Intergenerational Transmission of Wealth in the ICRISAT Villages

1. Background Information

Numerous influential articles in the microeconomics of development have used the village level data collected between 1975 and 1984 in ten villages of rural India that formed the core of the ICRISAT Village Level Survey (VLS). The present analysis uses new data collected in six of the ICRISAT villages on demographic and wealth since 2001. The panel was reconstructed by linking the original VLS households to a new survey in the villages conducted in 2001-04, and a tracking survey conducted in 2005 of all individuals ever interviewed in the old VLS. The result is a long-term panel data set, covering the period 1975–2005.

The data collection was conducted by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT). This analysis is concerned with the core data set on the 240 households from three districts and six villages: Aurepalle and Dokur in Mahbubnagar District in Andhra Pradesh and Shirapur and Kalman in Sholapur District and Kanzara and Kinkheda in Akola District in Maharashtra. The villages are generally poor, and their main economic activity is dryland farming, with some irrigation. Much descriptive information on these villages can be found in Walker and Ryan (1990).

The new data collection, since 2001, has covered the same households interviewed in 1984/85, based on a broadly consistent questionnaire and a sampling strategy that takes into account split-offs of the original households.

2. The Sample

The sample (as it stands now) consists of 705 individuals who were born before 1980 (and were under 15 years of age in 1980) and whose parents are in the sample. The data includes information on age (in 2005), sex, education and household assets. However, while sex, age and education are available for all the individuals, the asset variables come from a different survey which was not administered to all individuals. The information on the parents generation individuals is retrieved from the old VLS and from direct questions (for those present in the recent round). This includes age (in 2005), education and assets. The dataset is not yet complete, as more information from the recent survey is currently being processed.

This preliminary analysis focuses on the intergenerational transmission of three forms of wealth:

1. Education = number of years in full time education
2. Livestock = number of bovine livestock
3. Land = amount of land operated in hectares

Education is measured for fathers, mothers, sons and daughters. Therefore, all four pairings are possible (f-s, f-d, m-s, m-d). Observation error for the education variable was calculated using responses for the same individuals from two related questions. Data on individual's education in each round of the VLS is not yet available because of problems with individual identifiers across survey waves. These data will become available soon and it will be possible to estimate the observation error using education information over multiple years.

Data on livestock and land is available yearly from 2001 to 2004 for the offspring generation and from 1975 to 1979 for the parents. The wealth measure used for the estimation is the average calculated over these time periods. The measurement error was estimated following the procedure in the Methods Memo for the case in which multiple-year observations are available. Livestock and land are always measured as that belonging to the household. For the offspring generation, this information is currently available only for the sons (it is not yet possible to link the daughters to their new households). For most observations, the information on parental land and livestock is identical for mothers and fathers. However, this is not always the case, as some individuals were linked to only one parent. Two parings (f-s and m-s) are thus used to estimate the elasticity—results are unsurprisingly similar for the two groups.

3. Estimates

Following the procedures in the Methods Memo, the descriptive statistics and the β were estimated for the three wealth measures (education, livestock and land). The results are presented in IntergenSummary.xls and the regression output can be found in the last section of this document.[1]

The β coefficients for education are different for sons and daughters (irrespective of the parent to whom they are paired). The intergenerational association in education seem to be relatively low for the sons. The estimated coefficient is greater for the daughters, but not exceptionally high. The parent-son β for land is lower than the parent-son β for livestock. Also, the degree of persistence in land is similar to the degree of persistence in education for the sons. These results will have to be interpreted in a context of rapid change in the Indian economy. By 2001, when the subsequent data collection started, Indian economic

[1] I used the "ineqdec0" command in STATA to calculate Gini coefficients. I was unable to use "ginidesc".

growth had picked up substantially, and during the 1990s, gradual but steady structural changes have taken place.

4. Potential Biases

Like most available long-term panel data in developing countries, the sample used suffer from problems related to handling split-offs and attrition linked to migration (Rosenzweig, 2003). In 2005, a detailed tracking survey of all original individuals covered by the earlier survey rounds was undertaken. Badiani et al. (2007) use available tracking information on a number of indicators and show the existence of important differences between those that stayed in the community and those that left.

This preliminary analysis is based only on the individuals with links to the 'old' VLS households. Quite obviously, in order to generalize about the findings, a careful analysis of the lost households and individuals is needed. More data collection is currently taking place to study in more detail the individuals that left the community, and these data will allow complimentary analysis in the next phase of the study.

5. References

Badiani R., Dercon S., Krishnan P. and K. P. C. Rao (2007), "Changes in Living Standards in Villages in India 1975-2004: Revisiting the ICRISAT village level studies", *CPRC Working Paper 85*, August.

Rosenzweig, M. (2003), "Payoffs from Panels in Low-Income Countries: Economic Development and Economic Mobility", *American Economic Review, papers and proceedings*, May, pp. 112-116.

Walker, Thomas S. and James G. Ryan (1990). *Village and Household Economies in India's Semi-Arid Tropics*, Baltimore: Johns Hopkins.

6. Regression Output

Regression results for Education

<u>f-s paring</u>

```
. reg lnEd lnFed fage fagesq age agesq aaeduc, cluster (fcode)

Linear regression                                      Number of obs =     354
                                                       F(  6,   215) =    6.80
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.1564
Number of clusters (fcode) = 216                       Root MSE      =  2.4781

------------------------------------------------------------------------------
             |               Robust
        lnEd |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       lnFed |   .3315042   .0571958     5.80   0.000     .2187679    .4442404
        fage |   .0595624   .1822797     0.33   0.744    -.2997216    .4188463
      fagesq |  -.0004464   .0013191    -0.34   0.735    -.0030464    .0021535
         age |  -.0489013   .5319808    -0.09   0.927    -1.097467    .9996643
       agesq |   .0003223   .0079539     0.04   0.968    -.0153554    .0159999
      aaeduc |   .0039038   .0095629     0.41   0.684    -.0149453    .0227529
       _cons |   3.582681   9.037171     0.40   0.692    -14.23012    21.39548
------------------------------------------------------------------------------
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<u>*f-d paring</u>

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. reg lnEd lnFed fage fagesq age agesq aaeduc, cluster (fcode)

Linear regression                                      Number of obs =     284
                                                       F(  6,   187) =   11.84
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.2577
Number of clusters (fcode) = 188                       Root MSE      =  2.7515

------------------------------------------------------------------------------
             |               Robust
        lnEd |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       lnFed |   .5158856   .0663934     7.77   0.000     .3849092     .646862
        fage |   .0433973   .1896457     0.23   0.819    -.3307227    .4175173
      fagesq |  -.0001224   .0013519    -0.09   0.928    -.0027894    .0025445
         age |   -.983389   .5504025    -1.79   0.076    -2.069185     .102407
       agesq |   .0130517    .008181     1.60   0.112    -.0030872    .0291906
      aaeduc |   .0133911   .0125988     1.06   0.289     -.011463    .0382452
       _cons |   17.83713   9.684973     1.84   0.067    -1.268712    36.94298
------------------------------------------------------------------------------
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*m-s paring

```
. reg lnEd lnMed mage magesq age agesq aaeduc, cluster (mcode)

Linear regression                                      Number of obs =     366
                                                       F(  6,   227) =   17.40
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.1490
Number of clusters (mcode) = 228                       Root MSE      =  2.5362

------------------------------------------------------------------------------
             |               Robust
        lnEd |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       lnMed |   .3342346   .0369944     9.03   0.000     .2613382     .407131
        mage |  -.0994333   .1645491    -0.60   0.546    -.4236722    .2248056
      magesq |   .0005025   .0013112     0.38   0.702    -.0020812    .0030861
         age |   .3648776   .5214738     0.70   0.485    -.6626705    1.392426
       agesq |  -.0060185   .0078163    -0.77   0.442    -.0214203    .0093833
      aaeduc |   .0132246    .006948     1.90   0.058    -.0004662    .0269154
       _cons |   3.633615   8.307958     0.44   0.662    -12.73696    20.00419
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*m-d paring

```
. reg lnEd lnMed mage magesq age agesq aaeduc, cluster (mcode)

Linear regression                                      Number of obs =     288
                                                       F(  6,   192) =   19.77
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.2049
Number of clusters (mcode) = 193                       Root MSE      =   2.867

------------------------------------------------------------------------------
             |               Robust
        lnEd |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       lnMed |   .5292849   .0518485    10.21   0.000     .4270192    .6315507
        mage |   .0004718   .2184828     0.00   0.998    -.4304629    .4314064
      magesq |  -.0000408   .0017276    -0.02   0.981    -.0034484    .0033667
         age |  -.7338764   .5866958    -1.25   0.213    -1.891073    .4233203
       agesq |   .0102616   .0088022     1.17   0.245    -.0070999     .027623
      aaeduc |   .0139686   .0102059     1.37   0.173    -.0061616    .0340987
       _cons |   16.18716   9.510739     1.70   0.090    -2.571789    34.94611
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Regression results for Livestock

f-s paring

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. reg lnLiv lnFliv fage fagesq age agesq aaliv, cluster (fcode)

Linear regression                                      Number of obs =     177
                                                       F(  6,   124) =    3.75
                                                       Prob > F      =  0.0018
                                                       R-squared     =  0.1685
Number of clusters (fcode) = 125                       Root MSE      =  2.5514

------------------------------------------------------------------------------
             |               Robust
       lnLiv |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      lnFliv |   .4088632   .0968578     4.22   0.000     .2171546    .6005719
        fage |   .3756447   .2818685     1.33   0.185    -.1822521    .9335414
      fagesq |  -.0027939   .0021048    -1.33   0.187    -.0069599    .0013721
         age |  -.4894701   .6670533    -0.73   0.464    -1.809755    .8308152
       agesq |    .006933   .0101907     0.68   0.498    -.0132373    .0271033
       aaliv |  -.0064925   .0176718    -0.37   0.714    -.0414701     .028485
       _cons |  -1.670804   12.51391    -0.13   0.894    -26.43933    23.09772
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m-s paring

```
. reg lnLiv lnMliv mage magesq age agesq aaliv, cluster (mcode)

Linear regression                                      Number of obs =     184
                                                       F(  6,   129) =    5.04
                                                       Prob > F      =  0.0001
                                                       R-squared     =  0.1826
Number of clusters (mcode) = 130                       Root MSE      =  2.5469

------------------------------------------------------------------------------
             |               Robust
       lnLiv |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      lnMliv |   .4179578   .0914892     4.57   0.000     .2369442    .5989713
        mage |   .2140139   .1663354     1.29   0.201    -.1150847    .5431126
      magesq |  -.0014549    .001266    -1.15   0.253    -.0039596    .0010499
         age |  -.7296169   .6409218    -1.14   0.257    -1.997696    .5384625
       agesq |   .0113169   .0098262     1.15   0.252    -.0081244    .0307582
       aaliv |  -.0196634   .0178254    -1.10   0.272    -.0549314    .0156046
       _cons |   6.311695   10.93406     0.58   0.565    -15.32161      27.945
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Regression results for Land

f-s paring

```
. reg lnLand lnFland fage fagesq age agesq aaland, cluster (fcode)

Linear regression                                      Number of obs =     175
                                                       F(  6,   124) =    5.54
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.2230
Number of clusters (fcode) = 125                       Root MSE      =  1.7709

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             |               Robust
      lnLand |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     lnFland |   .3354665   .0731515     4.59   0.000     .1906792    .4802538
        fage |  -.0763031    .191655    -0.40   0.691    -.4556421    .3030358
      fagesq |   .0004016   .0013821     0.29   0.772    -.0023339    .0031372
         age |  -.2830605    .498571    -0.57   0.571    -1.269872    .7037511
       agesq |   .0048364   .0073687     0.66   0.513    -.0097483    .0194211
      aaland |  -.0004203   .0136881    -0.03   0.976    -.0275128    .0266722
       _cons |   10.15547   7.868008     1.29   0.199    -5.417519    25.72847
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m-s paring

```
. reg lnLand lnMland mage magesq age agesq aaland, cluster (mcode)

Linear regression                                      Number of obs =     182
                                                       F(  6,   129) =    4.28
                                                       Prob > F      =  0.0006
                                                       R-squared     =  0.1939
Number of clusters (mcode) = 130                       Root MSE      =  1.7772

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             |               Robust
      lnLand |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     lnMland |    .305705   .0684113     4.47   0.000     .1703515    .4410584
        mage |   -.089705   .1320918    -0.68   0.498    -.3510519     .171642
      magesq |   .0006039   .0010157     0.59   0.553    -.0014057    .0026134
         age |  -.3158152   .4662322    -0.68   0.499    -1.238267    .6066367
       agesq |   .0058148   .0070556     0.82   0.411     -.008145    .0197745
      aaland |  -.0069678   .0134828    -0.52   0.606    -.0336439    .0197083
       _cons |   10.30251   7.362893     1.40   0.164    -4.265157    24.87017
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