Appendix

This document contains estimation methods and regression results, including sensitivity analysis for the results found in:


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Variable Definitions

The following is a key to variables used in the output tables listed in this Appendix:

\( \lnimr \): natural log of the infant mortality (IMR) rate (deaths in first year of life per 1,000 live births)

\( \lncmr \): natural log of the child mortality (CMR) rate (deaths in first 5 years of life)

\( \lnlifex \): natural log of life expectancy at birth \( (e_0) \)

\( \text{ad}5\text{pc} \): DAH spending per capita over previous five years

\( \text{ad}5\text{pc}_2 \): Square of \( \text{ad}5\text{pc} \)

\( \lnad5\text{pc} \): natural log of DAH spending per capita over previous five years

\( \lnwt5\text{pc} \): natural log of water aid per capita over previous five years

\( \lnal5\text{pc} \): natural log of all other aid over previous five years

\( \lnigdp5 \): real GDP per capita over previous 5 year period

\( \lni\text{ipop} \): natural log of recipient country population

\( \text{ipolity}2 \): Polity2 score

\( t5 \): time (in 5 year increments)

The following definitions apply in Donor Type Models

\( \lnad15\text{pc} \): natural log of DAH for donor type 1: Bi-laterals

\( \lnad25\text{pc} \): natural log of DAH for donor type 2: multilaterals
The following definitions apply in Sub-Sector Models

lnad15pc: natural log of DAH for sub-sector 1: Administration

lnad25pc: natural log of DAH for sub-sector 1: Training

lnad35pc: natural log of DAH for sub-sector 1: Infrastructure

lnad45pc: natural log of DAH for sub-sector 1: Basic Health Care

lnad55pc: natural log of DAH for sub-sector 1: Nutrition

lnad65pc: natural log of DAH for sub-sector 1: HIV/AIDS and other STDs

lnad75pc: natural log of DAH for sub-sector 1: Other Infectious Disease

lnad85pc: natural log of DAH for sub-sector 1: Family Planning

lnad95pc: natural log of DAH for sub-sector 1: Non-Specific

Note: lags of variables (in 5 year increments) are noted by variablename_1

See text for additional information on variable definitions
**Estimation Methods**

As discussed in the text, the population mortality rate $M_{it}$ follows a trajectory over time, where countries are indexed by $i$ and time periods (in five year increments) by $t$. Other variables shift this trajectory up and down; these include the primary variable of interest, $DAH_i$, and control variables, which include other forms of aid, GDP, population, and Polity2 (these are all components of the vector $X_i$). The mortality trajectory is then approximated by the following linear model:

$$ M_{it} = \beta_0 + \beta_1 t + \beta_2 DAH_{it} + X_i \beta_3 + \beta_4 M_{i(t-1)} + u_i + e_{it} $$

Other factors can also affect shift the mortality trajectory, as shown above. These include the lagged value of the dependent variable and an unobserved country effect, $u_i$, which varies across countries but is constant over time. This term captures the host of unobserved economic, political and cultural determinants of mortality and significantly reduces problems with omitted variable bias. The residual, $e_{it}$, is an independent error process. Finally, in most models the slope of the trajectory, $\beta_{1i}$, is assumed to be common across countries ($\beta_{1i} = \beta_1$). As specified above, however, it is possible to allow the slope to vary across countries (similar to the way that the $u_i$ term allows for variation in intercepts).

The following models can be estimated as special cases of the general model above:

**Static Models**

1. **Bi-variate OLS** ($\beta_{1i} = \beta_1$, $\beta_3 = 0$, $\beta_4 = 0$, $u_i = 0$). This is a simple OLS regression model of mortality on $DAH$ without any further controls.

2. **Multi-variate OLS** ($\beta_{1i} = \beta_1$, $\beta_4 = 0$, $u_i = 0$). This includes the complete set of explanatory variable including the time trend, but no lagged dependent variable.
Unobserved heterogeneity models

3. First difference model \((\beta_{1i} = \beta_1, \beta_4 = 0)\). The dependent variable and each independent variable is differenced, meaning the previous value is subtracted from the current value (e.g., \(x_{it} - x_{it-1}\)). In this specification, the country effects, \(u_i\), and the time trend \(t\), are present in the model, but they are swept away by the differencing process.

4. Random effects model \((\beta_{1i} = \beta_1, \beta_4 = 0)\). This model treats the unobserved country effects, \(u_i\), as random draws from a normal distribution. It is estimated by maximum likelihood and is justified for large samples. Coefficient estimates, however, are biased if the unobserved effects are correlated with the explanatory variable, which will often be the case.

5. Fixed effects model \((\beta_{1i} = \beta_1, \beta_4 = 0)\). This model treats the country effects as fixed parameters which can be estimated by OLS after subtracting the country-specific mean for each variable. It is equivalent to including a dummy variable for each country. Probably the most attractive feature of this model is that correlation between \(u_i\) and other explanatory variables does not cause bias.

Dynamic Models

6. Lagged dependent variable model \((\beta_{1i} = \beta_1, u_i = 0)\). This model has no fixed effect and a common time trend. However, the inclusion of the lagged dependent variable often has similar consequences to including fixed effects since both approaches involve shifting the time trajectory based on country-specific unobservables.

7. Dynamic panel model \((\beta_{1i} = \beta_1)\). This model captures the full dynamic specification above except that the slope is assumed constant. As Nickel (1981) showed, however, estimates of
parameters are biased. However, Monte Carlo simulations by Judson and Owen (1999) suggest the bias is mostly a problem with respect to $\beta_4$, a parameter of little interest here.

The dynamic panel model will be estimated two ways. The first approach is to use the simple fixed effects model with OLS, which will be done here. Second, GMM estimation using the common Arellano-Bond (1991) estimator is feasible. The Arellano-Bond approach takes first differences of the data and then uses lagged values of the variables as instrumental variables. This is a highly effective way to account for the obvious endogeneity of many of the variables in the model, including DAH, but the usual cost of instrumental variable regression, including GMM, is much higher standard errors. The Arellano-Bond estimates are consistent, but are designed for large-N studies. The small-sample properties of these estimators are not well known. Thus we have a tradeoff of a reduction in endogeneity bias at the cost of precision. The Arellano-Bond estimator also treats slope coefficients as fixed, as do the previous models.

8. Latent Growth Model ($\beta_4 = 0$). This last model is part of a class of models that go by many names including random coefficient models, mixed models, hierarchical linear models and multi-level models. Its strength is the highly flexible functional form that allows both random intercepts and random slopes. Furthermore, in the estimation results to follow, arbitrary correlation between the random effects in the model is allowed (and proves to be important). Latent growth models, however, also rely on large sample properties of maximum likelihood estimation for their justification and are not necessary unbiased in small samples. They also include no lagged dependent model.
**MAIN ESTIMATES: DAH Effectiveness**  
*(Infant Mortality)*

**Notes:**
DAH spending (lnad5pc) reported in Table 1 for all models  
Models 2, 6, 7a, 7b are reported in Table 2.

---

**Model (1): Bi-variate OLS**

Linear regression  
Number of obs = 547  
F( 1, 95) = 0.01  
Prob > F = 0.9261  
R-squared = 0.0001  
Root MSE = .57695  

(Std. Err. adjusted for 96 clusters in cc)

| lnimr  | Coef.      | Std. Err. | t    | P>|t| | [95% Conf. Interval] |
|--------|------------|-----------|------|-----|----------------------|
| lnad5pc| -0.0022826 | 0.0245499 | -0.09| 0.926| -0.0510204 -0.0464551|
| _cons  | 4.215864   | 0.0693644 | 60.78| 0.000| 4.078159 4.35357   |

---

**Model (2): Multi-variate OLS**

Linear regression  
Number of obs = 476  
F( 7, 83) = 49.94  
Prob > F = 0.0000  
R-squared = 0.6548  
Root MSE = .34012  

(Std. Err. adjusted for 84 clusters in cc)

| lnimr  | Coef.      | Std. Err. | t    | P>|t| | [95% Conf. Interval] |
|--------|------------|-----------|------|-----|----------------------|
| lnad5pc| 0.039193   | 0.0165601 | 2.37 | 0.020| 0.0062556 0.0721303|
| lnw5pc | -0.0179015 | 0.0160117 | -1.12| 0.267| -0.0497482 0.0139451|
| lnal5pc| -0.0139984 | 0.0167747 | -0.83| 0.406| -0.0473627 0.0193659|
| lnigdp5| -0.3704193 | 0.0337877 | -10.96| 0.000| -0.4376217 -0.3032169|
| lnipop | -0.0501531 | 0.0231518 | -2.17| 0.033| -0.096201  -0.0041051|
| ipolity2| -0.0087891 | 0.0049785 | -1.77| 0.081| -0.0186912 0.001113|
| t5     | -0.0965325 | 0.0123837 | -7.52| 0.000| -0.1220582 -0.0710067|
| _cons  | 8.371492   | 0.4319429 | 19.38| 0.000| 7.512375 9.230609  |
Model (3): First Differences (OLS)

Linear regression
Number of obs = 392
F(  6,   83) =   5.74
Prob > F = 0.0000
R-squared = 0.0490
Root MSE = .11189

(Std. Err. adjusted for 84 clusters in cc)

<table>
<thead>
<tr>
<th>Robust</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coef.  Std. Err.  t    P&gt;</td>
</tr>
</tbody>
</table>

D.lnimr   |  .0066632   .003151  2.11   0.037   .000396   .0129305 |
lnad5pc   |  .0007906   .0020118 -0.39   0.695  -.004792   .0032109 |
lnal5pc   |  -.0090529   .0031564 -2.87   0.005  -.0153308  -.0027749 |
lnigdp5   |  -.095253   .0353465  -2.69   0.009  -.1655558  -.0249502 |
lipop     |  .1896118   .2139481  0.89   0.378  -.2359224   .6151461 |
ipolity2  |  .0012532   .0008938  1.40   0.165  -.0005246   .0030309 |
t5        |               (omitted) |
_cons     |  -.1446429   .0268894  -5.38   0.000  -.1981247  -.0911610 |

Model (4): Fixed Effects

Fixed-effects (within) regression
Number of obs = 476
Number of groups = 84

Obs per group: min = 2
avg = 5.7
max = 6

F(7,83) = 32.40
Prob > F = 0.0000

(Std. Err. adjusted for 84 clusters in cc)

<table>
<thead>
<tr>
<th>Robust</th>
</tr>
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<tbody>
<tr>
<td>Coef.  Std. Err.  t    P&gt;</td>
</tr>
</tbody>
</table>

lnad5pc   |  .0290151   .0087095  3.33   0.001  .0116922   .0463379 |
lnwt5pc   |  -.0108708   .0071152 -1.53   0.130  -.0250227   .0032811 |
lnal5pc   |  -.024189   .0080785 -2.99   0.004  -.0402569   -.0081212 |
lnigdp5   |  -.1272372   .0583362 -2.18   0.032  -.2432655  -.0112089 |
lipop     |  .4557747   .2623241  1.74   0.086  -.0659774   .9775267 |
ipolity2  |  .0014783   .0028185  0.52   0.601  -.0041277   .0070843 |
t5        |  -.173381   .0303795 -5.24   0.000  -.2391748  -.1075873 |
_cons     |  -1.367288   4.217915 -0.32   0.747  -9.756651   7.021974 |

sigma_u   |  .92017101 |
sigma_e   |  .16043648 |
rho       |  .97049719  (fraction of variance due to u_i)
### Model (5): Random Effects

Random-effects GLS regression  
Number of obs       =       476  
Number of groups   =        84  

R-sq:  within = 0.6570  
   Obs per group: min =      2  
   between = 0.6475  
   avg =      5.7  
overall = 0.6373  
   max =      6  

Random effects u_i ~ Gaussian  
Wald chi2(7)  =    262.37  
Prob > chi2    =    0.0000  

(Std. Err. adjusted for 84 clusters in cc)

|         | Coef.  | Std. Err. |     z  |   P>|z|  | [95% Conf. Interval] |
|---------|--------|-----------|--------|------|---------------------|
| lnimr   | 0.0339 | 0.0085   | 3.98   | 0.000| 0.0172 - 0.0506 |
| lnad5pc | 0.0084 | 0.0069   | -1.22  | 0.223| -0.02 - 0.05  |
| lnwt5pc | 0.0276 | 0.0086   | -3.21  | 0.001| -0.0443 - 0.0078 |
| lnal5pc | 0.2730 | 0.0458   | -5.96  | 0.000| -0.3629 - 0.1832 |
| lnigdp5 | 0.0440 | 0.0154   | -1.60  | 0.114| -0.0907 - 0.0069 |
| ipolity2| 0.0023 | 0.0028   | -0.80  | 0.424| -0.0078 - 0.0033 |
| t5      | 0.1047 | 0.0124   | -8.44  | 0.000| -0.13 - 0.08  |
| _cons  | 7.5816 | 0.4451  | 17.03  | 0.000| 6.71 - 8.45  |

| sigma_u | 0.3006 |
| sigma_e | 0.1604 |
| rho    | 0.7783 |

(fraction of variance due to u_i)

### Model (6): OLS w/ Lagged Dependent Variable

Linear regression  
Number of obs       =       470  
F(  8,    83) =  211.07  
Prob > F      =  0.0000  
R-squared     =  0.8636  
Root MSE      =  .2143  

(Std. Err. adjusted for 84 clusters in cc)

|         | Coef.  | Std. Err. |     t  |   P>|t|  | [95% Conf. Interval] |
|---------|--------|-----------|--------|------|---------------------|
| lnimr   | 0.6943 | 0.0085   | 63.40  | 0.000| 0.4766 - 0.9119 |
| lnad5pc | 0.0052 | 0.0099   | 0.53   | 0.599| -0.0145 - 0.0250 |
| lnwt5pc | 0.0046 | 0.0078   | -0.59  | 0.559| -0.0201 - 0.0099 |
| lnal5pc | 0.0245 | 0.0154   | -1.60  | 0.114| -0.0552 - 0.0604 |
| lnigdp5 | 0.1586 | 0.0382   | -4.08  | 0.000| -0.2319 - 0.0798 |
| lnipop | 0.0319 | 0.0117   | -2.73  | 0.008| -0.0553 - 0.0086 |
| ipolity2| 0.0044 | 0.0023   | -1.90  | 0.062| -0.0091 - 0.0022 |
| t5      | 0.0194 | 0.0135   | -1.44  | 0.153| -0.0463 - 0.0074 |
| _cons  | 3.1652 | 0.7927 | 3.41   | 0.001| 1.3209 - 5.0095 |
Model (7a): Dynamic Panel Model (Fixed Effects)

Fixed-effects (within) regression

Group variable: cc

Number of obs = 470
Number of groups = 84

R-sq:  within  = 0.7678
between = 0.0103
overall = 0.0573

|                | Coef.   | Std. Err. | t    | P>|t| | [95% Conf. Interval] |
|----------------|---------|-----------|------|-----|----------------------|
| lnimr_l        | 0.31554 | 0.0965146 | 3.27 | 0.002 | 0.1235763 - 0.5075036 |
| lnad5pc        | 0.0147364 | 0.0078037 | 1.89 | 0.062 | -0.0007849 - 0.0302576 |
| lnwt5pc        | -0.0999135 | 0.0057695 | -1.72 | 0.089 | -0.0213888 - 0.0015619 |
| lnal5pc        | -0.028945 | 0.0087063 | -3.10 | 0.002 | -0.1285594 - 0.0710622 |
| lnigdp5        | -0.0436184 | 0.0427063 | -1.02 | 0.313 | -0.1285594 - 0.0710622 |
| lnipop         | 0.0007683 | 0.0022454 | 0.34 | 0.733 | -0.0036977 - 0.0052344 |

sigma_u = 0.77580996
sigma_e = 0.13778787
rho = 0.96942097

(Std. Err. adjusted for 84 clusters in cc)

Model (7b): Dynamic Panel Model (Arellano-Bond)

Arellano-Bond dynamic panel-data estimation

Group variable: cc

Number of obs = 309
Number of groups = 83

Time variable: t5

Obs per group: min = 1
avg = 3.722892
max = 4

Number of instruments = 29

Wald chi2(7) = 914.42
Prob > chi2 = 0.0000

Two-step results

|                | Coef.   | Std. Err. | t    | P>|t| | [95% Conf. Interval] |
|----------------|---------|-----------|------|-----|----------------------|
| lnimr          | 4.111502 | 2.035432 | 2.02 | 0.043 | 1.122198 - 8.100875  |

Instruments for differenced equation

L2(2).ipolity2

Standard: D.lnimr

Instruments for level equation

Standard: _cons

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**Model 8: Latent Growth Model**

Mixed-effects ML regression

|             | Coef.    | Std. Err. | z      | P>|z|   | [95% Conf. Interval] |
|-------------|----------|-----------|--------|-------|---------------------|
| lnimr       |          |           |        |      |                     |
| lnad5pc     | 0.0038149| 0.0038532 | 0.99   | 0.322| -.0037373 0.0113671 |
| lnwt5pc     | 0.0014454| 0.003024  | 0.48   | 0.633| -.0044815 0.0073723 |
| lnal5pc     | -0.0044433| 0.0038161 | -1.16  | 0.244| -.0119228 0.0030361 |
| lnigdp5     | -0.1430816| 0.0228715 | -6.26  | 0.000| -.1879089 -0.0982543 |
| lnipop      | -.0480747 | 0.0221236 | -2.17  | 0.030| -.0914362 -.0047132 |
| ipolicy2    | 0.0006909 | 0.0012441 | 0.56   | 0.579| -.0017475 0.0031292 |
| t5          | -0.112191 | 0.0100612 | -11.15 | 0.000| -.1319106 -.0924714 |
| _cons       | 6.555808  | 0.3946341 | 16.61  | 0.000| 5.782339 7.329277   |

Random-effects Parameters

<table>
<thead>
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<th></th>
<th>Estimate</th>
<th>Std. Err.</th>
<th>[95% Conf. Interval]</th>
</tr>
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<tbody>
<tr>
<td>sd(t5)</td>
<td>0.0839747</td>
<td>0.0068892</td>
<td>.0715017 .0986236</td>
</tr>
<tr>
<td>sd(_cons)</td>
<td>0.3369131</td>
<td>0.0285431</td>
<td>.2853676 .3977692</td>
</tr>
<tr>
<td>corr(t5,_cons)</td>
<td>-.2363338</td>
<td>.1277114</td>
<td>-.4668266 .0242253</td>
</tr>
<tr>
<td>sd(Residual)</td>
<td>.0674652</td>
<td>.0027907</td>
<td>.0622114 .0731627</td>
</tr>
</tbody>
</table>

LR test vs. linear regression: chi2(3) = 856.07  Prob > chi2 = 0.0000

Note: LR test is conservative and provided only for reference.
MAIN ESTIMATES: DAH Effectiveness
(Child Mortality)

Notes:
DAH spending (lnad5pc) reported in Table 1 for all models

Model (1): Bi-variate OLS

|               | Coef. | Std. Err. | t    | P>|t| | [95% Conf. Interval] |
|---------------|-------|-----------|------|-----|----------------------|
| lncmr         |       |           |      |     |                      |
| lnad5pc       | -.0016562 | .0309176  | -0.05| 0.957 | -.0630354 -.059723   |
| _cons         | 4.57434 | .0851429  | 53.73| 0.000 | 4.40531 4.743371    |

Model (2): Multi-variate OLS

|               | Coef. | Std. Err. | t    | P>|t| | [95% Conf. Interval] |
|---------------|-------|-----------|------|-----|----------------------|
| lncmr         |       |           |      |     |                      |
| lnad5pc       | .041724 | .0200731  | 2.08 | 0.041 | .0017993 .0816487   |
| lnwt5pc       | -.0155494 | .0191058 | -0.81 | 0.418 | -.05355 .0224512   |
| lnal5pc       | -.0135417 | .0200518 | -0.68 | 0.501 | -.053424 .0263407  |
| lnigdp5       | -.4530963 | .0394577 | -11.48 | 0.000 | -.531576 -.3746166 |
| lnipop        | -.0574818 | .0270915 | -2.12 | 0.037 | -.1113658 -.0035978 |
| ipolicy2      | -.0104524 | .0059117 | -1.77 | 0.081 | -.0222105 .0013058 |
| t5            | -.1093521 | .0149216 | -7.33 | 0.000 | -.1390305 -.0796736 |
| _cons         | 9.552418 | .5021486 | 19.02 | 0.000 | 8.553665 10.55117   |
Model (3): First Differences (OLS)

Linear regression                                      Number of obs = 392  
F(  6,  83) = 5.26  
Prob > F      = 0.0001  
R-squared     = 0.0450  
Root MSE      = .12775  
(Std. Err. adjusted for 84 clusters in cc)

<table>
<thead>
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<tbody>
<tr>
<td></td>
<td>Coef.</td>
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<td></td>
<td>Std. Err.</td>
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<td>lnad5pc D1.</td>
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<td>lnwt5pc D1.</td>
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<td>lnal5pc D1.</td>
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<td>lnigdp5 D1.</td>
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<td>lnipop D1.</td>
<td>.2203683</td>
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<tr>
<td>ipolity2 D1.</td>
<td>.0013604</td>
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<tr>
<td>t5 D1.</td>
<td>(omitted)</td>
</tr>
<tr>
<td>_cons</td>
<td>-.1640328</td>
</tr>
</tbody>
</table>

Model (4): Fixed Effects

Fixed-effects (within) regression               Number of obs = 476  
Group variable: cc                               Number of groups = 84  
R-sq:  within  = 0.6819                         Obs per group: min = 2  
        between = 0.0016            avg = 5.7  
        overall = 0.0051           max = 6  
F(7,83)            =     32.98  
corr(u_i, Xb)  = -0.7834                       Prob > F           =    0.0000  
(Std. Err. adjusted for 84 clusters in cc)

<table>
<thead>
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<td>Coef.</td>
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<td>ipolity2</td>
<td>.0021193</td>
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<td>t5</td>
<td>-.1976618</td>
</tr>
<tr>
<td>_cons</td>
<td>-2.059201</td>
</tr>
</tbody>
</table>

sigma_u |  1.0814562  
sigma_e |  .18058932  
rho    |  .97289175  
(fraction of variance due to u_i)
Model (5): Random Effects

<table>
<thead>
<tr>
<th>Random-effects GLS regression</th>
<th>Number of obs</th>
<th>476</th>
</tr>
</thead>
<tbody>
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<td>Group variable: cc</td>
<td>Number of groups</td>
<td>84</td>
</tr>
<tr>
<td>R-sq: within</td>
<td>0.6526</td>
<td></td>
</tr>
<tr>
<td>between</td>
<td>0.6567</td>
<td>avg</td>
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<tr>
<td>overall</td>
<td>0.6364</td>
<td>max</td>
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<td>Random effects u_i ~ Gaussian</td>
<td>Wald chi2(7)</td>
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<tr>
<td>corr(u_i, X)</td>
<td>Prob &gt; chi2</td>
<td>0.0000</td>
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</tbody>
</table>

(Std. Err. adjusted for 84 clusters in cc)

| lncmr | Coef. | Std. Err. | z     | P>|z| | 95% Conf. Interval |
|-------|-------|-----------|------|------|-------------------|
| lnd5pc | .0376426 | .0095461 | 3.94 | 0.000 | .0189326 - .0563525 |
| lnwt5pc | -.009282 | .0077846 | -1.19 | 0.233 | -.0245397 - .0059756 |
| lnalp5 | -.0314584 | .0098378 | -3.20 | 0.001 | -.0507401 - .0121767 |
| lnigdp5 | -.3081396 | .0529249 | -5.82 | 0.000 | -.4118704 - .2044087 |
| lnipop | -.0476447 | .0286624 | -1.66 | 0.096 | -.103822 - .0085326 |
| ipolity2 | -.0023216 | .0032169 | -0.72 | 0.470 | -.0086266 - .0039834 |
| t5 | -.1183538 | .0141577 | -8.36 | 0.000 | -.1461023 - -.0906052 |
| _cons | 8.343522 | .5097399 | 16.37 | 0.000 | 7.34445 - 9.342594 |

Model (6): OLS w/ Lagged Dependent Variable

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<tr>
<th>Linear regression</th>
<th>Number of obs</th>
<th>470</th>
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<tr>
<td>F( 8, 83)</td>
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<td>Prob &gt; F</td>
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<tr>
<td>R-squared</td>
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<tr>
<td>Root MSE</td>
<td>.26131</td>
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</table>

(Std. Err. adjusted for 84 clusters in cc)

| lncmr | Coef. | Std. Err. | t     | P>|t| | 95% Conf. Interval |
|-------|-------|-----------|------|------|-------------------|
| lncmr_1 | .8119689 | .1225066 | 6.63 | 0.000 | .5683081 - 1.05563 |
| lnd5pc | .0022894 | .0127159 | 0.18 | 0.858 | -.023002 - .0275807 |
| lnwt5pc | .0001167 | .0102529 | 0.01 | 0.991 | -.0202759 - .0205093 |
| lnalp5 | -.0262103 | .0176647 | -1.48 | 0.142 | -.0613448 - .0089241 |
| lnigdp5 | -.2020877 | .0430525 | -4.69 | 0.000 | -.2877174 - -.1164579 |
| lnipop | -.0365941 | .0140471 | -2.61 | 0.011 | -.0645332 - .008655 |
| ipolity2 | -.0053704 | .0027963 | -1.92 | 0.058 | -.0109321 - .0001913 |
| t5 | -.0195231 | .016672 | -1.17 | 0.245 | -.0526832 - .0136369 |
| _cons | 3.471093 | 1.031382 | 3.37 | 0.001 | 1.419715 - 5.522471 |
**Model (7a): Dynamic Panel Model (Fixed Effects)**

Fixed-effects (within) regression

|                | Robust | Std. Err. | t    | P>|t| | [95% Conf. Interval] |
|----------------|--------|-----------|------|-----|----------------------|
| lncmr_l        | .3469891 | .1037712 | 3.34 | 0.001 | .1405923 .5533859 |
| lnad5pc        | .0163525 | .0086151 | 1.90 | 0.061 | -.0007827 .0334877 |
| lnwt5pc        | -.0122283 | .0064054 | -1.91 | 0.060 | -.0249684 .0005118 |
| lnal5pc        | -.033038  | .0107929 | -3.06 | 0.003 | -.0545047 -.0115714 |
| lnigdp5        | .4478764 | .223434  | 2.00 | 0.048 | .0034753 .8922776 |
| _cons          | -3.187031 | 3.40255  | -0.94 | 0.352 | -.9.954567 3.580505 |

sigma_u | .92519671 |
sigma_e | .15618625 |
rho    | .97229144 (fraction of variance due to u_i)

**Model (7b): Dynamic Panel Model (Arellano-Bond)**

Arellano-Bond dynamic panel-data estimation

|                | WC-Robust | Std. Err. | z    | P>|z| | [95% Conf. Interval] |
|----------------|-----------|-----------|------|-----|----------------------|
| lncmr_l        | .3469891 | .1037712 | 3.34 | 0.001 | .1405923 .5533859 |
| lnad5pc        | .0163525 | .0086151 | 1.90 | 0.061 | -.0007827 .0334877 |
| lnwt5pc        | -.0122283 | .0064054 | -1.91 | 0.060 | -.0249684 .0005118 |
| lnal5pc        | -.033038  | .0107929 | -3.06 | 0.003 | -.0545047 -.0115714 |
| lnigdp5        | .4478764 | .223434  | 2.00 | 0.048 | .0034753 .8922776 |
| _cons          | -3.187031 | 3.40255  | -0.94 | 0.352 | -.9.954567 3.580505 |

Instruments for differenced equation

GMM-type: L(2/3).lncmr L(2/2).lnad5pc L(2/2).lnwt5pc L(2/2).lnal5pc L(2/2).lnigdp5 L(2/2).lnipolity2

Standard: D.lnipop

Instruments for level equation

Standard: _cons

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Model 8: Latent Growth Model

Mixed-effects ML regression

|                | Coef. | Std. Err. | z    | P>|z| [95% Conf. Interval] |
|----------------|-------|-----------|------|---------|----------------------|
| lncmr          |       |           |      |         |                      |
| lnad5pc        | .0037 | .0044     | .84  | .400    | -.0049531 至 .012409 |
| lnwt5pc        | .0016 | .0035     | .46  | .644    | -.0052121 至 .008434 |
| lnal5pc        | -.0056| .0044     | -1.29| .198    | -.014233 至 .0029457 |
| lnigdp5        | -.1516| .0266     | -5.70| .000    | -.2038 至 -.0994614 |
| lnipop         | -.0491| .0265     | -1.85| .064    | -.1011 至 .00284 |
| ipolity2       | .0007 | .0014     | .45  | .650    | -.0021568 至 .0034568 |
| t5             | -.1271| .0114     | -11.17| .000   | -.1494 至 -.1048245 |
| _cons          | 7.06  | .47       | 15.01| .000    | 6.1386 至 7.982657 |

Random-effects Parameters

<table>
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<th>Estimate</th>
<th>Std. Err.</th>
<th>[95% Conf. Interval]</th>
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<tr>
<td>cc: Unstructured</td>
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<tr>
<td>sd(t5)</td>
<td>.0943</td>
<td>.0077</td>
<td>.0802 至 .1108413</td>
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<tr>
<td>sd(_cons)</td>
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<td>.0339</td>
<td>.3341 至 .4675807</td>
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<td>corr(t5,_cons)</td>
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<td>.1320</td>
<td>-.3505 至 .1558931</td>
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<td>sd(Residual)</td>
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<td>.0032</td>
<td>.0716 至 .0842797</td>
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LR test vs. linear regression: χ²(3) = 883.10  Prob > χ² = 0.0000

Number of obs = 476
Number of groups = 84
Obs per group: min = 2
avg = 5.7
max = 6
Log likelihood = 200.82254
Wald χ²(7) = 204.77
Prob > χ² = 0.0000
### MAIN ESTIMATES: DAH Effectiveness (Life Expectancy)

**Notes:**
DAH spending (lnad5pc) reported in Table 1 for all models

#### Model (1): Bi-variate OLS

|                      | Coef. | Std. Err. | t    | P>|t| | [95% Conf. Interval] |
|----------------------|-------|-----------|------|-----|----------------------|
| lnlifex              |       |           |      |     |                      |
| lnad5pc              | -.0006093 | .0068144  | -0.09 | 0.929 | -.0141341 -.0129155  |
| _cons                | 4.047765   | .0194653  | 207.95 | 0.000 | 4.009132 4.086398  |

(Number of obs = 563)

#### Model (2): Multi-variate OLS

|                      | Coef. | Std. Err. | t    | P>|t| | [95% Conf. Interval] |
|----------------------|-------|-----------|------|-----|----------------------|
| lnlifex              |       |           |      |     |                      |
| lnad5pc              | -.0052249 | .005513  | -0.95 | 0.346 | -.01619 .0057402    |
| lnwt5pc              | .0022148   | .0051256  | 0.43 | 0.667 | -.0079799 .0124094 |
| lnal5pc              | .0010064   | .0049031  | 0.21 | 0.838 | -.0087457 .0107585 |
| lnigdp5              | .098087    | .0096785  | 10.13 | 0.000 | .0788369 .1173371  |
| lnipop              | .0167739    | .0069355  | 2.42 | 0.018 | .0029795 .0305684  |
| ipolity2             | .0028535   | .0061099  | 1.77 | 0.080 | -.0033485 .0060555 |
| t5                  | .0140981   | .0041961  | 3.36 | 0.001 | .0057522 .022444   |
| _cons                | 2.935721   | .1400587  | 20.96 | 0.000 | 2.65715 3.214292  |

(Number of obs = 478)
**Model (3): First Differences (OLS)**

Linear regression

|                      | Coef.   | Std. Err. | t    | P>|t| | [95% Conf. Interval] |
|----------------------|---------|-----------|------|-----|----------------------|
| lnad5pc D1.          | -0.0003846 | 0.0010133 | -0.38 | 0.705 | (-0.0024, 0.0016307) |
| lnt5pc D1.           | 0.0001056 | 0.0009159 | 0.12  | 0.908 | (-0.0017161, 0.0019273) |
| lnal5pc D1.          | 0.0033249 | 0.0010732 | 3.10  | 0.003 | (0.0011904, 0.0054594) |
| lnigdp5 D1.          | 0.0083763 | 0.0147302 | 0.57  | 0.571 | (-0.0209215, 0.0376742) |
| lnipop D1.           | 0.0003014 | 0.0004089 | 0.74  | 0.463 | (-0.0005119, 0.0011147) |
| ipolity2 D1.         | 0.1925705 | 0.0896819 | 2.15  | 0.035 | (0.0141969, 0.3709442) |
| t5 D1.               | (omitted) |           |      |      |                      |
| _cons                | -0.0026975 | 0.0118768 | -0.23 | 0.821 | (-0.0263201, 0.0209251) |

(Std. Err. adjusted for 84 clusters in cc)

**Model (4): Fixed Effects**

Fixed-effects (within) regression

|                      | Coef.   | Std. Err. | t    | P>|t| | [95% Conf. Interval] |
|----------------------|---------|-----------|------|-----|----------------------|
| lnad5pc              | -0.0046934 | 0.0024523 | -1.91 | 0.059 | (-0.0095709, 0.0001841) |
| lnt5pc               | 0.0039795 | 0.0021336 | 1.87  | 0.068 | (-0.0002641, 0.008223) |
| lnal5pc              | 0.0060278 | 0.0028846 | 2.09  | 0.040 | (0.0002905, 0.011765) |
| lnigdp5              | 0.0150057 | 0.0244881 | 0.61  | 0.542 | (-0.0337001, 0.0637115) |
| lnipop               | 0.0840294 | 0.0694208 | 1.21  | 0.230 | (-0.0540457, 0.2221045) |
| ipolity2             | 0.0009823 | 0.0012229 | 0.80  | 0.426 | (-0.0014622, 0.0034267) |
| t5                   | 0.0081999 | 0.0102607 | 0.80  | 0.426 | (-0.0122081, 0.0286079) |
| _cons                | 2.51905   | 1.144667  | 2.20  | 0.031 | (0.2423538, 4.795746) |

(Std. Err. adjusted for 84 clusters in cc)
### Model (5): Random Effects

Random-effects GLS regression  
Number of obs = 478  
Number of groups = 84  
R-sq:  within = 0.2829  
Obs per group: min = 2  
between = 0.5144  
avg = 5.7  
overall = 0.4859  
max = 6  
Random effects u_i ~ Gaussian  
Wald chi2(7) = 131.43  
corr(u_i, X) = 0 (assumed)  
Prob > chi2 = 0.0000  
(Std. Err. adjusted for 84 clusters in cc)

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<tr>
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<tr>
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</table>

sigma_u = 0.10013749  
sigma_e = 0.05938601  
rho = 0.73980803 (fraction of variance due to u_i)

---

### Model (6): OLS w/ Lagged Dependent Variable

Linear regression  
Number of obs = 478  
F(8, 83) = 772.73  
Prob > F = 0.0000  
R-squared = 0.8940  
Root MSE = 0.05452  
(Std. Err. adjusted for 84 clusters in cc)

<table>
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pg. 19
## Model (7a): Dynamic Panel Model (Fixed Effects)

Fixed-effects (within) regression  
- Number of obs = 478  
- Number of groups = 84  

<table>
<thead>
<tr>
<th>R-sq:  within</th>
<th>Obs per group: min</th>
<th>between</th>
<th>avg</th>
<th>overall</th>
<th>max</th>
<th>F(8,83)</th>
<th>Prob &gt; F</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5556</td>
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<td>6</td>
<td>72.57</td>
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</table>

\[
\text{corr}(u_i, Xb) = 0.7413
\]

(Std. Err. adjusted for 84 clusters in cc)

| lnlifex | Coef. (Robust) | Std. Err. | t | P>|t| | [95% Conf. Interval] |
|---------|----------------|------------|---|------|-----------------------|
| lnlifex_l | .5691412 | .0826714 | 6.88 | 0.000 | .4047112 - .7335712 |
| lnlad5pc | .0007968 | .002023 | 0.39 | 0.695 | -.0032268 .0048204 |
| lnwt5pc | .0003177 | .0015841 | 0.20 | 0.842 | -.002833 .0034685 |
| lnal5pc | .0046889 | .0026463 | 1.77 | 0.080 | -.0005744 .0099522 |
| lnigdp5 | -.004055 | .0163363 | -0.25 | 0.805 | -.0365473 .0284373 |
| lnipop | .0100986 | .0423626 | 0.24 | 0.842 | -.074159 .0943561 |
| ipolity2 | .0007623 | .0009885 | 0.77 | 0.443 | -.0012038 .0027284 |
| t5 | .0029299 | .0054955 | 0.53 | 0.595 | -.0080005 .0138603 |
| _cons | 1.592086 | .5543392 | 2.87 | 0.005 | .4895273 2.694644 |

\[
\text{sigma}_u | 0.07128211
\]
\[
\text{sigma}_e | 0.0478302
\]
\[
\rho = 0.68954141
\]

(fraction of variance due to \(u_i\))

## Model (7b): Dynamic Panel Model (Arellano-Bond)

Arellano-Bond dynamic panel-data estimation  
- Number of obs = 311  
- Number of groups = 83  

<table>
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<tr>
<th>Wald chi2(7)</th>
<th>Prob &gt; chi2</th>
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</tbody>
</table>

Two-step results  
(Std. Err. adjusted for clustering on cc)

| lnlifex | Coef. (WC-Robust) | Std. Err. | z | P>|z| | [95% Conf. Interval] |
|---------|-------------------|------------|---|------|-----------------------|
| lnlifex_l | .0394913 | .4006828 | 0.10 | 0.921 | -.7458326 .8248151 |
| lnad5pc | .0038524 | .0059288 | 0.65 | 0.516 | -.0077677 .0154726 |
| lnwt5pc | .0005725 | .002608 | 0.11 | 0.913 | -.0097384 .0108834 |
| lnal5pc | .0033351 | .0058029 | 0.57 | 0.565 | -.0080384 .0147086 |
| lnigdp5 | .03804 | .0431381 | 0.88 | 0.378 | -.0465091 .1225891 |
| ipolity2 | .0012168 | .0019935 | 0.61 | 0.542 | -.0026904 .005124 |
| lnipop | .1225149 | .121748 | 1.01 | 0.314 | -.1161068 .3611366 |
| _cons | 1.573864 | .4932181 | 3.19 | 0.001 | .6071745 2.540554 |

Instruments for differenced equation
- GMM-type: L(2/3).lnlifex L(2/2).lnad5pc L(2/2).lnwt5pc L(2/2).lnal5pc L(2/2).lnigdp5 L(2/2).ipolity2  
- Standard: D.lnipop

Instruments for level equation
- Standard: _cons

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Model 8: Latent Growth Model

Mixed-effects ML regression

| Coef.     | Std. Err. | z    | P>|z| | 95% Conf. Interval |
|-----------|-----------|------|------|-------------------|
| lnlifex   |           |      |      |                   |
| lnlad5pc  | -.0003106 | .0021439 | -0.14 | 0.885 | -.0045126 to .0038915 |
| lntwt5pc  | -.000452  | .0017009 | -0.27 | 0.790 | -.0037856 to .0028816 |
| lnlal5pc  | .0033204  | .0020949 | 1.59  | 0.113 | -.0007855 to .0074264 |
| lnlgdp5   | .0670259  | .0090656 | 7.39  | 0.000 | .0492575 to .0847942 |
| lnipop    | .0241202  | .0072597 | 3.32  | 0.001 | .0098915 to .0383488 |
| ipolity2  | .0007691  | .0006755 | 1.14  | 0.255 | -.0005549 to .0020931 |
| t5        | .0135924  | .0034663 | 3.92  | 0.000 | .0067986 to .0203861 |
| _cons     | 3.057151  | .1370741 | 22.30 | 0.000 | 2.788491 to 3.325812 |

---

Random-effects Parameters

<table>
<thead>
<tr>
<th>Estimate</th>
<th>Std. Err.</th>
<th>[95% Conf. Interval]</th>
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<tr>
<td>sd(t5)</td>
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<td>.0024115 to .0314899</td>
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<td>.0870662 to .1937163</td>
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<tr>
<td>corr(t5,_cons)</td>
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<td>-.7005297 to -.3599013</td>
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<tr>
<td>sd(Residual)</td>
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<td>.0353662 to .04195</td>
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LR test vs. linear regression: chi2(3) = 563.00 Prob > chi2 = 0.0000

Note: LR test is conservative and provided only for reference.
MAIN ESTIMATES: DAH Allocation
(Infant Mortality)

Notes: Model 2, 6, 71, 7b, and 8 are reported in Table 4.

Model (2): Multi-variate OLS

Linear regression

| Variable | Coef. | Std. Err. | t     | P>|t| | 95% Conf. Interval |
|----------|-------|-----------|-------|------|-------------------|
| ladinfp5c | .6479412 | .1798595 | 3.60  | 0.001 | .2900772 - 1.005805 |
| lnimr    | .1798595 |          |       |       |                   |
| reduce   | -.5018287 | .1286562 | -3.90 | 0.000 | -.7578141 - .2458432 |
| lnigdp5  | .086965   |          |       |       |                   |
| lnipop   | -.4002964 | .0390119 | -10.26| 0.000 | -.4779178 - -.322675 |
| polity2  | .0338208  | .0105393 | 3.21  | 0.002 | .012851 - .0547906 |
| t5       | .2823984  | .0385183 | 7.33  | 0.000 | .2057592 - .3590377 |
| _cons    | 4.529619  | 1.721698  | 2.63  | 0.010 | 1.10398 - 7.955257 |

(Std. Err. adjusted for 82 clusters in cc)

Model (3): First Differences (OLS)

Linear regression

| Variable | Coef. | Std. Err. | t     | P>|t| | 95% Conf. Interval |
|----------|-------|-----------|-------|------|-------------------|
| D.ladinfp5c | 1.60215 | .4696545 | 3.41  | 0.001 | .6669487 - 2.537352 |
| lnimr    | .4696545 |          |       |       |                   |
| reduce   | -.0756805 | .1830623 | -0.41 | 0.680 | -.4402041 - .2888432 |
| lnigdp5  | .1830623  |          |       |       |                   |
| lnipop   | -.2765623 | .439411  | -0.63 | 0.531 | -.1.151541 - .5984169 |
| polity2  | 1.508355  |          |       |       |                   |
| t5       | -.0063669 | .0120418 | -0.53 | 0.599 | -.0303453 - .0176114 |
| _cons    | 4.2163442 | 2.78     | 0.007 | 1.000 | 1.704938 - 1.032086 |

(Std. Err. adjusted for 78 clusters in cc)
Model (4): Fixed Effects

Fixed-effects (within) regression
Number of obs = 333
Number of groups = 82
R-sq: within = 0.2322
between = 0.4435
overall = 0.3775
Obs per group: min = 1
avg = 4.1
max = 5
F(6,81) = 18.50
Prob > F = 0.0000
(Fixed Effects, adjusted for 82 clusters in cc)

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<td>lnipop</td>
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<tr>
<td>t5</td>
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<tr>
<td>_cons</td>
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-----------
sigma_u | .8242847
sigma_e | .73661914
rho | .55598659

Model (5): Random Effects

Random-effects GLS regression
Number of obs = 333
Number of groups = 82
R-sq: within = 0.2135
between = 0.5392
overall = 0.4346
Obs per group: min = 1
avg = 4.1
max = 5
Random effects u_i ~ Gaussian
Wald chi2(6) = 270.92
Prob > chi2 = 0.0000
(Random Effects, adjusted for 82 clusters in cc)

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<td>lnipop</td>
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<tr>
<td>polity2</td>
</tr>
<tr>
<td>t5</td>
</tr>
<tr>
<td>_cons</td>
</tr>
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</table>

-----------
sigma_u | .57598256
sigma_e | .73661914
rho | .37942554

(fraction of variance due to u_i)
### Model (6): OLS w/ Lagged Dependent Variable

Linear regression  

|                | Coef. | Std. Err. | t     | P>|t|   | [95% Conf. Interval] |
|----------------|-------|-----------|-------|-------|----------------------|
| lnadf5pc       |       |           |       |       |                      |
| lnad5pc        | .2806985 | .0575041 | 4.88  | 0.000 | .1662833 - .3951136  |
| lnimr          | .4957052 | .1485433 | 3.34  | 0.001 | .2001506 - .7912597  |
| reduce         | -.2768173 | .1201555 | -2.30 | 0.024 | -.515889 - .0377455  |
| lnigdp5        | .0422727 | .065183  | 0.65  | 0.518 | -.0874211 - .1719664 |
| lnipop         | -.2961522 | .0333309 | -8.89 | 0.000 | -.3624703 - -.229834 |
| polity2        | .022737  | .0082504 | 2.76  | 0.007 | .0063212 - .0391527  |
| t5             | .2011269 | .0394312 | 5.10  | 0.000 | .1226712 - .2795826  |
| _cons          | 3.333992 | 1.20962  | 2.76  | 0.007 | .9272283 - 5.740757  |

(Std. Err. adjusted for 82 clusters in cc)

### Model (7a): Dynamic Panel Model (Fixed Effects)

Fixed-effects (within) regression  

|                | Coef. | Std. Err. | t     | P>|t|   | [95% Conf. Interval] |
|----------------|-------|-----------|-------|-------|----------------------|
| lnadf5pc       |       |           |       |       |                      |
| lnad5pc        | -.0673899 | .0416863 | -1.62 | 0.110 | -.1503326 - .0155528 |
| lnimr          | .7527602 | .331014  | 2.27  | 0.026 | .0941462 - 1.411374  |
| reduce         | -.2642216 | .2210993 | -1.20 | 0.236 | -.7041399 - .1756966 |
| lnigdp5        | -.020012 | .3155986 | -0.06 | 0.950 | -.6479542 - .6079301 |
| lnipop         | -.2585586 | 1.05957  | -0.24 | 0.808 | -2.366771 - 1.849654 |
| polity2        | -.0054995 | .0099547 | -0.55 | 0.582 | -.0253064 - .0143073 |
| t5             | .4000128 | .1488696 | 2.69  | 0.009 | .1041671 - .6958584  |
| _cons          | 2.035709 | 16.95944 | 0.12  | 0.905 | -.3170825 - 35.77967 |

|                |       |           |       |       |                      |
| sigma_u        | .91280824  |           |       |       |                      |
| sigma_e        | .7355154  |           |       |       |                      |
| rho            | .60632936 | (fraction of variance due to u_i) |       |       |                      |

(Std. Err. adjusted for 82 clusters in cc)

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pg. 24
Model (7b): Dynamic Panel Model (Arellano-Bond)

Arellano-Bond dynamic panel-data estimation

- Number of obs = 192
- Number of groups = 72
- Time variable: t5
  - Obs per group: min = 1
  - avg = 2.66667
  - max = 3
- Number of instruments = 22
- Wald chi2(7) = 58.19
- Prob > chi2 = 0.0000

Two-step results

(Std. Err. adjusted for clustering on cc)

| lnadf5pc | Coef. | Std. Err. | z     | P>|z| | [95% Conf. Interval] |
|----------|-------|-----------|-------|------|-----------------------|
| L(1).lnadf5pc | -.0639011 | .1758598 | -0.36 | 0.716 | -.4085801 -.2807778 |
| L(1).lnimr | 1.4325 | .8140275 | 1.76  | 0.078 | -.1629649 3.027964 |
| L(1).reduce | -1.705883 | 1.352395 | -1.26 | 0.207 | -4.35653 .9447629 |
| L(1).lnigdp5 | -.492546 | 1.112699 | -0.44 | 0.658 | -2.673395 1.688303 |
| L(1).polity2 | -.02419 | .0332787 | -0.73 | 0.467 | -.0894151 .9447629 |
| L(1).lnipop | .8048952 | .3453315 | 2.33  | 0.020 | .1280579 1.481732 |

Instruments for differenced equation

GMM-type: L(2/3).lnadf5pc L(2/2).lnimr L(2/2).reduce L(2/2).lnigdp5 L(2/2).polity2 Standard: D.lnimr D.reduce D.lnipop D.t5

Model 8: Latent Growth Model

Mixed-effects ML regression

- Number of obs = 333
- Number of groups = 82

| lnadf5pc | Coef. | Std. Err. | z     | P>|z| | [95% Conf. Interval] |
|----------|-------|-----------|-------|------|-----------------------|
| L(1).lnimr | .6554843 | .1920274 | 3.41  | 0.001 | .2791175 1.031851 |
| L(1).reduce | -.3998376 | .2012048 | -1.99 | 0.047 | -.7941919 -.0054834 |
| L(1).lnigdp5 | .023858 | .0991409 | 0.24  | 0.810 | -.1704545 .2181706 |
| L(1).lnipop | -.400061 | .0453996 | -8.81 | 0.000 | -.4890427 -.310794 |
| L(1).polity2 | .0255975 | .0093991 | 2.72  | 0.006 | .0071756 .0440193 |
| L(1).t5 | .3122454 | .0381894 | 8.18  | 0.000 | .2373956 .3870952 |
| _cons | 4.557429 | 1.852427 | 2.46  | 0.014 | .9267393 8.188119 |

Random-effects Parameters

<table>
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<tr>
<th>Estimate</th>
<th>Std. Err.</th>
<th>[95% Conf. Interval]</th>
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</thead>
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<tr>
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<td>sd(Residual)</td>
<td>.7537335</td>
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LR test vs. linear regression: ch2(3) = 26.71 Prob > ch2 = 0.0000
**ALTERNATE ESTIMATES - Definition of High Mortality Country: IMR > 25**  
(Infant Mortality)

Model (1): Bi-variate OLS

|                | Coef. | Std. Err. | t     | P>|t|  | [95% Conf. Interval] |
|----------------|-------|-----------|-------|-----|----------------------|
| lnximr         |       |           |       |     |                      |
| lnxad5pc       | -.0293168 | .0250871 | -1.17 | 0.245 | -.0790189 - .0203853   |
| _cons          | 4.114224 | .0788714 | 52.16 | 0.000 | 3.957966 - 4.270483   |

(Number of obs = 550  
F( 1, 113) = 1.37  
Prob > F = 0.2450  
R-squared = 0.0047  
Root MSE = .66052  
(Std. Err. adjusted for 114 clusters in cc)  

Model (2): Multi-variate OLS

|                | Coef.       | Std. Err. | t     | P>|t|  | [95% Conf. Interval] |
|----------------|-------------|-----------|-------|-----|----------------------|
| lnximr         |             |           |       |     |                      |
| lnxad5pc       | .0651521    | .0227349  | 2.87  | 0.005 | .0200296 - .1102747  |
| lnxwt5pc       | -.0156121   | .0178974  | -0.87 | 0.385 | -.0511334 - .0199092 |
| lnxal5pc       | -.0195632   | .0220643  | -0.89 | 0.377 | -.0633547 - .0242282 |
| lnxigdp5       | -.3905663   | .0405628  | -9.63 | 0.000 | -.4710723 - -.3100603 |
| lnxipop       | -.0456862   | .0267246  | -1.71 | 0.091 | -.0987272 - .0073547 |
| ipolity2       | -.016954    | .0060592  | -2.80 | 0.006 | -.0289797 - -.0049282 |
| t5             | -.0985828   | .0160919  | -6.13 | 0.000 | -.1305208 - -.0666448 |
| _cons          | 8.384914    | .5006475  | 16.75 | 0.000 | 7.391268 - 9.378561   |

(Number of obs = 493  
F( 7, 97) = 57.04  
Prob > F = 0.0000  
R-squared = 0.6152  
Root MSE = .41177  
(Std. Err. adjusted for 98 clusters in cc)
Model (3): First Differences (OLS)

Linear regression

Number of obs = 383
F(6, 97) = 3.35
Prob > F = 0.0048
R-squared = 0.1137
Root MSE = .10363

(Std. Err. adjusted for 98 clusters in cc)

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<tr>
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</tr>
<tr>
<td>lnal5pc</td>
<td>D1.</td>
</tr>
<tr>
<td>lnigdp5</td>
<td>D1.</td>
</tr>
</tbody>
</table>

| lnipop     | D1.     | .5170423  | .1673792 | 3.09  | 0.003 | .1848408  | .8492437 |
| ipolity2   | D1.     | -.000076  | .0009525 | -0.08 | 0.937 | -.0019663 | .0018144 |
| t5         | D1.     | (omitted) |
| _cons      |         | -.1748593 | .0228159 | -7.66 | 0.000 | -.2201425 | -.129576 |

Model (4): Fixed Effects

Fixed-effects (within) regression

Number of obs = 493
Group variable: cc
Number of groups = 98

R-sq: within = 0.6901
between = 0.0028
overall = 0.0099

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<td>_cons</td>
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</tr>
</tbody>
</table>

| sigma_u    | 1.2055662 |
| sigma_e    | .14940965 |
| rho        | .9487291  | (fraction of variance due to u_i) |
Model (5): Random Effects

Random-effects GLS regression                   Number of obs      =       493
Group variable: cc                              Number of groups   =        98
R-sq:  within = 0.6567                         Obs per group: min =         2
between = 0.5676                avg =       5.0
overall = 0.5900                                      max =         6
Random effects u_i ~ Gaussian                   Wald chi2(7)       =    241.09
corr(u_i, X)       = 0 (assumed)                Prob > chi2        =    0.0000

(Std. Err. adjusted for 98 clusters in cc)

|                | Coef. | Std. Err. | z    | P>|z|     | [95% Conf. Interval] |
|----------------|-------|-----------|------|---------|----------------------|
| lnad5pc        | .013374 | .010224 | 1.31 | 0.191   | -.0066646 to .0334127 |
| lnwt5pc        | -.0053731 | .0072614 | -0.74 | 0.459   | -.0196052 to .0088591 |
| lnal5pc        | -.0143206 | .0086245 | -1.66 | 0.097   | -.0312243 to .0025831 |
| lningdp5       | -.3041922 | .0567148 | -5.36 | 0.000   | -.4153512 to -.1930332 |
| lnipop         | -.0280477 | .0283546 | -0.99 | 0.323   | -.0836217 to .0275264 |
| ipolity2       | -.0037922 | .0024969 | -1.52 | 0.129   | -.0086859 to .0011016 |
| t5             | -.0980508 | .01203 | -8.15 | 0.000   | -.1216292 to -.0744724 |
| _cons          | 7.425877 | .6200249 | 11.98 | 0.000   | 6.21065 to 8.641103  |

sigma_u | .39050626
sigma_e | .14940965
rho | .87230608 (fraction of variance due to u_i)

Model (6): OLS w/ Lagged Dependent Variable

Linear regression                                      Number of obs =     405
F(  8,    97) = 1506.61
Prob > F      =  0.0000
R-squared     =  0.9783
Root MSE      =  .09897

(Std. Err. adjusted for 98 clusters in cc)

|                | Coef. | Std. Err. | t    | P>|t|     | [95% Conf. Interval] |
|----------------|-------|-----------|------|---------|----------------------|
| lnimr_l        | 1.057609 | .0172494 | 61.31 | 0.000   | 1.023374 to 1.091845  |
| lnad5pc        | -.0080372 | .0070285 | -1.14 | 0.256   | -.0219868 to .0059123 |
| lnwt5pc        | -.0032906 | .003833 | -0.86 | 0.393   | -.008998 to .0043168 |
| lnal5pc        | -.0016089 | .0097254 | -0.17 | 0.869   | -.0209112 to .0176933 |
| lningar5       | -.0060214 | .0104097 | -0.58 | 0.564   | -.0266818 to .014639 |
| lnipop         | -.0135465 | .0065666 | -2.06 | 0.042   | -.0265793 to -.0005137 |
| ipolity2       | -.000716 | .0011229 | -0.64 | 0.525   | -.0029447 to .0015127 |
| t5             | .0081683 | .0011229 | 2.05 | 0.044   | .0002413 to .0160953 |
| _cons          | -.1006457 | .2093006 | -0.48 | 0.632   | -.5160493 to .314758  |
Model (7a): Dynamic Panel Model (Fixed Effects)

Fixed-effects (within) regression

| Coef. | Std. Err. | t     | P>|t|  | [95% Conf. Interval] |
|-------|-----------|-------|------|----------------------------|
| lnimr | .8681522  | .0612 | 14.18| 0.000                      |
| lnad5pc | -.0037652 | .0083 | -0.46| 0.650                      |
| lnw5tc | -.0005532 | .0044 | -0.13| 0.901                      |
| lnal5pc | -.0132617 | .0127 | -1.04| 0.300                      |
| lnigdp5 | -.003519  | .0308 | -0.01| 0.991                      |
| lnipop | .276116   | .1461 | 1.89 | 0.062                      |
| ipolit2 | -.000853  | .0011 | -0.76| 0.448                      |
| t5     | -.047336  | .0219 | -2.16| 0.033                      |
| _cons | -3.756675 | 2.18  | -1.72| 0.088                      |

sigma_u: .49289415
sigma_e: .07527799
rho: .9772063 (fraction of variance due to u_i)

Model (7b): Dynamic Panel Model (Arellano-Bond)

Arellano-Bond dynamic panel-data estimation

| Coef. | Std. Err. | t     | P>|t|  | [95% Conf. Interval] |
|-------|-----------|-------|------|----------------------------|
| lnimr | .7944501  | .1449 | 5.48 | 0.000                      |
| lnad5pc | -.0043874 | .0318 | -0.14| 0.890                      |
| lnw5tc | .005377   | .0131 | 0.41 | 0.683                      |
| lnal5pc | .0281824  | .0245 | 1.15 | 0.252                      |
| lnigdp5 | -.24931   | .2032 | -1.23| 0.220                      |
| ipolit2 | -.0031774 | .0047 | 0.66 | 0.507                      |
| lniop | -.1510165 | .1114 | -1.35| 0.175                      |
| _cons | .972063   | .5371 | -1.72| 0.088                      |

Instruments for differenced equation

GMM-type: L(2/3).lnimr L(2/2).lnad5pc L(2/2).lnw5tc L(2/2).lnal5pc L(2/2).lnigdp5
L(2/2).ipolit2

Instruments for level equation

Standard: _cons
Model 8: Latent Growth Model

Mixed-effects ML regression

Number of obs = 493
Group variable: cc
Number of groups = 98

Obs per group: min = 2
avg = 5.0
max = 6

Log likelihood = 262.92101

Wald chi2(7) = 258.08
Prob > chi2 = 0.0000

------------------------------------------------------------------------------
|                  Coef.     Std. Err.     z    P>|z|     [95% Conf. Interval] |    
|------------------|-----------------|-------|---------|---------------------------------|
|lnimr            |                 |       |         |                                 |
|lnad5pc          | -.0064569       | .0043094 | -1.50   | 0.134     | -.0149031 -.0019893 |
|lnwt5pc          | .0043687        | .0028208 |  1.55   | 0.121     |  -.00116  .0098974 |
|lnal5pc          | -.0027993       | .0042138 | -0.66   | 0.506     | -.0110582 .0054595 |
|lnigdp5          | -.1872268       | .0288295 | -6.49   | 0.000     | -.2437316 -.1307219 |
|lnipop           | -.0186341       | .0262589 | -0.71   | 0.478     | -.0701005 .0328324 |
|ipolity2         | .0000485        | .0011042 |  0.04   | 0.965     | -.0021157 .0022128 |
|t5               | -.1084047       | .009478  | -11.44  | 0.000     | -.1269812 -.0898282 |
|_cons            | 6.322894        | .5003463 | 12.64   | 0.000     | 5.342233  7.303555 |

------------------------------------------------------------------------------
Random-effects Parameters | Estimate   Std. Err.       [95% Conf. Interval]
-----------------------------|------------|-----------------|---------------------------------|
|cc: Unstructured          |            |                 |                                 |
|sd(t5)                     | .0811432   | .0062389        | .069792 .0943406               |
|sd(_cons)                  | .4216198   | .0329639        | .3617185 .4914408              |
|corr(t5,_cons)             | -.175981   | .1149535        | -.3887592 .054618               |
|sd(Residual)               | .0618935   | .0026143        | .0569759 .0672356              |

------------------------------------------------------------------------------
LR test vs. linear regression: chi2(3) = 1041.97  Prob > chi2 = 0.0000

Note: LR test is conservative and provided only for reference.
ALTERNATE ESTIMATES – Definition of High Mortality Country: IMR > 75 (Infant Mortality)

Model (1): Bi-variate OLS

Linear regression

|       | Coef.  | Std. Err. | t    | P>|t| | [95% Conf. Interval] |
|-------|--------|-----------|------|-----|---------------------|
| lnad5pc | -.08455 | .0208834 | -4.05 | 0.000 | -.1263089 -.0427911 |
| _cons  | 4.631422 | .0486874 | 95.13 | 0.000 | 4.534065 4.728778  |

(Std. Err. adjusted for 62 clusters in cc)

Model (2): Multi-variate OLS

Linear regression

|       | Coef.  | Std. Err. | t    | P>|t| | [95% Conf. Interval] |
|-------|--------|-----------|------|-----|---------------------|
| lnad5pc |  .0071174 | .0184387 | 0.39  | 0.701 | -.0298054 .0440401  |
| lnwt5pc | -.0047348 | .0149216 | -0.32 | 0.752 | -.0346148 .0251453  |
| lnal5pc | -.0420981 | .0216837 | -1.94 | 0.057 | -.085519  .0013229 |
| lnigdp5 | -.2630433 | .0398272 | -6.60 | 0.000 | -.3427958 -.1832907 |
| lnipop | -.0495764 | .0194558 | -2.55 | 0.014 | -.0888536 -.0106168 |
| ipolity2 | -.0114863 | .0042917 | -2.68 | 0.010 | -.0200804 -.0028922 |
| t5     | -.0616852 | .0154165 | -4.00 | 0.000 | -.0925561 -.0308143 |
| _cons  | 7.689804 | .4554383 | 16.88 | 0.000 | 6.777804  8.601803  |
Model (3): First Differences (OLS)

Linear regression                                      Number of obs =     252
F(  6,    57) =    2.44
Prob > F      =  0.0359
R-squared     =  0.0786
Root MSE      =  .10021
(Std. Err. adjusted for 58 clusters in cc)

|               Robust     |
|-----------------|-----------------|
| D.lnimr | Coef. | Std. Err. | t    | P>|t|  | [95% Conf. Interval] |
|-------|-------|-----------|------|------|-------------------|
| lnad5pc | .0037718 | .0071716 | 0.53 | 0.601 | -.0105891 to .0181326 |
| lnwt5pc | -.0042245 | .002922 | -1.45 | 0.154 | -.0100757 to .0016268 |
| lnal5pc | -.0063749 | .0033095 | -1.93 | 0.059 | -.0130021 to .0002522 |
| lnigdp5 | -.0545818 | .0623252 | -0.88 | 0.385 | -.1793859 to .0702223 |
| lnipop | .4758797 | .2339688 | 2.03 | 0.047 | .0073652 to .9443941 |
| ipolity2 | .0004807 | .0010003 | 0.48 | 0.633 | -.0015225 to .0024838 |
| t5 | (omitted) |
| _cons | -.1589107 | .0347578 | -4.57 | 0.000 | -.228512 to -.0893093 |

Model (4): Fixed Effects

Fixed-effects (within) regression               Number of obs      =       317
Group variable: cc                              Number of groups   =        58
R-sq:  within  = 0.6260                         Obs per group: min =         3
between = 0.0010                                        avg =       5.5
overall = 0.0014                                        max =         6
F(7,57)            =     17.13
corr(u_i, Xb)  = -0.9513                        Prob > F           =    0.0000
(Std. Err. adjusted for 58 clusters in cc)

|               Robust     |
|-----------------|-----------------|
| lnimr | Coef. | Std. Err. | t    | P>|t|  | [95% Conf. Interval] |
|-------|-------|-----------|------|------|-------------------|
| lnad5pc | .0136187 | .0122141 | 1.11 | 0.270 | -.0108396 to .0380771 |
| lnwt5pc | -.0154483 | .0106388 | -1.45 | 0.152 | -.0367521 to .0058556 |
| lnal5pc | -.0149975 | .01198 | -1.25 | 0.216 | -.038987 to .0089921 |
| lnigdp5 | -.0338674 | .0774443 | -0.44 | 0.664 | -.1889469 to .1212121 |
| lnipop | .7018306 | .2959232 | 2.37 | 0.021 | .1092546 to 1.294407 |
| ipolity2 | .0007589 | .0029504 | 0.26 | 0.798 | -.0051491 to .006667 |
| t5 | -.1840609 | .0428573 | -4.29 | 0.000 | -.2698813 to -.0982406 |
| _cons | -.1589107 | .0347578 | -4.57 | 0.000 | -.228512 to -.0893093 |

sigma_u | 1.2004962
sigma_e | .14413602
rho | .98578956 (fraction of variance due to u_i)
### Model (5): Random Effects

Random-effects GLS regression

| Coef. | Std. Err. | z    | P>|z| | [95% Conf. Interval] |
|-------|-----------|------|------|---------------------|
| lnad5pc | 0.0187796 | 0.0132135 | 1.42 | 0.155 | -0.0071183 - 0.0446775 |
| lnwt5pc | -0.0104968 | 0.0094636 | -1.11 | 0.267 | -0.0290452 - 0.0080515 |
| lnal5pc | -0.0222655 | 0.0108216 | -2.06 | 0.040 | -0.0434754 - 0.0010556 |
| lnigdp5 | -0.1829675 | 0.0526676 | -3.47 | 0.001 | -0.286194 - 0.079741 |
| lnipop | -0.0252896 | 0.0197188 | -1.28 | 0.200 | -0.0639377 - 0.0133585 |
| ipolity2 | -0.0031562 | 0.002779 | -1.14 | 0.256 | -0.0086029 - 0.0022906 |
| t5 | -0.0864908 | 0.0134633 | -6.42 | 0.000 | -0.1128784 - 0.0601031 |
| _cons | 6.680337 | 0.5665507 | 11.79 | 0.000 | 5.569918 - 7.790756 |

Random effects u_i ~ Gaussian

<table>
<thead>
<tr>
<th>Wald chi2(7)</th>
<th>Prob &gt; chi2</th>
</tr>
</thead>
<tbody>
<tr>
<td>106.89</td>
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</tbody>
</table>

(Number of obs = 317
Number of groups = 58
Obs per group: min = 3
avg = 5.5
max = 6

Random effects u_i ~ Gaussian

corr(u_i, X) = 0 (assumed)

(Std. Err. adjusted for 58 clusters in cc)

### Model (6): OLS w/ Lagged Dependent Variable

Linear regression

| Coef. | Std. Err. | t    | P>|t| | [95% Conf. Interval] |
|-------|-----------|------|------|---------------------|
| lndmr | 1.036548 | 0.0320653 | 32.33 | 0.000 | .9723387 - 1.100758 |
| lnad5pc | -0.0159075 | 0.0117156 | -1.36 | 0.180 | -.0393677 - .0075526 |
| lnwt5pc | 0.0015669 | 0.005888 | 0.27 | 0.791 | -.0102237 - .0133574 |
| lnal5pc | 0.0107661 | 0.0121133 | 0.89 | 0.378 | -.0134903 - .0350225 |
| lnigdp5 | -0.0309853 | 0.0122615 | -2.53 | 0.014 | -.0555386 - -.006432 |
| lnipop | -0.0107645 | 0.0085402 | -1.26 | 0.213 | -.0278659 - .006337 |
| ipolity2 | -0.0020085 | 0.0013276 | -1.51 | 0.136 | -.004667 - .000649 |
| t5 | 0.00859 | 0.0049341 | 1.74 | 0.087 | -.0012904 - .0184705 |
| _cons | 0.835872 | 0.3257424 | 0.26 | 0.798 | -.5687007 - 0.7358751 |

(Number of obs = 272
F( 8, 57) = 321.11
Prob > F = 0.0000
R-squared = 0.9437
Root MSE = 0.09389

(Std. Err. adjusted for 58 clusters in cc)
Model (7a): Dynamic Panel Model (Fixed Effects)

Fixed-effects (within) regression

| Coef. | Std. Err. | t     | P>|t|   | [95% Conf. Interval] |
|-------|-----------|-------|-------|----------------------|
| lnimr | 0.8940286 | 0.0824 | 10.85 | 0.000  | 0.7290254 - 1.059032 |
| lnad5pc | -0.0090183 | 0.0093276 | -0.97 | 0.338 | -0.0276966 - 0.0096599 |
| lnwt5pc | -0.0040498 | 0.0056817 | -0.71 | 0.479 | -0.0154272 - 0.0037247 |
| lnal5pc | -0.0083096 | 0.0092866 | 0.89 | 0.375 | -0.0186647 - 0.0210875 |
| lnigdp5 | -0.0000705 | 0.0011376 | 0.06 | 0.951 | -0.0022075 - 0.0023485 |
| _cons | 5.993319 | 3.081652 | 1.94 | 0.057 | -12.16422 - 1.757827 |

Model (7b): Dynamic Panel Model (Arellano-Bond)

Arellano-Bond dynamic panel-data estimation

| Coef. | Std. Err. | t     | P>|t|   | [95% Conf. Interval] |
|-------|-----------|-------|-------|----------------------|
| lnimr | 0.7584896 | 0.1711857 | 4.43 | 0.000  | 0.4229718 - 1.094007 |
| lnal5pc | -0.361251 | 0.0368803 | -0.98 | 0.327 | -0.438092 - 0.0361591 |
| lnwt5pc | 0.019305 | 0.0212732 | 0.91 | 0.364 | -0.0238975 - 0.0669996 |
| lnigdp5 | -0.583933 | 0.0307317 | 1.90 | 0.057 | -0.6418397 - 0.5260263 |
| ipolity2 | 0.4478459 | 0.238341 | -1.88 | 0.060 | -0.819921 - 0.0183002 |
| _cons | 5.781343 | 3.620137 | 1.60 | 0.110 | -1.313994 - 11.87668 |

Instruments for differenced equation

| Coef. | Std. Err. | t     | P>|t|   | [95% Conf. Interval] |
|-------|-----------|-------|-------|----------------------|
| lnad5pc | -0.0361251 | 0.0368803 | -0.98 | 0.327 | -0.1084092 - 0.0361591 |
| lnwt5pc | 0.019305 | 0.0212732 | 0.91 | 0.364 | -0.0238975 - 0.0669996 |
| lnal5pc | -0.583933 | 0.0307317 | 1.90 | 0.057 | -0.6418397 - 0.5260263 |
| lnigdp5 | -0.4478459 | 0.238341 | -1.88 | 0.060 | -0.819921 - 0.0183002 |
| ipolity2 | 0.0028382 | 0.0029915 | 0.95 | 0.343 | -0.0030251 - 0.0070515 |
| _cons | -0.1042062 | 0.1559917 | -0.67 | 0.504 | -0.4099443 - 0.2015318 |
| _cons | 5.781343 | 3.620137 | 1.60 | 0.110 | -1.313994 - 11.87668 |
Model 8: Latent Growth Model

Mixed-effects ML regression

| Variable | Coef.  | Std. Err. | z     | P>|z| | [95% Conf. Interval] |
|----------|--------|-----------|-------|------|---------------------|
| lnimr    | -0.0040727 | 0.0059938 | -0.68 | 0.497 | -0.0158204 0.007675 |
| lnad5pc  | 0.00236       | 0.0038874 | 0.61  | 0.544 | -0.0052592 0.0099792 |
| lnwt5pc  | -0.0005034 | 0.0056699 | -0.09 | 0.929 | -0.0116162 0.0106095 |
| lnal5pc  | -0.1535574 | 0.030788 | -4.99 | 0.000 | -0.2139007 -0.0932141 |
| lnigdp5  | -0.0186697 | 0.0200192 | -0.93 | 0.351 | -0.0579066 0.0205672 |
| lnipop   | 0.0086653 | 0.0108507 | -7.98 | 0.000 | -0.1078853 0.0653514 |
| _cons    | 6.262728   | 0.4289122 | 14.60 | 0.000 | 5.422076 7.103381 |

Random-effects Parameters

<table>
<thead>
<tr>
<th>Variable</th>
<th>Estimate</th>
<th>Std. Err.</th>
<th>[95% Conf. Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td>cc: Unstructured</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sd(t5)</td>
<td>0.0753764</td>
<td>0.0073609</td>
<td>0.062246 0.0912767</td>
</tr>
<tr>
<td>sd(_cons)</td>
<td>0.2845863</td>
<td>0.0281417</td>
<td>0.2344454 0.3454509</td>
</tr>
<tr>
<td>corr(t5,_cons)</td>
<td>-0.5655677</td>
<td>0.1028137</td>
<td>-0.7339625 -0.3316669</td>
</tr>
</tbody>
</table>

LR test vs. linear regression: chi2(3) = 495.86 Prob > chi2 = 0.0000

Note: LR test is conservative and provided only for reference.
ALTERNATE ESTIMATES - Definition of High Mortality Country: IMR > 100
(Infant Mortality)

Model (1): Bi-variate OLS

Linear regression

|     | Coef. | Std. Err. | t     | P>|t|  | [95% Conf. Interval] |
|-----|-------|-----------|-------|------|----------------------|
| lnad5pc | -.0632345 | .0239544 | -2.64 | 0.012 | -.1116869 -.0147821 |
| _cons  | 4.732955  | .051165  | 92.50 | 0.000 | 4.629464  4.836446 |

Model (2): Multi-variate OLS

Linear regression

|     | Coef. | Std. Err. | t     | P>|t|  | [95% Conf. Interval] |
|-----|-------|-----------|-------|------|----------------------|
| lnad5pc | .0147931  | .0206387  | 0.72  | 0.478 | -.0270248  .0566111 |
| lnwt5pc | -.0108296 | .0192441  | -0.56 | 0.577 | -.0498218  .0281626 |
| lnal5pc | -.0359458 | .0272597  | -1.32 | 0.195 | -.0911791  .0219785 |
| lnigdp5 | -.1947923 | .055531   | -3.51 | 0.001 | -.3073088  -.0822757 |
| lnipop | -.0398366 | .0227041  | -1.75 | 0.088 | -.0858394  .0061663 |
| ipolity2 | -.009567  | .0062186  | -1.54 | 0.132 | -.0221672  .0030331 |
| t5    | -.0694223 | .0199709  | -3.48 | 0.001 | -.1098871  -.0289574 |
| _cons | 7.106886  | .5956679  | 11.93 | 0.000 | 5.899948  8.313823 |
Model (3): First Differences (OLS)

Linear regression

|             | Coef.  | Std. Err. | t     | P>|t|   | [95% Conf. Interval] |
|-------------|--------|-----------|-------|-------|----------------------|
| D.lnimr     | .0104746 | .0060244  | 1.74  | 0.090 | -.0017319 - .0226811 |
| lnad5pc     | -.0039423 | .004606   | -.86  | 0.398 | -.013275 - .0053903  |
| lnwt5pc     | .0024249  | .0066035  | 0.37  | 0.716 | -.0109549 - .0158048 |
| lnal5pc     | .05904    | .0672885  | 1.51  | 0.139 | -.1953795 - .0772995 |
| lnigdp5     | .3199833  | .2116612  | 1.46  | 0.152 | -.108883 - .7488496  |
| ipolity2    | .0014778  | .0010093  | 1.46  | 0.152 | -.0005673 - .003523  |
| t5          | (omitted) |           |       |       |                      |
| _cons       | -.1478317 | .0353312  | -4.18 | 0.000 | -2.194196 - .0762438 |

(Std. Err. adjusted for 38 clusters in cc)

Model (4): Fixed Effects

Fixed-effects (within) regression

|             | Coef.  | Std. Err. | t     | P>|t|   | [95% Conf. Interval] |
|-------------|--------|-----------|-------|-------|----------------------|
| lnad5pc     | .0225619 | .0137389  | 1.64  | 0.109 | -.0052757 - .0503995 |
| lnwt5pc     | -.0268053 | .0130992  | -2.05 | 0.048 | -.0533468 - .0002638 |
| lnal5pc     | .0153211  | .0253221  | 0.61  | 0.549 | -.0359862 - .0666285 |
| lnigdp5     | -.0209392 | .0877674  | -.24  | 0.813 | -.1987728 - .1568944 |
| lnipop      | .6813467  | .3237449  | 2.10  | 0.042 | .0253772 - 1.337316  |
| ipolity2    | .0046142  | .0029323  | 1.57  | 0.124 | -.0013272 - .0105557 |
| t5          | -.2011518 | .051057   | -3.94 | 0.000 | -.3046032 - .0977004 |
| _cons       | -5.51759  | 5.181389  | -1.06 | 0.294 | -.1601699 - 4.988184  |

(Std. Err. adjusted for 38 clusters in cc)
Model (5): Random Effects

<table>
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<tr>
<th></th>
<th>Robust</th>
<th>[95% Conf. Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td>lnimr</td>
<td>Coef.</td>
<td>Std. Err.</td>
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<tr>
<td>lnad5pc</td>
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</tr>
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<td>lnwt5pc</td>
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<td>0.0115113</td>
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<td>lnal5pc</td>
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<td>lnigdp5</td>
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<tr>
<td>lnipop</td>
<td>-0.0183601</td>
<td>0.0031006</td>
</tr>
<tr>
<td>ipolity2</td>
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<td>0.0030106</td>
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<td>t5</td>
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<td>0.0157499</td>
</tr>
<tr>
<td>_cons</td>
<td>6.306065</td>
<td>0.6103984</td>
</tr>
</tbody>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>sigma_u</td>
<td>0.21445518</td>
</tr>
<tr>
<td>sigma_e</td>
<td>0.13315347</td>
</tr>
<tr>
<td>rho</td>
<td>0.7217576 (fraction of variance due to u_i)</td>
</tr>
</tbody>
</table>

Model (6): OLS w/ Lagged Dependent Variable

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<tr>
<th></th>
<th>Robust</th>
<th>[95% Conf. Interval]</th>
</tr>
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<tbody>
<tr>
<td>lnimr</td>
<td>Coef.</td>
<td>Std. Err.</td>
</tr>
<tr>
<td>lnimr_l</td>
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<td>0.0322091</td>
</tr>
<tr>
<td>lnad5pc</td>
<td>-0.0164429</td>
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</tr>
<tr>
<td>lnwt5pc</td>
<td>0.0018628</td>
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</tr>
<tr>
<td>lnal5pc</td>
<td>0.0184546</td>
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<td>lnipop</td>
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<td>_cons</td>
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<td>0.2996551</td>
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</table>

(Std. Err. adjusted for 38 clusters in cc)
### Model (7a): Dynamic Panel Model (Fixed Effects)

Fixed-effects (within) regression

|               | Coef.   | Std. Err. | t    | P>|t| | 95% Conf. Interval |
|---------------|---------|-----------|------|-----|-------------------|
| lnimr         | 1.028347| .0679446  | 15.14| 0.000| 0.8906784 - 1.166016 |
| lnad5pc       | -.006367| .0077807  | -0.82| 0.418| -.0221321 - 0.0093982 |
| lnwt5pc       | -.0059204| .0065627  | -0.90| 0.373| -.0192176 - 0.0073679 |
| lnal5pc       | .0194281 | .010219   | 1.90 | 0.065| -.0012777 - 0.0401338 |
| lnigdp5       | .0157394 | .0273666  | 0.58 | 0.569| -.0397106 - 0.071894 |
| lnipop        | -.0037429| .100358   | -0.04| 0.969| -.2070875 - 0.196018 |
| ipolity2      | .0002272 | .0010168  | 0.22 | 0.824| -.001833 - 0.0022874 |
| t5            | -.0050407| .0132128  | -0.38| 0.705| -.0318123 - 0.021731 |
| _cons         | -.3446668| 1.718354  | -0.20| 0.842| -.3826383 - 3.13705 |

**(Std. Err. adjusted for 38 clusters in cc)**

### Model (7b): Dynamic Panel Model (Arellano-Bond)

Arellano-Bond dynamic panel-data estimation

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<tr>
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</tr>
<tr>
<td>_cons</td>
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</tr>
</tbody>
</table>

Instruments for differenced equation

- GMM-type: L(2/3).lnimr L(2/2).lnad5pc L(2/2).lnwt5pc L(2/2).lnal5pc L(2/2).lnigdp5
- Standard: D.lnipop

Instruments for level equation

- Standard: _cons
### Model 8: Latent Growth Model

**Mixed-effects ML regression**

- Number of obs = 210  
- Number of groups = 38  
- Obs per group:  
  - min = 3  
  - avg = 5.5  
  - max = 6

**Log likelihood** = 192.62901  
**Wald chi2(7)** = 73.84  
**Prob > chi2** = 0.0000

| lnimr  | Coef.   | Std. Err. | z     | P>|z| | [95% Conf. Interval] |
|--------|---------|-----------|-------|-----|---------------------|
| lnad5pc| .0061624| .0055909  | 1.10  | 0.270| -.0047955 – .0171203|
| lnwt5pc| .0022635| .0042492  | 0.53  | 0.594| -.0060649 – .0105918|
| lnal5pc| .0048598| .0068702  | 0.71  | 0.479| -.0086805 – .0183253|
| lnigdp5| -.0923469| .0290007 | -3.18 | 0.001| -.1491873 – -.0355065|
| lnipop | -.0135667| .0187734 | -0.72 | 0.470| -.0503619 – .0232284|
| ipolity2| .0017303| .0010937 | 1.58  | 0.114| -.0004132 – .0038738|
| t5     | -.0959592| .0124458 | -7.71 | 0.000| -.1203525 – -.071566|
| _cons  | 5.829538 | .3968369 | 14.69 | 0.000| 5.051752 – 6.607324|

**Random-effects Parameters**  
- **sd(t5)** | .0720618 | .0085344 | .0571342 | .0908995
- **sd(_cons)** | .209791 | .0259163 | .1646775 | .2672632
- **corr(t5,_cons)** | -.4721767 | .1405669 | -.7000621 | -.1570041

**sd(Residual)** | .0465508 | .0028493 | .0412882 | .0524842

**LR test vs. linear regression:**  
- chi2(3) = 402.37  
- Prob > chi2 = 0.0000

**Note:** LR test is conservative and provided only for reference.
ALTERNATE ESTIMATES – 2-year Time Delay

Model (1): Bi-variate OLS

Linear regression

Number of obs = 547
F( 1, 95) = 0.22
Prob > F = 0.6408
R-squared = 0.0009
Root MSE = 0.5767

(Std. Err. adjusted for 96 clusters in cc)

|             | Coef.  | Std. Err. | t     | P>|t|     | [95% Conf. Interval] |
|-------------|--------|-----------|-------|---------|----------------------|
| lnimr | 0.0097422 | 0.0208153 | -0.47 | 0.641   | -0.0510659 0.0315814 |
| _cons | 4.224975  | 0.0642305 | 65.78 | 0.000   | 4.097461 4.352489   |

Model (2): Multi-variate OLS

Linear regression

Number of obs = 476
F(  7,  83) = 47.83
Prob > F = 0.0000
R-squared = 0.6557
Root MSE = 0.3397

(Std. Err. adjusted for 84 clusters in cc)

|             | Coef.  | Std. Err. | t     | P>|t|     | [95% Conf. Interval] |
|-------------|--------|-----------|-------|---------|----------------------|
| lnimr | 0.0414915  | 0.0157384 | -2.64 | 0.010   | 0.0101884 0.0727946 |
| lnwt5pc | -0.0245452 | 0.0184448 | -1.33 | 0.187   | -0.0612312 0.0121408 |
| lnal5pc | -0.0023741 | 0.0173643 | -0.14 | 0.892   | -0.036911 0.0321627 |
| lnigdp5 | -0.3680169 | 0.0338501 | -10.87| 0.000   | -0.4353435 -0.3006904 |
| lnipop | -0.0484966 | 0.0227543 | -2.13 | 0.036   | -0.093754 -0.0032393 |
| ipolity2 | -0.0086419 | 0.0048356 | -1.79 | 0.078   | -0.0182597 0.000976 |
| t5 | -0.100892  | 0.0132881 | -7.59 | 0.000   | -0.1272386 -0.0743798 |
| _cons | 8.298359  | 4.207241  | 19.72 | 0.000   | 7.461555 9.135162   |
### Model (3): First Differences (OLS)

**Linear regression**

- **Number of obs** = 392
- **F( 6, 83) =** 2.28
- **Prob > F =** 0.0439
- **R-squared =** 0.0386
- **Root MSE =** 0.1125

(Std. Err. adjusted for 84 clusters in cc)

| D.lnimr | Coef. | Robust Std. Err. | t | P>|t| | [95% Conf. Interval] |
|---------|-------|------------------|---|-----|----------------------|
| lnad5pc | D1.   | 0.0017215        | 0.92 | 0.360 | -0.001999 to 0.005442 |
| lnwt5pc | D1.   | -0.0002219       | -0.07 | 0.941 | -0.0062018 to 0.005758 |
| lnal5pc | D1.   | -0.0058599       | -1.42 | 0.159 | -0.0140706 to 0.0023507 |
| lni5gd5 | D1.   | -0.0934526       | -2.52 | 0.014 | -0.1671572 to -0.019748 |
| lni5pop | D1.   | 0.1819694        | 0.85 | 0.399 | -0.2445093 to 0.6084482 |
| ipolity2 | D1.   | 0.0013457        | 1.46 | 0.159 | -0.0004834 to 0.0031748 |
| t5      | D1.   | (omitted)        |     |      |                      |
| _cons   |       | -0.1432476       | -5.31 | 0.000 | -0.1969541 to -0.0895411 |

### Model (4): Fixed Effects

**Fixed-effects (within) regression**

- **Number of obs** = 476
- **Number of groups** = 84
- **R-squared**:
  - **within =** 0.6698
  - **between =** 0.0032
  - **overall =** 0.0037
- **F(7,83) =** 31.16
- **corr(u_i, Xb) =** -0.8214

(Std. Err. adjusted for 84 clusters in cc)

| lnad5pc | Coef. | Robust Std. Err. | t | P>|t| | [95% Conf. Interval] |
|---------|-------|------------------|---|-----|----------------------|
| lnad5pc |       | 0.0141428        | 1.82 | 0.072 | -0.0012738 to 0.0295595 |
| lnwt5pc |       | -0.0148099       | -1.83 | 0.071 | -0.030894 to 0.0012742 |
| lnal5pc |       | -0.0109665       | -1.27 | 0.209 | -0.0281837 to 0.0062506 |
| lni5gd5 |       | -0.1168074       | -1.99 | 0.050 | -0.2336821 to 0.000673 |
| lni5pop |       | 0.4913577        | 1.82 | 0.072 | -0.0447873 to 1.027503 |
| ipolity2 |      | 0.0023986        | 0.79 | 0.431 | -0.0036254 to 0.0084226 |
| t5      |       | -0.1777569       | -5.28 | 0.000 | -0.2446718 to -0.110842 |
| _cons   |       | -2.038776        | -4.335656 | -0.47 | 0.639 | -10.66222 to 6.584668 |

| sigma_u |       | 0.98054568       |      |      |                      |
| sigma_e |       | 0.16361532       |      |      |                      |
| rho     |       | 0.97291146       | (fraction of variance due to u_i) |      |      |                      |
Model (5): Random Effects

Random-effects GLS regression  Number of obs =  476
Group variable: cc  Number of groups =  84

R-sq:  within = 0.6402  Obs per group: min =  2
        between = 0.6524  avg =  5.7
        overall = 0.6369  max =  6

Random effects u_i ~ Gaussian  Wald chi2(7) = 244.95
corr(u_i, X) = 0 (assumed)  Prob > chi2 = 0.0000

(Std. Err. adjusted for 84 clusters in cc)

|        | Coef.  | Std. Err. |   z   | P>|z|   | 95% Conf. Interval |
|--------|--------|-----------|-------|-------|-------------------|
| lnimr  | .0199729 | .0077595   | 2.57  | 0.010 | .0047647 -.0351812 |
| lnad5pc| -.0104718 | .0083359   | -1.26 | 0.209 | -.0268099 .0058664 |
| lna15pc| -.0161308 | .0095315   | -1.69 | 0.091 | -.0348122 .0025505 |
| lni5pc | -.2758406 | .0457758   | -6.03 | 0.000 | -.3655596 -.1861216 |
| lnigdp5| -.0479375 | .0237063   | -2.02 | 0.043 | -.0944011 -.001474 |
| lnipop | -.0016728 | .0030208   | -0.55 | 0.580 | -.0075934 .0042478 |
| t5     | -.1033987 | .0131255   | -7.88 | 0.000 | -.1291243 -.0776731 |
| _cons  | 7.633847  | .4550664   | 16.78 | 0.000 | 6.741934 8.525761 |

Model (6): OLS w/ Lagged Dependent Variable

Linear regression  Number of obs =  470
F(  8,  83) = 196.63
Prob > F = 0.0000
R-squared =  0.8640
Root MSE   =  .21399

(Std. Err. adjusted for 84 clusters in cc)

|        | Coef.  | Std. Err. |   t   | P>|t|   | 95% Conf. Interval |
|--------|--------|-----------|-------|-------|-------------------|
| lnimr  | .6992914 | .1084664  | 6.45  | 0.000 | .4835561 .9150266 |
| lnad5pc| .0057934 | .0089567  | 0.65  | 0.520 | -.0120212 .0236079 |
| lnw5pc | .0004382 | .007098   | 0.05  | 0.960 | -.0177617 .0168853 |
| lna15pc| -.0275347 | .0144787  | -1.90 | 0.061 | -.0563323 .0012628 |
| lni5pc | -.1549755 | .038218   | -4.06 | 0.000 | -.2309897 -.0789614 |
| lnigdp5| -.0320738 | .0116261  | -2.76 | 0.007 | -.0551976 -.0089499 |
| lnipop | -.0041857 | .0023133  | -1.81 | 0.074 | -.0087867 .0004153 |
| t5     | -.0183298 | .0135725  | -1.35 | 0.181 | -.0453248 .0086653 |
| _cons  | 3.138699  | .918113   | 3.42  | 0.001 | 1.312609 4.964789 |

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Model (7a): Dynamic Panel Model (Fixed Effects)

Fixed-effects (within) regression
Number of obs = 470
Group variable: cc
Number of groups = 84

R-sq: within = 0.7655
between = 0.0081
overall = 0.0504

F(8,83) = 56.71
corr(u_i, Xb) = -0.7213
Prob > F = 0.0000

(Std. Err. adjusted for 84 clusters in cc)

<table>
<thead>
<tr>
<th>Robust</th>
</tr>
</thead>
<tbody>
<tr>
<td>lnimr</td>
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<td>lnal5pc</td>
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<tr>
<td>lnigdp5</td>
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<tr>
<td>ipolity2</td>
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<tr>
<td>t5</td>
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<tr>
<td>_cons</td>
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</tbody>
</table>

Model (7b): Dynamic Panel Model (Arellano-Bond)

Arellano-Bond dynamic panel-data estimation
Number of obs = 309
Group variable: cc
Number of groups = 83

Obs per group: min = 1
avg = 3.722892
max = 4

Number of instruments = 29
Wald chi2(7) = 743.98
Prob > chi2 = 0.0000

Two-step results
(Std. Err. adjusted for clustering on cc)

<table>
<thead>
<tr>
<th>WC-Robust</th>
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<tbody>
<tr>
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<tr>
<td>lnigdp5</td>
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<tr>
<td>ipolity2</td>
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<tr>
<td>t5</td>
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<tr>
<td>_cons</td>
</tr>
</tbody>
</table>

Instruments for differenced equation
GMM-type: L(2/3).lnimr L(2/2).lnad5pc L(2/2).lnwt5pc L(2/2).lnal5pc L(2/2).lnigdp5
L(2/2).ipolity2
Standard: D.lnimr
Instruments for level equation
Standard: _cons
Model 8: Latent Growth Model

Mixed-effects ML regression

Number of obs = 476
Number of groups = 84

Obs per group: min = 2
avg = 5.7
max = 6

Log likelihood = 269.11827
Wald chi2(7) = 205.65
Prob > chi2 = 0.0000

------------------------------------------------------------------------------
|        Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
lnimr |  -.0003969   .0034593    -0.11   0.909     -.007177    .0063832
lnad5pc |  -.0034593   .0034593    -1.00   0.317     -.010337    .0034218
lnwt5pc |   .0020753   .0033742     0.62   0.539     -.004538    .0086886
lnal5pc |   .0020753   .0033742     0.62   0.539     -.004538    .0086886
lnigdp5 |  -.1422528   .0232082    -6.13   0.000      -.18774   -.0967657
lnipop |  -.0499871   .0221269    -2.26   0.024     -.093355   -.0066191
ipolity2 |  .0007722   .0012478     0.62   0.536    -.0016736    .0032179
_t5 |  -.112163    .010185   -11.01   0.000    -.1321253   -.0922008
_cons |   6.566099   .3961151    16.58   0.000     5.789727     7.34247
------------------------------------------------------------------------------

Random-effects Parameters |   Estimate   Std. Err.     [95% Conf. Interval]
-----------------------------+------------------------------------------------
c: Unstructured              
   sd(t5) |   .0850678   .0069634      .0724583    .0998716
   sd(_cons) |  .3380798   .0287472     .2861811    .3993903
   corr(t5,_cons) |  -.2441543   .1282128     -.4749237    .0180329
-----------------------------+------------------------------------------------
   sd(Residual) |   .0674119   .0027936      .0621529    .0731158
-----------------------------+------------------------------------------------
LR test vs. linear regression:    chi2(3) = 853.12   Prob > chi2 = 0.0000

Note: LR test is conservative and provided only for reference.
ALTERNATE ESTIMATES – DAH by Donor Type
(Infant Mortality)

Model (1): Bi-variate OLS

Linear regression

Number of obs = 526
F(  2,   113) = 0.51
Prob > F = 0.6006
R-squared = 0.0052
Root MSE = 0.66843

(Std. Err. adjusted for 114 clusters in cc)

| Robust             | Coef.  | Std. Err. | t     | P>|t|   | [95% Conf. Interval] |
|-------------------|--------|-----------|-------|-------|----------------------|
| lnimr             |        |           |       |       |                      |
| lnad15pc          | 0.030269 | 0.0299216 | 1.01  | 0.314 | -0.029011 - 0.089549 |
| lnad25pc          | -0.0084345 | 0.0271883 | -0.31 | 0.757 | -0.0622993 - 0.0454304 |
| _cons             | 4.042145 | 0.0744951 | 54.26 | 0.000 | 3.894556 - 4.189733  |

Model (2): Multi-variate OLS

Linear regression

Number of obs = 452
F(  8,    96) = 38.98
Prob > F = 0.0000
R-squared = 0.5776
Root MSE = 0.42887

(Std. Err. adjusted for 97 clusters in cc)

| Robust             | Coef.  | Std. Err. | t     | P>|t|   | [95% Conf. Interval] |
|-------------------|--------|-----------|-------|-------|----------------------|
| lnimr             |        |           |       |       |                      |
| lnad15pc          | 0.0819993 | 0.0244291 | 3.36  | 0.001 | 0.0335078 - 0.1304907 |
| lnad25pc          | 0.0163544 | 0.0173286 | 0.94  | 0.348 | -0.0180426 - 0.0507514 |
| lnwt5pc           | -0.0173699 | 0.0201471 | -0.86 | 0.391 | -0.0573615 - 0.0226218 |
| lnal5pc           | -0.0082648 | 0.0201471 | -0.36 | 0.721 | -0.0540738 - 0.0375443 |
| lnigdp5           | -0.3695436 | 0.0453249 | -8.15 | 0.000 | -0.4595129 - -0.2795743 |
| lnipop            | -0.0258118 | 0.0286713 | -0.90 | 0.370 | -0.0827239 - 0.0311002 |
| polity2           | -0.0212196 | 0.0061546 | -3.45 | 0.001 | -0.0334364 - -0.0090028 |
| t5                | 0.1202592 | 0.0170367 | -7.06 | 0.000 | -0.1540768 - -0.0864416 |
| _cons             | 7.917367  | 0.5578118 | 14.19 | 0.000 | 6.810119 - 9.024614  |
Model (3): First Differences (OLS)

Linear regression                                      Number of obs =     346
F(  7,    84) =    4.22
Prob > F      =  0.0005
R-squared     =  0.1136
Root MSE      =  .10771
(Std. Err. adjusted for 85 clusters in cc)

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<td>t5</td>
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<td>_cons</td>
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</table>

Model (4): Fixed Effects

Fixed-effects (within) regression               Number of obs      =       452
Group variable: cc                              Number of groups   =        97
R-sq:  within  = 0.6894                         Obs per group: min =         1
        between = 0.0002                                        avg =       4.7
        overall = 0.0038                                        max =         6
F(8,96)            =     29.30
corr(u_i, Xb)  = -0.8837                        Prob > F           =    0.0000
(Std. Err. adjusted for 97 clusters in cc)

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<td>_cons</td>
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</tbody>
</table>

sigma_u | 1.4070042
sigma_e | .1484576
rho | .98898953 (fraction of variance due to u_i)
Model (5): Random Effects

Random-effects GLS regression
Group variable: cc

Number of obs = 452
Number of groups = 97

R-sq:  within = 0.6491
      between = 0.5212
      overall = 0.5438

Obs per group:
min = 1
avg = 4.7
max = 6

Random effects u_i ~ Gaussian
corr(u_i, X) = 0 (assumed)

Wald chi2(8) = 227.84
Prob > chi2 = 0.0000

(Std. Err. adjusted for 97 clusters in cc)

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<tr>
<td>polity2</td>
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</table>

Model (7a): Dynamic Panel Model (Fixed Effects)

Linear regression

Number of obs = 382
F(  9,    96) = 1171.87
Prob > F = 0.0000
R-squared = 0.9769
Root MSE = .10153

(Std. Err. adjusted for 97 clusters in cc)

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Model (7b): Dynamic Panel Model (Fixed Effects)

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<th>Arellano-Bond dynamic panel-data estimation</th>
<th>Number of obs = 260</th>
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<td>Group variable: cc</td>
<td>Number of groups = 84</td>
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<td>Time variable: t5</td>
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</table>

<table>
<thead>
<tr>
<th>Obs per group:</th>
<th>min = 1</th>
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</thead>
<tbody>
<tr>
<td>avg = 3.095238</td>
<td></td>
</tr>
<tr>
<td>max = 4</td>
<td></td>
</tr>
</tbody>
</table>

Number of instruments = 33
Wald chi2(8) = 858.49
Prob > chi2 = 0.0000

Two-step results

| lnimr | WC-Robust Coef. | Std. Err. | z     | P>|z| | [95% Conf. Interval] |
|-------|----------------|-----------|-------|------|---------------------|
| lnimr |                |           |       |      |                     |
| L1.   | .8131413       | .1137732  | 7.15  | 0.000| .5901499 1.036133   |
| lnad15pc | -.0329594 | .0233166  | -1.41 | 0.157| -.0786591 .0127404 |
| lnad25pc | -.0053448 | .0088209  | -0.61 | 0.545| -.0226334 .0119439 |
| lnwt5pc | .0161764      | .0095212  | 1.70  | 0.089| -.0024849 .0348377 |
| lnal5pc | .0263395      | .0217698  | 1.21  | 0.226| -.0163284 .0690075 |
| lnigdp5 | -.1138367     | .1339673  | -0.88 | 0.377| -.3809577 .1441842 |
| polity2 | .0037768      | .0046827  | 0.81  | 0.420| -.005401 .0129547  |
| lnipop | -.1080378     | .1002751  | -1.08 | 0.281| -.3045734 .0884979 |
| _cons  | 3.227689      | 2.669584  | 1.21  | 0.227| -2.004599 8.459977  |

Instruments for differenced equation

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<tr>
<th>GMM-type:</th>
<th>L(2/3).lnimr L(2/2).lnad15pc L(2/2).lnad25pc L(2/2).lnwt5pc L(2/2).lnal5pc L(2/2).lnigdp5 L(2/2).polity2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard:</td>
<td>D.lnipop</td>
</tr>
</tbody>
</table>

Instruments for level equation

| Standard: | _cons                                                                                   |
Model 8: Latent Growth Model

|                  | Coef.  | Std. Err. | z     | P>|z| | [95% Conf. Interval] |
|------------------|--------|-----------|-------|-----|----------------------|
| lnimr            | lnad15pc | -.0085316 | .0048487 | -1.76 | 0.078 | -.0180349 | .0009716 |
|                  | lnad25pc | -.0046395 | .0026589 | -1.74 | 0.081 | -.009851 | .0005719 |
|                  | lnwt5pc  | .0033887 | .0030845 | 1.10 | 0.272 | .000591 | .0061843 |
|                  | lnal5pc  | -.0005071 | .0045289 | -0.11 | 0.911 | -.0093835 | .0083693 |
|                  | lnigdp5  | -.0838846 | .0238977 | -3.51 | 0.000 | -.1307233 | -.037046 |
|                  | lnipop   | -.008126  | .0299868 | -0.27 | 0.786 | -.0668991 | .050647 |
|                  | polity2  | .0006384  | .0011769 | 0.54 | 0.588 | -.0016683 | .0029451 |
|                  | t5       | -.1167791 | .0101142 | -11.55 | 0.000 | -.1366024 | -.0969557 |
|                  | _cons    | 5.318769  | 5.175272 | 10.28 | 0.000 | 4.304434 | 6.333104 |

Random-effects Parameters | Estimate | Std. Err. | [95% Conf. Interval]
--------------------------|----------|-----------|----------------------|
cc: Unstructured
| sd(t5) | .0851705 | .0070175 | .0724696 | .1000974 |
| sd(_cons) | .463838 | .0389858 | .3933892 | .5469027 |
| corr(t5, _cons) | .010829 | .1163582 | -.2139004 | .2344698 |

sd(Residual) | .062768 | .0027737 | .0575604 | .0684467 |

LR test vs. linear regression:  chi2(3) = 928.54  Prob > chi2 = 0.0000

Note: LR test is conservative and provided only for reference.
### ALTERNATE ESTIMATES – Lagged Effectiveness

*(Infant Mortality)*

Model (1): Bi-variate OLS

Linear regression

|          | Coef. | Robust Std. Err. | t    | P>|t|   | [95% Conf. Interval] |
|----------|-------|------------------|------|-------|---------------------|
| lnimr    |       |                  |      |       |                     |
| lnad5pc  |  -0.023208 |  0.0270536 | -0.86 | 0.393 |                     |
| lnad5pc_l|  -0.0291167 |  0.0175148 | -1.66 | 0.100 |                     |
| _cons    |   4.352054 |   0.0846731 | 51.40 | 0.000 |                     |

(Std. Err. adjusted for 84 clusters in cc)

Model (2): Multi-variate OLS

Linear regression

|          | Coef. | Robust Std. Err. | t    | P>|t|   | [95% Conf. Interval] |
|----------|-------|------------------|------|-------|---------------------|
| lnimr    |       |                  |      |       |                     |
| lnad5pc  |   0.0413443 |  0.028442 | 1.45 | 0.150 |                     |
| lnad5pc_l|   0.0115463 |  0.026674 | 0.43 | 0.666 |                     |
| lnwt5pc  |  -0.024651 |   0.0170392 | -1.45 | 0.152 |                     |
| lnwt5pc_l|   0.0065997 |  0.0171524 | 0.38 | 0.702 |                     |
| lnal5pc  |  -0.0430741 |   0.030144 | -1.43 | 0.157 |                     |
| lnal5pc_l|    0.018137 |   0.0172461 | 1.05 | 0.296 |                     |
| lnigdp5  |  -0.3403498 |   0.0511073 | -6.66 | 0.000 |                     |
| lnipop   |  -0.0627695 |   0.0235485 | -2.67 | 0.009 |                     |
| ipolity2 |  -0.0071793 |   0.0059078 | -1.22 | 0.228 |                     |
| t5       |  -0.1087464 |   0.0185509 | -5.86 | 0.000 |                     |
| _cons    |    8.467337 |   0.5112555 | 16.57 | 0.000 |                     |

(Std. Err. adjusted for 75 clusters in cc)
Model (3): First Differences (OLS)

Linear regression

Number of obs = 263
F( 9, 74) = 1.84
Prob > F = 0.0758
R-squared = 0.1260
Root MSE = 0.10882

(Std. Err. adjusted for 75 clusters in cc)

| D.lnimr | Coef.    | Std. Err. | t   | P>|t|     | [95% Conf. Interval] |
|---------|----------|-----------|-----|---------|----------------------|
| lnad5pc | .0054978 | .008074   | 0.68| 0.498   | -.0105899  .0215856  |
| lnad5pc_l| .0064109 | .0060985  | 1.05| 0.297   | -.0057407  .0185625  |
| lnwt5pc | -.0050155| .0047847  | -1.05| 0.298  | -.0145492  .0045182  |
| lnwt5pc_l| -.0053247| .0045384  | -1.17| 0.244  | -.0143676  .0037182  |
| lnal5pc | -.0039029| .0040513  | -0.64| 0.521  | -.0159604  .0081545  |
| lnal5pc_l| -.0041953| .0039285  | -0.77| 0.442  | -.0150118  .0066213  |
| lntagdp5 | -.0797795| .0755528  | -1.06| 0.294  | -.2303217  .0707626  |
| lnipop  | .5934799 | .2550717  | 2.33| 0.023  | .0852384  1.101721   |
| ipolity2| .000572  | .001355   | 0.50| 0.616  | -.0016906  .0028346  |
| t5      | (omitted)|          |     |         |                      |
| _cons   | -.1839302| .0347957  | -5.29| 0.000  | -.2532621  -.1145982 |
Model (4): Fixed Effects

Fixed-effects (within) regression  Number of obs =  344
Group variable: cc                  Number of groups =  75

R-sq:  within = 0.6378         Obs per group: min =  2
          between = 0.0088        avg =  4.6
          overall = 0.0029       max =  5

F(10,74) = 16.89        Prob > F = 0.0000

(Std. Err. adjusted for 75 clusters in cc)

|          | Coef.     | Std. Err. | t     | P>|t|  | [95% Conf. Interval] |
|-----------|-----------|-----------|-------|------|----------------------|
| lnad5pc   | 0.01073   | 0.0102245 | 1.05  | 0.297| -.0096427 - 0.0311027|
| lnad5pc_l | 0.007788  | 0.0104009 | 0.75  | 0.456| -.0096427 - 0.0311027|
| lnwt5pc   | -0.0198973| 0.0083746 | -2.38 | 0.020| -.0365842 - 0.0032105|
| lnwt5pc_l | -0.0120775| 0.006939  | -1.74 | 0.086| -.0259038 - 0.0071488|
| lnal5pc   | -0.0039178| 0.0083746 | -0.48 | 0.632| -0.0159943 - 0.0071488|
| lnal5pc_l | -0.0073917| 0.006939  | -1.74 | 0.086| -0.0259038 - 0.0071488|
| lnigdp5   | -0.0787217| 0.0878282 | -0.90 | 0.373| -.2537232 - 0.0997299|
| lnipop    | 0.0090782 | 0.0097714 | 2.03  | 0.042| 0.0007266 - 0.0390297|
| ipolity2  | 0.0039655 | 0.0063746 | 0.63  | 0.528| 0.274727 - 1.580876 |
| t5        | -0.228237 | 0.0410123 | -5.57 | 0.000| -0.3099557 - 0.1465138|
| _cons     | -9.61802  | 5.014578 | -1.92 | 0.059| -.3734757 - 19.60978 |

sigma_u   | 1.6398821
sigma_e   | 0.13998544
rho       | 0.99276585 (fraction of variance due to u_i)

Model (5): Random Effects

Random-effects GLS regression  Number of obs =  344
Group variable: cc                  Number of groups =  75

R-sq:  within = 0.5823         Obs per group: min =  2
          between = 0.4828        avg =  4.6
          overall = 0.5187       max =  5

Random effects u_i ~ Gaussian    Wald chi2(10) = 141.96
                                Prob > chi2 = 0.0000

(Std. Err. adjusted for 75 clusters in cc)

|          | Coef.     | Std. Err. | z     | P>|z|  | [95% Conf. Interval] |
|-----------|-----------|-----------|-------|------|----------------------|
| lnad5pc   | 0.0136427 | 0.0105018 | 1.30  | 0.194| -.0069404 - 0.0342258|
| lnad5pc_l | 0.007788  | 0.0104009 | 0.75  | 0.456| -.0096427 - 0.0311027|
| lnwt5pc   | -0.0142755| 0.0094101 | -1.52 | 0.129| -0.0327189 - 0.0041679|
| lnwt5pc_l | -0.0073917| 0.006939  | -1.74 | 0.086| -0.0259038 - 0.0071488|
| lnal5pc   | -0.0097279| 0.0126228 | -0.77 | 0.441| -0.0232465 - 0.0098611|
| lnal5pc_l | -0.0014603| 0.0092534 | -0.16 | 0.875| -.0195966 - 0.016676 |
| lnigdp5   | -0.2767765| 0.0605101 | -4.52 | 0.000| -.386354 - 0.149159 |
| lnipop    | -0.0449481| 0.0243583 | -1.85 | 0.065| -0.0926895 - 0.0027934|
| ipolity2  | 0.000216  | 0.0027934 | 0.01  | 0.994| -0.0054606 - 0.0055039|
| t5        | 0.106346  | 0.0149086 | -7.13 | 0.000| -.1355663 - 0.0771256|
| _cons     | 7.567886  | 6.180854  | 2.19  | 0.029| 6.356461 - 8.779312 |

sigma_u   | 1.3998544
sigma_e   | 0.13998544
rho       | 0.99276585 (fraction of variance due to u_i)

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Model (6): OLS w/ Lagged Dependent Variable

Linear regression  
Number of obs = 310  
F(11, 74) = 960.01  
Prob > F = 0.0000  
R-squared = 0.9652  
Root MSE = .09924

|             | Coef. | Std. Err. | t     | P>|t|   | [95% Conf. Interval] |
|-------------|-------|-----------|-------|------|---------------------|
| lnimr_l     | 1.072 | .021      | 52.1  | 0.00 | 1.031 - 1.113      |
| ladin5pc    | -0.149 | .011      | -1.3  | 0.19 | -.037 - .007       |
| ladin5pc_l  | .002 | .007      | 0.3   | 0.79 | -0.012 - .012      |
| lnwt5pc     | -.005 | .004      | -1.3  | 0.19 | -.013 - .002       |
| lnat5pc_l   | .000 | .007      | 0.1   | 0.95 | -.012 - .012       |
| lnat5pc     | .009 | .005      | 1.7   | 0.08 | -.001 - .019       |
| lngdp5      | -.012 | .013      | -1.0  | 0.32 | -.037 - .012       |
| lnipop      | -.014 | .008      | -1.8  | 0.07 | -.030 - .004       |
| ipolity2    | -.000 | .001      | -0.5  | 0.6  | -.003 - .002       |
| t5          | .003  | .007      | 0.4   | 0.65 | -.010 - .016       |
| _cons       | -0.096 | .253     | -0.4  | 0.69 | -0.599 - 0.408     |

(Std. Err. adjusted for 75 clusters in cc)

Model (7a): Dynamic Panel Model (Fixed Effects)

Fixed-effects (within) regression  
Number of obs = 310  
Number of groups = 75  
Obs per group: min = 1  
avg = 4.1  
max = 5  
F(11,74) = 158.63  
Prob > F = 0.0000

|             | Coef. | Std. Err. | t     | P>|t|   | [95% Conf. Interval] |
|-------------|-------|-----------|-------|------|---------------------|
| lnimr_l     | .849  | .063      | 13.6  | 0.00 | .724 - .974        |
| ladin5pc    | -.006 | .009      | -0.7  | 0.53 | -.025 - .012       |
| ladin5pc_l  | .001  | .004      | 0.2   | 0.8   | -.007 - .010      |
| lnwt5pc     | -.009 | .005      | -1.8  | 0.07 | -.023 - .005       |
| lnat5pc_l   | -.014 | .004      | -3.2  | 0.00 | -.009 - .019       |
| lnat5pc     | -.001 | .001      | 0.3   | 0.75 | -.003 - .001       |
| lngdp5      | -.004 | .007      | -0.6  | 0.52 | -.017 - .008       |
| lnipop      | .373  | .174      | 2.1   | 0.03 | .025 - .723        |
| ipolity2    | .000  | .003      | 0.3   | 0.75 | -.002 - .002       |
| t5          | -.067 | .026      | -2.6  | 0.01 | -.119 - -.015      |
| _cons       | -5.06 | 2.55      | 1.9   | 0.05 | -10.14 - .021      |

sigma_u | .635  | .635 |
sigma_e | .076  | .076 |
rho | .986  | .986 |
(fraction of variance due to u_i)

(Std. Err. adjusted for 75 clusters in cc)
Model (7b): Dynamic Panel Model (Arellano-Bond)

| Arellano-Bond dynamic panel-data estimation | Number of obs = 232 |
| Group variable: cc | Number of groups = 73 |
| Time variable: t5 |
| Obs per group: min = 1 |
| avg = 3.178082 |
| max = 4 |
| Number of instruments = 38 |
| Wald chi2(10) = 673.61 |
| Prob > chi2 = 0.0000 |
| Two-step results |

(Std. Err. adjusted for clustering on cc)

| lnimr | Coef. | Std. Err. | z | P>|z| | [95% Conf. Interval] |
|-------|-------|-----------|---|-------|----------------------|
| L1. lnimr | .9102398 | .0847726 | 10.74 | 0.000 | .7440886 - 1.076391 |
| lnad5pc | -.0537801 | .0229723 | -2.34 | 0.019 | -.098805 - .0087552 |
| lnad5pc_l | .0107907 | .0063341 | 1.70 | 0.088 | -.0016239 - .0232053 |
| lnwt5pc | .0082698 | .009316 | 0.89 | 0.375 | -.0099892 - .0265289 |
| lnwt5pc_l | .0062903 | .0063341 | 1.01 | 0.314 | -.0059583 - .0185389 |
| lnal5pc | .0587367 | .0282076 | 2.08 | 0.037 | -.031774 - .140225 |
| lnal5pc_l | -.0145138 | .0088064 | -1.65 | 0.099 | -.031774 - .0207464 |
| lnigdp5 | -.1466104 | .0998658 | -1.47 | 0.142 | -.3423438 - .049123 |
| ipolity2 | .005909 | .0037543 | 1.57 | 0.115 | -.0014492 - .0132672 |
| lnipop | -.039516 | .1042641 | -0.38 | 0.705 | -.24387 - .1648379 |
| _cons | 1.891429 | 1.969794 | 0.96 | 0.337 | -.969296 - 5.752154 |

Instruments for differenced equation

GMM-type: L(2/3).lnimr L(2/2).lnad5pc L(2/2).lnad5pc_l L(2/2).lnwt5pc L(2/2).lnwt5pc_l L(2/2).lnal5pc L(2/2).lnal5pc_l L(2/2).lnigdp5 L(2/2).ipolity2
Standard: D.lnipop

Instruments for level equation

Standard: _cons
Model 8: Latent Growth Model

Mixed-effects ML regression

| Coef. | Std. Err. | z | P>|z| | [95% Conf. Interval] |
|-------|-----------|---|----|---------------------|
| lnad5pc | -.0084167 | .0062912 | -1.34 | 0.181 | -.0207474 - .0039139 |
| lnad5pc_l | .0053544 | .0053351 | 1.00 | 0.316 | -.0051022 - .0158109 |
| lnwt5pc | .0061252 | .0039121 | 1.57 | 0.117 | -.0015424 - .0137927 |
| lnwt5pc_l | .0001083 | .0036387 | 0.03 | 0.976 | -.0070234 - .0072399 |
| lnal5pc | .0005259 | .0039121 | 0.08 | 0.934 | -.0015422 - .0129663 |
| lnal5pc_l | -.0011329 | .0045693 | -0.25 | 0.804 | -.0000885 - .0028201 |
| lnigdp5 | -.1936096 | .0306528 | -6.32 | 0.000 | -.2536881 - -.1335311 |
| lnipop | -.0244479 | .0229347 | -1.07 | 0.286 | -.069399 - .0205032 |
| ipolity2 | .0003212 | .001275 | 0.25 | 0.801 | -.0021776 - .0028201 |
| t5 | -.1029585 | .0116539 | -8.83 | 0.000 | -.1257998 - -.0801172 |
| _cons | 6.609265 | .4594568 | 14.38 | 0.000 | 5.708747 - 7.509784 |

Random-effects Parameters

<table>
<thead>
<tr>
<th>cc: Unstructured</th>
<th>Estimate</th>
<th>Std. Err.</th>
<th>[95% Conf. Interval]</th>
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</thead>
<tbody>
<tr>
<td>sd(t5)</td>
<td>.0890187</td>
<td>.0077912</td>
<td>.0749862 - .1056773</td>
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<tr>
<td>sd(_cons)</td>
<td>.3437532</td>
<td>.0305575</td>
<td>.2887937 - .4091837</td>
</tr>
<tr>
<td>corr(t5,_cons)</td>
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<td>.1046925</td>
<td>-.6512053 - -.2440465</td>
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<tr>
<td>sd(Residual)</td>
<td>.0578047</td>
<td>.0029943</td>
<td>.052224 - .0639817</td>
</tr>
</tbody>
</table>

LR test vs. linear regression: chi2(3) = 652.28 Prob > chi2 = 0.0000

Note: LR test is conservative and provided only for reference.
**ALTERNATE ESTIMATES – Multiple Imputations**

(Infant Mortality)

**Model (1): Bi-variate OLS**

<table>
<thead>
<tr>
<th>Multiple-imputation estimates</th>
<th>Imputations = 20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linear regression</td>
<td></td>
</tr>
<tr>
<td>Number of obs</td>
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</tr>
<tr>
<td>Average RVI</td>
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<td>Complete DF</td>
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<tr>
<td>DF:</td>
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<tr>
<td>min</td>
<td>93.06</td>
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<tr>
<td>avg</td>
<td>93.06</td>
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<tr>
<td>max</td>
<td>93.06</td>
</tr>
<tr>
<td>Model F test: Equal FMI</td>
<td>F( 1, 93.1) = 0.01</td>
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<tr>
<td>Within VCE type: Robust</td>
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<tr>
<td>Prob &gt; F</td>
<td>0.9261</td>
</tr>
</tbody>
</table>

(Within VCE adjusted for 96 clusters in cc)

| lnimr | Coef. | Std. Err. | t    | P>|t| | 95% Conf. Interval |
|-------|-------|-----------|------|------|------------------|
| lnad5pc | -.0022826 | .0245499 | -0.09 | 0.926 | -.0510335 -.0464682 |
| _cons | 4.215864 | .0693644 | 60.78 | 0.000 | 4.078122 4.353607 |

**Model (2): Multi-variate OLS**

<table>
<thead>
<tr>
<th>Multiple-imputation estimates</th>
<th>Imputations = 20</th>
</tr>
</thead>
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<tr>
<td>Linear regression</td>
<td></td>
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<tr>
<td>Number of obs</td>
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<tr>
<td>Average RVI</td>
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<td>max</td>
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<td>F( 7, 92.8) = 49.46</td>
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<tr>
<td>Within VCE type: Robust</td>
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<tr>
<td>Prob &gt; F</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

(Within VCE adjusted for 96 clusters in cc)

| lnimr | Coef. | Std. Err. | t    | P>|t| | 95% Conf. Interval |
|-------|-------|-----------|------|------|------------------|
| lnad5pc | .0273132 | .0153771 | 1.78 | 0.079 | .0032382 .0578647 |
| lnwt5pc | .0224126 | .0145898 | -1.56 | 0.121 | .051792 .0061668 |
| lnal5pc | .0244096 | .0172178 | -1.42 | 0.160 | -.00586258 .0198067 |
| lnigdp5 | .361453  | .0333056 | 10.85 | 0.000 | -.0427643 .2952629 |
| lnipop | -.162481 | .0226702 | -0.72 | 0.475 | -.0612709 .0287747 |
| ipolity2 | .0097991 | .0049342 | 1.99 | 0.050 | -.0196056 7.41e-06 |
| t5     | -.0944786 | .0125687 | -7.52 | 0.000 | -.1194505 -.0695067 |
| _cons | 7.837793 | .4420178 | 17.73 | 0.000 | 6.959529 8.716057 |
Model (3): First Differences (OLS)

Multiple-imputation estimates
Linear regression
Multiple-imputation estimates
Imputations = 20
Number of obs = 451
Average RVI = 0.1109
Complete DF = 95
DF adjustment: Small sample
DF: min = 55.59
avg = 81.16
max = 92.98
Model F test: Equal FMI
F(6, 91.4) = 3.75
Within VCE type: Robust
Prob > F = 0.0022

(Within VCE adjusted for 96 clusters in cc)

|            | Coef. | Std. Err. | t    | P>|t|  | [95% Conf. Interval] |
|------------|-------|-----------|------|------|----------------------|
| D.lnimr:   |       |           |      |      |                      |
| lnad5pc:   | .0054715 | .0025423  | 2.15 | 0.034 | .0004205 - .0105225  |
| D1:        |       |           |      |      |                      |
| lnwt5pc:   | -.0019053 | .0017693  | -1.08 | 0.284 | -.0054199 - .0016093 |
| D1:        |       |           |      |      |                      |
| lnal5pc:   | -.0077125 | .0024194  | -3.19 | 0.002 | -.0125282 - -.0028968 |
| D1:        |       |           |      |      |                      |
| lnigdp5:   | -.0363253 | .0209043  | -1.74 | 0.088 | -.0782086 - .0055579 |
| D1:        |       |           |      |      |                      |
| lnipop:    | .2532151 | .2038788  | 1.24 | 0.217 | -.1516491 - .6580793 |
| D1:        |       |           |      |      |                      |
| ipolity2:  | .0008806 | .0007514  | 1.17 | 0.245 | -.000619 - .0023801  |
| t5:        |       |           |      |      |                      |
| D1:        |       |           |      |      |                      |
| _cons:     | -.1543287 | .0251942  | -6.13 | 0.000 | -.2043598 - -.1042976 |
### Model (4): Fixed Effects

Multiple-imputation estimates
Fixed-effects (within) regression

#### Group variable: cc
- **Number of obs**: 547
- **Number of groups**: 96
- **Obs per group**: min = 2, avg = 5.7, max = 6
- **Average RVI**: 0.6849
- **Complete DF**: 95

**DF adjustment**: Small sample
- **DF**: min = 64.19, avg = 86.00, max = 92.78

**Model F test**: Equal FMI
- **F(7, 92.5)** = 33.72
- **Prob > F**: 0.0000

**Within VCE type**: Robust

| Variable | Coef. | Std. Err. | t     | P>|t| | [95% Conf. Interval] |
|----------|-------|-----------|-------|-----|----------------------|
| lnad5pc  | 0.0235622 | 0.008543 | 2.76  | 0.007 | 0.0065967 - 0.0405277 |
| lnwt5pc  | -0.0150188 | 0.0064353 | -2.33 | 0.022 | -0.0278047 - 0.0022329 |
| lnal5pc  | -0.0236671 | 0.0076096 | -3.11 | 0.003 | -0.0387869 - 0.0085474 |
| lnigdp5  | -0.0894615 | 0.0455112 | -1.97 | 0.054 | -0.1803753 0.0014524 |
| lnipop   | 0.5223297 | 0.2290893 | 2.28  | 0.025 | 0.0673895 0.97727 |
| ipolity2 | 0.0007769 | 0.0024147 | 0.32  | 0.749 | -0.0040332 0.005587 |
| t5       | -0.179954 | 0.0277204 | -6.49 | 0.000 | -0.2350072 -0.1249007 |
| _cons    | -2.629166 | 3.6252 | -0.73 | 0.470 | -9.82874 4.570409 |

**sigma_u**: 1.0691751
**sigma_e**: 0.16108409
**rho**: 0.97780476 (fraction of variance due to u_i)

---

### Model (5): Random Effects

Multiple-imputation estimates
Random-effects GLS regression

#### Group variable: cc
- **Number of obs**: 547
- **Number of groups**: 96
- **Obs per group**: min = 2, avg = 5.7, max = 6
- **Average RVI**: 0.0746
- **DF adjustment**: Large sample
- **DF**: min = 840.68, avg = 45428.81, max = 298404.14

**Model F test**: Equal FMI
- **F(7, 22408.8)** = 33.44
- **Prob > F**: 0.0000

**Within VCE type**: Robust

| Variable | Coef. | Std. Err. | t     | P>|t| | [95% Conf. Interval] |
|----------|-------|-----------|-------|-----|----------------------|
| lnad5pc  | 0.0279131 | 0.0080266 | 3.48  | 0.001 | 0.0121808 0.0436454 |
| lnwt5pc  | -0.0136316 | 0.006714 | -2.03 | 0.042 | -0.0267932 -0.004701 |
| lnal5pc  | -0.0261878 | 0.0078443 | -3.34 | 0.001 | -0.0415763 -0.0107994 |
| lnigdp5  | -0.2001142 | 0.0503488 | -3.97 | 0.000 | -0.2989384 -0.1012899 |
| lnipop   | 0.0040247 | 0.024652 | 0.16  | 0.870 | -0.0442924 0.0523419 |
| ipolity2 | -0.0019045 | 0.0025671 | -0.74 | 0.458 | -0.006943 0.0031339 |
| t5       | -0.179954 | 0.0277204 | -6.49 | 0.000 | -0.2350072 -0.1249007 |
| _cons    | 6.279785 | 3.6252 | 11.63 | 0.000 | 5.220773 7.338797 |

**sigma_u**: 0.3315563
**sigma_e**: 0.16108409
**rho**: 0.80903354 (fraction of variance due to u_i)

---

Note: sigma_u and sigma_e are combined in the original metric.
Model (6): OLS w/ Lagged Dependent Variable

Multiple-imputation estimates
Imputations = 20
Linear regression
Number of obs = 537
Average RVI = 0.0288
Complete DF = 95
DF adjustment: Small sample
DF: min = 81.91
av = 90.81
max = 92.61
Model F test: Equal FMI
F(8, 92.9) = 254.74
Within VCE type: Robust
Prob > F = 0.0000

(Within VCE adjusted for 96 clusters in cc)

| lnimr | Coef.  | Std. Err. | t    | P>|t| | [95% Conf. Interval] |
|-------|--------|-----------|------|-----|---------------------|
| lnimr_l | .7272406 | .0964271 | 7.54 | 0.000 | .5357323, .9187489 |
| lnad5pc | -.0043599 | .0097878 | -.45 | 0.657 | -.0237963, .0150786 |
| lnwt5pc | -.0062883 | .0093883 | -.67 | 0.505 | -.0249326, .012356 |
| lnal5pc | -.0241354 | .0149598 | -1.61 | 0.110 | -.0538454, .0055746 |
| lnigdp5 | -.1419365 | .033745 | -4.21 | 0.000 | -.2089727, -0.0749003 |
| lnipop | -.0144512 | .0099327 | -1.45 | 0.149 | -.0341772, .0052748 |
| ipolity2 | -.0043875 | .0023666 | -1.85 | 0.067 | -.0090954, .0053205 |
| t5 | -.019623 | .0123969 | -1.58 | 0.117 | -.044246, .005 |
| _cons | 2.648995 | .7726863 | 3.43 | 0.001 | 1.114275, 4.183716 |

Model (7a): Dynamic Panel Model (Fixed Effects)

Multiple-imputation estimates
Imputations = 20
Fixed-effects (within) regression
Number of obs = 537
Group variable: cc
Number of groups = 96
Obs per group: min = 2
avg = 5.6
max = 6
Average RVI = 0.3415
Complete DF = 95
DF adjustment: Small sample
DF: min = 72.68
avg = 88.68
max = 92.98
Model F test: Equal FMI
F(8, 92.8) = 51.57
Within VCE type: Robust
Prob > F = 0.0000

(Within VCE adjusted for 96 clusters in cc)

| lnimr | Coef.  | Std. Err. | t    | P>|t| | [95% Conf. Interval] |
|-------|--------|-----------|------|-----|---------------------|
| lnimr_l | .2917183 | .0804934 | 3.62 | 0.000 | .131874, .4515625 |
| lnad5pc | .0116362 | .0072065 | 1.61 | 0.110 | -.0026748, .0259472 |
| lnwt5pc | -.0118695 | .0063775 | -1.86 | 0.066 | -.0245354, .007964 |
| lnal5pc | -.0270293 | .0085249 | -3.17 | 0.002 | -.0439598, -.010988 |
| lnigdp5 | -.0457105 | .0309566 | -1.48 | 0.144 | -.1073569, .0159359 |
| lnipop | .4225761 | .1960732 | 2.16 | 0.034 | .0332101, .8119422 |
| ipolity2 | .0000837 | .0020845 | 0.04 | 0.968 | -.004071, .0042384 |
| t5 | -.1355012 | .0293883 | -4.61 | 0.000 | -.1938626, -.0771398 |
| _cons | -2.804734 | 2.91175 | -0.96 | 0.338 | -8.58719, 2.977721 |

| sigma_u | .86942092 |
| sigma_e | .13955283 |
| rho | .97488829 | (fraction of variance due to u_i) |

Note: sigma_u and sigma_e are combined in the original metric.
### Model 8: Latent Growth Model

**Multiple-imputation estimates**  
Imputations = 20

**Mixed-effects ML regression**  
Number of obs = 547

**Group variable: cc**  
Number of groups = 96

<table>
<thead>
<tr>
<th>Obs per group: min</th>
<th>avg</th>
<th>max</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>5.7</td>
<td>6</td>
</tr>
</tbody>
</table>

**DF adjustment:** Large sample

DF:  
- min = 111.43
- avg = 1.12e+06
- max = 6.56e+06

**Model F test:** Equal FMI

<table>
<thead>
<tr>
<th>F(7, 8878.6)</th>
<th>24.76</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prob &gt; F</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

| lnimr | Coef. | Std. Err. | t     | P>|t|   | [95% Conf. Interval] |
|-------|-------|-----------|-------|-------|----------------------|
| lnavdp5c | .0027273 | .0033655 | 0.81  | 0.418 | -.0038691 -.0093237 |
| lnavt5pc | .0009548 | .0026186 | 0.36  | 0.715 | -.0041775 .0060872 |
| lnav5p5c | -.0031456 | .0032614 | -0.96 | 0.335 | -.0095386 .0032474 |
| lnavgdp5 | -.0399004 | .0174442 | -2.29 | 0.024 | -.0744657 -.0053351 |
| lnipop | -.0140715 | .0020427 | -0.69 | 0.491 | -.0541077 .0259647 |
| ipolity2 | .000748 | .001066 | 0.70  | 0.483 | -.0013437 .0028397 |
| t5 | -.1211961 | .0095411 | -12.70 | 0.000 | -.1398963 -.1024959 |
| _cons | 5.214958 | .3524167 | 14.80 | 0.000 | 4.524011 5.905906 |

**Random-effects Parameters**  
<table>
<thead>
<tr>
<th>Estimate</th>
<th>Std. Err.</th>
<th>[95% Conf. Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td>cc: Unstructured</td>
<td></td>
<td></td>
</tr>
<tr>
<td>sd(t5)</td>
<td>.0064288</td>
<td>.0065567</td>
</tr>
<tr>
<td>sd(_cons)</td>
<td>.3655541</td>
<td>.0287984</td>
</tr>
<tr>
<td>corr(t5,_cons)</td>
<td>.0194318</td>
<td>.1118145</td>
</tr>
<tr>
<td>sd(Residual)</td>
<td>.0643976</td>
<td>.0024585</td>
</tr>
</tbody>
</table>

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ALTernate estimates – contingent effectiveness
(Infant Mortality)

Model (1): Bi-variate OLS

Linear regression

Number of obs = 426
F( 1, 83) = 7.81
Prob > F = 0.0065
R-squared = 0.0248
Root MSE = .50619

(Std. Err. adjusted for 84 clusters in cc)

|             | Coef.  | Std. Err. | t     | P>|t| [95% Conf. Interval] |
|-------------|--------|-----------|-------|------------------------|
| lnad5pc     | -.0592 | .02118    | -2.79 | 0.006 [-.1012976 -.0170543]
| _cons       | 4.413  | .06978    | 63.24 | 0.000 [4.274258 4.551845] |

Model (2): Multi-variate OLS

Linear regression

Number of obs = 393
F( 8, 74) = 23.32
Prob > F = 0.0000
R-squared = 0.5423
Root MSE = .34728

(Std. Err. adjusted for 75 clusters in cc)

|             | Coef.  | Std. Err. | t     | P>|t| [95% Conf. Interval] |
|-------------|--------|-----------|-------|------------------------|
| lnad5pc     | .0394  | .02851    | 1.38  | 0.172 [-.017443 .0961765]
| lnwt5pc     | -.0104 | .01747    | -0.60 | 0.550 [-.0452983 .024315]
| lnal5pc     | -.0282 | .02276    | -1.24 | 0.219 [-.0735909 .0171417]
| lnigdp5     | -.3255 | .04549    | -7.16 | 0.000 [-.4161779 -.234899]
| lnipop      | -.0590 | .02295    | -2.57 | 0.012 [-.1047884 -.0133208]
| ipolity2    | -.0019 | .00862    | -0.22 | 0.828 [-.0190591 .0153005]
| adpol       | -.0029 | .00289    | -1.03 | 0.308 [-.0086965 .002786]
| t5          | -.1002 | .01752    | -5.72 | 0.000 [-.1351317 -.0653173]
| _cons       | 8.278  | .49773    | 16.63 | 0.000 [7.286955 9.270457] |

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Model (3): First Differences (OLS)

Linear regression

|                       | Coef. | Std. Err. | t     | P>|t|  | [95% Conf. Interval] |
|-----------------------|-------|-----------|-------|------|----------------------|
| lnad5pc D1. | .0031501 | .006107  | 0.52  | 0.608 | -.0090182 - .0153185 |
| lnwt5pc D1. | -.0032074 | .0023076 | -1.39 | 0.169 | -.0078054 - .0013905 |
| lnal5pc D1. | -.0036143 | .0035565 | -1.02 | 0.313 | -.0107007 - .0034722 |
| lnigdp5 D1. | -.0803136 | .0683913 | -1.17 | 0.244 | -.2165862 - .055959 |
| lnipop D1. | .6071204 | .2401935 | 2.53  | 0.014 | .1285244 - 1.085716 |
| ipolity2 D1. | -.0004758 | .0016266 | -0.29 | 0.771 | -.003717 - .0027653 |
| adpol D1. | .0004483 | .0007262 | 0.62  | 0.539 | -.0009986 - .0018953 |
| t5 D1. | (omitted) |   |       |      |         |
| _cons | -.1861535 | .0334948 | -5.56 | 0.000 | -.2528933 - .1194136 |

Root MSE = .10445

(Std. Err. adjusted for 75 clusters in cc)

Model (4): Fixed Effects

Fixed-effects (within) regression

|                       | Coef. | Std. Err. | t     | P>|t|  | [95% Conf. Interval] |
|-----------------------|-------|-----------|-------|------|----------------------|
| lnad5pc | .0081789 | .0128423  | 0.64  | 0.526 | -.01741 - .0337678 |
| lnwt5pc | -.0139444 | .0086334 | -1.62 | 0.111 | -.0311468 - .0032581 |
| lnal5pc | -.0066424 | .0093581 | -0.71 | 0.480 | -.0252888 - .012004 |
| lnigdp5 | -.0833441 | .0758235 | -1.10 | 0.275 | -.2344258 - .0677375 |
| lnipop | .8273127 | .2953914 | 2.80  | 0.007 | .2387325 - 1.415893 |
| ipolity2 | -.0011574 | .0038229 | -0.30 | 0.763 | -.0087746 - .0064598 |
| adpol | .0007003 | .001491  | 0.47  | 0.640 | -.0002270 - .0036712 |
| t5 | -.206472 | .0409416 | -5.04 | 0.000 | -.2880499 - .1248942 |
| _cons | -.7446766 | .4719369 | -1.56 | 0.123 | -.1696987 - 2.076334 |

sigma_u | 1.4257251 |
| sigma_e | .14963554 |
| rho | .99910468 | (fraction of variance due to u_i)

Root MSE = .10445

(Std. Err. adjusted for 75 clusters in cc)
Model (5): Random Effects

Random-effects GLS regression  Number of obs      =       393  
Group variable: cc  Number of groups   =        75  
R-sq:  within  = 0.6144  
        between = 0.4766  
        overall = 0.5260  
Random effects u_i ~ Gaussian  
Wald chi2(8) =    162.18  
corr(u_i, X) = 0 (assumed)  
(Std. Err. adjusted for 75 clusters in cc)

|                | Coef. | Std. Err. | z     | P>|z|  | [95% Conf. Interval] |
|----------------|-------|-----------|-------|-----|----------------------|
| lnimr          | .0184462 | .0146059 | 1.26  | 0.207 | -.010181  .0470733  |
| lnad5pc        | -.0106587 | .0081479 | -1.31 | 0.191 | -.0266282 .0053109  |
| lnwt5pc        | -.0132229 | .0091407 | -1.45 | 0.148 | -.0311384 .0046926  |
| lnal5pc        | -.2398191 | .0575508 | -4.17 | 0.000 | -.3526167 -.1270216 |
| lnigdp5        | -.0361489 | .0244068 | -1.48 | 0.148 | -.0839854 .0116875  |
| ipolity2       | -.0022457 | .0041075 | -0.55 | 0.585 | -.0102962 .0058049  |
| adpol          | -.0000507 | .0015841 | -0.03 | 0.974 | -.0031554 .0030541  |
| t5             | -.0980783 | .0134896 | -7.27 | 0.000 | -.1245175 -.0716392 |
| _cons          | 7.184569 | .6156346 | 11.67 | 0.000 | 5.977948  8.391191  |

sigma_u | .32008443             
sigma_e | .14963554             
rho    | .82065102 (fraction of variance due to u_i)

Model (6): OLS w/ Lagged Dependent Variable

Linear regression  Number of obs      =     330  
F(  9,    74) = 1235.74  
Prob > F      =  0.0000  
R-squared     =  0.9653  
Root MSE      =  .09787  
(Std. Err. adjusted for 75 clusters in cc)

|                | Coef. | Std. Err. | t     | P>|t|  | [95% Conf. Interval] |
|----------------|-------|-----------|-------|-----|----------------------|
| lnimr_l        | 1.074487 | .0186598 | 57.58 | 0.000 | 1.037307  1.111667  |
| lnad5pc        | -.0156961 | .0108971 | -1.44 | 0.154 | -.0374091 .0060169  |
| lnwt5pc        | -.0029353 | .0048906 | -0.60 | 0.550 | -.0126801 .0068095  |
| lnal5pc        | -.0139041 | .0117496 | -1.18 | 0.240 | -.0373158 .0095076  |
| lnigdp5        | -.0123979 | .0076701 | -1.62 | 0.110 | -.0276809 .0028852  |
| ipolity2       | .0003929 | .002039  | 0.19  | 0.848 | -.0036699 .0044557  |
| adpol          | -.005428 | .0007228 | -0.75 | 0.455 | -.001983  .0016875  |
| t5             | .008199  | .0047566 | 1.72  | 0.089 | -.0012787 .0176767  |
| _cons          | -1.642644| .2427314 | -6.86 | 0.501 | -.6479173 .3193885  |

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**Model (7a): Dynamic Panel Model (Fixed Effects)**

Fixed-effects (within) regression  
Number of obs = 330  
Group variable: cc  
Number of groups = 75  
R-sq:  within = 0.9028  
Obs per group: min = 1  
between = 0.1427  
avg = 4.4  
overall = 0.1933  
max = 6  
F(9,74) = 215.88  
Prob > F = 0.0000  

(Std. Err. adjusted for 75 clusters in cc)

<table>
<thead>
<tr>
<th>Robust</th>
<th></th>
<th>[95% Conf. Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td>lnimr</td>
<td>Coef.</td>
<td>Std. Err.</td>
</tr>
<tr>
<td>lnimr_l</td>
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</tr>
<tr>
<td>lnad5pc</td>
<td>-.0107318</td>
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</tr>
<tr>
<td>lnwt5pc</td>
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<td>.0053079</td>
</tr>
<tr>
<td>lnigdp5</td>
<td>-.0083897</td>
<td>.0134376</td>
</tr>
<tr>
<td>ipolity2</td>
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</tr>
<tr>
<td>sigma_u</td>
<td>.0038363</td>
<td>.0011948</td>
</tr>
<tr>
<td>sigma_e</td>
<td>.0038363</td>
<td>.0026987</td>
</tr>
<tr>
<td>rho</td>
<td>.98959968</td>
<td>(fraction of variance due to u_i)</td>
</tr>
</tbody>
</table>

**Model (7b): Dynamic Panel Model (Arellano-Bond)**

Arellano-Bond dynamic panel-data estimation  
Number of obs = 232  
Group variable: cc  
Number of groups = 73  
Time variable: t5  
Obs per group: min = 1  
avg = 3.178082  
max = 4  
Number of instruments = 33  
Wald chi2(8) = 492.60  
Prob > chi2 = 0.0000  

Two-step results  
(Std. Err. adjusted for clustering on cc)

<table>
<thead>
<tr>
<th></th>
<th>WC-Robust</th>
<th>[95% Conf. Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td>lnimr</td>
<td>Coef.</td>
<td>Std. Err.</td>
</tr>
<tr>
<td>L1.</td>
<td>.8859935</td>
<td>.1157706</td>
</tr>
<tr>
<td>lnad5pc</td>
<td>-.0315138</td>
<td>.0226676</td>
</tr>
<tr>
<td>lnwt5pc</td>
<td>.0081911</td>
<td>.0089517</td>
</tr>
<tr>
<td>lnigdp5</td>
<td>-.0083987</td>
<td>.0253875</td>
</tr>
<tr>
<td>ipolity2</td>
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<td>.0064265</td>
</tr>
<tr>
<td>sigma_u</td>
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<tr>
<td>sigma_e</td>
<td>.0003995</td>
<td>.0026987</td>
</tr>
<tr>
<td>rho</td>
<td>.98959968</td>
<td>(fraction of variance due to u_i)</td>
</tr>
</tbody>
</table>

**Instruments for differenced equation**  
GMM-type: L(2/3).lnimr L(2/2).lnad5pc L(2/2).lnwt5pc L(2/2).lnigdp5  
L(2/2).ipolity2  
Standard: D.lnipop  

**Instruments for level equation**  
Standard: _cons
Model 8: Latent Growth Model

Mixed-effects ML regression
Group variable: cc

Number of obs = 393
Number of groups = 75

Obs per group: min = 3
avg = 5.2
max = 6

Log likelihood = 242.40198

Wald chi2(8) = 164.89
Prob > chi2 = 0.0000

|                             | Coef.   | Std. Err. | z     | P>|z|   | [95% Conf. Interval] |
|-----------------------------|---------|-----------|-------|-------|-----------------------|
| lnimr | -0.0045271 | 0.0054973 | -0.82 | 0.410 | -0.0153016 .0062475 |
| lnad5pc | 0.0040722 | 0.0032027 | 1.27  | 0.204 | -0.002205 0.0103493 |
| lnwt5pc | -0.0011574 | 0.0046213 | -0.25 | 0.802 | -0.0102149 .0079002 |
| lnal5pc | -0.1778079 | 0.0295681 | -6.01 | 0.000 | -0.2357603 -0.1198554 |
| lnigdp5 | -0.0282326 | 0.0221105 | -1.28 | 0.202 | -0.0715683 0.0151031 |
| lnipop | -0.092326 | 0.021105 | -9.63 | 0.000 | -0.1232951 -0.0815979 |
| adpol | 0.0000397 | 0.0006509 | 0.06  | 0.951 | -0.001236 0.0013155 |
| t5 | -0.1024465 | 0.0106372 | -9.63 | 0.000 | -0.1232951 -0.0815979 |
| _cons | 6.550141 | 0.4438448 | 14.76 | 0.000 | 5.680221 7.420061 |

---------------------------------------------------------------------
Random-effects Parameters | Estimate  Std. Err. [95% Conf. Interval]
---------------------------------------------------------------------
cc: Unstructured
sd(t5) | 0.083414 0.0072318 0.0703788 .0988634
sd(_cons) | 0.3164229 0.0279374 0.2661424 0.3762025
corr(t5, _cons) | -0.3725674 0.1166479 -0.5762811 -0.1252641
---------------------------------------------------------------------

sd(Residual) | 0.0611966 0.0028147 0.0559211 0.0669696

LR test vs. linear regression: chi2(3) = 759.70  Prob > chi2 = 0.0000

Note: LR test is conservative and provided only for reference.
# ALTERNATE ESTIMATES - Quadratic Models

## Model (1): Bi-variate OLS (with quadratic term)

Linear regression  
Number of obs =  547  
F(  2,    95) =    2.88  
Prob > F =  0.0613  
R-squared =  0.0111  
Root MSE =  .57428  
(Std. Err. adjusted for 96 clusters in cc)

|     | Coef. | Std. Err. |  t    | P>|t| | [95% Conf. Interval] |
|-----|-------|-----------|-------|-----|----------------------|
| lnimr |      |           |       |     |                      |
| ad5pc | -.0053971 | .0036957 | -1.46 | 0.147 | -.0127339 to .0019398 |
| ad5pc_2 | .0000155 | .0000193 | 0.80  | 0.423 | -.0000228 to .0000539 |
| _cons | 4.263246 | .0687579 | 62.00 | 0.000 | 4.126744 to 4.399747 |

## Model (2): Multi-variate OLS

Linear regression  
Number of obs =  476  
F(  8,    83) =   44.02  
Prob > F =  0.0000  
R-squared =  0.6558  
Root MSE =  .34  
(Std. Err. adjusted for 84 clusters in cc)

|     | Coef. | Std. Err. |  t    | P>|t| | [95% Conf. Interval] |
|-----|-------|-----------|-------|-----|----------------------|
| lnimr |      |           |       |     |                      |
| ad5pc | .0154353 | .0058855 | 2.62  | 0.010 | .0037293 to .0271413 |
| ad5pc_2 | -.0003046 | .0001157 | -2.63 | 0.010 | -.0005348 to -.0000745 |
| lnwt5pc | -.0177363 | .0151786 | -1.17 | 0.246 | -.047926 to .0124534 |
| lnal5pc | -.0127379 | .0188066 | -0.68 | 0.500 | -.0501435 to .0246678 |
| lnigdp5 | -.3731278 | .0333604 | -11.18 | 0.000 | -.4394802 to -.3067754 |
| lnipop | -.051762 | .0261311 | -1.98 | 0.051 | -.1037356 to .0002117 |
| ipolity2 | -.0085083 | .0050985 | -1.67 | 0.099 | -.0186491 to .0016325 |
| t5 | -.0993081 | .0132437 | -7.50 | 0.000 | -.1256493 to -.0729669 |
| _cons | 8.398214 | .4443568 | 18.90 | 0.000 | 7.514406 to 9.282022 |
Model (3): First Differences (OLS)

Linear regression  
Number of obs = 392  
F(7,83) = 2.33  
Prob > F = 0.0320  
R-squared = 0.0457  
Root MSE = .11223

(Std. Err. adjusted for 84 clusters in cc)

| D.lnimr | Coef. | Robust Std. Err. | t | P>|t| | 95% Conf. Interval |
|---------|-------|------------------|---|------|-------------------|
| ad5pc_1 | .0007635 | .0009505 | 0.80 | 0.424 | -.0011269 | .002654 |
| ad5pc_2 | -.0000264 | .0000194 | -1.36 | 0.177 | -.0000649 | .0000121 |
| lnwt5pc | .0000466 | .0019766 | 0.02 | 0.981 | -.0038849 | .003978 |
| lnal5pc | .0000466 | .0019766 | 0.02 | 0.981 | -.0038849 | .003978 |
| lnigdp5 | .0000466 | .0019766 | 0.02 | 0.981 | -.0038849 | .003978 |
| lnipop | .0000466 | .0019766 | 0.02 | 0.981 | -.0038849 | .003978 |
| ipolity2 | .0000466 | .0019766 | 0.02 | 0.981 | -.0038849 | .003978 |
| t5      | (omitted) |
| _cons  | -.1418172 | .0271253 | -5.23 | 0.000 | -.1957683 | -.0878662 |

Model (4): Fixed Effects

Fixed-effects (within) regression  
Number of obs = 476  
Group variable: cc  
Number of groups = 84  

R-squared: within = 0.6730  
Obs per group: min = 2  
between = 0.0016  
avg = 5.7  
overall = 0.0063  
max = 6  

F(8,83) = 27.93  
Prob > F = 0.0000

(Std. Err. adjusted for 84 clusters in cc)

| lnimr | Coef. | Robust Std. Err. | t | P>|t| | 95% Conf. Interval |
|-------|-------|------------------|---|------|-------------------|
| ad5pc | .0063316 | .0031724 | 2.00 | 0.049 | .0000218 | .0126413 |
| ad5pc_2 | -.0001089 | .000063 | -1.73 | 0.087 | -.0002341 | .0000163 |
| lnwt5pc | -.0079397 | .0072465 | -1.10 | 0.276 | -.0223526 | .0064732 |
| lnal5pc | -.0227646 | .0090951 | -2.50 | 0.014 | -.0408543 | -.0046748 |
| lnigdp5 | -.1299524 | .060779 | -2.14 | 0.035 | -.2508393 | -.0090655 |
| lnipop | .468102 | .2649715 | 1.77 | 0.081 | -.0589157 | .9951196 |
| ipolity2 | .0019342 | .0029529 | 0.65 | 0.514 | -.0039391 | .0078074 |
| t5 | (omitted) |
| _cons | -1.545714 | 4.275942 | -0.36 | 0.719 | -10.05039 | 6.958962 |

| sigma_u | .94271107 |
| sigma_e | .16303453 |
| rho | .97095956 | (fraction of variance due to u_i) |

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Model (5): Random Effects

Random-effects GLS regression

| Coef. | Std. Err. | z     | P>|z|   | [95% Conf. Interval] |
|-------|-----------|-------|-------|----------------------|
| ad5pc | 0.0090971 | 0.0032134 | 2.83  | 0.005   | 0.0027989    0.0153953 |
| ad5pc_2 | -0.0001576 | 0.0000692 | -2.28  | 0.023  | -0.0002933    -0.0000219 |
| lnwt5pc | -0.0053601 | 0.0072265 | -0.77  | 0.442  | -0.0197238    0.0086035 |
| lnal5pc | -0.0271552 | 0.0093074 | -2.92  | 0.004  | -0.0453974    -0.009129 |
| lnigdp5 | -0.2815203 | 0.0460596 | -6.11  | 0.000  | -0.3717955    -0.1912452 |
| lnipop | -0.0468308 | 0.024165 | -1.94  | 0.053  | -0.0941934    0.0005318 |
| ipolity2 | -0.0019383 | 0.002949 | -0.66  | 0.511  | -0.0077183    0.0038417 |
| t5 | -0.104542 | 0.0133455 | -7.83  | 0.000  | -0.1306934    -0.0783853 |
| _cons | 7.684151 | 0.4399425 | 17.47  | 0.000  | 6.821879  8.546422 |

(Std. Err. adjusted for 84 clusters in cc)

---

Model (6): OLS w/ Lagged Dependent Variable

Linear regression

| Coef. | Std. Err. | t     | P>|t|   | [95% Conf. Interval] |
|-------|-----------|-------|-------|----------------------|
| lnimr_l | 0.6964175 | 0.1094391 | 6.36  | 0.000  | 0.4787474    0.9140875 |
| ad5pc | 0.0005291 | 0.0032491 | 0.16  | 0.871  | -0.006932    0.0079914 |
| ad5pc_2 | -0.000335 | 0.0000555 | -0.60  | 0.548  | -0.000144    0.000077 |
| lnwt5pc | -0.0028496 | 0.0075867 | -0.38  | 0.708  | -0.0179393    0.001224 |
| lnal5pc | -0.022431 | 0.0152279 | -1.47  | 0.145  | -0.0527186    0.0078567 |
| lnigdp5 | -0.1560825 | 0.0390964 | -3.99  | 0.000  | -0.2338437    -0.0783213 |
| lnipop | -0.0352692 | 0.0126831 | -2.81  | 0.005  | -0.0604954    -0.010431 |
| ipolity2 | -0.0040331 | 0.0024119 | -1.67  | 0.098  | -0.0088302    0.000764 |
| t5 | -0.0174385 | 0.0139444 | -1.25  | 0.215  | -0.0451734    0.0002963 |
| _cons | 3.20095 | 0.9328431 | 3.43  | 0.001  | 1.345563    5.056338 |

(Std. Err. adjusted for 84 clusters in cc)
### Model (7a): Dynamic Panel Model (Fixed Effects)

Fixed-effects (within) regression

| Coefficient | Standard Error | t-statistic | P>|t| | 95% Confidence Interval |
|-------------|----------------|-------------|-------|-------------------------|
| lnimr | 0.3250212 | 0.096919 | 3.35 | 0.001 | 0.1322532 to 0.5177891 |
| ad5pc | 0.0031151 | 0.0025489 | 1.22 | 0.225 | -0.0019545 to 0.0081848 |
| ad5pc_2 | -0.0000588 | 0.0000449 | -1.31 | 0.194 | -0.0001481 to 0.0000306 |
| lnwt5pc | -0.0081241 | 0.0057185 | -1.42 | 0.159 | -0.019498 to 0.0032498 |
| lnal5pc | 0.0434161 | 0.0442017 | -0.98 | 0.329 | -0.1313569 to 0.0444738 |
| lnigdp5 | -0.0081241 | 0.0057185 | -1.42 | 0.159 | -0.019498 to 0.0032498 |
| lnipop | 0.3860979 | 0.2086452 | 1.85 | 0.068 | -0.028889 to 0.8010849 |
| _cons | -2.462372 | 3.158745 | -0.78 | 0.438 | -8.744989 to 3.820244 |

Model (7b): Dynamic Panel Model (Arellano-Bond)

Arellano-Bond dynamic panel-data estimation

| Coefficient | WC-Robust Standard Error | z-statistic | P>|z| | 95% Confidence Interval |
|-------------|--------------------------|-------------|-------|-------------------------|
| lnimr | 0.7984507 | 0.0743037 | 10.75 | 0.000 | 0.6528182 to 0.9440832 |
| L1. | -0.0042456 | 0.0055093 | -0.77 | 0.441 | -0.0150436 to 0.0065524 |
| ad5pc | 0.0000354 | 0.0000855 | 0.41 | 0.679 | -0.0001322 to 0.0002031 |
| lnwt5pc | 0.0022559 | 0.011355 | 0.02 | 0.982 | -0.0219995 to 0.025113 |
| lnal5pc | -0.0181165 | 0.0169079 | -1.07 | 0.284 | -0.0369075 to 0.0006524 |
| lnigdp5 | -0.1266385 | 0.1375215 | -0.92 | 0.357 | -0.3961757 to 0.1428987 |
| ipolity2 | 0.000324 | 0.0068482 | 0.05 | 0.962 | -0.0130983 to 0.0137463 |
| lnipop | -0.1207079 | -0.1100354 | -1.10 | 0.273 | -0.3363733 to 0.0949575 |
| _cons | 3.658745 | 1.837365 | 1.99 | 0.046 | 0.0575763 to 7.259914 |

### Instruments for differenced equation
- **GMM-type:** L(2/3).lnimr L(2/2).ad5pc L(2/2).ad5pc_2 L(2/2).lnwt5pc L(2/2).lnal5pc L(2/2).lnigdp5 L(2/2).ipolity2
- **Standard:** D.lnipop

### Instruments for level equation
- **Standard:** _cons
Model 8: Latent Growth Model

Mixed-effects ML regression
Number of obs = 476
Number of groups = 84

Obs per group: min = 2
avg = 5.7
max = 6

Log likelihood = 273.47296 Wald chi2(8) = 214.51
Prob > chi2 = 0.0000

|                     | Coef.   | Std. Err. | z     | P>|z|   [95% Conf. Interval] |
|---------------------|---------|-----------|-------|-------|-------------------------|
| lnimr               |         |           |       |       |                         |
| 5ad5pc              | -.0000167 | .0013319 | -.01  | .990  | -.0026272 -.0025938     |
| 5ad5pc_2            | -.0000295 | .0000266 | -1.11 | .267  | -.0000815 .0000225      |
| lnwt5pc             | .0025885  | .0029619 | 0.87  | .382  | -.0032167 .0083937      |
| lnal5pc             | -.0027366 | .0038326 | -0.71 | .475  | -.0102484 .0047751      |
| lnigdp5             | -.1430453 | .0227407 | -6.29 | .000  | -.1876162 -.0984745     |
| lnipop              | -.0523868 | .0219682 | -2.38 | .017  | -.0954436 -.00933       |
| ipolity2            | .0007211  | .0012351 | 0.58  | .559  | -.0016998 .0031419      |
| 5t                 | -.1090989 | .0101919 | -10.70| .000  | -.1290747 -.0891231     |
| _cons              | 6.616077  | .3917802 | 16.89 | .000  | 5.848201  7.383952       |

Random-effects Parameters | Estimate | Std. Err. | [95% Conf. Interval]
---------------------------|----------|-----------|----------------------
cc: Unstructured |
| sd(5t)          | .0852022 | .0069636 | .0725908 .1000046   |
| sd(_cons)        | .3351525 | .0283754 | .283907 .3956478    |
| corr(5t,_cons)   | -.2411893 | .1275587 | -.4711044 .0194135  |
| sd(Residual)     | .0665925 | .0027538 | .061408 .0722146    |

LR test vs. linear regression: chi2(3) = 861.66 Prob > chi2 = 0.0000

Note: LR test is conservative and provided only for reference.
ALTERNATE ESTIMATES – OLS By Year
(Infant Mortality)

Note: Results graphed in Figure 2

Year=1980

Linear regression

|             | Coef. | Std. Err. | t    | P>|t| | [95% Conf. Interval] |
|-------------|-------|-----------|------|------|----------------------|
| lnimr       | .500875 | .2172793 | 2.31 | 0.024 | (.0671836, .9345664) |
| lnad5pc     | -.0247298 | .0205652 | -.120 | 0.233 | (-.065778, .016315)  |
| lnwt5pc     | .0074237 | .0165161 | 0.45 | 0.655 | (.0255426, .04039)  |
| lnal5pc     | .0164106 | .0165161 | 0.45 | 0.655 | (.0255426, .04039)  |
| lnigdp5     | -.138042 | .0439144 | -3.14 | 0.002 | (-.2256956, -.050388) |
| lnipop      | -.0275283 | .0217474 | -1.27 | 0.210 | (-.0709364, .0158798) |
| ipolity2    | .0073286 | .0165161 | 0.45 | 0.655 | (.0255426, .04039)  |
| t5          | (omitted) |          |     |      |                      |
| _cons       | 3.648391 | 1.352658 | 2.70 | 0.009 | (.9484748, 6.348307) |

Year=1985

Linear regression

|             | Coef. | Std. Err. | t    | P>|t| | [95% Conf. Interval] |
|-------------|-------|-----------|------|------|----------------------|
| lnimr       | .9872456 | .0622641 | 15.86 | 0.000 | (.8631815, 1.11131) |
| lnad5pc     | -.0259881 | .0148115 | -1.75 | 0.083 | (-.0555007, .003524) |
| lnwt5pc     | .019577 | .0077774 | 2.52 | 0.014 | (.0040803, .0350738) |
| lnal5pc     | -.0074663 | .0075255 | -0.99 | 0.324 | (-.0224611, .0075286) |
| lnigdp5     | -.092066 | .0276629 | -3.33 | 0.001 | (-.1471857, -.036946) |
| lnipop      | -.0321143 | .0176643 | -1.81 | 0.073 | (-.0673112, .0030826) |
| ipolity2    | .0044775 | .003072 | 1.46 | 0.149 | (-.0016435, .0105986) |
| t5          | (omitted) |          |     |      |                      |
| _cons       | 1.221944 | 7.145919 | 1.71 | 0.091 | (-.2019114, 2.645799) |
### Year=1990

Linear regression

| Coef. | Std. Err. | t     | P>|t|   | [95% Conf. Interval] |
|-------|-----------|-------|------|-------------------------|
| lnimr | 1.028524  | 0.0295517 | 34.80 | 0.000 | 0.9696545 - 1.087394 |
| lnad5pc | -0.0077676 | 0.0077985 | -1.00 | 0.322 | -0.023303 - 0.0077677 |
| lnwt5pc | -0.0113391 | 0.0057241 | -1.98 | 0.051 | -0.022742 - 0.0000638 |
| lnal5pc | 0.0089459 | 0.0061939 | 1.44 | 0.153 | -0.003393 - 0.0212849 |
| lnigdp5 | -0.053094 | 0.0170094 | -3.12 | 0.003 | -0.086978 - -0.0192094 |
| lnipop | -0.0057444 | 0.0057238 | -1.00 | 0.319 | -0.0171468 - 0.0056581 |
| ipolity2 | -0.0023788 | 0.0018516 | -1.28 | 0.203 | -0.0060673 - 0.0013097 |
| _cons | 0.260514 | 0.258494 | 1.01 | 0.317 | -0.2544325 - 0.7754606 |

### Year=1995

Linear regression

| Coef. | Std. Err. | t     | P>|t|   | [95% Conf. Interval] |
|-------|-----------|-------|------|-------------------------|
| lnimr | 0.3454258 | 0.1651685 | 2.09 | 0.040 | 0.016853 - 0.6739986 |
| lnad5pc | 0.044213 | 0.0291417 | 1.52 | 0.133 | -0.0137592 - 0.1021852 |
| lnwt5pc | -0.0220537 | 0.0274549 | -0.80 | 0.424 | -0.0766702 - 0.0325629 |
| lnal5pc | -0.0329486 | 0.0307729 | -1.07 | 0.287 | -0.0941658 - 0.0282686 |
| lnigdp5 | -0.3050717 | 0.0664143 | -4.59 | 0.000 | -0.437191 - -0.1729524 |
| lnipop | -0.0308518 | 0.0197269 | -1.56 | 0.122 | -0.0700949 - 0.0083914 |
| ipolity2 | -0.0094518 | 0.0047658 | -2.00 | 0.049 | -0.0188658 - 0.0000378 |
| _cons | 5.797237 | 1.295564 | 4.47 | 0.000 | 3.219947 - 8.374527 |

### Year=2000

Linear regression

| Coef. | Std. Err. | t     | P>|t|   | [95% Conf. Interval] |
|-------|-----------|-------|------|-------------------------|
| lnimr | 0.9468591 | 0.0975189 | 9.70 | 0.000 | 0.7527726 - 1.140946 |
| lnad5pc | 0.0308777 | 0.0239442 | 1.29 | 0.201 | -0.0167464 - 0.0785017 |
| lnwt5pc | 0.0025869 | 0.0132867 | 0.19 | 0.846 | -0.0238399 - 0.0290136 |
| lnal5pc | -0.1068173 | 0.0523572 | -2.04 | 0.045 | -0.210957 - -0.0026808 |
| lnigdp5 | -0.0206477 | 0.0431774 | -0.48 | 0.634 | -0.1065258 - 0.0652304 |
| lnipop | -0.0527821 | 0.0118678 | -4.29 | 0.001 | -0.0942917 - -0.0106426 |
| ipolity2 | 0.0012937 | 0.0029691 | 0.44 | 0.664 | -0.0046117 - 0.0071991 |
| _cons | 1.607467 | 1.174597 | 1.37 | 0.175 | -0.7287599 - 3.943693 |
### Linear regression

Year=2005

|               | Coef. | Std. Err. | t    | P>|t|  | [95% Conf. Interval] |
|---------------|-------|-----------|------|------|----------------------|
| **lnimr**     |       |           |      |      |                      |
| lnimr_l       | 1.0396| 0.0358    | 28.98| 0.000| 0.9682 - 1.1111      |
| lnad5pc       | -0.0125| 0.0118   | -1.06| 0.292| -0.0361 - 0.0109     |
| lnwt5pc       | -0.0197| 0.0058   | -3.39| 0.001| -0.0312 - 0.0081     |
| lnal5pc       | 0.0218| 0.0155    | 1.12 | 0.267| -0.0171 - 0.0607     |
| lnigdp5       | -0.0145| 0.0249   | -0.58| 0.562| -0.0640 - 0.0350     |
| lnipop        | -0.0068| 0.0079   | -0.85| 0.399| -0.0226 - 0.0091     |
| ipolicy2      | -0.0004| 0.0025   | -0.16| 0.876| -0.0053 - 0.0045     |
| t5            | (omitted) |         |      |      |                      |
| _cons         | -1.3737| 0.3071   | -0.45| 0.656| -0.7482 - 0.4734     |

(Std. Err. adjusted for 84 clusters in cc)
ALTERNATE ESTIMATES – OLS By Year
(Child Mortality)

Note: Results graphed in Figure 2

Year=1980

Linear regression
Number of obs = 68
F(  7,    67) = 25.13
Prob > F = 0.0000
R-squared = 0.6971
Root MSE = .28261

(Std. Err. adjusted for 68 clusters in cc)

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<td>_cons</td>
<td>4.37853   1.547218   2.83 0.006  1.29027    7.466789</td>
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Year=1985

Linear regression
Number of obs = 75
F(  7,    74) = 149.04
Prob > F = 0.0000
R-squared = 0.9162
Root MSE = .16845

(Std. Err. adjusted for 75 clusters in cc)

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pg. 75
Year=1990

Linear regression

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Year=1995

Linear regression

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### Year=2000

**Linear regression**

| Coef. | Std. Err. | t    | P>|t|  | 95% Conf. Interval |
|-------|-----------|------|------|-------------------|
| lncmr_l | 1.134197  | 0.0992365 | 11.43 | 0.000 | [0.9368197, 1.331574] |
| lnad5pc | 0.0353661  | 0.0284956 | 1.24  | 0.218 | [-0.0213104, 0.0920427] |
| lnwt5pc | 0.006744  | 0.0178521 | 0.04  | 0.970 | [-0.0348326, 0.0361815] |
| lnal5pc | -0.1204546 | 0.053506 | -2.25 | 0.027 | [-0.2268759, -0.014033] |
| lnigdp5 | -0.0232773 | 0.0479706 | -0.49 | 0.629 | [-0.1186889, 0.0721344] |
| lnipop | -0.0583994 | 0.0223391 | -2.61 | 0.011 | [-0.1028309, -0.0139678] |
| ipolity2 | 0.003336 | 0.0041003 | 0.81 | 0.418 | [-0.0048194, 0.0114913] |
| _cons | 1.341123  | 1.180681 | 1.14  | 0.259 | [-1.007205, 3.689451] |

### Year=2005

**Linear regression**

| Coef. | Std. Err. | t    | P>|t|  | 95% Conf. Interval |
|-------|-----------|------|------|-------------------|
| lncmr_l | 1.210589  | 0.0571546 | 21.18 | 0.000 | [1.096911, 1.324267] |
| lnad5pc | -0.034905  | 0.0194314 | -0.18 | 0.858 | [-0.0421388, 0.0351578] |
| lnwt5pc | -0.0264908 | 0.0104893 | -2.53 | 0.013 | [-0.0473536, -0.0056281] |
| lnal5pc | 0.0072627  | 0.019748 | 0.37  | 0.711 | [-0.056334, 0.0708594] |
| lnigdp5 | -0.0240975 | 0.0340726 | -0.71 | 0.481 | [-0.0918665, 0.0436714] |
| lnipop | -0.0053891 | 0.0123898 | -0.43 | 0.665 | [-0.0300319, 0.0192537] |
| ipolity2 | 0.00171 | 0.0038296 | 0.45 | 0.656 | [-0.005907, 0.009327] |
| _cons | -0.3935185 | 0.5133433 | -0.77 | 0.446 | [-1.414538, 0.6275006] |
ALTERNATE ESTIMATES – OLS By Year
(Life Expectancy)

Note: Results graphed in Figure 2

Year=1980

Linear regression

|              | Coef.  | Std. Err. | t    | P>|t|  | [95% Conf. Interval] |
|--------------|--------|-----------|------|------|---------------------|
| lnlifex_l    | .69096 | .12852    | 5.38 | 0.000| .4348132  to  .9471052 |
| lnad5pc      | .00626 | .00469    | 1.33 | 0.186| -.00309  to  .0156239 |
| lnwt5pc      | -.00122| .00264    | -0.46| .646 | -.00649  to  .0040483 |
| lnal5pc      | -.00246| .00400    | -0.61| .541 | -.01044  to  .0055241 |
| lnigdp5      | .03280 | .01262    | 2.60 | 0.011| .00765  to  .0579554 |
| lnipop       | .00803 | .00538    | 1.57 | 0.149| -.00287  to  .0180044 |
| ipolity2     | .00171 | .00120    | 1.42 | 0.160| -.00069  to  .0041045 |
| _cons        | .87956 | .37252    | 2.36 | 0.021| .13712  to  1.621997 |

Year=1985

Linear regression

|              | Coef.  | Std. Err. | t    | P>|t|  | [95% Conf. Interval] |
|--------------|--------|-----------|------|------|---------------------|
| lnlifex_l    | .83900 | .10200    | 8.23 | 0.000| .63567  to  1.041921 |
| lnad5pc      | .00758 | .00416    | 1.82 | 0.072| -.00070  to  .0158479 |
| lnwt5pc      | -.00296| .00265    | -1.12| .267 | -.00825  to  .0023192 |
| lnal5pc      | .00028 | .00259    | 0.11 | 0.915| -.00489  to  .005444 |
| lnigdp5      | .02559 | .01094    | 2.34 | 0.022| .00380  to  .047378 |
| lnipop       | .00784 | .00538    | 1.46 | 0.149| -.00287  to  .018554 |
| ipolity2     | .00008 | .00119    | 0.07 | 0.946| -.00227  to  .0024364 |
| _cons        | .3453  | .29145    | 1.18 | 0.240| -.23523  to  .9259544 |
Year=1990

Linear regression  Number of obs =      77
                     F(  7,    76) = 180.69
                     Prob > F      =  0.0000
                     R-squared     =  0.9116
                     Root MSE      =  .05218

                     (Std. Err. adjusted for 77 clusters in cc)

                      |               Robust
              lnlifex | Coef.     Std. Err.     t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  lnlifex_l   | 1.0304     0.0471916   21.83   0.000     .9364098     1.12439
  lnad5pc     | 0.002742   0.0036198    0.08   0.940    -.0069354    .0074837
  lnwt5pc     | -0.002576  0.0044623   -0.58   0.565    -.0114638    .0063111
  lnal5pc     | 0.0021235  0.0037026    0.57   0.565    -.0052509    .0094979
  lnigdp5     | 0.0064664  0.0041927    1.54   0.127    -.0018841    .0148169
  lnipop      | -0.0015348 0.0023368   -0.66   0.513    -.0061889    .0031193
  ipolity2    | 0.0005193  0.0004989    1.04   0.301    -.0004742    .0015129
  t5          | (omitted)
  _cons       | -0.1298727 0.1806339   -0.72   0.474    -.4896363    .2298909
-------------+----------------------------------------------------------------
Year=1995

Linear regression  Number of obs =      83
                     F(  7,    82) = 90.28
                     Prob > F      =  0.0000
                     R-squared     =  0.9126
                     Root MSE      =  .05395

                     (Std. Err. adjusted for 83 clusters in cc)

                      |               Robust
              lnlifex | Coef.     Std. Err.     t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  lnlifex_l   | 0.9266085  0.0814845   11.37   0.000     .7645098    1.088707
  lnad5pc     | -0.0049134 0.0073124   -0.67   0.504    -.0194601    .0096332
  lnwt5pc     | -0.009684  0.0042411   -0.23   0.820    -.0094053    .0074685
  lnal5pc     | 0.008256   0.0054385    1.52   0.133    -.0025629    .0190749
  lnigdp5     | 0.0086498  0.0101243    0.85   0.395    -.0114906    .0287902
  lnipop      | 0.0019817  0.0035323    0.56   0.576    -.0050452    .0089087
  ipolity2    | 0.0014574  0.0010067    1.45   0.151    -.0005452    .003446
  t5          | (omitted)
  _cons       | 0.1750578  0.2688543    0.65   0.517    -.359779    .7098946
-------------+----------------------------------------------------------------
### Year=2000

**Linear regression**

- **Number of obs =** 84
- **F( 7, 83) =** 59.09
- **Prob > F =** 0.0000
- **R-squared =** 0.8576
- **Root MSE =** 0.06631

(Std. Err. adjusted for 84 clusters in cc)

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### Year=2005

**Linear regression**

- **Number of obs =** 84
- **F( 7, 83) =** 339.70
- **Prob > F =** 0.0000
- **R-squared =** 0.9632
- **Root MSE =** 0.03399

(Std. Err. adjusted for 84 clusters in cc)

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*pg. 80*
ALTERNATE ESTIMATES - Sub-Sector Effects
(Infant Mortality)

Note: Model 8 estimates are reported in Table 3

Model (1): Bi-variate OLS

| lnimr | Coef. | Robust Std. Err. | t     | P>|t|  | [95% Conf. Interval] |
|-------|-------|------------------|-------|-----|---------------------|
| lnad15pc | -0.029585 | 0.0141629 | -2.09 | 0.039 | -0.057702 to -0.001468 |
| lnad25pc | 0.011317 | 0.0142737 | 0.79 | 0.430 | -0.0170197 to 0.0396539 |
| lnad35pc | -0.0031833 | 0.015903 | -0.20 | 0.842 | -0.0347548 to 0.0283882 |
| lnad45pc | 0.0202374 | 0.0183733 | 1.10 | 0.273 | -0.0162383 to 0.0567131 |
| lnad55pc | 0.0407019 | 0.0136495 | 2.98 | 0.004 | 0.0136041 to 0.0677996 |
| lnad65pc | 0.0225359 | 0.0144181 | 1.56 | 0.121 | -0.0060877 to 0.0515959 |
| lnad75pc | 0.0143285 | 0.0199157 | 0.72 | 0.474 | -0.0224458 to 0.0513212 |
| lnad85pc | 0.0159937 | 0.0195689 | 0.38 | 0.760 | -0.0448429 to 0.0528556 |
| _cons | 4.302485 | 0.0536176 | 80.24 | 0.000 | 4.196041 to 4.408929 |

(Std. Err. adjusted for 96 clusters in cc)

Model (2): Multi-variate OLS

| lnimr | Coef. | Robust Std. Err. | t     | P>|t|  | [95% Conf. Interval] |
|-------|-------|------------------|-------|-----|---------------------|
| lnad15pc | 0.0086891 | 0.0095681 | 0.91 | 0.366 | -0.0103416 to 0.0277197 |
| lnad25pc | -0.030485 | 0.008515 | -0.36 | 0.721 | -0.0199846 to 0.0138876 |
| lnad35pc | 0.0027794 | 0.0116365 | 0.24 | 0.812 | -0.0203651 to 0.0259239 |
| lnad45pc | 0.03585 | 0.0136174 | 2.47 | 0.016 | 0.0065005 to 0.0606694 |
| lnad55pc | 0.006731 | 0.0085381 | 1.02 | 0.313 | -0.0083089 to 0.025655 |
| lnad65pc | 0.0172952 | 0.006766 | 2.56 | 0.012 | 0.0038279 to 0.0307526 |
| lnad75pc | -0.0011177 | 0.0103101 | -0.11 | 0.914 | -0.0216241 to 0.0193886 |
| lnad85pc | -0.0035999 | 0.0139323 | -0.24 | 0.806 | -0.0363706 to 0.0193509 |
| lnad95pc | 0.0075444 | 0.0115215 | 0.65 | 0.514 | -0.0153713 to 0.0304602 |
| lnwt5pc | -0.0220102 | 0.016082 | -1.37 | 0.175 | -0.0539967 to 0.0099763 |
| lnl5pc | 0.0048924 | 0.0161604 | 0.30 | 0.763 | -0.02725 to 0.0370347 |
| lnigdp5 | -0.3692865 | 0.0313827 | -11.13 | 0.000 | -0.4352854 to -0.3032875 |
| lnipop | -0.0357394 | 0.0250415 | -1.43 | 0.157 | -0.085546 to 0.0140672 |
| ipolity2 | -0.0081076 | 0.0048384 | -1.68 | 0.098 | -0.0177311 to 0.001518 |
| _t5 | -0.094626 | 0.0152646 | -6.20 | 0.000 | -0.1249866 to -0.0642653 |
| _cons | 8.122664 | 0.4182302 | 19.42 | 0.000 | 7.290821 to 8.954507 |

(Std. Err. adjusted for 84 clusters in cc)
Model (3): First Differences (OLS)

| D.lnimr | Coef.  | Std. Err. | t     | P>|t|   | [95% Conf. Interval] |
|---------|--------|-----------|-------|-------|---------------------|
| lnad15pc | .00419 | .0016966  | 2.47  | 0.016 | .0008155 - .0075645 |
| lnad25pc | -.001215 | .0016904 | -0.72 | 0.474 | -.0045771 - .0021471 |
| lnad35pc | -.0001237 | .0019594 | -0.06 | 0.950 | -.004021 - .0037735 |
| lnad45pc | .0004002 | .003235 | 0.12  | 0.902 | -.0060341 - .0068344 |
| lnad55pc | -.0011623 | .00183 | -0.64 | 0.527 | -.0048021 - .0024774 |
| lnad65pc | -.0007761 | .0017219 | -0.45 | 0.653 | -.0042009 - .0026487 |
| lnad75pc | -.0041958 | .0017053 | -2.46 | 0.016 | -.0075876 - -.0008041 |
| lnad85pc | -.0052714 | .0021193 | -2.49 | 0.015 | -.0094867 - -.0010562 |
| lnad95pc | -.0003096 | .0016899 | -0.18 | 0.855 | -.0036708 - .0030516 |
| lnwt5pc | -.0003713 | .0023565 | -0.16 | 0.875 | -.0050582 - .0043156 |
| lnal5pc | -.008857 | .0032565 | -2.72 | 0.008 | -.0153339 - -.00238 |
| lnigdp5 | -.0952636 | .0371524 | -2.56 | 0.012 | -.1691582 - -.021369 |
| lnipop | .1788703 | .2197775 | 0.81  | 0.418 | -.2582583 - .6159989 |
| ipolity2 | .0014513 | .000921 | 1.58  | 0.119 | -.0003806 - .0032832 |
| t5  | (omitted) | |
| _cons | -.1438376 | .0273727 | -5.25 | 0.000 | -.1982809 - -.0893944 |
Model (4): Fixed Effects

Fixed-effects (within) regression

| lnimr | Coef.  | Std. Err. | t     | P>|t| | [95% Conf. Interval] |
|-------|--------|-----------|-------|------|-----------------------|
| lnad15pc | .0064071 | .0044912 | 1.43  | 0.157 | -.0025258 to .0153399 |
| lnad25pc | -.0066357 | .0055484 | -1.20 | 0.235 | -.0176711 to .0043998 |
| lnad35pc | -.0014641 | .0064195 | -0.23 | 0.820 | -.0142322 to .011304  |
| lnad45pc | .006245  | .0064195 | 0.93  | 0.354 | -.0007074 to .0195645 |
| lnad55pc | -.0017675 | .0064195 | -0.38 | 0.707 | -.011102 to .0075678 |
| lnad65pc | .0105246 | .0054867 | 1.92  | 0.059 | -.0003881 to .0214374 |
| lnad75pc | -.0018504 | .0047859 | -0.39 | 0.700 | -.0113693 to .0076686 |
| lnad85pc | -.0077231 | .0069013 | -1.12 | 0.266 | -.0214495 to .0060034 |
| lnad95pc | -.0008919 | .0055186 | 0.16  | 0.872 | -.0100843 to .0118681 |
| lnwt5pc  | -.0071022 | .0072001 | -0.99 | 0.327 | -.0214229 to .0072184 |
| lnal5pc  | -.0175964 | .0086664 | -2.03 | 0.046 | -.0348335 to -.0003593 |
| lningdp3 | -.1289579 | .0598889 | -2.15 | 0.034 | -.2480746 to .0098413 |
| lnipop   | .4868758 | .2667553 | 1.83  | 0.072 | -.0436897 to 1.017441 |
| ipolicy2 | .0024964 | .0030519 | 0.82  | 0.416 | -.0035378 to .0085665 |
| t5       | -.1765631 | .0335703 | -5.26 | 0.000 | -.2433331 to -.1097931 |
| _cons    | -1.841363 | 4.293878 | -0.43 | 0.669 | -10.38171 to 6.698987 |
| sigma_u  | .97741895 |
| sigma_e  | .16391436 |
| rho      | .9726456  | (fraction of variance due to u_i) |
Model (5): Random Effects

Random-effects GLS regression

Number of obs = 476
Group variable: cc
Number of groups = 84

R-sq:  within = 0.6469
between = 0.6497
overall = 0.6389

Random effects u_i ~ Gaussian
Wald chi2(15) = 279.61
Prob > chi2 = 0.0000

(Std. Err. adjusted for 84 clusters in cc)

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sigma_u | .2936073 |
sigma_e | .1639144 |
rho | .7623846 |

Model (6): OLS w/ Lagged Dependent Variable

Linear regression

Number of obs = 470
F( 16,    83) = 142.91
Prob > F = 0.0000
R-squared = 0.8655
Root MSE = .21464

(Std. Err. adjusted for 84 clusters in cc)

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Model (7a): Dynamic Panel Model (Fixed Effects)

Fixed-effects (within) regression

| lnimr | Coef. | Std. Err. | t    | P>|t| | [95% Conf. Interval] |
|-------|-------|-----------|------|------|----------------------|
| lnimr_l | .3314227 | .0965661 | 3.43 | 0.001 | (0.1393566, 0.5234888) |
| lnad15pc | .0050003 | .0036491 | 1.37 | 0.174 | (-.0022577, .0122583) |
| lnad25pc | .0010803 | .0048891 | 0.22 | 0.826 | (-.0086439, .0108045) |
| lnad35pc | -.0037131 | .0044969 | -0.83 | 0.411 | (-.0126572, .0052311) |
| lnad45pc | .0016523 | .0052723 | 0.31 | 0.758 | (-.0088541, .0121188) |
| lnad55pc | -.001147 | .0039708 | -0.44 | 0.661 | (-.0096448, .0061508) |
| lnad65pc | .0061638 | .0048199 | 1.28 | 0.205 | (-.0034227, .0157503) |
| lnad75pc | -.0057432 | .003647 | -1.57 | 0.119 | (-.012997, .0015106) |
| lnad85pc | -.0085448 | .005065 | -1.69 | 0.095 | (-.018619, .0015293) |
| lnad95pc | .0016059 | .0041223 | 0.39 | 0.698 | (-.0065932, .0098049) |
| lnwt5pc | .0070111 | .0059174 | -1.18 | 0.239 | (-.0187805, .0047583) |
| lnal5pc | -.0273222 | .0096279 | -2.84 | 0.006 | (-.0464716, -.0081727) |
| lnigdp5 | .0437059 | .0483666 | -1.00 | 0.322 | (-.130915, .0435033) |
| ipolity2 | .001494 | .0023907 | 0.62 | 0.534 | (-.0032611, .006249) |
| t5 | -.1259062 | .033561 | -3.75 | 0.000 | (-.1926577, -.0591547) |
| _cons | -2.463091 | 3.24691 | .76 | 0.450 | (-8.921064, 3.994882) |

σ_u = .78395775
σ_e = .13896177
ρ = .9695372 (fraction of variance due to u_i)
### Model (7b): Dynamic Panel Model (Arellano-Bond)

Arellano-Bond dynamic panel-data estimation  Number of obs = 309  
Group variable: cc  Number of groups = 83  
Time variable: t5  
Obs per group:  
  min = 1  
  avg =  3.722892  
  max = 4  

Number of instruments = 60  
Wald chi2(15) = 2447.93  
Prob > chi2 = 0.0000  

Two-step results  
(Std. Err. adjusted for clustering on cc)

|                | WC-Robust Coef. | Std. Err. | z     | P>|z|  | [95% Conf. Interval]             |
|----------------|----------------|-----------|-------|------|--------------------------------|
| lnimr |                |            |       |      |                                |
| L1. | 0.8732386  | 0.0645954  | 13.52 | 0.000 | .746634  | .9998432 |
| lnad15pc | 0.0015989  | 0.0058901  | 0.27  | 0.786 | -0.0099454 | .0131433 |
| lnad25pc | 0.003739  | 0.0073988  | 0.05  | 0.960 | -0.0141275 | .0148753 |
| lnad35pc | 0.011835  | 0.0076724  | 0.18  | 0.861 | -0.0120705 | .0144376 |
| lnad45pc | -0.0103358 | 0.0154555  | -0.67 | 0.504 | -0.0406281 | .0199565 |
| lnad55pc | 0.0010637  | 0.0063466  | 0.17  | 0.867 | -0.0113754 | .0135027 |
| lnad65pc | -0.0017931 | 0.0046541  | -0.39 | 0.700 | -0.010915 | .0073287 |
| lnad75pc | -0.006876  | 0.0047198  | -2.05 | 0.040 | -0.0189382 | -0.00437 |
| lnad85pc | -0.004843  | 0.00576  | -0.08 | 0.933 | -0.0117736 | .010805 |
| lnad95pc | -0.0018541 | 0.0091643  | -0.20 | 0.840 | -0.0196158 | .0161076 |
| lnwt5pc | 0.0041451  | 0.0098906  | 0.42  | 0.675 | -0.001524 | .0235303 |
| lnl5pc | 0.0364313  | 0.0189535  | 1.92  | 0.055 | -0.007169 | .0735795 |
| lnigdp5 | -0.1520547 | 0.0767611  | -1.98 | 0.048 | -0.3025036 | .0016058 |
| ipolity2 | 0.0002125 | 0.0039553  | 0.05  | 0.957 | -0.0075398 | .0079647 |
| lnipop | -0.0677204 | 0.1207742  | -0.56 | 0.575 | -0.3044335 | .1689926 |
| _cons | 2.541573 | 1.955332  | 1.30  | 0.194 | -1.290806 | 6.373953 |

Instruments for differenced equation  
GMM-type: L(2/3).lnimr L(2/2).lnad15pc L(2/2).lnad25pc L(2/2).lnad35pc L(2/2).lnad45pc  
L(2/2).lnad55pc L(2/2).lnad65pc L(2/2).lnad75pc L(2/2).lnad85pc L(2/2).lnad95pc  
L(2/2).lnwt5pc L(2/2).lnl5pc L(2/2).lnigdp5 L(2/2).ipolity2  
Standard: D.lnipop  

Instruments for level equation  
Standard: _cons
Model 8: Latent Growth Model

Mixed-effects ML regression

Number of obs = 476
Number of groups = 84

Obs per group: min = 2
avg = 5.7
max = 6

Log likelihood = 288.00918
Wald chi2(15) = 236.90
Prob > chi2 = 0.0000

------------------------------------------------------------------------------
  lnimr |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  lnad15pc |    .002453   .0024138     1.02   0.310    -.0022779     .007184
  lnad25pc |  -.0021882   .0023419    -0.93   0.350    -.0067783    .0024018
  lnad35pc |  -.0004396   .0025109    -0.18   0.861    -.0053609    .0044817
  lnad45pc |  -.0021255   .0027619    -0.77   0.442    -.0075387    .0032828
  lnad55pc |  -.0013886   .0020124    -0.69   0.490    -.0053329    .0025557
  lnad65pc |  -.0048275   .0021924    -2.20   0.028    -.0091246    -.0005304
  lnad75pc |  -.0069645   .0023146    -3.01   0.003    -.0115011    -.002428
  lnad85pc |  -.0048275   .0021924    -2.20   0.028    -.0091246    -.0005304
  lnad95pc |  -.0026064    .002445    -1.07   0.286    -.0073985    .0021857
  lnwt5pc |   .0021522   .0028935     0.74   0.457     -.003519    .0078233
  lnal5pc |  -.0065306   .0035669    -1.83   0.067    -.0135216    .0004604
  lnigdp5 |  -.1242528   .0224482    -5.54   0.000    -.1682504   -.0802551
  lnipop |  -.0547477   .0223118    -2.45   0.014    -.108478   -.0010175
  ipolity2 |   .0009941   .0011739     0.85   0.397    -.0013066    .0032949
  t5 |  -.1139014   .0103786   -10.97   0.000    -.134243    -.0935598
   _cons |   6.512003   .3944289    16.51   0.000     5.738936    7.285069
-------------+----------------------------------------------------------------

------------------------------------------------------------------------------
Random-effects Parameters |   Estimate   Std. Err.     [95% Conf. Interval]
-----------------------------+------------------------------------------------
  cc: Unstructured    
     sd(t5) |    .086975   .007070     .0741656    .1019968
     sd(_cons) |   .337795    .028634    .2860865    .3988495
   corr(t5,_cons) |  -.1893737  .1288805  -.4249229   .0701939
-----------------------------+------------------------------------------------
     sd(Residual) |   .0629101   .002608   .0580007    .0682351

LR test vs. linear regression:     chi2(3) = 882.81   Prob > chi2 = 0.0000

Note: LR test is conservative and provided only for reference.