Cover Page

Title:

An Interactive Introduction to Randomized Evaluation

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An Interactive Introduction to Randomized Evaluation

Abstract: We describe an impact evaluation exercise in the classroom. The proposed Classroom Randomized Control Trial Game can be used to introduce the nuts and bolts of randomized evaluation such as the Average Treatment Effect (ATE), Intent-to-Treat Effect (ITT), Sub-group Average Treatment Effect (SATE), and Externality Effect (EE). The game is easy to implement and provides students experiential learning opportunity through participating in a simple randomized control trial of their own.

Keywords: program evaluation, experiential learning, classroom experiment, pedagogy

JEL codes: A22, C70

“I hear and I forget; I see and I remember; I do and I understand”

1. Introduction

Pedagogic innovations are necessary for effective teaching (Frank 1997, Dickie, 2006; Emerson & Taylor, 2004; Gremmen & Potters, 1997). They are in fact integral to the promotion of experiential learning. Hawtrey (2007) defines experiential learning as an “incorporation of active, participatory learning opportunities in the course”. Classroom experiments in particular, are a prominent way to incorporate experiential learning opportunities (Egbert & Mertins, 2010). Survey results indicate that students have a clear preference for such learning opportunities (Hawtrey, 2007). This paper introduces impact evaluation in an interactive classroom experiment. Previous research on suggests that introduction to any topic in this way has the potential to improve student interest, and improve their eagerness to learn through their active involvement in the process (Senge, 1994).

The randomized evaluation technique, often referred to as the “gold standard” in social policy experimentation, has become a critical tool for development economists in the recent
Randomized evaluation technique has the ability to cleanly disentangle treatment effects from pre-existing differences across groups, making the method highly popular as a measurement tool for economic policy initiatives (Lalonde, 1986; Smith & Todd 2005). Its strongest proponents, affiliated faculty at the Abdul Latif Jameel Poverty Action Lab (J-PAL) have more than 333 randomized impact evaluations studies that have either been completed or are ongoing. The key policy lessons from these impact evaluations are narrated in (Banerjee & Duflo, 2011), and (Karlan & Appel, 2011).

Even a cursory search for economics course syllabi provides ample evidence of the topic being taught nationally and internationally at different levels. We include in the Appendix, outlines from eight publicly available syllabi from top-level national and international schools, as well as liberal arts teaching institutions (see outlines A-H in Appendix D). The course titles varied from Development Microeconomics, Public Policy and Economics of Development, Microeconomics of International Development Policy, Development Economics, Economic Development and Growth, Econometrics and Impact Evaluation, and Community Economic Development. The structure of these courses reveal that the instructor has to devote sufficient time to introduce and explain the technique of Randomized Evaluation to be able to discuss the research findings of papers included in their syllabus. Our Classroom RCT Game can be just the pedagogy to provide an experiential introduction to the whole topic. To illustrate this point further, we have indicated where our Classroom Randomized Control Trial Game fits in the syllabus outlines A-H (in Appendix D).

Independent of the level at which randomized evaluation is introduced, student participation in our proposed Classroom RCT Game has the potential to improve comprehension (Leet & Houser 2003; Hall, Lawson, & Dirk Mateer, 2006). By actual participation in the game, the students are less likely to be stalled by the different mathematical notations and definitions, and instead focus on an intuitive understanding of the whole process first. While we do not have a controlled experiment to evaluate the impact of the Classroom RCT Game on student learning,

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1 www.povertyactionlab.org; www.3ieimpact.org.
student comments received at the end of the semester provides some indication of its usefulness. The student responses included in Appendix C suggest a positive learning experience from the activity. It is especially encouraging to note that even in our limited student response-data some indicate that they have understood how to disentangle treatment differences from pre-existing differences between groups.

The Classroom RCT Game introduced here provides an interactive introduction to the nuts and bolts in randomized evaluation, such as the Average Treatment Effect, Intent-to-Treat Effect, Externality Effect, and Sub-group Average Treatment Effect. The concept behind measures such as the Intent-to-Treat effect and the Externality effect might not be intuitively obvious when introduced through the standard chalk and talk method only. However, when students participate in the Classroom RCT Game and compute these measures using their own choices, they get a first hand insight into how and why different measures are needed in a randomized program evaluation. To the knowledge of the authors this is the first paper to use classroom games to introduce the nuts and bolts of randomized evaluation techniques. Recent research findings on experiential learning, along with student feedback collected by the authors suggest that this can be an educative and yet entertaining pedagogy for introducing randomized evaluation in the classroom.

The rest of the paper is organized as follows. Section 2 describes the Classroom RCT Game; section 3 provides a discussion of possible activities to follow up at the completion of the experiment. Concluding remarks follow in section 4.

2. The Classroom RCT Game

Preparation
Prepare the following before running the experiments: a) sufficient number of red and white poker chips in equal proportions to distribute among the students, b) three separate wordlists containing words and their associated meanings, enough copies to hand out to about half the students in the class, and c) three different quizzes, containing some of the words from the

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2 We are grateful to one of the referees for this suggestion.
3 See WORDLIST 1, WORDLIST 2, and WORDLIST 3 in the Appendix. A standard GRE vocabulary list was used to construct them.
wordlists constructed earlier. Each quiz presents words with three possible choices next to each of them.\textsuperscript{4} We used lists containing 15 words, and quizzes containing 10 words.

**Description of the Classroom Activity**

In the description below we introduce three modular classroom activities that use slightly different activities to introduce students to the different measurements used in a randomized field evaluation. In all the three activities, the *intervention/treatment* is an exposure to a list of words with their associated meanings. All students participate in a quiz, post-intervention. The *outcome variable* of interest is the post-intervention quiz scores computed for each student.

First, students need to be placed randomly in a Treatment and a Control group. To construct the treatment and the control group, the poker chips are handed out to the students at the beginning of the experiment. Students with red chips are assigned to the treatment group and are asked to sit on the right side of the classroom. Students with white chips are assigned to the control group and are asked to sit on the left side of the classroom. Handing out the chips provides a useful depiction of random assignment into groups.

**Introducing Average-Treatment Effect**

The objective of this activity is to provide students an intuitive understanding behind treatment differences and how to measure Average Treatment Effect (ATE) using experimental data. The Average Treatment Effect is the foremost variable of interest in any randomized control trial, since it captures the impact of the treatment on the outcome-variable of interest. Each student in the treatment group is given a copy of WORDLIST 1 to review for five minutes. Students in the control group do not have any task at that time. At the end of the review period, the instructor collects back the wordlists from the treatment group, distributes QUIZ 1 to all students in the treatment as well as the control group. They are allowed five minutes to complete the quiz, at the end of which the instructor reads out the correct answers for students to score their tests. The students are asked to write their total points on the left hand corner of the test – a point for each correct answer. The instructor collects the scored quiz sheets and computes the average score for the treatment group, and the average score for the control group. The difference in the average

\textsuperscript{4} See QUIZ 1, QUIZ 2 and QUIZ 3 in Appendix A.
quiz scores of the two groups is the Average Treatment Effect of the intervention (see appendix B for a definition). At the end of the game simple excel graphs can be used for visual elaboration (see Post Activity Discussion). Behrman, Sengupta & Todd (2005) examine the average treatment effect of PROGRESA (conditional cash transfer program) on schooling enrollment. During post activity discussion, the instructor can use this paper to provide a real world application of the concept of average treatment effect.

**Introducing Intent-to-Treat Effect**

The intent-to-treat effect captures the impact of the treatment on the target sample and not necessarily those who get treated. By its very nature, the intent to treat effect is not always obvious to students who have not been to the field and have not run a randomized evaluation. However, participating in this activity can provide students an intuitive understanding behind the source of the Intent-to-treat effect. The next activity introduces students to Intent-to-treat effects (ITT) and also the method of computing them.

WORDLIST 2 is distributed to everyone in the treatment group. In addition, a sub-set of students in the control group receives the list as well (for example, the first two rows of students in the control group). The objective here is to expose some individuals from the control group to the treatment, depicting partial compliance in the field. The rest of the activity is analogous to the earlier game. Students review the world list and answer QUIZ 2. The instructor announces the answers and students score them next. The instructor collects the quiz and computes the average score for the treatment group, and the average score for the control group (which have been *partially* treated in this case). The difference in the averages for the two groups gives the Intent-to-treat effect of the program. As long as the treatment has non-negative effects, under partial compliance, the Intent-to-treat effects will be smaller than the average treatment effect of the program. Since, partial compliance is what is normally observed in the field, Attanasio et. al (2011) and Banerjee et. al (2009) compute the intent-to-treat effects of participating in a vocational education and microfinance program respectively. During post activity discussion, the

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5 It might be useful to have an excel-sheet with the appropriate formula written on it already. This can simplify things for the instructor in class.

6 Usually it would be enough to distribute this word list to roughly about 6 students from the Control group where the control group has about 20 students. The instructor can improvise here depending up the size of their Control group.
instructor can use these two papers as examples of real world applications of the concept of intent-to-treat effects.

**Introducing Externality Effect**

Often in a randomized evaluation program, the treatment gets spilled over to part of the control group. Again, explaining the spillover becomes easier if one can demonstrate how spillovers might arise during an intervention. The objective of this game is to provide such a situation to the students and introduce measures to compute such effects of a program or treatment.

Two sub-groups for each of the treatment and control groups need to be constructed for this game. The instructor can verbally assign numbers to sitting positions in a sequential manner. Treatment-group-odd comprises students from the treatment group who are sitting in odd-numbered positions (i.e., positions 1, 3, 5, 7…); treatment-group-even consists of students sitting in even sitting positions in the treatment group. A similar sub-grouping is made for the control group, control-group-even, and control-group-odd. In this version of the exercise, treatment-group-odd is supposed to receive the treatment (WORDLIST 3). The three other groups are not supposed to receive the treatment. However, even though treatment-group-even is not supposed to receive the treatment, there is a good chance that they get exposed to the contents of WORDLIST 3, and get “treated” (although unintentionally), because each of their immediate neighbors have received the wordlist. The exact method of exposure can vary. If the instructor purposefully does not give any explicit rules regarding sharing of the lists, the chance of exposure to the treatment (i.e., exposure to the wordlist) is even stronger since the even and odd members in the treatment group can end up discussing or sharing the lists with each other. The exercise here provides a situation where the impact of the program (exposure to the wordlist) has the potential to go beyond those who were intended to receive the treatment. The rest of the procedure is as before; the instructor collects back the wordlists, distributes QUIZ 3 to all students in the classroom, and reads out the correct answers at the end of the test. After students have written their scores, and the quizzes have been collected back, the average score for the treatment group (even) and the average score for the control group (even) need to be calculated. The difference in the averages for the two subgroups (even) captures the externality effect of the treatment. For instance, Oster & Thornton (forthcoming) compute the externality effect (peer
effect) of technology adoption. During post activity discussion, the instructor can use this paper to provide a real world application of the concept of externality effect.

3. Post Activity Discussion

Using the results

The natural way one can use the three activities above, is to use excel plots of the computed results (see Figure 1,2, and 3) when introducing the concepts outlined in Appendix B. The fact that the students themselves have generated the data allows them to identify with all the components of the experiment design readily, and allows the instructor to describe and define different measurements in a convincing manner. Especially when it comes to non-intuitive concepts such as ITT and externality effects, this process can help students understand more readily the underlying processes behind the reasons for computing the different measures. In our classroom sessions at Fordham University, we found that for the Average Treatment Game the sample mean of the treatment group and the sample mean of the control group were 9.7 and 5.8. So the average treatment effect was 3.9 (significant at 1%). In the Intent-To-Treat game the sample mean of the treatment group was 9.63 while the sample mean of the control group had increased to 7.03. The intent-to-treat effect is then 2.6 (significant at 1%). It is trivially easy to generate graphs like Figures 1 and 2 in excel to motivate the decline in the average differences in the two games visually, and discuss the effects of positive spill-overs/contamination/partial compliance reducing the impact of the treatment.

The computed scores from the Average Treatment Game can also serve to illustrate the Sub-group Average Treatment Effect (SATE). To illustrate the idea, one can compute the average scores of male and female students separately. For example, we can now compute the differences in the quiz scores for the male students belonging to the treatment and the control groups. We calculate score differences analogously for females belonging to the treatment and the control groups. In our sessions, SATE for males was 3.25 (standard error = 0.62) and SATE for females was 4.7 (standard error = 0.42).

Results from the Externality Game should be used to discuss the externality effect of being exposed to the treatment group. In our classroom session, the average scores for the treatment
group (even) was 7.7 and the control group (even) was slightly lower at 7.1 (a difference in the right direction although not statistically significant). A possible way to strengthen the externality effects might be through announcements that students in the treatment group (odd) can choose to share or not to share the list with students sitting next to them.

Further readings

We summarize below a list of prominent policy initiatives whose effectiveness has been evaluated using a randomized evaluation design. The instructor can use the references provided here for further details on these studies.

*Conditional cash transfer program:* In an effort to improve children’s schooling outcomes (test scores, completed grades, and enrollment), cash transfer payments have been provided as incentives to parents’ who send their children regularly to school. A randomized control trial implemented to understand the effectiveness of conditional cash transfers find positive association between the program and - schooling enrollment, and completed grades of schooling in Mexico (Parker, Rubalcava, & Teruel, 2008; Behrman, Sengupta & Todd, 2005), attendance and grades in Nicaragua (Maluccio & Flores, 2005), attendance in Honduras (Morris, Flores, Olinto, & Medina, 2004), and enrollment in Ecuador (Schady & Araujo, 2006).


*Microfinance program:* Banerjee et. al (2009) conduct the first randomized evaluation study to assess the effectiveness of microcredit on poverty. The authors find that increased access to microcredit is associated with increased expenditure on durable goods though, not associated with improvements in average household per capita expenditure – an important measure of well-being.
The conditional cash transfer program implemented in Mexico and the deworming pills program implemented in Kenya are examples of famous interventions that have been scaled up by country officials to the National level.

Randomized evaluations have also been used to study a number of other interesting research questions such as identify the impact of: (a) iron supplements on labor productivity and earnings among adults in Indonesia (Thomas et. al, 2003), (b) price subsidies on take-up of antimalarial insecticide treated bed-nets among pregnant women in Kenya (Cohen & Dupas, 2010), (c) non-monetary incentives on immunization up-take in India (Banerjee et. al, 2010), (d) micronutrient supplementation on education, and long-term earnings (Hoddinott et. al, 2008, Maluccio et. al, 2009), (e) vocational education programs on labor market earnings (Attanasio et. al, 2011), (f) peer effects on technology adoption (Oster & Thornton, forthcoming), and (g) teacher incentives on student learning (Muralidharan & Sundaram, 2011).

4. Conclusion

Randomized evaluation is a topic that is now taught nationally and internationally in different economics courses. We propose an interactive classroom activity that allows students scopes for experiential learning. The Classroom RCT Game can be a wholesome introduction to the topic itself. In the process the students have the opportunity not only to learn some of the core measures in any evaluation program (Average Treatment Effect, Intent-to-Treat Effect, Externality Effect, and Sub-group Average Treatment Effect), they also get exposed to an intuitive understanding of how some of these effects may arise, which might not always be obvious unless one runs his/her own experiment in the field. The usefulness of the pedagogy can be aptly described by the old Chinese proverb: I hear and I forget; I see and I remember; I do and I understand.

The Classroom RCT Game need not be restricted just to undergraduate introductions to the topic of randomized evaluation. The game is possible to be used in a graduate course as well, since it can be time-consuming if not impossible to take the whole class to the field to provide a first-hand exposure to the very process of randomized evaluation. Additionally, the idea of control and trial is now common enough in courses other than development economics. Courses
in behavioral economics and experimental economics routinely have a topic on measurement and experiment design. Here again, the classroom game can provide a personal experience into the design and process of an experiment which can make the logic of designing an experiment – to evaluate and estimate “treatment differentials” more vivid to the participating student. In fact the game can be used in courses in finance and marketing as well as an introduction to a growing body of interesting intervention research (See for example Mazar & Ariely (2006), Amir et. al (2008), Cole et. al (2011), Sarthak et. al (2011), Anagol & Gamble (forthcoming). Finally, our intervention can also be used to allow students revise concepts where one replaces the regular wordlists with definitions and concepts that have been just covered in the lectures. We provide such an example in the Appendix (see pages 18-19).  

Previous research on experiential learning techniques (Hawtrey, 2007), classroom experiments (Egbert & Mertins, 2010), along with student responses from our own teaching suggest that students would be open and excited to learn the topic in this dynamic manner.

References


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7 We are particularly grateful to one of the anonymous referees for suggesting this interesting usage of our basic intervention idea.


Figures

Figure 1: Results from the Average Treatment Game
Figure 2: Results from the Intent-to-treat Game

Figure 3: Results from the Externality Game
Appendix A: Wordlists and Quizzes

**WORDLIST 1**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Antediluvian - Ancient</td>
</tr>
<tr>
<td>2</td>
<td>Anomalous - unique</td>
</tr>
<tr>
<td>3</td>
<td>Ambrosial - Delicious</td>
</tr>
<tr>
<td>4</td>
<td>Emollient - Softening</td>
</tr>
<tr>
<td>5</td>
<td>Inchoate – incomplete</td>
</tr>
<tr>
<td>6</td>
<td>Dearth - scarcity</td>
</tr>
<tr>
<td>7</td>
<td>Nefarious – Evil</td>
</tr>
<tr>
<td>8</td>
<td>Efficacy - effectiveness</td>
</tr>
<tr>
<td>9</td>
<td>Breach - gap</td>
</tr>
<tr>
<td>10</td>
<td>Ossified - Inflexible</td>
</tr>
<tr>
<td>11</td>
<td>Perfidious - Dishonest</td>
</tr>
<tr>
<td>12</td>
<td>Vex - Irritate</td>
</tr>
<tr>
<td>13</td>
<td>Quiescence – Inactivity</td>
</tr>
<tr>
<td>14</td>
<td>Erudite – scholarly</td>
</tr>
<tr>
<td>15</td>
<td>Sedulous – Diligent</td>
</tr>
</tbody>
</table>

**WORDLIST 2**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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<tbody>
<tr>
<td>1</td>
<td>Abjure - promise</td>
</tr>
<tr>
<td>2</td>
<td>Admonitory – containing warning</td>
</tr>
<tr>
<td>3</td>
<td>Baneful – causing harm</td>
</tr>
<tr>
<td>4</td>
<td>Cadge – to beg</td>
</tr>
<tr>
<td>5</td>
<td>Commodious – plenty of space</td>
</tr>
<tr>
<td>6</td>
<td>Contrite-filled with deep sorrow</td>
</tr>
<tr>
<td>7</td>
<td>Eschew – avoid</td>
</tr>
<tr>
<td>8</td>
<td>Fecund - fertile</td>
</tr>
<tr>
<td>9</td>
<td>Garrulous - talkative</td>
</tr>
<tr>
<td>10</td>
<td>Halcyon – calm and peaceful</td>
</tr>
<tr>
<td>11</td>
<td>Esoteric – difficult to understand</td>
</tr>
<tr>
<td>12</td>
<td>Nadir – lowest point</td>
</tr>
<tr>
<td>13</td>
<td>Petulant – unreasonably impatient</td>
</tr>
<tr>
<td>14</td>
<td>Recant – take back</td>
</tr>
<tr>
<td>15</td>
<td>Sanguine - cheerful</td>
</tr>
</tbody>
</table>
### WORDLIST 3

1) Aplomb – Self-confidence  
2) disparate – different  
3) Egress – exit  
4) Immaculate – faultless  
5) Indigenous – Native  
6) Conrite-filled with deep sorrow  
7) Maladroit – Tactless  
8) Mettlesome – Courageous  
9) Onerous - burdensome  
10) Parley – negotiation  
11) Irksome - tiresome  
12) Pariah – outcast  
13) Taciturn – silent  
14) Unscathed– unharmed  
15) Guile – cunning

### QUIZ 1: Introducing Average-Treatment Effect

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>2) Ambrosial</td>
<td>a. Ugly</td>
<td>b. Delicious</td>
</tr>
<tr>
<td>3) Emollient</td>
<td>a. Softening</td>
<td>b. Loud</td>
</tr>
<tr>
<td>4) Inchoate</td>
<td>a. Incomplete</td>
<td>b. Complete</td>
</tr>
<tr>
<td>5) Nefarious</td>
<td>a. Delightful</td>
<td>b. Fun</td>
</tr>
<tr>
<td>6) Ossified</td>
<td>a. Inflexible</td>
<td>b. Sanguine</td>
</tr>
<tr>
<td>8) Vex</td>
<td>a. Short</td>
<td>b. Poor</td>
</tr>
<tr>
<td>9) Quiescence</td>
<td>a. Inactivity</td>
<td>b. Silent</td>
</tr>
<tr>
<td>10) Sedulous</td>
<td>a. Diligent</td>
<td>b. Careless</td>
</tr>
</tbody>
</table>

Please circle the closest synonym/meaning for the following words
**QUIZ 2: Introducing Intent-to-Treat Effect**

<p>| | | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>1) Abjure</td>
<td>a. abhor</td>
<td>b. allude</td>
</tr>
<tr>
<td>2) Baneful</td>
<td>a. promise</td>
<td>b. supportive</td>
</tr>
<tr>
<td>3) Cadge</td>
<td>a. beg</td>
<td>b. candor</td>
</tr>
<tr>
<td>4) Contrite</td>
<td>a. short</td>
<td>b. filled with deep sorrow</td>
</tr>
<tr>
<td>5) Eschew</td>
<td>a. avoid</td>
<td>b. difficult</td>
</tr>
<tr>
<td>6) Fecund</td>
<td>a. barren</td>
<td>b. recant</td>
</tr>
<tr>
<td>7) Halcyon</td>
<td>a. Irritable</td>
<td>b. calm and peaceful</td>
</tr>
<tr>
<td>8) Nadir</td>
<td>a. highest point</td>
<td>b. contrite</td>
</tr>
<tr>
<td>9) Petulant</td>
<td>a. onerous</td>
<td>b. valiant</td>
</tr>
<tr>
<td>10) Sanguine</td>
<td>a. cheerful</td>
<td>b. taciturn</td>
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</tbody>
</table>

**QUIZ 3: Introducing Externality Effect**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>1) Aplomb</td>
<td>a. self-confidence</td>
<td>b. brave</td>
</tr>
<tr>
<td>2) Immaculate</td>
<td>a. trace</td>
<td>b. faultless</td>
</tr>
<tr>
<td>3) Indigenous</td>
<td>a. native</td>
<td>b. volatile</td>
</tr>
<tr>
<td>4) Maladroit</td>
<td>a. clever</td>
<td>b. versatile</td>
</tr>
<tr>
<td>5) Onerous</td>
<td>a. malign</td>
<td>b. burdensome</td>
</tr>
<tr>
<td>6) Parley</td>
<td>a. miser</td>
<td>b. nexus</td>
</tr>
<tr>
<td>7) Irksome</td>
<td>a. tiresome</td>
<td>b. petrify</td>
</tr>
<tr>
<td>8) Pariah</td>
<td>a. rebuff</td>
<td>b. rivet</td>
</tr>
<tr>
<td>9) Taciturn</td>
<td>a. talkative</td>
<td>b. silent</td>
</tr>
<tr>
<td>10) Unscathed</td>
<td>a. unharmed</td>
<td>b. untoward</td>
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</tbody>
</table>

Please circle the closest synonym/meaning for the following words
WORDLIST: REVISING ECONOMICS

1. Scarcity: is a result of limited resources and unlimited wants
2. Positive statement: seeks to understand economic behavior without making judgments
3. Normative statement: seeks to understand economic behavior using value judgments
4. Ceteris paribus: means all else equal or holding everything else constant
5. Opportunity cost: is the best alternative that we forgo, or give up
6. Market failure: is when the market cannot efficiently allocate goods and services freely
7. Law of supply: is the positive relationship between price and quantity supplied
8. Substitutes: are two goods whose demand schedules are related in a way that a decrease (increase) in the price of one good causes a rightward (leftward) shift in the demand curve of the other good
9. Price elasticity of supply: measures the response of quantity of a good supplied to a change in price of that good
10. Negative externality: is a cost incurred by an individual who was not directly involved in the transaction causing the cost

QUIZ: REVISING ECONOMICS

1) Scarcity is the result of:
   a) government decision making.
   b) inappropriate normative judgements.
   c) positive economics.
   d) wants that exceed the resources necessary to provide them.

2) The term "ceteris paribus" means that:
   a) everything is variable.
   b) all variables except those specified are constant.
   c) no one knows which variables will change and which will remain constant.
   d) what is true for the individual is not necessarily true for the whole.
e) all variables are held constant.

3) The opportunity cost of an item is:
   a) greater during periods of inflation and lower during periods of deflation.
   b) the highest valued alternative you give up to get that item.
   c) the value of all available alternatives you sacrifice to get that item.
   d) always equal to the dollar value of the item.
   e) always less than the dollar value of the item.

4) When the Blue Ocean Surfboard Company lowered the price of surfboards by 20%, it sold 10% more surfboards. The price elasticity coefficient for surfboards is:
   a) 2.
   b) 1/2.
   c) 1.
   d) 20.
   e) indeterminate.

5) Socially inefficient outcomes may occur in markets where there are:
   a) free riders.
   b) negative externalities present.
   c) asymmetric information problems.
   d) positive externalities present.
   e) any of the above
Appendix B: Concepts and Definitions

The focus of this section is to introduce some of the key concepts used in the evaluation literature. At the end of the classroom exercise, one can use the results from the games to explain the following concepts. Consider a pool of applicants (N) for a job training program. A randomly selected subset $N_T$ gets assigned to the treatment group (T), and receives the treatment (for example: the job training program). The remaining sample $N_C = N - N_T$ gets assigned to the control (C) group which does not receive the training. In our example we are interested in measuring the impact of the training program on some measurable outcome variable (Y) such as wage earnings.

*Average Treatment Effect (ATE)*

The ATE measures the overall impact of a program on an observable outcome variable. Under perfect compliance, it is defined to be the difference in the empirical means of the outcome variable (Y collected at the end of the program) between the treatment and the control group. Thus, under perfect compliance,

$$ATE = \bar{Y}_T - \bar{Y}_C,$$

where $\bar{Y}_T$ is the sample mean of the outcome variable for everyone in the treatment group and $\bar{Y}_C$ is the sample mean of the outcome variable for everyone in the control group.

In many social experiments, imperfect compliance is a source of concern as it affects the measured impact of the program. It can come about in two ways - one, where some of the individuals originally assigned to receive the treatment do not receive the treatment. Two, when some of the individuals originally chosen not to receive the treatment (i.e., assigned to the

---

8Under perfect compliance, everyone in the treatment group gets treated and no one from the control group receives the treatment.
control group) end up receiving the treatment. Consequently, under imperfect compliance, we are interested in measuring a related effect, that is, the impact of offering the treatment (ITT).

**Intent-to-treat effect (ITT)**

Program participation is often voluntary in social programs, and as a result, randomization only affects the probability of being exposed to the treatment. Hence, under voluntary participation the researcher is interested in measuring the effect of being offered the program, rather than the actual treatment. ITT measures the average impact of offering a program using the initial random assignment as a way to avoid the re-introduction of selection bias. Under partial-compliance, the difference in the sample means of the outcome variable between the treatment group (those originally assigned to receive the treatment) and the control group (originally assigned not to receive the treatment) measures the ITT effects of the program. Notice, that under perfect compliance, the ITT and ATE will be identical. So,

\[
\text{ITT} = \bar{Y}_T - \bar{Y}_c, \text{ where } \bar{Y}_T \text{ is sample mean of the outcome variable for those initially assigned to the treatment group (T) and } \bar{Y}_c \text{ is the sample mean of the outcome variable for those assigned to the control group (C); regardless of the treatment they actually receive. Under partial compliance as long as the treatment has non-negative effects, the ITT effects will normally be smaller than the ATE of the program.}
\]

**Sub-group Average Treatment Effect (SATE)**

SATE measures the impact of the treatment for exogenous sub-groups where the formation of the sub-group (X) is not affected by the treatment. SATE is defined to be the difference in the sample means of the outcome variable between the treatment and control group with a certain
identical characteristic X (ex: Bobonis et. al (2006) measure program impacts in the following sub-categories – gender, age, mother’s schooling and baseline anemia). So,

\[ SATE = \bar{Y}_{TX} - \bar{Y}_{CX} \]

For example: when X= male, the SATE will be the difference in the sample means of the outcome variable between all males in the treatment group and all males in the control group.

**Externality Effect (EE)**

EE measures the impact of the treatment on individuals and groups who are not targeted to receive the treatment. Let us assume that we have information on the friends of the people who applied for this job training program and for simplicity, let’s assume that the friends did not apply for this training program. Let us call the friends of our treatment group, FT and let us call the friends of our control group, FC. The externality effect of the program/treatment is measured as the difference in the sample means of the outcome variable between the FT and FC group.

\[ EE = \bar{Y}_{FT} - \bar{Y}_{FC} \]

where \( \bar{Y}_{FT} \) is the sample mean of the outcome variable for the FT group and \( \bar{Y}_{FC} \) is the sample mean of the outcome variable for the FC group.
Appendix C: Student Responses to the Classroom RCT Game

Student 1:

The experiment was easy to understand and successful within the class as results were very clear and one side of the room (one team) performed significantly better than the other.

Student 2:

I think it was an interesting experiment that helped me remember the concept of randomized evaluation methodology. The words used in the experiment were of a fairly appropriate difficulty level for college students. I learnt that due to the fact that students were put into groups randomly, the differences in results were due to the stimulus provided and not due to pre-existing differences.

Student 3:

I thought it was a good experiment but maybe use more words next time because almost every single kid in my group was able to respond correctly to all 10 definitions. I don't know if that means anything but I think it would be better if we had to see 20 words or something to challenge that section of kids. 10 is too easy to remember. Regardless, the experiment did prove the point that if you have a heads up even for just a few minutes it really helps out.

Student 4:

I thought that the games were a very good way for us to get a sense of the differences in the results of various randomized evaluation techniques. I thought that the process went smoothly, and the games had the desired impact for each technique. I think that it was useful teaching tool when paired with a discussion of empirical challenges and when to use each method.

Student 5:

In all honesty, I found the classroom games to be very useful in assisting me to fully comprehend the various randomized evaluation techniques. While explanations in class were quite useful, observing the techniques practically helped to conceptualize them in a more concrete manner. Additionally, it made a lesson that could perhaps be deemed very academic fun and interactive. Overall, I would say that the classroom games were a useful tool because they helped me conceptualize the techniques and were fun and interactive.

Student 6:

I appreciated the game in that it was a simple representation of how to compute an Average Treatment Effect and Intent to Treat effect and why those are different. It also shows how some of the control may be treated simply due to proximity to the treatment group. As I was in 2 classes where this was presented (one class where we had already discussed randomization, ATE and ITE in detail and one where we had not) I think the exercise was more useful for the uninitiated group. For the class that had already learned about these concepts the game was a good illustration but perhaps could have been a bit more detailed. I think this game would be especially useful for an undergraduate course or a similar group of uninitiated learners.
Student 7:

I do remember the word games we played in class and thought they were a clever way to show us how the concepts of random evaluation can be measured. I had learned about ATE, TOT, ITT, etc. in a few of my undergraduate courses previously but thought your method of presenting the concepts to us in a hands on way were much more effective and showed how useful these simple methods can be for all types of experiments. I had previously only been exposed to these concepts pertaining to field experiments involving medication treatments or other development related interventions and didn't consider how useful these types of measurements could be in other social experiment settings. My only suggestion is regarding our small call size- I think if these games were played in a larger class that was a bit more gender equal (as I remember there were only 2 males in the room) the results would be a bit more clear especially when measuring the externality effect and sub-group average treatment effect. But in general I think this was a worthwhile exercise, as it presented what could be considered confusing information very clearly. I would also argue that it made most students feel more comfortable using these concepts in future work.
Appendix D: Syllabus Outlines

We append below outlines from eight publicly available syllabi from top-level national and international schools as well as liberal arts teaching institutions. Course titles varied from Development Microeconomics, Public Policy and Economics of Development, Microeconomics of International Development Policy, Development Economics, Economic Development and Growth, Econometrics and Impact Evaluation and Community Economic Development. The courses vary from their intended audience and instruction level. But all of them share the common feature of focusing entirely or devoting at least partly to the randomized evaluation technique.

Outline A

In outline A one can introduce the game where the instructor plans “Introduction to Part 3 and Part 4”.

Outline B

In outline B one can introduce the game before starting on Section 1 (the big picture).

Outline C

In outline C one can introduce the game before starting on section 2, “Background Ideas and Methods”.

Outline D

In outline D one can introduce the game before starting on “The Evaluation Problem: How Do We Know What Works?”

Outline E

In outline E one can introduce the game before starting on section 3, the “Toolbox”.

Outline F

In outline F can introduce the game before starting off on Chapter 2 of Poor Economics.

Outline G

In outline G one can introduce the game before starting on Lecture 6 on “Randomized experiments, the gold standard of impact evaluation”.

Outline H

In outline H one can introduce the game before starting on Program Evaluation (section 3).
OUTLINE A

Part 1: Agricultural household models

• Lecture 1: The canonical model and the separability result
• Lecture 2: Market imperfections and non separability
• Lecture 3: Market imperfections and economic policy
• Lecture 4: Beyond the unitary model: intra-household allocation models

Part 2: Land

• Lecture 5: Land tenure and agricultural productivity

Introduction to Part 3 and Part 4: A reminder on impact evaluation.

Part 3: Human capital accumulation

• Lecture 7: Why don't the poor pick the low-hanging fruit available for better health. (1)
• Lecture 8: Why don't the poor pick the low-hanging fruit available for better health. (2)
• Lecture 9: Why is the absentee rate at school so high among the children living in developing countries. (1)
• Lecture 10: Why is the absentee rate at school so high among the children living in developing countries. (2)

Part 4: Physical capital accumulation
• Lecture 11: Why don't the poor save more. (1)
• Lecture 12: Why don't the poor save more. (2)

Introduction to Part 3 and Part 4: A reminder on impact evaluation

Part 3: Human capital accumulation

Lecture 7: Why don't the poor pick the low-hanging fruit available for better health. (1)

Reading material:

Books:

Journal articles:


Lecture 8: Why don't the poor pick the low-hanging fruit available for better health. (2)

Reading material: see Lecture 7

Lecture 9: Why is the absentee rate at school so high among the children living in developing countries. (1)

Reading material:

Books:

Journal articles:


• Nguyen, 2008, Information, role models and perceived returns to education: experimental evidence from Madagascar, working paper.

• Akresh R., Bagby E., de Walque D. and H. Kazianga, 2011, Child ability and household human capital investment decisions in Burkina Faso, working paper.


**Lecture 10: Why is the absentee rate at school so high among the children living in developing countries. (2)**

**Part 4: Physical capital accumulation**

**Lecture 11: Why don't the poor save more. (1)**

Reading material: 
Books:

Journal articles:


Lecture 12: Why don't the poor save more. (2)
Reading material: see Lecture 1
OUTLINE B

Course Outline

All readings required except * = recommended. UP=Understanding Poverty. DE=Development Economics. PE = Poor Economics. MTGI = More than Good Intentions Note: Lecture notes and all readings not linked below will be made available on blackboard during the term. It is the students own responsibility to manage their printing of any of these documents within any budget for printing they may have.

Also note that the dates given below are subject to change.

0. Statistical Background

You must understand everything in DE Appendix 2 before the course begins; you don’t have to read it if you already know the concepts. You should also read the article titled “Evaluating Empirical Studies” posted on Blackboard. You might also want to read the following article which nicely explains the concept of causality: Freedman, David (1991) “Statistical Models and Shoe Leather,” Sociological Methodology, Vol. 21, pp 291-313.

1. The big picture

1.1 What is poverty? How do we measure it? [3/26]


• DE Ch. 2

1.2 History, Growth and Development [3/28] (Causality and instrumental variables)

• UP Ch 1, "Measuring Poverty" 1.2 History, Growth and Development [3/28] (Causality and instrumental variables)
• UP Ch 2, "Understanding Prosperity and Poverty: Geography, Institutions, and the Reversal of Fortune"

• *UP Ch 3, "Colonialism, Inequality, and Long-Run Paths of Development" o *DE Ch. 3 & 4.1-4.3

1.3 Globalization and poverty [3/30]

• UP Ch 6, "Globalization and All That"

• UP Ch 7, "The Global Economy and the Poor"

2. Health

2.1 Health and Nutrition: Poverty Traps [4/2]

• DE Ch. 8 (esp. 8.4), Ch 13.4

2.2 Providing health services and medicines in developing countries [4/4]

• PE Chapter 3: “Low-Hanging Fruit for Better (Global) Health”.

• UP Ch 20, "Intellectual Property and Health in Developing Countries”

• UP Ch 21, "Public Policies to Stimulate Development of Vaccines for Neglected Diseases"


2.3 Health externalities and randomized experiments [4/6] PS 1 DUE


2.4 HIV & the economics of risky behaviors [4/9]


3. Education and Human Capital

3.1 Education [4/11] (Difference in differences)

• UP Ch 18, "The Primacy of Education,"


3.2 Educational Interventions [4/13] PS 2 DUE


• *Muralidharan, Karthik and Venkatesh Sundaraman. Contract Teachers: Experimental Evidence from India. Mimeo, UCSD.

3.3 Fertility [4/16]

• DE Ch 9

• UP Ch 9, "Fertility and Income"


• UP Ch 17, "Policy Dilemmas for Controlling Child Labor"

4. Land and property rights

4.1 Land [4/20]

• DE 11 & 12
• UP Ch 8, "The Role of Agriculture in Development"

4.2 Land Reform [4/25]


4.3 Property Rights [4/27]


5. Labor and migration

5.1 Labor markets [4/30]

• DE13

5.2 Migration [5/2]

• DE Ch. 10

6. Credit

• 6.1 Credit and investment [5/4]
• DE Ch 14
• UP Ch 23, "Credit, Intermediation, and Poverty Reduction"
6.2 The microcredit promise [5/7]


- PE Chapter 9: “Reluctant Entrepreneurs”

7. Savings and Insurance

7.1 Savings and Insurance 1 [5/9]

- DE Ch 15

- UP Ch 14, "Transfers and Safety Nets in Poor Countries: Revisiting the Trade-Offs and Policy Options,"

- MTGI Chapter 7: “To Save: The Unfun Option”

7.2 Insurance Failures [5/11]

- PE Chapter 6: “Barefoot Hedge-Fund Managers”

- UP Ch 22, "Microinsurance: The Next Revolution?"


8. Public goods, political economy, aid and corruption

8.1 Public Goods [5/21]

- UP Ch 19, "Public Goods and Economic Development,"

- UP Ch 12, "Ethnic Diversity and Poverty Reduction,"


8.2 Do leaders matter? [5/23]


8.3 Corruption [5/25] PS 5 DUE

• UP Ch 11, "Corruption and Development"


8.4 Aid [5/30] Policy Debate

OUTLINE C

Course Overview

This is a course about the microeconomics of development. We will thus use the toolkit of applied microeconomics to study the behavior of individuals, households, and firms in developing countries. You are expected to have a good understanding of the basic principles of microeconomics (i.e., PPS128 or higher): utility maximization; profit maximization; risk and uncertainty; public goods and externalities; market power; principal-agent model; etc. Moreover, because the material relies heavily on empirical findings, you should have a good, intuitive grasp of basic applied statistics: linear regression, hypothesis testing, etc. Although we will be going over some theoretical models because they provide a useful framework through which one can analyze the world, the content of the course will largely be empirical. In other words, we will be focusing on what we can and cannot learn, as well as on what we have learned from taking these models to the data. We will also be focusing on the policy implications one can derive from empirical findings. Because this course is a bit mathematical in nature, I will be spending a great deal of time walking you through the models in order for you to gain an intuitive understanding of them. I will never ask you to solve theoretical models or estimate empirical models, but I do expect you to understand their key features and be able to express them in words. To counterbalance the technical aspects of the course, I will have you read studies dealing with specific policies and discuss them at the end of each section of the syllabus, and I provide a set of lighter readings and podcasts to help illustrate the material.

Textbook

There is no textbook for this course, but you should buy the following book, which was written to explain many of the more technical concepts we will discuss in class and emphasize their policy importance to the general public:


You are expected to take notes in class. To help you do so, I will post my slides on Blackboard, typically in the hours before lecture, as I tend to work on my slides up until the last minute. I will be putting the compulsory readings on my website as well, on a password-protected page. Email me for the password.
Readings

The following list of topics and readings is indicative - I might add or subtract some readings as we go along and as I discover new papers on the following topics. Asterisks (*) denote compulsory reading materials.

1. Introduction (Week of August 29)


• *Roberts, R. (2008), “Collier on the Bottom Billion,” EconTalk,


2. Background Ideas and Methods (Week of September 5)


3. Household and Intrahousehold Models (Week of September 12)


4. Market Participation (Week of September 19)


5. Land (Week of September 26)


6. Labor

6.1. Food and Nutrition


6.2. Health


• Experimental Evidence on Insecticide Treated Bednets,” World Development 37(3): 607-617.


6.3. Education


7. Capital (Week of October 31)

• Armendáriz de Aghion, B., and J. Morduch (2005), The Economics of Microfinance, Cambridge: MIT Press.


8. Technology Adoption (Week of November 7)


9. Institutions, Corruption, and Governance (Week of November 14)


• November 21: No class on Tuesday, Thanksgiving on Thursday.) November 28: Review session on Tuesday, Second Midterm on Thursday.)
OUTLINE D

Course materials


Recommended texts


Access to readings

Many readings are in one of the two required texts, Poor Economics and Portfolios of the Poor. These books have been ordered and are (or should soon be) available at bookstores serving the University, such as Ulrich’s, Michigan Book and Supply, and Barnes and Noble/Michigan Union Bookstore. Other readings available electronically via either: 1) the Ctools site for the class, or 2) at the web addresses given on the reading list below. For some articles, a policy-oriented summary in the form of a “JPAL brief” is available, and I have provided a link to that resource.

Reading List

Economic Development: The Facts and the Puzzles (1 class)

- **Sachs, The End of Poverty, Ch. 1

• 2011. Tables 1-3, p. 344 -349. (And skim other tables and text according to your interests.)


• Amartya Sen, "The Concept of Development," in Chenery and Srinivasan, eds., Handbook of


The Economic Lives of the Poor (1 class)

• **Collins, Morduch, Rutherford, and Ruthven, Portfolios of the Poor, Ch. 1-2.


Economic Growth (1 class)

• **Sachs, The End of Poverty, Ch. 2-3

• **Easterly, The Elusive Quest for Growth, Ch. 2-3


• Ch. 3, “Economic Growth”.


Geography
• **David Bloom and Jeffrey Sachs, “Geography, Demography, and Economic Growth in Africa,”


• Diamond, Jared, Guns, Germs, and Steel, Prologue, Ch. 1, Ch. 4-10.


Institutions (1 class)


• JPAL brief version:


• Banerjee and Duflo, Poor Economics, Ch. 10.


Economic policy (1 class)


Foreign aid (1 class)

• **Jeffrey Sachs, The End of Poverty, Ch. 15.
• *Easterly, The White Man’s Burden, Ch. 1-2.
• *Banerjee and Duflo, Poor Economics, Ch. 1.

Global public goods (application: advance market commitments) (1 class)

• **Ruth Levine, Michael Kremer, and Alice Albright, “Making Markets for Vaccines: Ideas to Action,”
The Evaluation Problem: How Do We Know What Works. (1 class)


Education (2 classes)

Class 1: The Supply Side

• **Banerjee and Duflo, Poor Economics, Ch. 4.


• JPAL brief version:


Class 2: The Demand Side


Health

**Banerjee and Duflo, Poor Economics, Ch. 2, 3 and 5.


*Banerjee, Abhijit V., Esther Duflo, Rachel Glennerster, and Dhruva Kothari, “Improving
• Immunisation Coverage in Rural India: A Clustered Randomised Controlled Evaluation of

• JPAL brief version: http://www.povertyactionlab.org/publication/incentives-immunization


Microfinance (3 classes)

• **Banerjee and Duflo, Poor Economics, Ch. 7.

• **Collins, Morduch, Rutherford, and Ruthven, Portfolios of the Poor, Ch. 5.

• *Armendariz and Morduch, The Economics of Microfinance, Ch. 1, 2, and 4.

  http://faculty.wcas.northwestern.edu/~cgk281/MoM.pdf


• http://www.povertyactionlab.org/publication/latest-findings-randomized-evaluations-microfinance


• Class 2: Making Credit Markets Work


• http://karlan.yale.edu/p/GroupversusIndividualLending.pdf

• **Giné, Xavier, Jessica Goldberg, and Dean Yang, “Credit Market Consequences of Improved Personal Identification: Field Experimental Evidence from Malawi,” American Economic Review, forthcoming. JPAL brief version:

• http://www.povertyactionlab.org/publication/fingerprinting-reduce-risky-borrowing

Class 3: Savings

• **Banerjee and Duflo, Poor Economics, Ch. 8. ** Collins, Morduch, Rutherford, and Ruthven, Portfolios of the Poor, Ch. 4.

• ** Armendariz and Morduch, The Economics of Microfinance, Ch. 6 (sections 6.1-6.5, 6.8). *Nava Ashraf, Dean Karlan, and Wesley Yin, “Tying Odysseus to the Mast: Evidence from a


• 2350-2390. JPAL brief version: http://www.povertyactionlab.org/publication/well-timed-nudge


Disasters, Insurance, and Risk (1 class)

• **Banerjee and Duflo, Poor Economics, Ch. 6.

• **Collins, Morduch, Rutherford, and Ruthven, Portfolios of the Poor, Ch. 3.

• **Armendariz and Morduch, The Economics of Microfinance, Ch. 6 (sections 6.6-6.7).


International Migration and Remittances (2 classes)

Class 1: Migration


• *World Bank, Migration and Remittances Fact Book. Online resource. (Skim the data on this website and look up information for regions and countries of interest to you.)
  http://go.worldbank.org/QGUCPJTOR0

Class 2: Remittances


• *Ashraf, Nava, Diego Aycinena, Claudia Martinez A., and Dean Yang, “Remittances and the

• Problem of Control: A Field Experiment Among Migrants from El Salvador,” mimeo, University of Michigan, 2011.
OUTLINE E

Synopsis: The focus of the course will be on the microeconomics of development, with strong policy and empirical components. We will begin with an introduction to poverty and its measurement. We will then discuss the literature on foreign aid effectiveness. After reviewing impact evaluation methods, including randomized designs, we will study specific interventions on education, health, and credit. We will then turn to the study of institutions, including historical roots, democracy, corruption, resource and ethnic curces, and conflict.

Assessment:

1. Practical class presentation (paper) – 20%

This is the group presentation of a designated research paper or specific source in the practical class. It will involve a powerpoint presentation (made for 30min), and broad discussion in class (for the remaining time), as everyone is expected to read the paper in advance and have questions to ask. The group will be responsible to answer the questions raised.

2. Impact evaluation proposal – 20%.

The impact evaluation proposal will take the form of a 5-page (font size 12 pp) written report (which can be done in groups), which should be sent to Nuno Palma by May 23, 2012. This impact evaluation proposal should contain: (i) a relevant research question related to any of the themes of the course, competently motivated (i.e., relating to other papers, policy debates, etc.); (ii) the description of a proposed intervention that is useful for answering the research question (the intervention may be real or imaginary; however, feasibility will be particularly valued, as it may turn reality with your help after the course!!); (iii) an evaluation design, including method (field, lab, natural experiment, etc.) and description of measurement (household survey, test scores, etc.)
3. Oral participation in the lectures and practical classes – 10%.

This includes number and quality of questions asked during the student presentations.

4. Final exam – 50%.

**Main sources:**


**Outline**

1. Poverty
   - Ray, chapters 1 and 8.1-8.2.
   - Banerjee and Duflo, chapters 1 and 2.
   - Practical class: organization

2. Aid.
   - Collier, Paul (2007), The Bottom Billion: Why the Poorest Countries Are Failing and What Can Be Done About It, Oxford University Press. [with special attention to chapter 7]
3. Toolbox

- Practical class: Duflo, Glennerster, and Kremer paper

4. Education

- Banerjee and Duflo, chapter 4.

5. Health
• Banerjee and Duflo, chapter 3.


• Practical class: Miguel and Kremer paper

6. Finance

• Banerjee and Duflo, chapters 6-8.


• Practical class: Ashraf, Karlan, and Yin paper

7. History

• Banerjee and Duflo, chapter 10.

• Acemoglu and Robinson, chapter 4.


• Sachs, Jeffrey (2003), Institutions Matter but not for Everything, Finance and Development, 38-41.

• Practical class: Acemoglu, Johnson, and Robinson paper

8. Democracy

• Banerjee and Duflo, chapter 10.

• Acemoglu and Robinson, chapter 4.


• Bjorkman, Martina, and Jakob Svensson (2009), Power to the People: Evidence from a Randomized Field Experiment on Community-Based Monitoring in Uganda, Quarterly Journal of Economics, 124 (2), pp. 735-769.

• Wantchekon, Leonard (2003), Clientelism and Voting Behavior: Evidence from a Field Experiment in Benin, World Politics, 55, pp. 399-422.

• Practical class: Bjorkman and Svensson paper
9. Corruption

- Banerjee and Duflo, chapter 10.
- Besley, chapter 2.
- *Practical class: Olken paper*

10. Curses

- Banerjee and Duflo, chapter 10.

• Practical class: Habyarimana, Humphreys, Posner, and Weinstein paper

11. Conflict

• Banerjee and Duflo, chapter 10.


• Jones, Benjamin F. and Benjamin A. Olken (2009), Hit or Miss. The Effect of Assassinations on Institutions and War, American Economic Journal: Macroeconomics, 1 (2), pp. 55-87.


• Practical class: Miguel, Satyanath, and Sergenti paper

12. Presentations of proposed interventions
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**Additional Readings from Syllabus**

Banerjee and Duflo The Economic Lives of the Poor
OUTLINE G

General introduction

Part 1: Two standard estimation methods for multiple regression models: OLS and MLE.

October 6, 2011: EXCEPTIONALLY, THE CLASS WILL TAKE PLACE FROM 5:00 PM TO 8:00 PM.

Lecture 1: Back to basics: OLS (Ordinary Least Squares) for continuous dependent variables.

Lecture 2: MLE (Maximum Likelihood Estimates) for limited dependent variables.


Part 2: Estimating causal/treatment effects.

Lecture 3: The Instrumental Variables approach.


See also:


Lecture 4: The Heckman procedure.


Lecture 5: The Regression Discontinuity design.

• Lecture 5 relies on the following methodological paper:


• Dataset (very similar to the one used in benchmark paper 2): here

• Problem set: here Translate

Introduce Classroom RCT Game here

Lecture 6: Randomized experiments, the gold standard of impact evaluation.

• Lecture 6 relies on the following methodological paper:


OUTLINE H

Objective: Health, education and income are used as key markers of development in a community. The objective of the course is to provide you an understanding of factors and characteristics that determine economic development in a community. In this course, the household is the major unit of analysis. We focus on areas of human capital (health and education) accumulation, poverty, program evaluation and microfinance. The papers used here use an empirical approach to understand development issues at the microeconomic level.

Reading list

The * readings are required readings, all of which will be available on blackboard.

1. Introduction to Development Economics

In this section, we will use microeconomic indicators of well being to measure country’s economic performance. These microeconomic indicators are constructed using household survey data from developing countries. There are no required readings for this introductory section. You can simply rely on class notes that will be posted on blackboard. In this section we will cover the following – (a) measures of well being constructed using micro level data and to understand the difference between macro and micro measures, (b) understand the living conditions of the poor around the world, and (c) understanding the role of human behavior in development problems.


2. Poverty

In this section we will learn to construct measures of poverty, most important indicator of well economic well being.


3. Program Evaluation

In this section, we will use empirical methods used by academicians and policy makers to assess the effectiveness of programs and policies such as the food for education policy, conditional cash transfer program, and nutrition supplement program.

There are two kinds of empirical frameworks – natural experiments and field experiments used to evaluate programs and policies.


4. Human Capital

Health and education are two important dimensions of human capital accumulation. Human capital is a significant determinant of growth and welfare. In this section, we are introduced to the different short-run and long-run measures of health and education among children and adults. We analyze how to identify the various determinants of health and educational outcomes that guide policy prescription.

4.1 Education


Returns to Education


4.2 Health


Returns to Good Health


5. Microfinance

In this topic we will learn about the key features of microfinance and how successful is it in improving welfare outcomes? What is the future of this very popular form of household finance?


