042*** (0.010)	-0.055*** (0.014)	-0.042*** (0.010)	-0.060*** (0.011)	-0.036* (0.019)	-0.052*** (0.013)	-0.034* (0.020)	-0.034* (0.020)
Urbanization rate	-0.018** (0.007)	-0.014* (0.007)	-0.017** (0.007)	-0.018** (0.007)	-0.005*** (0.001)	-0.004** (0.002)	-0.005*** (0.002)	-0.003 (0.002)	-0.002 (0.004)	-0.005** (0.002)	-0.002 (0.004)	-0.002 (0.004)
Unemployment rate	0.004 (0.008)	0.003 (0.008)	0.002 (0.010)	0.002 (0.009)	-0.006* (0.003)	0.010 (0.006)	-0.006* (0.003)	-0.002 (0.003)	0.003 (0.005)	0.008 (0.004)	0.003 (0.005)	0.003 (0.005)
Concentration Index	0.261*** (0.033)	0.287*** (0.030)	0.276*** (0.034)	0.267*** (0.032)	0.290*** (0.023)	0.311*** (0.033)	0.290*** (0.023)	0.320*** (0.029)	0.275*** (0.049)	0.268*** (0.048)	0.275*** (0.048)	0.275*** (0.048)
Territorial Units	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)	0.011*** (0.001)	0.012*** (0.001)	0.011*** (0.001)	0.012*** (0.001)	0.011*** (0.002)	0.012*** (0.001)	0.010*** (0.002)	0.010*** (0.002)
Democratic quality	0.003 (0.007)	0.005 (0.007)	0.004 (0.008)	0.002 (0.008)	0.002 (0.003)	0.003 (0.007)	0.003 (0.003)	-0.000 (0.004)	-0.003 (0.004)	-0.002 (0.005)	-0.003 (0.005)	-0.003 (0.005)
Constant	42.658 (246.024)	218.949 (263.266)	233.759 (230.946)	170.290 (271.715)	-0.835 (0.560)	-1.443* (1.021)	-0.835 (0.560)	-0.791 (0.765)	-1.682* (0.888)	-2.828*** (0.934)	-1.734* (0.952)	-1.734* (0.952)
Observations	262	256	241	253	293	293	293	293	293	293	293	280
R ²	0.63	0.63	0.64	0.62								

Robust Standard errors in parenthesis. Coefficients significant at 1% level *** p<0.01, at 5% level ** p<0.05, at 10% level * p<0.1
Hausman test is conduct for each model between FE and RE for time variant variables and RE and Hausman Taylor estimates for time invariant variables.
Time dummies included with each model.
Robust standard errors are in parentheses. Coefficients significant at 1% level *** p<0.01, at 5% level ** p<0.05, at 10% level * p<0.1

Table 5: Robustness test: Fixed/Random Effects (Gini)

Models	Fixed Effect					Random Effect						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Expenditure Decentralization	4.181 (3.436)											
Revenue Decentralization		3.573 (2.202)										
Tax Decentralization			7.548* (3.613)									
Vertical Fiscal Imbalance				1.354 (2.694)								
Federal Govt.					-1.991 (3.512)							
Sub-national Govt. tiers					-4.121 (2.630)							
Autonomy						4.400 (4.352)						
Residual autonomy							-1.991 (3.512)					
Autonomy/residual								-1.117 (2.857)				
Bottom tier elections									5.770* (3.265)			
Second tier elections										9.500*** (2.053)		
Bottom/second elections											9.483*** (2.833)	
Trade openness	-0.023 (0.056)	-0.015 (0.054)	-0.005 (0.055)	-0.019 (0.076)	0.008 (0.026)	-0.002 (0.019)	0.008 (0.026)	0.007 (0.028)	0.019 (0.026)	0.007 (0.021)	0.019 (0.021)	0.019 (0.021)
Natural resource rents	0.003 (0.118)	0.008 (0.131)	0.040 (0.136)	0.022 (0.147)	-0.106 (0.090)	-0.175 (0.145)	-0.106 (0.090)	-0.098 (0.090)	0.008 (0.108)	-0.062 (0.090)	0.152 (0.129)	0.152 (0.129)
GDPPC	62.099** (22.484)	75.364*** (19.649)	39.332 (33.901)	74.739*** (18.697)	50.930** (20.901)	64.952*** (16.827)	48.253*** (22.615)	52.361*** (22.553)	44.269*** (17.521)	65.591*** (10.460)	31.898*** (11.173)	31.898*** (11.173)
GDPPC ²	-3.671** (1.380)	-4.420*** (1.295)	-2.525 (1.858)	-4.539*** (1.323)	-3.208** (1.378)	-4.113*** (1.128)	-2.972** (1.515)	-3.302** (1.409)	-2.939*** (1.106)	-4.141*** (0.675)	-2.188*** (0.732)	-2.188*** (0.732)
Ethnicity	49.085*** (14.872)	61.715*** (9.572)	49.109** (18.057)	58.956*** (17.089)	-0.807 (4.692)	-7.318** (3.531)	-1.611 (4.327)	-1.885 (3.856)	-5.098 (4.364)	-6.238** (2.785)	0.888 (6.564)	0.888 (6.564)
Surface area	175.609 (978.017)	408.289 (1167.194)	-141.866 (1022.809)	534.526 (1450.417)	-1.317 (1.998)	-0.579 (2.013)	-0.579 (2.013)	-1.314 (1.998)	-1.362 (1.418)	-1.275 (1.298)	-1.511 (0.861)	-1.511 (0.861)
Urbanization rate	0.055 (0.287)	0.018 (0.296)	-0.075 (0.266)	0.072 (0.409)	0.244 (0.176)	0.176 (0.141)	0.244 (0.203)	0.244 (0.176)	0.356** (0.140)	0.228** (0.101)	0.298*** (0.110)	0.298*** (0.110)
Unemployment rate	-0.260 (0.260)	-0.416 (0.234)	-0.550** (0.236)	-0.426 (0.261)	-0.295 (0.415)	-0.293 (0.272)	-0.295 (0.315)	-0.293 (0.415)	-0.350 (0.223)	-0.018 (0.221)	-0.293 (0.202)	-0.293 (0.202)
Concentration Index	-6.221 (44.139)	-58.485 (41.429)	-46.856 (40.268)	-56.749 (41.192)	11.438 (11.011)	5.831 (9.565)	5.079 (11.473)	11.438 (11.011)	13.324 (9.445)	11.605 (7.456)	30.962*** (10.755)	30.962*** (10.755)
Democratic quality	-0.091 (0.208)	-0.152 (0.206)	-0.229 (0.210)	-0.052 (0.274)	0.090 (0.244)	0.339 (0.197)	0.114 (0.197)	0.090 (0.244)	0.108 (0.269)	0.060 (0.186)	-0.033 (0.247)	-0.033 (0.247)
Constant	-2617.021 (13224.881)	-5831.946 (15857.530)	1791.786 (13780.439)	-7536.476 (19704.397)	-154.438** (63.744)	-195.533*** (55.617)	-152.497** (67.714)	-159.477** (67.324)	-126.658** (55.248)	-206.405*** (27.684)	-80.275** (38.176)	-80.275** (38.176)
Observations	102	99	95	98	117	117	117	117	117	117	104	104
R ²	0.60	0.61	0.62	0.60								

Robust Standard errors in parenthesis. Coefficients significant at 1% level *** p<0.01, at 5% level ** p<0.05, at 10% level * p<0.1
Hausman test is conducted for each model between FE and RE for time variant variables and RE and Hausman Taylor estimates for time invariant variables.
Time dummies included with each model.
Robust standard errors are in parentheses. Coefficients significant at 1% level *** p<0.01, at 5% level ** p<0.05, at 10% level * p<0.1

Table 6: Robustness test: FGLS (PW-CV)

Models	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Dependent Variable: Population Weighted Coefficient of Variation (PW-CV) of regional GDP per capita (1990-2015)												
Expenditure Decentralization	0.060** (0.027)											
Revenue Decentralization		0.046 (0.038)										
Tax Decentralization			0.057 (0.045)									
Vertical Fiscal Imbalance				0.017 (0.022)								
Federal Govt.					-0.281*** (0.044)							
Sub-national Govt. tiers						0.014 (0.042)						
Autonomy							-0.044 (0.050)					
Residual autonomy								-0.281*** (0.044)				
Autonomy/residual									-0.185*** (0.042)	0.089 (0.056)		
Bottom tier elections											0.145*** (0.053)	
Second tier elections												0.109* (0.064)
Bottom/second elections												0.001*** (0.000)
Trade openness	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)
Natural resource rent	0.000 (0.001)	0.000 (0.001)	-0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	-0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
GDP/PC	0.543*** (0.155)	0.539*** (0.149)	0.665*** (0.139)	0.549*** (0.139)	0.389*** (0.153)	0.491*** (0.173)	0.468*** (0.157)	0.389*** (0.153)	0.492*** (0.175)	0.452*** (0.203)	0.626*** (0.210)	0.414* (0.213)
<i>GDP/PC</i> ²	-0.031*** (0.010)	-0.031*** (0.009)	-0.038*** (0.009)	-0.032*** (0.009)	-0.022** (0.010)	-0.028** (0.011)	-0.032*** (0.010)	-0.022** (0.010)	-0.030*** (0.011)	-0.027** (0.013)	-0.037*** (0.013)	-0.024* (0.014)
Ethnicity	0.511*** (0.057)	0.516*** (0.061)	0.605*** (0.060)	0.495*** (0.057)	0.630*** (0.057)	0.546*** (0.067)	0.516*** (0.059)	0.630*** (0.057)	0.551*** (0.065)	0.473*** (0.063)	0.479*** (0.082)	0.511*** (0.099)
Surface area	-0.061*** (0.011)	-0.065*** (0.012)	-0.080*** (0.012)	-0.052*** (0.010)	-0.050*** (0.011)	-0.059*** (0.014)	-0.057*** (0.012)	-0.050*** (0.011)	-0.048*** (0.013)	-0.048*** (0.016)	-0.055*** (0.015)	-0.046*** (0.018)
Urbanization rate	-0.005*** (0.001)	-0.005*** (0.001)	-0.003*** (0.001)	-0.004*** (0.001)	-0.004*** (0.001)	-0.004*** (0.001)	-0.004*** (0.002)	-0.004*** (0.001)	-0.004** (0.002)	-0.002 (0.002)	-0.004** (0.002)	-0.003 (0.002)
Unemployment rate	0.002 (0.003)	0.001 (0.003)	0.000 (0.003)	-0.001 (0.003)	-0.004 (0.003)	0.001 (0.003)	0.000 (0.003)	-0.004 (0.003)	0.002 (0.003)	0.001 (0.003)	0.002 (0.003)	-0.000 (0.003)
Concentration Index	0.230*** (0.026)	0.233*** (0.025)	0.248*** (0.025)	0.238*** (0.025)	0.235*** (0.027)	0.232*** (0.027)	0.236*** (0.027)	0.235*** (0.027)	0.235*** (0.028)	0.221*** (0.029)	0.218*** (0.029)	0.218*** (0.029)
Territorial Units	0.013*** (0.001)	0.013*** (0.001)	0.013*** (0.001)	0.013*** (0.001)	0.012*** (0.001)	0.013*** (0.001)	0.013*** (0.001)	0.012*** (0.001)	0.013*** (0.001)	0.012*** (0.001)	0.013*** (0.001)	0.012*** (0.001)
Democratic quality	-0.000 (0.003)	0.001 (0.003)	-0.001 (0.003)	0.001 (0.003)	0.002 (0.002)	0.001 (0.003)	0.001 (0.003)	0.002 (0.002)	0.000 (0.003)	0.000 (0.003)	0.000 (0.003)	-0.002 (0.003)
Constant	-1.422** (0.583)	-1.416** (0.567)	-1.784*** (0.555)	-1.536*** (0.534)	-0.988* (0.566)	-1.352** (0.617)	-1.478** (0.579)	-0.988* (0.566)	-1.126* (0.658)	-1.206 (0.756)	-1.806** (0.792)	-1.116 (0.794)
Observations	262	256	241	253	293	293	293	293	293	293	293	280

Robust Standard errors in parenthesis. Coefficients significant at 1% level *** p<0.01, at 5% level ** p<0.05, at 10% level * p<0.1. All regressions include time dummies (not shown) and controls for heteroskedasticity and AR(1).

Table 7: Robustness test: FGLS (Gini)

Models	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Dependent Variable: Gini Index											
Expenditure Decentralization	4.923** (1.982)											
Revenue Decentralization	1.339 (2.343)											
Tax Decentralization			10.770*** (3.160)									
Vertical Fiscal Imbalance				0.963 (1.644)								
Federal Govt.					-3.323** (1.594)	-2.454* (1.351)						
Sub-national Govt. tiers							4.322* (2.232)					
Autonomy												
Residual autonomy								-3.323** (1.594)	-1.799 (1.416)	4.286*** (1.504)	8.001*** (0.935)	10.374*** (1.486)
Autonomy/residual												
Bottom tier elections												
Second tier elections												
Bottom/second elections												
Trade openness	-0.021 (0.018)	-0.001 (0.022)	-0.019 (0.022)	0.001 (0.022)	-0.003 (0.015)	-0.004 (0.016)	-0.004 (0.016)	-0.003 (0.015)	-0.004 (0.015)	0.009 (0.016)	0.002 (0.014)	0.022 (0.014)
Natural resource rents	-0.060 (0.063)	-0.086 (0.067)	-0.087 (0.064)	-0.083 (0.066)	-0.064 (0.058)	-0.097 (0.061)	-0.130* (0.067)	-0.064 (0.058)	-0.038 (0.059)	0.015 (0.066)	-0.083 (0.055)	0.186*** (0.067)
GDP/PC	51.341*** (9.140)	53.229*** (10.120)	58.827*** (8.974)	50.917*** (9.716)	53.339*** (9.443)	58.343*** (9.785)	48.782*** (9.436)	53.339*** (9.443)	55.524*** (9.519)	48.839*** (8.981)	66.438*** (7.392)	26.343*** (7.359)
<i>GDP/PC</i> ²	-3.100*** (0.586)	-3.156*** (0.660)	-3.622*** (0.589)	-3.009*** (0.635)	-3.312*** (0.610)	-3.662*** (0.631)	-2.628*** (0.616)	-3.312*** (0.610)	-3.452*** (0.618)	-2.812*** (0.563)	-4.153*** (0.468)	-1.788*** (0.467)
Ethnicity	-2.262 (2.611)	3.150 (4.699)	0.913 (4.295)	2.346 (4.894)	-1.548 (2.693)	-6.040** (2.658)	-3.155 (2.423)	-1.548 (2.693)	-3.175 (2.493)	-5.307** (2.533)	-6.514*** (2.343)	5.186 (3.265)
Surface area	-2.452*** (0.867)	-2.883*** (0.984)	-2.858*** (0.918)	-2.634*** (0.946)	-3.197*** (0.830)	-1.331 (0.912)	-1.284 (0.928)	-3.197*** (0.830)	-3.188*** (0.873)	-2.196*** (0.836)	-2.400*** (0.757)	-2.012*** (0.754)
Urbanization rate	0.067 (0.089)	0.081 (0.090)	0.179** (0.090)	0.064 (0.090)	0.251*** (0.082)	0.169** (0.085)	0.069 (0.091)	0.251*** (0.082)	0.244*** (0.087)	0.256*** (0.088)	0.227*** (0.073)	0.231*** (0.088)
Unemployment rate	0.129 (0.178)	0.040 (0.167)	-0.056 (0.164)	0.093 (0.166)	-0.345* (0.178)	-0.224 (0.159)	-0.034 (0.152)	-0.345* (0.178)	-0.238 (0.167)	-0.163 (0.154)	-0.022 (0.145)	-0.203 (0.148)
Concentration Index	10.342 (6.872)	24.402*** (9.939)	11.637 (9.459)	25.874*** (10.017)	21.824*** (5.990)	11.086* (6.020)	10.760* (6.515)	21.824*** (5.990)	21.211*** (6.084)	18.033*** (6.128)	15.685*** (5.526)	38.955*** (7.068)
Democratic quality	0.164 (0.160)	-0.015 (0.178)	0.050 (0.175)	0.011 (0.177)	-0.016 (0.140)	0.220 (0.158)	0.143 (0.141)	-0.016 (0.140)	0.005 (0.146)	-0.126 (0.152)	0.033 (0.131)	-0.130 (0.167)
Constant	-134.525*** (31.209)	-145.386*** (34.456)	0.000 (.)	-139.338*** (33.657)	-142.521*** (31.902)	-166.450*** (32.151)	-127.780*** (30.582)	-142.521*** (31.902)	-150.621*** (31.824)	-115.673*** (29.957)	-199.874*** (24.348)	-5.4071*** (25.482)
Observations	101	98	95	98	117	117	117	117	117	117	117	104

Robust Standard errors in parenthesis. Coefficients significant at 1% level *** p<0.01, at 5% level ** p<0.05, at 10% level * p<0.1. All regressions include time dummies (not shown) and controls for heteroskedasticity and AR(1).

Table 8: Robustness test: FD and PD mix, FGLS (PW-CV)

Dependent variable: Population weighted Coefficient of Variation (PW-CV) of regional GDP per capita (1990-2015)						
Models	(1)	(2)	(3)	(4)	(5)	(6)
Expenditure Decentralization	0.067** (0.027)	0.026 (0.023)	0.035 (0.024)	0.035 (0.028)	-0.003 (0.028)	0.034 (0.031)
Autonomy	-0.064 (0.043)					
Residual autonomy		-0.328*** (0.038)				
Autonomy/residual authority			-0.227*** (0.033)			
Bottom tier elections				0.101** (0.047)		
Second tier elections					0.187*** (0.049)	
Bottom/second elections						0.103* (0.054)
Trade openness	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)
Natural resource rent	0.001 (0.001)	-0.000 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
GDPPC	0.558*** (0.138)	0.323** (0.145)	0.500*** (0.145)	0.542*** (0.160)	0.765*** (0.178)	0.537*** (0.160)
GDPPC2	-0.033*** (0.009)	-0.017* (0.009)	-0.032*** (0.009)	-0.033*** (0.010)	-0.046*** (0.011)	-0.032*** (0.010)
Ethnicity	0.486*** (0.053)	0.644*** (0.054)	0.497*** (0.053)	0.431*** (0.069)	0.433*** (0.067)	0.438*** (0.069)
Surface area	-0.066*** (0.011)	-0.049*** (0.010)	-0.069*** (0.010)	-0.047*** (0.013)	-0.052*** (0.012)	-0.046*** (0.015)
Urbanization rate	-0.004** (0.001)	-0.005*** (0.001)	-0.002 (0.001)	-0.003* (0.002)	-0.005*** (0.002)	-0.003* (0.002)
Unemployment rate	0.001 (0.003)	-0.005* (0.003)	-0.003 (0.003)	0.001 (0.003)	0.003 (0.003)	0.001 (0.003)
Concentration Index	0.240*** (0.025)	0.233*** (0.025)	0.240*** (0.026)	0.224*** (0.026)	0.218*** (0.027)	0.225*** (0.027)
Territorial Units	0.013*** (0.001)	0.012*** (0.001)	0.013*** (0.001)	0.012*** (0.001)	0.014*** (0.001)	0.012*** (0.001)
Democratic quality	-0.001 (0.003)	0.000 (0.003)	-0.002 (0.003)	-0.002 (0.003)	-0.002 (0.003)	-0.002 (0.003)
Constant	-1.377*** (0.516)	-0.640 (0.535)	-0.960* (0.547)	-1.542** (0.600)	-2.336*** (0.675)	-1.536** (0.603)
Observations	262	262	262	262	262	256

Robust Standard errors in parenthesis. Coefficients significant at 1% level *** $p < 0.01$, at 5% level ** $p < 0.05$, at 10% level * $p < 0.1$. All regressions include time dummies (not shown) and controls for heteroskedasticity and AR(1).

Table 9: Robustness test: FD and PD mix, FGLS (Gini)

Models	Dependent variable: Gini index					
	(1)	(2)	(3)	(4)	(5)	(6)
Expenditure Decentralization	5.651*** (1.989)	5.554*** (1.335)	5.284*** (1.720)	7.040*** (1.350)	-2.873 (1.858)	6.480*** (1.273)
Autonomy	4.220* (2.465)					
Residual autonomy		-11.546*** (1.499)				
Autonomy/residual authority			-5.705*** (1.584)			
Bottom tier elections				9.958*** (1.082)		
Second tier elections					11.047*** (1.473)	
Bottom/second elections						10.793*** (1.045)
Trade openness	-0.020 (0.018)	-0.052*** (0.016)	-0.037** (0.018)	-0.015 (0.015)	-0.013 (0.015)	-0.011 (0.014)
Natural resource rent	-0.113* (0.066)	-0.164*** (0.058)	-0.062 (0.066)	0.061 (0.059)	-0.109** (0.055)	0.142** (0.065)
GDPPC	46.580*** (9.089)	39.707*** (7.540)	52.011*** (8.966)	31.901*** (5.688)	60.947*** (6.782)	29.513*** (5.084)
GDPPC2	-2.758*** (0.587)	-2.397*** (0.485)	-3.175*** (0.578)	-2.091*** (0.361)	-3.748*** (0.433)	-1.928*** (0.325)
Ethnicity	-1.495 (2.778)	5.204* (2.713)	0.054 (2.673)	-7.995*** (2.467)	-4.003* (2.349)	-3.778 (2.937)
Surface area	-1.770* (0.918)	-1.722** (0.708)	-2.780*** (0.844)	-1.151* (0.608)	-1.162* (0.675)	-1.626*** (0.595)
Urbanization rate	0.001 (0.094)	0.076 (0.074)	0.130 (0.088)	0.130* (0.078)	0.057 (0.072)	0.104 (0.075)
Unemployment rate	0.146 (0.176)	-0.273* (0.162)	-0.068 (0.177)	0.219 (0.138)	0.226 (0.149)	0.232* (0.134)
Concentration Index	6.053 (7.425)	1.577 (6.248)	8.346 (6.822)	3.909 (5.525)	13.696** (5.841)	17.028** (7.083)
Democratic quality	0.225 (0.162)	-0.083 (0.131)	-0.031 (0.158)	-0.298** (0.148)	0.108 (0.135)	-0.177 (0.156)
Constant	0.000 (.)	0.000 (.)	0.000 (.)	-70.010*** (20.343)	0.000 (.)	0.000 (.)
Observations	101	101	101	101	101	95

Robust Standard errors in parenthesis. Coefficients significant at 1% level *** $p < 0.01$, at 5% level ** $p < 0.05$, at 10% level * $p < 0.1$. All regressions include time dummies (not shown) and controls for heteroskedasticity and AR(1).

Table 10: Panel results FD and PD mix (FGLS) Revenue decentralization

Dependent variable: Coefficient of Variation (CV) of regional GDP per capita (1990-2015)						
Models	(1)	(2)	(3)	(4)	(5)	(6)
Revenue Decentralization	0.042 (0.042)	0.040 (0.037)	0.041 (0.037)	0.037 (0.039)	0.020 (0.038)	0.049 (0.041)
Autonomy	-0.219*** (0.053)					
Residual autonomy		-0.399*** (0.041)				
Autonomy/residual authority			-0.346*** (0.034)			
Bottom tier elections				0.145*** (0.053)		
Second tier elections					0.238*** (0.049)	
Bottom/second elections						0.087 (0.054)
Trade openness	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.002*** (0.000)
Natural resource rent	0.006*** (0.001)	0.002 (0.001)	0.006*** (0.001)	0.004*** (0.001)	0.003*** (0.001)	0.003*** (0.001)
GDPPC	0.545*** (0.130)	0.258* (0.139)	0.356*** (0.131)	0.578*** (0.161)	0.828*** (0.182)	0.560*** (0.151)
<i>GDPPC</i> ²	-0.036*** (0.008)	-0.014 (0.009)	-0.026*** (0.008)	-0.037*** (0.010)	-0.052*** (0.012)	-0.035*** (0.009)
Ethnicity	0.269*** (0.073)	0.562*** (0.071)	0.363*** (0.062)	0.283*** (0.089)	0.248*** (0.092)	0.264*** (0.085)
Surface area	0.006 (0.013)	0.032*** (0.013)	0.002 (0.011)	0.039** (0.016)	0.023 (0.015)	0.025 (0.016)
Urbanization rate	-0.001 (0.001)	-0.006*** (0.001)	-0.001 (0.001)	-0.002 (0.002)	-0.004** (0.002)	-0.002 (0.002)
Unemployment rate	-0.005* (0.003)	-0.011*** (0.003)	-0.011*** (0.003)	-0.004 (0.003)	0.000 (0.003)	-0.004 (0.003)
Concentration Index	0.013 (0.014)	0.004 (0.013)	0.017 (0.014)	0.004 (0.014)	-0.001 (0.014)	0.004 (0.014)
Territorial Units	0.008*** (0.001)	0.006*** (0.001)	0.007*** (0.001)	0.006*** (0.001)	0.008*** (0.001)	0.006*** (0.001)
Democratic quality	-0.001 (0.003)	-0.001 (0.003)	-0.002 (0.003)	-0.003 (0.003)	-0.004 (0.003)	-0.004 (0.003)
Constant	-1.920*** (0.498)	-1.222** (0.533)	-0.973* (0.525)	-2.582*** (0.633)	-3.288*** (0.712)	-2.332*** (0.601)
Observations	256	256	256	256	256	250

Robust Standard errors in parenthesis. Coefficients significant at 1% level *** $p < 0.01$, at 5% level ** $p < 0.05$, at 10% level * $p < 0.1$. All regressions include time dummies (not shown) and controls for heteroskedasticity and AR(1).

Table 11: Robustness test: FD and PD mix, (FGLS) Revenue decentralization (PW-CV)

Dependent variable: Population Weighted Coefficient of Variation (PW-CV) of regional GDP per capita (1990-2015)						
Models	(1)	(2)	(3)	(4)	(5)	(6)
Revenue Decentralization	0.037 (0.038)	0.048 (0.033)	0.033 (0.033)	0.035 (0.037)	0.019 (0.036)	0.031 (0.038)
Autonomy	-0.103** (0.048)					
Residual autonomy		-0.343*** (0.035)				
Autonomy/residual authority			-0.259*** (0.034)			
Bottom tier elections				0.118*** (0.044)		
Second tier elections					0.182*** (0.042)	
Bottom/second elections						0.130*** (0.048)
Trade openness	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)
Natural resource rent	0.001 (0.001)	-0.001 (0.001)	0.002 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
GDPPC	0.541*** (0.145)	0.326** (0.139)	0.455*** (0.149)	0.573*** (0.158)	0.783*** (0.179)	0.572*** (0.160)
$GDPPC^2$	-0.033*** (0.009)	-0.018** (0.009)	-0.031*** (0.009)	-0.035*** (0.010)	-0.047*** (0.011)	-0.035*** (0.010)
Ethnicity	0.460*** (0.065)	0.643*** (0.055)	0.465*** (0.059)	0.424*** (0.071)	0.426*** (0.073)	0.433*** (0.073)
Surface area	-0.065*** (0.012)	-0.053*** (0.011)	-0.074*** (0.011)	-0.045*** (0.013)	-0.056*** (0.013)	-0.042*** (0.015)
Urbanization rate	-0.003** (0.002)	-0.005*** (0.001)	-0.001 (0.001)	-0.002 (0.002)	-0.005*** (0.002)	-0.002 (0.002)
Unemployment rate	-0.000 (0.003)	-0.006** (0.003)	-0.004* (0.003)	0.001 (0.003)	0.003 (0.003)	0.001 (0.003)
Concentration Index	0.238*** (0.025)	0.233*** (0.025)	0.238*** (0.026)	0.226*** (0.026)	0.218*** (0.027)	0.227*** (0.026)
Territorial Units	0.013*** (0.001)	0.012*** (0.001)	0.013*** (0.001)	0.012*** (0.001)	0.014*** (0.001)	0.012*** (0.001)
Democratic quality	0.000 (0.003)	0.001 (0.003)	-0.000 (0.003)	-0.002 (0.003)	-0.002 (0.003)	-0.002 (0.003)
Constant	-1.231** (0.547)	-0.556 (0.522)	-0.626 (0.577)	-1.675*** (0.599)	-2.348*** (0.686)	-1.714*** (0.615)
Observations	256	256	256	256	256	250

Robust Standard errors in parenthesis. Coefficients significant at 1% level *** $p < 0.01$, at 5% level ** $p < 0.05$, at 10% level * $p < 0.1$. All regressions include time dummies (not shown) and controls for heteroskedasticity and AR(1).

Table 12: Robustness test: FD and PD mix, (FGLS) Revenue decentralization (Gini)

Models	Dependent variable: Gini index					
	(1)	(2)	(3)	(4)	(5)	(6)
Revenue Decentralization	3.047 (2.495)	3.813* (2.281)	1.920 (2.424)	5.716** (2.280)	-2.299 (2.154)	3.164 (1.990)
Autonomy	9.187*** (2.882)					
Residual autonomy		-14.147*** (2.001)				
Autonomy/residual authority			-6.500*** (2.461)			
Bottom tier elections				10.257*** (1.180)		
Second tier elections					10.129*** (1.052)	
Bottom/second elections						12.589*** (0.986)
Trade openness	0.033 (0.022)	-0.086*** (0.022)	-0.054* (0.029)	0.005 (0.017)	0.003 (0.016)	0.038** (0.016)
Natural resource rent	-0.236*** (0.073)	-0.172*** (0.057)	-0.048 (0.075)	0.044 (0.055)	-0.129** (0.055)	0.200*** (0.047)
GDPPC	42.963*** (9.651)	43.843*** (7.861)	55.960*** (9.669)	31.945*** (6.800)	57.221*** (6.697)	23.546*** (5.725)
$GDPPC^2$	-2.289*** (0.639)	-2.827*** (0.504)	-3.547*** (0.637)	-2.032*** (0.441)	-3.422*** (0.431)	-1.370*** (0.375)
Ethnicity	14.786*** (5.570)	-0.468 (3.961)	-4.148 (5.740)	2.982 (4.103)	0.413 (3.692)	20.296*** (3.992)
Surface area	-2.636*** (0.968)	-0.988 (0.818)	-2.244** (0.957)	-2.084*** (0.695)	-1.553** (0.781)	-3.388*** (0.566)
Urbanization rate	-0.077 (0.093)	0.184*** (0.069)	0.219** (0.095)	0.167** (0.077)	0.018 (0.075)	0.072 (0.071)
Unemployment rate	0.112 (0.154)	-0.659*** (0.162)	-0.310 (0.194)	0.017 (0.130)	0.342** (0.141)	0.020 (0.115)
Concentration Index	35.204*** (9.967)	-12.740 (9.621)	2.811 (11.757)	21.535*** (8.316)	20.811*** (7.240)	64.706*** (8.373)
Democratic quality	-0.062 (0.169)	-0.065 (0.144)	-0.025 (0.178)	-0.526*** (0.164)	-0.022 (0.154)	-0.335** (0.158)
Constant	0.000 (.)	0.000 (.)	0.000 (.)	-70.215*** (23.376)	-175.472*** (23.167)	-57.599*** (19.659)
Observations	98	98	98	98	98	92

Robust Standard errors in parenthesis. Coefficients significant at 1% level *** $p < 0.01$, at 5% level ** $p < 0.05$, at 10% level * $p < 0.1$. All regressions include time dummies (not shown) and controls for heteroskedasticity and AR(1).