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Appendix

Appendix A. Statistic summary of chemical wood pulp variable

Variable		Mean	Std. Dev.	Min	Max	Observations
lnvol	overall	8.723438	3.169397	-6.907755	14.96344	N = 452
	between		3.135195	-1.671313	14.14371	n = 63
	within		1.722083	-2.377815	14.67014	T-bar = 7.1746
lngdp_~d	overall	8.003157	.2052799	7.692375	8.323712	N = 452
	between		.1430111	7.692375	8.323712	n = 63
	within		.1900882	7.587582	8.370678	T-bar = 7.1746
lngdp_~t	overall	9.166071	1.471405	5.331477	11.24388	N = 433
	between		1.471386	5.749453	11.19027	n = 62
	within		.1643002	8.436204	9.783253	T-bar = 6.98387
lndist	overall	8.699436	.6583303	6.920588	9.846746	N = 452
	between		.6166218	6.920588	9.846746	n = 63
	within		0	8.699436	8.699436	T-bar = 7.1746
ln_price	overall	6.052532	.4537061	1.315743	10.30058	N = 452
	between		.3817581	4.611814	7.853173	n = 63
	within		.4092899	2.132962	9.9462	T-bar = 7.1746
lnvol_1	overall	16.40543	2.512271	2.995732	21.51304	N = 359
	between		2.270926	10.7717	20.95322	n = 38
	within		1.429362	6.484153	23.18463	T-bar = 9.44737
lnprod	overall	15.44991	.2301285	15.00943	15.81699	N = 452
	between		.1577332	15.00943	15.81699	n = 63
	within		.2147153	14.92213	15.84315	T-bar = 7.1746

Appendix B. Statistic summary of chemical wood pulp variable

Variable		Mean	Std. Dev.	Min	Max	Observations
lnvol	overall	7.020129	2.794042	-5.809143	13.0418	N = 2201
	between		2.800214	-4.961845	12.41607	n = 182
	within		1.353093	-2.95631	13.13338	T-bar = 12.0934
lngdp_~d	overall	8.020602	.1923071	7.692375	8.323712	N = 2201
	between		.0825557	7.756021	8.304872	n = 182
	within		.1858194	7.637314	8.379678	T-bar = 12.0934
lngdp_~t	overall	8.635446	1.511233	5.267172	11.42537	N = 2111
	between		1.510316	5.399965	11.38971	n = 174
	within		.1404604	7.854368	9.252628	T-bar = 12.1322
lndist	overall	9.093375	.57964	6.920588	9.871479	N = 2201
	between		.5520919	6.920588	9.871479	n = 182
	within		0	9.093375	9.093375	T-bar = 12.0934
ln_price	overall	6.711448	.3058628	3.919197	10.67411	N = 2201
	between		.3274777	6.400882	9.813875	n = 182
	within		.2584363	3.411777	10.36726	T-bar = 12.0934
lnvol_1	overall	14.22701	2.575931	4.330733	19.94955	N = 1976
	between		2.47082	6.44254	19.22499	n = 164
	within		1.254954	4.963703	17.6921	T-bar = 12.0488
lnprod	overall	14.65712	.2771975	14.29732	14.88675	N = 2201
	between		.1145884	14.29732	14.88675	n = 182
	within		.2690345	14.13646	15.13071	T-bar = 12.0934



Appendix C. Hausman test result of chemical wood pulp

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) Fixed1	(B) Random1		
lngdp_ind	-.0826209	.6017456	-.6843665	.3969227
lngdp_dest	1.228001	-.0301358	1.258137	.5451492
ln_price	-.7056622	-1.111268	.4056059	.075041
lnvol_1	.4007304	.6050123	-.2042819	.0310625
lnprod	.0537437	.1608779	-.1071342	.1222275

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$$\begin{aligned} \text{chi2}(5) &= (b-B)' [(V_b-V_B)^{-1}] (b-B) \\ &= 68.00 \\ \text{Prob>chi2} &= 0.0000 \end{aligned}$$

Appendix D. Hausman test result of uncoated paper and paperboard

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) Fixed1	(B) Random1		
lngdp_ind	.6804929	.6365878	.0439051	.1137221
lngdp_dest	.839902	.0382987	.8016033	.2123359
ln_price	-.7307289	-.5875515	-.1431773	.0448239
lnvol_1	.4709963	.8333431	-.3623468	.0183545
lnprod	.2820347	-.437601	.7196356	.0481647

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$$\begin{aligned} \text{chi2}(5) &= (b-B)' [(V_b-V_B)^{-1}] (b-B) \\ &= 393.84 \\ \text{Prob>chi2} &= 0.0000 \end{aligned}$$