Supplementary Materials

Results

Table S1. Descriptive statistics

		N	Minimum	Maximum	Mean	Std. Deviation
Dependent Variable	Et	424	193.70	15981.405384	27852.5465876	27852.5465876
Covariate	Tcases	424	0	157261.14	1149271.178	1149271.178
	Tvaccs	424	0	7153.92	135802.578	135802.578
	LF15+	424	203.70	17235.200896	29847.6956511	29847.6956511
	Et-1	424	193.70	16028.695644	27961.7030297	27961.7030297
	Et-2	424	194.40	16099.300531	28113.0650175	28113.0650175
	VGDPt-1	424	-67529.60	24240.703538	73593.3163652	73593.3163652
	Dumm1	424	0	1	.38	.485
	Dumm2	424	0	1	.07	.249
	AP	424	942.6179	17302.927322	13184.0769783	13184.0769783

Table S2. Correlation matrix form1

		Et	Et-1	Et-2	VGDPt-1	AP	LF15+	Tvacc	Tcases
Pearson Correlation	Et	1.000	.951	.949	.828	.999	.788	.	.
	Et-1	.951	1.000	.999	.846	.949	.770	.	.
	Et-2	.949	.999	1.000	.841	.948	.759	.	.
	VGDPt-1	.828	.846	.841	1.000	.818	.935	.	.
	AP	-.049	-.042	-.040	.187	-.055	.157	.	.
	LF15+	.999	.949	.948	.818	1.000	.775	.	.
	Tvacc	.788	.770	.759	.935	.775	1.000	1.000	.
	Tcases	.896	.896	.894	.947	.897	.916		1.000
Sig. (1-tailed)	Et	.	.000	.000	.000	.000	.000	.000	.000
	Et-1	.000	.	.000	.000	.000	.000	.000	.000
	Et-2	.000	.000	.	.000	.000	.000	.000	.000
	VGDPt-1	.000	.000	.000	.	.000	.000	.000	.000
	AP	.376	.393	.399	.112	.360	.155	.288	.288
	LabF15+	.000	.000	.000	.000	.	.000	.000	.000
	Tvacc	.000	.000	.000	.000	.000	.	.000	.000
	Tcases	.000	.000	.000	.000	.000	.000	.	.
N	Et	44	44	44	44	44	44	44	44
	Et-1	44	44	44	44	44	44	44	44
	Et-22	44	44	44	44	44	44	44	44
	VGDPt-1	44	44	44	44	44	44	44	44
	AP	44	44	44	44	44	44	44	44
	LF15+	44	44	44	44	44	44	44	44
	Tvacc	44	44	44	44	44	44	44	44
	Tcases	44	44	44	44	44	44	44	44

Table S3. Correlation matrix form2

		Et	Et-1	Et-2	VGDPt-1	AP	Dumm1	Dumm2	LF15+
Pearson Correlation	Et	1.000	.951	.949	.828	-.049	.	.	.999
	Et-1	.951	1.000	.999	.846	-.042	.	.	.949
	Et-2	.949	.999	1.000	.841	-.040	.	.	.948
	VGDPt-1	.828	.846	.841	1.000	.187	.	.	.818
	AP	-.049	-.042	-.040	.187	1.000	.	.	-.055
	Dumm1	.	.	.	.	.	1.000	.	.
	Dumm2	.	.	.	.	.	.	1.000	.
	LF15+	.999	.949	.948	.818	-.055	.	.	1.000
Sig. (1-tailed)	Et	.	.000	.000	.000	.376	.000	.000	.000
	Et-1	.000	.	.000	.000	.393	.000	.000	.000
	Et-2	.000	.000	.	.000	.399	.000	.000	.000
	VGDPt-1	.000	.000	.000	.	.112	.000	.000	.000
	AP	.376	.393	.399	.112	.	.000	.000	.360
	Dumm1	.000	.000	.000	.000	.000	.	.000	.000
	Dumm2	.000	.000	.000	.000	.000	.000	.	.000
	LF15+	.000	.000	.000	.000	.360	.000	.000	.
N	Et	44	44	44	44	44	44	44	44
	Et-1	44	44	44	44	44	44	44	44
	Et-2	44	44	44	44	44	44	44	44
	VGDPt-1	44	44	44	44	44	44	44	44
	AP	44	44	44	44	44	44	44	44
	Dumm1	44	44	44	44	44	44	44	44
	Dumm2	44	44	44	44	44	44	44	44
	LF15+	44	44	44	44	44	44	44	44

Results of Regression Estimation

Table S4. Regression- goodness of fit[b]

	Value	df	Value/df
Deviance	5.388E8	416	1295195.626
Scaled Deviance	424.000	416	
Pearson Chi-Square	5.388E8	416	1295195.626
Scaled Pearson Chi-Square	424.000	416	
Log Likelihood[a]	-3581.316		
Akaike's Information Criterion (AIC)	7180.632		
Finite Sample Corrected AIC (AICC)	7181.067		
Bayesian Information Criterion (BIC)	7217.080		
Consistent AIC (CAIC)	7226.080		

a. The full log likelihood function is displayed and used in computing information criteria.

b. Information criteria are in small-is-better form.

Table S5. Omnibus test[a] of the model form 1

Likelihood Ratio Chi-Square	df	Sig.
2718.635	7	.000

Dependent variable: Et

Model: (intercept), t_cases, t_Vacc, LF, Et-1,Et-2, VGDPt-1, AP

a. Compares the fitted model against the intercept – only model

Table S6. Autocorrelation, Series:Et

			Box-Ljung Statistic		
Lag	Autocorrelation	Std. Error[a]	Value	df	Sig.[b]
1	.915	.047	371.222	1	.000
2	.840	.047	685.220	2	.000
3	.769	.047	949.202	3	.000
4	.688	.047	1160.733	4	.000
5	.605	.047	1324.613	5	.000
6	.521	.047	1446.679	6	.000
7	.440	.047	1533.708	7	.000
8	.370	.047	1595.538	8	.000
9	.295	.047	1635.038	9	.000
10	.224	.047	1657.559	10	.000
11	.205	.047	1676.607	11	.000
12	.189	.047	1692.795	12	.000
13	.175	.047	1706.796	13	.000
14	.160	.047	1718.439	14	.000
15	.144	.047	1727.963	15	.000
16	.129	.047	1735.572	16	.000

a. The underlying process assumed is independence (white noise).

b. Based on the asymptotic chi-square approximation.

Table S7. Partial autocorrelation, Et

Lag	Partial Autocorrelation	Std. Error
1	.915	.049
2	.022	.049
3	-.014	.049
4	-.103	.049
5	-.066	.049
6	-.058	.049
7	-.041	.049
8	.022	.049
9	-.072	.049
10	-.037	.049
11	.260	.049
12	.037	.049
13	.008	.049
14	-.071	.049
15	-.044	.049
16	-.043	.049

Table S8. Parameter estimates of the model form 1

			95% Wald Confidence Interval	
Parameter	B	Std. Error	Lower	Upper
(Intercept)	82.437	160.0186	-231.194	396.067
t_vacc	.001	.0010	-.001	.002
t_cases	.000	.0001	-.001	-7.033E-5
LF15	.446	.1727	.107	.784
Et-1	.729	.2690	.202	1.256
Et-2	-.199	.1368	-.468	.069
VGDPt-1	-.006	.0075	-.021	.009
AP	.001	.0050	-.009	.011
(Scale)	1831151.436			

Table S9. Hypothesis test of the model form 1

	Hypothesis Test		
Parameter	Wald Chi-Square	df	Sig.
(Intercept)	.265	1	.606
t_vacc	.316	1	.574
t_cases	6.001	1	.014
LF15	6.651	1	.010
Et-1	7.347	1	.007
Et-2	2.123	1	.145
VGDPt-1	.675	1	.411
AP	.024	1	.876
(Scale)			

Dependent Variable: Et
Model: (Intercept), t_vacc,, t_cases, LF15, Et-1, Et-2, VGDPt-1, AP

Table S10. Parameter estimates of the model form 2

			95% Wald Confidence Interval	
Parameter	B	Std. Error	Lower	Upper
(Intercept)	163.523	118.0876	-67.925	394.970
LF15	.399	.0294	.342	.457
Et-1	.463	.0519	.361	.565
Et-2	.095	.0476	.002	.189
VGDPt-1	.005	.0015	.002	.008
AP	-.003	.0046	-.012	.006
Dumm1	-331.552	124.2950	-575.166	-87.938
Dumm2	406.646	250.8786	-85.067	898.359
(Scale)	1296194.373[a]	89022.9951	1132946.416	1482964.975

Table S11. Hypothesis test of the model form 2

	Hypothesis Test		
Parameter	Wald Chi-Square	df	Sig.
(Intercept)	1.918	1	.166
LF15	184.295	1	.000
Et-1	79.519	1	.000
Et-2	4.012	1	.045
VGDPt-1	11.661	1	.001
AP	.321	1	.571
Dumm1	7.115	1	.008
Dumm2	2.627	1	.105
(Scale)			

Dependent Variable: EmptQ
Model: (Intercept), LabF15, EmptQ1, EmplQ2, VarQt1, Pmoy, Dumm1, Dumm2
a. Maximum likelihood estimate.

Results of Fixed Effect Model

Table S12. Information criteria[a]of the model form 1

-2 Restricted Log Likelihood	5481.580
Akaike's Information Criterion (AIC)	5591.580
Hurvich and Tsai's Criterion (AICC)	5608.691
Bozdogan's Criterion (CAIC)	5868.268
Schwarz's Bayesian Criterion (BIC)	5813.268

The information criteria are displayed in smaller-is-better forms.
a. Dependent Variable: Et.

Table S13. Estimates of Fixed Effects[a]of the model form 1

						95% Confidence Interval	
Parameter	Estimate	Std. Error	df	t	Sig.	Lower Bound	Upper Bound
Intercept	314.314251	84.751345	4.274	3.709	.018	84.830035	543.798468
LF15	.939507	.003593	21.918	261.490	.000	.932054	.946960
Et-1	.045371	.003902	65.616	11.628	.000	.037580	.053162
Et-2	.002644	.001556	9.483	1.699	.122	-.000848	.006137
VGDPt-1	.000636	.000137	48.327	4.639	.000	.000360	.000911
AP	-.013002	.003701	6.966	-3.514	.010	-.021762	-.004243
t_vacc	.000109	2.147172E-5	39.621	5.071	.000	6.548351E-5	.000152
t_cases	-7.049263E-5	5.655245E-6	37.391	-12.465	.000	-8.194721E-5	-5.903806E-5

a. Dependent Variable: Et.

Table S14. Information Criteria[a]of the model form 2

-2 Restricted Log Likelihood	5432.171
Akaike's Information Criterion (AIC)	5542.171
Hurvich and Tsai's Criterion (AICC)	5559.283
Bozdogan's Criterion (CAIC)	5818.859
Schwarz's Bayesian Criterion (BIC)	5763.859

The information criteria are displayed in smaller-is-better forms.
a. Dependent Variable: Et.

Table S15. Estimates of Fixed Effects[a]of the model form 2

Parameter	Estimate	Std. Error	df	t	Sig.	95% Confidence Interval	
						Lower Bound	Lower Bound
Intercept	-16.478804	93.392475	50.350	-.176	.861	-204.030768	171.073161
EmptQ1	.055223	.002912	69.336	18.967	.000	.049415	.061031
EmplQ2	-.007326	.001781	20.448	-4.114	.001	-.011035	-.003616
VarQt1	.000637	9.665866E-5	20.742	6.591	.000	.000436	.000838
LabF15	.947212	.003545	62.514	267.201	.000	.940127	.954297
Pmoy	-.009875	.002656	15.999	-3.718	.002	-.015506	-.004244
Dumm1	-15.768382	7.678031	42.945	-2.054	.046	-31.253183	-.283580
Dumm2	-29.816969	7.664524	14.513	-3.890	.002	-46.201394	-13.432543

a. Dependent Variable: Et

Results of Random Effect Model

Table S16. Information Criteria[a]of the model form 1

-2 Restricted Log Likelihood	9504.084
Akaike's Information Criterion (AIC)	9630.084
Hurvich and Tsai's Criterion (AICC)	9652.993
Bozdogan's Criterion (CAIC)	9947.017
Schwarz's Bayesian Criterion (BIC)	9884.017

a. Dependent Variable: Et.

Table S17. Estimates of Random Effects[a]of the model form 1

						95% Confidence Interval	
Parameter	Estimate	Std. Error	df	t	Sig.	Lower Bound	Upper Bound
Intercept	524.514410	1950.538066	.000	.269	1.000	-22229.462988	23278.491807
t_vacc	-.589583	40.251602	.000	-.015	.000	-.601760	-.577406
LabF15	.733206	25.678145	.000	.029	1.000	-101.728906	103.195318
Et-1	.031859	25.682960	.000	.001	1.000	-20.960422	21.024139
Et-2	-.041244	25.670187	.000	-.002	1.000	-177.996990	177.914503
VGDPt-1	-.008194	25.630292	.000	.000	1.000	-21.485055	21.468667
AP	-.259931	25.636555	.000	-.010	1.000	-257.489115	256.969254
t_cases	-.004090	25.538888	.000	.000	.000	-.007618	-.000562

a. Dependent Variable: Et.