The below results were produced using the STATA code file called "Table2STATAscript.do" on June 29th, 2024. The code includes randomization, so the estimated coefficients could vary slightly from those presented here. However, the directions and the conclusions remain the same.

#How does training improve individual forecasts? Modeling Differences in Compensatory and Non-Compensatory Biases in Geopolitical Forecasts

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#This Script is used to gather numbers for the Table 2 of the manuscript.

```
  ___  ____  ____  ____  ____ ®
 /__    /   ____/   /   ____/      18.0
___/   /   /___/   /   /___/       SE—Standard Edition

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Notes:
      1. Unicode is supported; see help unicode_advice.
      2. Maximum number of variables is set to 5,000 but can be increased; see
          help set_maxvar.
      3. New update available; type -update all-

.
. import excel "/Users/mohota/Downloads/ReCod.xlsx", sheet("ReCod") firstrow
(39 vars, 50,161 obs)
```

Model 1:

. bayes: logit BinaryOutcome c.ForecastLogRatio if Experience == 0

#Time to run Model 1:

#. timer list 1

1:   16.54 /   1 =   16.5370

```
Results
. bayes: logit BinaryOutcome c.ForecastLogRatio if Experience == 0

Burn-in ...
Simulation ...

Model summary
------------------------------------------------------------------------------
Likelihood:
  BinaryOutcome ~ logit(xb_BinaryOutcome)

Prior:
  {BinaryOutc~e:ForecastLogRatio _cons} ~ normal(0,10000)                  (1)
------------------------------------------------------------------------------
(1) Parameters are elements of the linear form xb_BinaryOutcome.

Bayesian logistic regression                     MCMC iterations  =     12,500
Random-walk Metropolis-Hastings sampling         Burn-in          =      2,500
                                                 MCMC sample size =     10,000
                                                 Number of obs    =     39,481
                                                 Acceptance rate  =      .2304
                                                 Efficiency:  min =     .07771
                                                              avg =      .1096
Log marginal-likelihood = -19772.466                          max =      .1415

------------------------------------------------------------------------------
                 |                                                Equal-tailed
   BinaryOutcome |      Mean   Std. dev.     MCSE     Median  [95% cred. interval]
-----------------+------------------------------------------------------------
ForecastLogRatio |   .3423664   .0067599   .000243   .3423988   .3295764   .3552975
           _cons |  -1.040556   .0125727   .000334  -1.040663  -1.064879  -1.016867
------------------------------------------------------------------------------
Note: Default priors are used for model parameters.
```

Model 2:

Since the model has randomization, we set the seed. The coeffienents still might vary very slightly.

. set seed 6092024

. bayes: melogit BinaryOutcome c.ForecastLogRatio || user_id: c.ForecastLogRatio

#Time to run Model 2:

#. timer list 1

1: 230.09 / 1 = 230.0890

Page 1 of Model 2's results:

```
Results
. set seed 6092024

. bayes: melogit BinaryOutcome c.ForecastLogRatio if Experience == 0 || user_id: c.ForecastLogRatio

Burn-in 2500 aaaaaaaaa1000aaaaaaaaa2000aaaaa done
Simulation 10000 .........1000.........2000.........3000.........4000.........5000.........6000.........7000.........8000..
> .......9000.........10000 done

Multilevel structure
------------------------------------------------------------------------------
user_id
    {U0}: random intercepts
    {U1}: random coefficients for ForecastLogRatio
------------------------------------------------------------------------------

Model summary
----------------------------------------------------------------------------------
Likelihood:
  BinaryOutcome ~ melogit(xb_BinaryOutcome)

Priors:
  {BinaryOutc~e:ForecastLogRatio _cons} ~ normal(0,10000)                     (1)
                                   {U0} ~ normal(0,{U0:sigma2})               (1)
                                   {U1} ~ normal(0,{U1:sigma2})               (1)

Hyperpriors:
  {U0:sigma2} ~ igamma(.01,.01)
  {U1:sigma2} ~ igamma(.01,.01)
----------------------------------------------------------------------------------
(1) Parameters are elements of the linear form xb_BinaryOutcome.

Bayesian multilevel logistic regression          MCMC iterations  =     12,500
Random-walk Metropolis-Hastings sampling         Burn-in          =      2,500
                                                 MCMC sample size =     10,000
Group variable: user_id                          Number of groups=       851
                                                 Obs per group:
```

Page 2 of Model 2’s results:

Results

```
  {U0:sigma2} ~ igamma(.01,.01)
  {U1:sigma2} ~ igamma(.01,.01)
------------------------------------------------------------------------------------
(1) Parameters are elements of the linear form xb_BinaryOutcome.

Bayesian multilevel logistic regression              MCMC iterations  =     12,500
Random-walk Metropolis-Hastings sampling             Burn-in          =      2,500
                                                     MCMC sample size =     10,000
Group variable: user_id                              Number of groups=       851
                                                     Obs per group:
                                                              min =          1
                                                              avg =       46.4
                                                              max =        111
Family: Bernoulli                                    Number of obs    =     39,481
Link:   logit                                        Acceptance rate  =      .3288
                                                     Efficiency:  min =    .001905
                                                                  avg =     .03103
Log marginal-likelihood                                           max =      .1094

------------------------------------------------------------------------------------
                 |                                                Equal-tailed
                 |      Mean   Std. dev.     MCSE     Median  [95% cred. interval]
-----------------+------------------------------------------------------------------
BinaryOutcome    |
ForecastLogRatio |  .5849568   .0173772    .00273   .5845949   .5539536   .6193767
           _cons | -1.009224   .0129421   .000391   -1.00856  -1.034599  -.9837726
-----------------+------------------------------------------------------------------
user_id          |
       U0:sigma2 |  .0034942   .0015529   .000356   .0030942   .0015884   .0074536
       U1:sigma2 |  .0941136   .0094083   .001008   .0935117   .0771833   .1134356
------------------------------------------------------------------------------------
Note: Default priors are used for model parameters.
Note: There is a high autocorrelation after 500 lags.
Note: Adaptation tolerance is not met in at least one of the blocks.

.
```

Model 3:

. bayes: melogit BinaryOutcome c.ForecastLogRatio##i.TrainingBinary || user_id: c.ForecastLogR

> atio

#Time to run Model 3:

#. timer list 1

1: 301.42 / 1 = 301.4210

Page 1 of Model 3's results:

```
Results
. bayes: melogit BinaryOutcome c.ForecastLogRatio##i.TrainingBinary if Experience == 0 || user_id: c.ForecastLogRatio

Burn-in 2500 aaaaaaaaa1000aaaaaaaaa2000aaaaa done
Simulation 10000 .........1000.........2000.........3000.........4000.........5000.........6000.........7000.........8000..
> .......9000.........10000 done

Multilevel structure
------------------------------------------------------------------------------
user_id
    {U0}: random intercepts
    {U1}: random coefficients for ForecastLogRatio
------------------------------------------------------------------------------

Model summary
------------------------------------------------------------------------------
Likelihood:
  BinaryOutcome ~ melogit(xb_BinaryOutcome)

Priors:
                   {BinaryOutc~e:ForecastLogRatio} ~ normal(0,10000)            (1)
                   {BinaryOutc~e:1.TrainingBinary} ~ normal(0,10000)            (1)
  {BinaryOutc~e:1.TrainingBinary#c.ForecastLogRatio} ~ normal(0,10000)          (1)
                              {BinaryOutc~e:_cons} ~ normal(0,10000)            (1)
                                              {U0} ~ normal(0,{U0:sigma2})      (1)
                                              {U1} ~ normal(0,{U1:sigma2})      (1)

Hyperpriors:
  {U0:sigma2} ~ igamma(.01,.01)
  {U1:sigma2} ~ igamma(.01,.01)
------------------------------------------------------------------------------
(1) Parameters are elements of the linear form xb_BinaryOutcome.

Bayesian multilevel logistic regression           MCMC iterations  =     12,500
Random-walk Metropolis-Hastings sampling          Burn-in          =      2,500
                                                  MCMC sample size =     10,000
Group variable: user_id                           Number of groups=       851
```

Page 2 of Model 3's results:

```
Results

Bayesian multilevel logistic regression                MCMC iterations  =     12,500
Random-walk Metropolis-Hastings sampling               Burn-in          =      2,500
                                                       MCMC sample size =     10,000
Group variable: user_id                                Number of groups=        851
                                                       Obs per group:
                                               min =          1
                                               avg =       46.4
                                               max =        111
Family: Bernoulli                                      Number of obs    =     39,481
Link:   logit                                          Acceptance rate  =      .2554
                                                       Efficiency:  min =    .001529
                                                                    avg =     .01339
Log marginal-likelihood                                             max =     .03798

------------------------------------------------------------------------------------------------
                                  |                                            Equal-tailed
                                  |      Mean   Std. dev.     MCSE     Median  [95% cred. interval]
----------------------------------+-------------------------------------------------------------
BinaryOutcome                     |
                 ForecastLogRatio |  .5150221   .0192959   .002921   .5148801   .4776643   .5521207
                 1.TrainingBinary |  .0156495   .0264033     .0019   .0165011  -.0364689   .0668892
                                  |
TrainingBinary#c.ForecastLogRatio |
                                1 |   .144302   .0296456   .004193   .1444224   .0817382   .2062481
                                  |
                            _cons | -1.014741   .0174562   .000896  -1.014664  -1.050202  -.9809617
----------------------------------+-------------------------------------------------------------
user_id                           |
                        U0:sigma2 |  .0026645   .0010263   .000262   .0024493     .00129   .0052881
                        U1:sigma2 |  .0901033    .008713    .00079     .09007   .0736799     .10807
------------------------------------------------------------------------------------------------
Note: Default priors are used for model parameters.
Note: There is a high autocorrelation after 500 lags.
Note: Adaptation tolerance is not met in at least one of the blocks.

.
```

Model 4:

. bayes: melogit BinaryOutcome c.ForecastLogRatio##i.TrainingBinary c.ForecastLogRatio##i.year2binary || user_id: c.ForecastLogRatio

#Time to run Model 4:

#. timer list 1

1: 388.62 / 1 = 388.6210

Page 1 of Model 4's results:

```
Results
. bayes: melogit BinaryOutcome c.ForecastLogRatio##i.TrainingBinary c.ForecastLogRatio##i.year2binary if Experience == 0 ||
>  user_id: c.ForecastLogRatio

Burn-in 2500 aaaaaaaaa1000aaaaaaaaa2000aaaaa done
Simulation 10000 .........1000.........2000.........3000.........4000.........5000.........6000.........7000.........8000..
> .......9000.........10000 done

Multilevel structure
------------------------------------------------------------------------------
user_id
    {U0}: random intercepts
    {U1}: random coefficients for ForecastLogRatio
------------------------------------------------------------------------------

Model summary
------------------------------------------------------------------------------
Likelihood:
  BinaryOutcome ~ melogit(xb_BinaryOutcome)

Priors:
                     {BinaryOutc~e:ForecastLogRatio} ~ normal(0,10000)                          (1)
                     {BinaryOutc~e:1.TrainingBinary} ~ normal(0,10000)                          (1)
  {BinaryOutc~e:1.TrainingBinary#c.ForecastLogRatio} ~ normal(0,10000)                          (1)
                        {BinaryOutc~e:1.year2binary} ~ normal(0,10000)                          (1)
     {BinaryOutc~e:1.year2binary#c.ForecastLogRatio} ~ normal(0,10000)                          (1)
                                {BinaryOutc~e:_cons} ~ normal(0,10000)                          (1)
                                                {U0} ~ normal(0,{U0:sigma2})                    (1)
                                                {U1} ~ normal(0,{U1:sigma2})                    (1)

Hyperpriors:
  {U0:sigma2} ~ igamma(.01,.01)
  {U1:sigma2} ~ igamma(.01,.01)
------------------------------------------------------------------------------
(1) Parameters are elements of the linear form xb_BinaryOutcome.

Bayesian multilevel logistic regression                   MCMC iterations  =     12,500
```

Page 2 of Model 4's results:

```
Results

Bayesian multilevel logistic regression                MCMC iterations  =     12,500
Random-walk Metropolis-Hastings sampling               Burn-in          =      2,500
                                                       MCMC sample size =     10,000
Group variable: user_id                                Number of groups=        851
                                                       Obs per group:
                                                 min =          1
                                                 avg =       46.4
                                                 max =        111
Family: Bernoulli                                      Number of obs    =     39,481
Link:   logit                                          Acceptance rate  =      .3311
                                                       Efficiency:  min =    .001785
                                                                    avg =    .005509
Log marginal-likelihood                                             max =      .0179

----------------------------------------------------------------------------------------
                                  |                                     Equal-tailed
                                  |      Mean   Std. dev.     MCSE     Median  [95% cred. interval]
----------------------------------+-----------------------------------------------------
BinaryOutcome                     |
                 ForecastLogRatio |  .5615235   .0247621   .005555   .5621972   .5141854   .6057944
                 1.TrainingBinary |  .0096352   .0273484   .002044   .0103757  -.0427694   .0630151
                                  |
TrainingBinary#c.ForecastLogRatio |
                                1 |  .1431432   .0296502   .007018   .1419348    .089987   .1990223
                                  |
                     1.year2binary |  .1402667   .0293871   .005644   .1387164   .0866484   .1994227
                                  |
   year2binary#c.ForecastLogRatio |
                                1 | -.0859033   .0299278   .005926    -.08605  -.1422018  -.0249659
                                  |
                            _cons |  -1.08245   .0243968   .004234  -1.081174  -1.131714  -1.036687
----------------------------------+-----------------------------------------------------
user_id                           |
                        U0:sigma2 |  .0030063    .000931   .000186   .0029052   .0015502   .0052903
                        U1:sigma2 |  .0896008   .0085865   .000807   .0893385   .0739416    .107156
----------------------------------------------------------------------------------------

Command
```

's results:

Model 5:

. bayes: melogit BinaryOutcome c.ForecastLogRatio##i.TrainingBinary##i.year2binary if Experience == 0 || user_id

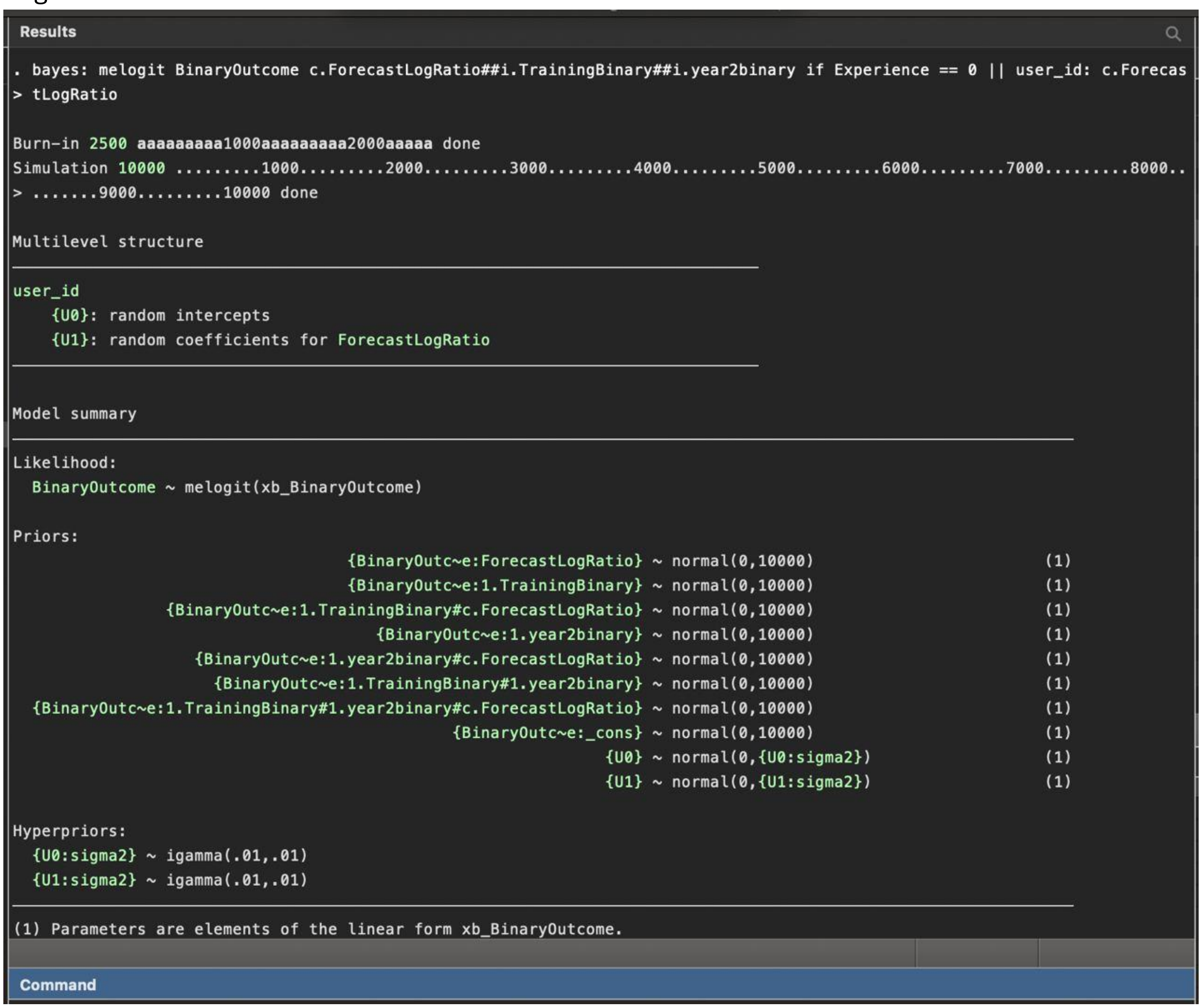
> : c.ForecastLogRatio

#Time to run Model 5:

#. timer list 1

1: 649.75 / 1 = 649.7470

Page 1 of Model 5



```
Results

. bayes: melogit BinaryOutcome c.ForecastLogRatio##i.TrainingBinary##i.year2binary if Experience == 0 || user_id: c.Forecas
> tLogRatio

Burn-in 2500 aaaaaaaaa1000aaaaaaaaa2000aaaaa done
Simulation 10000 .........1000.........2000.........3000.........4000.........5000.........6000.........7000.........8000..
> .......9000.........10000 done

Multilevel structure
------------------------------------------------------------------------------
user_id
    {U0}: random intercepts
    {U1}: random coefficients for ForecastLogRatio
------------------------------------------------------------------------------

Model summary
------------------------------------------------------------------------------
Likelihood:
  BinaryOutcome ~ melogit(xb_BinaryOutcome)

Priors:
                                  {BinaryOutc~e:ForecastLogRatio} ~ normal(0,10000)            (1)
                                  {BinaryOutc~e:1.TrainingBinary} ~ normal(0,10000)            (1)
                 {BinaryOutc~e:1.TrainingBinary#c.ForecastLogRatio} ~ normal(0,10000)            (1)
                                     {BinaryOutc~e:1.year2binary} ~ normal(0,10000)            (1)
                    {BinaryOutc~e:1.year2binary#c.ForecastLogRatio} ~ normal(0,10000)            (1)
                      {BinaryOutc~e:1.TrainingBinary#1.year2binary} ~ normal(0,10000)            (1)
  {BinaryOutc~e:1.TrainingBinary#1.year2binary#c.ForecastLogRatio} ~ normal(0,10000)            (1)
                                             {BinaryOutc~e:_cons} ~ normal(0,10000)            (1)
                                                             {U0} ~ normal(0,{U0:sigma2})      (1)
                                                             {U1} ~ normal(0,{U1:sigma2})      (1)

Hyperpriors:
  {U0:sigma2} ~ igamma(.01,.01)
  {U1:sigma2} ~ igamma(.01,.01)
------------------------------------------------------------------------------
(1) Parameters are elements of the linear form xb_BinaryOutcome.

Command
```

’s results:

Page 2 of Model 5’s results:

```
Results
(1) Parameters are elements of the linear form xb_BinaryOutcome.

Bayesian multilevel logistic regression              MCMC iterations  =     12,500
Random-walk Metropolis-Hastings sampling             Burn-in          =      2,500
                                                     MCMC sample size =     10,000
Group variable: user_id                              Number of groups=       851
                                                     Obs per group:
                                          min =          1
                                          avg =       46.4
                                          max =        111
Family: Bernoulli                                    Number of obs    =     39,481
Link:   logit                                        Acceptance rate  =      .2835
                                                     Efficiency:  min =    .002098
                                                                  avg =     .00631
                                                                  max =     .01741
Log marginal-likelihood

----------------------------------------------------------------------------------------------
                                       |                                          Equal-tailed
                                       |      Mean   Std. dev.     MCSE     Median  [95% cred. interval]
---------------------------------------+------------------------------------------------------
BinaryOutcome                          |
                      ForecastLogRatio |  .5539816   .0188804   .002993   .5563495   .5094402   .5848905
                      1.TrainingBinary | -.0473222   .0321662   .003227  -.0474587  -.1078511   .0190324
                                       |
     TrainingBinary#c.ForecastLogRatio |
                                     1 |  .1387734   .0303295   .005267    .135788   .0882398   .1983211
                                       |
                         1.year2binary |  .0779092   .0265128   .004065   .0808747   .0181696   .1205499
                                       |
        year2binary#c.ForecastLogRatio |
                                     1 | -.0921883   .0319851   .004891   -.092612  -.1512925  -.0271536
                                       |
            TrainingBinary#year2binary |
                                   1 1 |  .1393874   .0428197     .0052    .140212   .0533425   .2177178
                                       |
TrainingBinary#year2binary#c.ForecastLogRatio
Command
```

Page 3 of Model 5's results:

Results

```
                                            Efficiency:  min =    .002098
                                                         avg =     .00631
Log marginal-likelihood                                  max =     .01741
```

	Mean	Std. dev.	MCSE	Median	Equal-tailed [95% cred. interval]	
BinaryOutcome						
ForecastLogRatio	.5539816	.0188804	.002993	.5563495	.5094402	.5848905
1.TrainingBinary	-.0473222	.0321662	.003227	-.0474587	-.1078511	.0190324
TrainingBinary#c.ForecastLogRatio						
1	.1387734	.0303295	.005267	.135788	.0882398	.1983211
1.year2binary	.0779092	.0265128	.004065	.0808747	.0181696	.1205499
year2binary#c.ForecastLogRatio						
1	-.0921883	.0319851	.004891	-.092612	-.1512925	-.0271536
TrainingBinary#year2binary						
1 1	.1393874	.0428197	.0052	.140212	.0533425	.2177178
TrainingBinary#year2binary#c.ForecastLogRatio						
1 1	.0289564	.0362047	.004243	.029048	-.0434726	.0983469
_cons	-1.064619	.0159105	.002593	-1.063901	-1.095129	-1.034592
user_id						
U0:sigma2	.003342	.0011267	.000246	.0031168	.0018063	.0061634
U1:sigma2	.0886948	.0083476	.000633	.088273	.0734079	.106492

Note: Default priors are used for model parameters.
Note: There is a high autocorrelation after 500 lags.

.

Command