Development Economics as Taught in Developing Countries

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Abstract

This paper uses a combination of survey questions to instructors and data collected from course syllabi and examinations to examine how the subject of development economics is taught at the undergraduate and masters levels in developing countries, and benchmark this against undergraduate classes in the United States. The study finds that there is considerable heterogeneity in what is considered development economics: there is a narrow core of only a small set of topics such as growth theory, poverty and inequality, human capital, and institutions taught in at least half the classes, with substantial variation in other topics covered.

In developing countries, development economics is taught largely as a theoretical subject coupled with case studies, with few courses emphasizing data or empirical methods and findings. This approach contrasts with the approach taken in leading U.S. economics departments and with the evolution of development economics research. The analysis finds that country income per capita, the role of the state in the economy, the education level in the country, and the involvement of the instructor in research are associated with how close a course is to the frontier. The results suggest there are important gaps in how development economics is taught.

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Development Economics as Taught in Developing Countries[#]

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1. Introduction

The subject of development economics has evolved from a largely theoretic discipline focused on the process of economic transformation in developing countries to a multi-faceted field in which there may be no single big idea (Lindauer and Pritchett, 2002), but in which there is active debate about the role of macro versus micro approaches (e.g. Rodrik, 2008; Bardhan, 2013), and in which there is so much data and empirical work that there is debate as to whether there has been enough emphasis on theory (e.g. Mookherjee, 2005, Banerjee, 2005).

How is this state of the field reflected in what is taught as development economics in developing countries? The answer to this question is important for several reasons. First, the next generation of policy makers responsible for implementing key development policies are likely to have their views of what policies they should pursue heavily influenced by what they have been taught. Second, the answer is instructive about the ease at which ideas and knowledge flow from the research frontier, which is of more general interest for development. Third, what is taught as development economics around the world should be of interest to researchers producing development research, and to professors teaching the subject who may wish to benchmark their own courses against what is done elsewhere. Finally, it is important for determining the extent to which development economics education is meeting the key learning goals of economics education (Allgood et al, 2015).

We collected original data on what is taught as development economics and how it is taught through a combination of surveys of instructors and standardized coding and analysis of course syllabi and examinations.¹ We were able to collect this for 145 undergraduate courses in 54 developing countries, and 81 masters courses in 34 developing countries. We benchmark these courses against undergraduate development economics classes taught at top-20-ranked U.S. economics departments, and at a selection of other U.S. economics departments.

¹ We focus on development economics courses. In some countries the content of other economics classes such as macroeconomics, public finance, and labor economics may include applications of these topics to the home country or developing countries in general. Given the heavy reliance of many undergraduate classes on U.S.-produced textbooks and the emphasis on teaching the principles and methods of each subdiscipline at the introductory level, our sense is that this coverage is rather limited in many countries, but does occur more in Latin America, especially in the top economics programs in this region.

We begin with a stock-taking and examination of *what* is taught as development economics. We find the common shared topics to be reasonably narrow, with only four of the 22 topics enumerated being taught in at least half of all undergraduate courses in developing countries: growth theory, poverty and inequality, human capital, and institutions. Courses in top U.S. departments are much more likely to cover credit markets, risk and insurance, land markets, data analysis, and experimental methods than courses in developing countries, while the latter are more likely to cover dependency theory, the environment, and macroeconomic management. However, there is considerable heterogeneity in topic coverage, and using similarity indices we show that both undergraduate and masters development economics courses in developing countries are less similar to each other than are undergraduate courses in the U.S. Moreover, the average developing country undergraduate course only overlaps with 23 percent of the course content with courses offered in top U.S. schools. We also note that there are important topics such as entrepreneurship, firm growth, and international migration that are rarely covered in either developing country or U.S. classes.

Next we examine *how* development economics is taught. We find development economics is taught as a more abstract and theoretical subject in developing countries than in the U.S. with much less emphasis on empirics. This is true in terms of topics, where more of the syllabi is devoted to concepts and models and less to empirical findings in developing countries. It is also true in terms of assessment, where developing country classes largely rely on written exams, essays, and presentations, and very rarely require students to use statistical software or answer exam questions that require interpreting or manipulating economic data. This lack of emphasis on empirical work is also true in masters courses in developing countries, and in U.S. economics departments outside the top-20 compared to those in the top-20. There is also a large difference in the materials used for teaching: developing countries and non-top U.S. courses are more likely to be based around the textbook of Todaro and Smith (2014), first published in 1993 and now in its twelfth edition, while top programs are more likely to use the empirically-focused book of Banerjee and Duflo (2011), and the theory-based book of Ray (1998) supplemented by journal articles and blog posts.

Finally we try to answer *why* these differences occur, by considering the extent to which differences in what is taught and how it is taught correlate with country and instructor characteristics. We find that courses are less like those in the top U.S. schools if they are taught in

poorer countries, countries with a higher share of government involvement in the economy, and in countries with lower overall education attainment. Instructors who are actively involved in research are more likely to have their courses closer to the global teaching frontier.

Taken together, we believe the evidence suggests that many development economics courses taught in developing countries over-emphasize theory and descriptive analysis of the economy at the expense of teaching students how to interpret and use data, and do not instruct students on many of the most important recent topics of research inquiry. We conclude with suggestions for approaches instructors can take to better meet the learning goals of an undergraduate economics education.

2. Development economics as a subject

We begin with a brief summary of how the field of development economics has evolved over time, then examine how it is conceptualized in leading undergraduate textbooks, and then discuss what the main learning objectives of undergraduate economics education are. Our goal here is not to be comprehensive, but to highlight key features that we consider important for interpreting the way the field is taught today.

2.1 The Evolution of Development Economics as a Field

Development economics is seen by many to have arisen as a separate field in the 1940s and 1950s with the work of Rosenstein-Rodan, Kuznets, Myrdal, Lewis, and Hirschman (Lewis, 1984; Krugman, 1994). The focus was on theoretical descriptions of the development process and causes of underdevelopment, with debate about the appropriate policies for development planning. The increasing emphasis on formalization of theoretical models and the inability of models at the time to deal with market failures and incomplete markets led to increasing isolation of the field of development economics from the rest of the profession, with Lewis (1984) going so far as to describe development economics as being “in the doldrums”. Alternative theories of underdevelopment such as dependency theory also became popular in Latin America during this time.

However, during the 1980s theoretical developments in mainstream economics that incorporated imperfect competition, coordination failures, endogenous growth and incomplete markets brought development economics closer to the rest of the profession, and a large range of theoretical work

took place such as bringing theoretical ideas of asymmetric information and contracting to explain the range of agricultural institutions in developing countries (Mookherjee, 2005). Empirical work was still relatively limited, but the increasing availability of data at the macroeconomic level allowed for more description of the development process.

The state of the field at the time of the first *Handbook of Development Economics* published in 1988 was then one dominated by theoretical work on the process of development and the features of markets and institutions in developing countries, coupled with descriptive empirical work around the processes associated with the transformation from a poor, rural society to a more diversified, urbanized economy (Chenery and Srinivasan, 1988).

The last two decades have seen development economics become increasingly empirical in focus, with first the greater availability of computing power and micro data sets, and then the increasing involvement of researchers in collecting their own data leading to a rapid growth in empirical research. In 2005 this led Mookherjee (2005) to ask whether the pendulum had swung too much away from theory, resulting in an active debate in a symposium (Kanbur, 2005; Banerjee 2005; Bardhan, 2005; Basu, 2005; Mookherjee, 2005). However, empirical work on the topic has continued to dominate research, with Rodrik and Rosenzweig (2010) noting in the preface to the fifth *Handbook of Development Economics* that getting cause-and-effect right has become a central focus of research in development, with randomized controlled trials a key part of this.

As well as a change in focus between theory and empirics, the field of development has also evolved in terms of the topics studied. Economic growth and poverty reduction are central aims of development, and there has been a long body of work on how to conceptualize and measure them. Banerjee (2005) notes that many of the topics are familiar ones that were the same topics being debated 25 years earlier: education, health, credit, technology, land, (internal) migration. However, Rodrik and Rosenzweig (2010) also note a broadening of the field in the areas of institutions, governance and politics; and the fifth volume of the *Handbook* series also includes chapters on topics such as international migration, financial globalization, the environment, and industrial policy. Many of these newer topics are still considered under-researched relative to traditional topics.² Another more recent area of focus also includes the importance of behavioral factors in

² <http://blogs.worldbank.org/impactevaluations/what-are-the-under-researched-topics-in-development-according-to-young-faculty> [accessed October 19, 2015].

decision-making (e.g. World Bank, 2014), while the important topic of entrepreneurship has been relatively neglected (Naudé, 2013).

2.2 The View of Development Economics from Textbooks

Our surveys reveal that the three most widely-used textbooks for teaching development economics at the undergraduate and masters levels are Todaro and Smith's (2014) *Economic Development* (first published in 1993 and now in its twelfth edition), Ray's (1998) *Development Economics*, and Banerjee and Duflo's (2011) *Poor Economics*. These books differ substantially in their approach to the subject; their emphasis on theory, empirics, and stylized facts; the topics they cover (which we compare in Table 1); and the approach they take to student learning. This differs from the case of introductory and intermediate micro and macro-economics, in which Allgood et al. (2015) note that the choice of textbook is probably inconsequential for learning given the similarity of content.

2.2.1 Economic Development

Todaro and Smith (2014) define development economics as “the study of how economies are transformed from stagnation to growth and from low-income to high-income status, and overcome problems of absolute poverty”. They have the broadest topic coverage of the three textbooks, covering a number of macro, trade, and environmental issues not discussed in the other books. The teaching approach taken is a “problem- and policy-oriented” approach and relies heavily on case studies and stylized facts. Evidence here is presented largely as a set of motivating examples and facts with which to discuss a topic, rather than as explicit tests of specific models or hypotheses.

The structure of the text and review sections at the end of each chapter suggest a learning focus of attaining a general understanding of key topics together with rote-learning of definitions, with the questions for discussion and concepts for review at the end of each chapter asking students to give an account of the concepts seen and policies proposed in the preceding sections. Examples are questions like “Outline the range of major policy options for a developing country to alter and modify its size distribution of national income. Which policies do you believe are absolutely essential? Explain your answer.” “List and briefly describe the principal causes of high population growth in developing countries and the major consequences.” The book itself does not ask students to apply economic knowledge to an analysis of new problems, but gives students concepts they can use in doing so. There are no empirical exercises or attempts to develop data analysis skills. Theory is taught in general and graphical terms, with no equations.

2.2.2 Development Economics

Ray (1998) defines development economics as “the study of the economic transformation of developing countries”. Theories and models of economic growth, the link between inequality and development, the interconnection between the rural and urban sector, and labor markets and their implications for the development process, are hence among the topics covered in this text. The emphasis is strongly on theory, with the author stating that many economic problems and phenomena observed in developing countries can be traced back to a small set of common internal features of these countries. Specifically he advocates the study of theories of incomplete information, of incentives, and of strategic behavior to understand these common issues, and examines theories of the functioning of key factor markets in developing countries. With this emphasis on internal structural factors, Ray (1998) also distances himself from a view that advocates the notion that the problems of developing countries depend on their position in the international environment and on the interrelation with other actors therein. Although some international topics, such as international trade and trade policy, do appear, they are certainly not treated at the center stage in this text.

The book is taught at the most advanced analytical level of the three, but is still targeted at undergraduate students. The use of mathematics is largely kept to chapter appendices, with graphs used to demonstrate many of the models. Exercises at the end of each chapter test students on a broad range of levels, including questions that ask them to show the understanding of the theoretical models in the chapter, to apply the concepts learned to the analysis of an economic problem and to apply basic knowledge of empirical analysis. Although the ability of students to manipulate and analyze economic data is clearly not the aim of this textbook, a basic understanding of empirical analysis is tested in some of the review questions and elementary statistical methods are presented in the Appendix.

2.2.3 Poor Economics

The most recent book of the three is Banerjee and Duflo (2011), which differs from the other two in focusing less on what makes *poor countries* different than what makes the *the poor* different. This book is written for a more general audience, but is also recommended by the authors for teaching development economics, and is accompanied by a website that includes lecture materials,

assignment questions, and sample essays.³ The main departure from other texts in this area is the focus on asking concrete, ‘small’ questions and answering them based on rigorous evidence, largely coming from impact evaluations. Consequently, the topics covered in the book include topics well suited to asking these concrete sets of questions and specific interventions, such as transfer schemes, behavioral nudges and other such interventions. As can be seen in Table 1, readers will not find any discussion of topics dealing with economic development and growth, industrial development policy, or country experiences in lowering poverty – with this lack of focus on some big issues in development drawing the attention of critical reviewers (e.g. Ravallion, 2012; and Rosenzweig, 2012).

The emphasis is micro in nature and based on recent empirical evidence, with poverty traps and behavioral factors key recurring themes. While the book itself contains only very few graphs and no equations or regression tables, the corresponding assignments available online are analytically more demanding. The authors favor a combination of essay type questions and data analysis exercises, which require student to showcase their understanding of economic knowledge, to interpret and evaluate economic data and knowledge, and to apply economic knowledge to an analysis of an economic problem. For instance an example of an essay question they give is: “Why do you think the attendance of medical staff is so low in rural health clinics in India, and how do you think the problem could be resolved?” Empirical exercises require students to use statistical software to analyze microdata and interpret the results.

2.3 What Should Undergraduate Development Economics Education Achieve?

Education in development economics typically forms part of an undergraduate degree program in economics. Allgood et al. (2015) describe the undergraduate economics education as presenting a tree-like structure, starting with introductory courses which teach the necessary principles, analytical methods and quantitative skills, and followed by sub-disciplinary fields, representing the branches of the tree, which give students the opportunity to extend their knowledge and to apply the core theoretical principles and quantitative approaches from introductory courses. A key goal is to get students to “think like an economist” by “using deductive reasoning in conjunction with parsimonious models to help understand economic phenomena”. They highlight six key

³ www.pooreconomics.com

learning proficiencies that should arise from undergraduate economics education: (1) access existing economics knowledge; (2) display understanding of economic knowledge; (3) interpret and evaluate economic knowledge; (4) interpret and manipulate economic data; (5) apply economic knowledge to an analysis of an economic problem; and, (6) create new economic knowledge.

Taking these proficiencies as the goal also of development economics education, what is taught and how it is taught can then be related back to the extent to which students are then able to perform these tasks. Doing so requires that students have knowledge of a range of key topics, an understanding of theory, and the ability to be critical readers and users of data analysis.

2.4 Implications

Based on the above, we should expect undergraduate development economics courses that are closest to the frontier in the profession to have a stronger focus on empirical methods and interpretation of data, along with applied theory, rather than a study of development as stylized facts, case-studies and descriptive patterns. They should include more of the more recent topics, and test and assess students in a way that allows them to demonstrate the proficiencies outlined above.

3. Data Collection

We collected data on development economics courses via two sources: an online survey of instructors, and collection of course syllabi. We gathered information on both undergraduate and masters level development economics classes in developing countries. A comparison of the content of the undergraduate and masters level courses provides one way of seeing whether the education level of the students is a key factor in determining what is taught.

3.1 Online Survey

Our initial approach was to field an online survey directed at instructors of development economics classes, asking questions on the range of development economics classes offered at their institution, their background and on the specific development economics courses they teach. The online survey was available in English and French. For the identification of the relevant institutions we relied on the economics departments listed in the *Index of Economics Departments, Institutes and Research Centers in the World* provided by Repec. Whenever Repec provided a ranking of

the top 25% institutions in a country, we contacted these institutions. Otherwise, and in cases in which there were only very few teaching departments among the top 25% institutions, we contacted all teaching departments listed by Repec. However, a difficulty here was then the identification of the relevant persons to be contacted for the survey. Ideally we wanted to directly contact the instructors of development economics courses and so we searched the websites of economics departments for relevant information on classes offered, faculty staff teaching development economics and their contact details. But many websites of universities in developing countries do not provide the information needed for this purpose or are not working properly and so we sometimes had to rely on general email addresses or general phone contacts of the economics departments.

Based on this identification, from April to June 2015, we sent out electronic survey invitations to 550 faculty members of economics departments in developing countries. In addition, we advertised the survey on the development impact blog and incentivized participation through the possibility of winning gift cards for an online retail outlet. With a total of 70 responses, and not all of them being complete, the response rate was very low (12.73%).

3.2 Collecting Course Syllabi

As a reaction to this low response rate, in June 2015 we decided to modify the data collection and started to ask directly for the syllabi of any development economics courses offered, as well as to search the faculty websites for syllabi which were available online. We then coded the syllabi up in the same categories asked by the online survey on the course content, and a few additional ones. In addition to the information provided by Repec and further web searches, for the identification of relevant institutions and instructors we also relied on the help of staff from a number of World Bank country offices as well as other contacts in different countries and regions. Although we still referred to the survey and provided the link to it when asking for the syllabi, we made clear that the primary interest was the syllabus. We also contacted again those faculties and instructors who already had received survey invitations. An additional 100 survey responses came from respondents using the web-link, and includes respondents who have been made aware of the survey via the blog post or other sources, as well as people we contacted for the syllabus. However, a number of these responses were incomplete and could not be used for the analysis.

Overall, more than 750 faculty members of economics departments in developing countries were contacted, covering all World regions: Latin America and the Caribbean, Sub-Saharan Africa, East Asia and Pacific, Europe and Central Asia, and South Asia. This way we were able to collect 171 development economics syllabi from developing countries and were able to extract information on 55 additional development economics courses offered in developing countries from the survey responses. Overall this provides information on 145 undergraduate courses in 54 developing countries, and 81 masters courses in 34 developing countries. A list of the universities from which we obtained the information can be found in the Appendix.

Given the difficulties experienced in collecting information on development economics courses, the reader may be concerned about how representative this resulting sample is. We have two comments on this. The first is that given the lack of information on how development economics is taught around the world, the information we have collected is the best currently available. Second, to the extent that there is a bias from collecting data from the top quarter of universities within countries, and that there is selective responsiveness to our requests for data, we believe this bias will be towards sampling from the best courses taught in developing countries. Therefore any gaps identified are likely to be lower bounds for the extent of these gaps in developing country courses overall.

In order to establish a benchmark against which to compare the courses taught in developing countries, we also asked departments and instructors in the United States for development economics syllabi, focusing only on the undergraduate level given the lack of terminal masters degrees in economics in the U.S. We obtained information on 33 courses, comprising of 16 courses from departments classified in the top-20 economics departments in Repec's rankings, and 17 courses from departments outside the top-20.

4. Results

This section uses the survey and syllabi data to provide a description of development economics as taught in developing countries, and a comparison of this with the content in top-20 and other U.S. undergraduate development classes. The next section will then examine different explanations for the differences which arise.

4.1 Topic Coverage

Table 2 compares the topic coverage of development economics classes at the undergraduate level in different regions of the world to the topics covered in top-20 U.S. courses, and to the topic coverage in non-top-20 U.S. departments, and to masters level classes in developing countries. The topics are sorted in descending order by frequency of coverage in the joint sample of developing countries' undergraduate courses.

If we define the 'core' as those topics taught in at least 50 percent of the courses, then we see the core is a very narrow subset in developing countries, consisting of theories and models of economic growth, measuring poverty and inequality, institutions and corruption, and human capital. The core is broader in top-20 departments, comprising of eight topics. Comparing developing country to top-20 undergraduate courses, we see developing country courses are significantly less likely to cover institutions, human capital, credit markets, land markets, risk and insurance, impact evaluation, and data analysis; and significantly more likely to cover models of economic growth, dependency theory, the role of the state, the environment, and macroeconomic management. These differences are also apparent when comparing masters level classes in developing countries to U.S. undergraduate classes in the top-20, with little difference in topic emphasis between the undergraduate and masters classes taught in developing countries. Non top-20 U.S. departments appear closer in topic emphasis to developing countries than do top-20 departments.

A comparison of the topics by region shows a lot of commonalities in topic coverage relative to the top-20 U.S. schools, with there being a general tendency for developing country courses in all regions to focus more on macro issues and less on micro issues and empirics than is the case in the top-20 U.S. schools. Nevertheless, we do see some topic emphasis that seems consistent with some features of the different economies and their historic experience: classes in East Asia are more likely to focus on the role of the state, agricultural transformation, urbanization, and environmental issues; classes in Sub-Saharan Africa and in the Middle East and North Africa more on the role of aid and dependency theory, and classes in Latin America more on dependency theory.

In order to further assess the extent to which there exists a development economics 'core' of topics, we computed Jaccard binary similarity coefficients. For any pair of development economics courses i and j , the Jaccard coefficient gives us the overlap they share in the different topics, when at least one of the two courses covers this topic:

$$J_{i,j} = \frac{a_{11}}{a_{11} + a_{10} + a_{01}}$$

With a_{11} : Total number of topics covered in both courses i and j ,
 a_{10} : Total number of topics covered in course i but not in course j , and
 a_{01} : Total number of topics not covered in course i but in course j .

We then computed the average over these pairwise similarity indices within regions, for developing countries as a whole, and for the U.S. departments. They can be found in the last row of Table 2. The results show that the undergraduate development economics courses in developing countries are less similar, in terms of topics covered, than the courses taught in the United States, both in the top 20 U.S. economics departments and in the remaining departments. Whereas the overlap for developing countries is 24 percent at the undergraduate level and 22 at the graduate level, it is 38 percent for the top U.S. schools. The similarity indices are higher on average within MENA, EAP, and ECA for which we have small samples, with the topic coverage particularly diverse in Sub-Saharan Africa in which only 18 percent of the topics overlap on average.

We also used the Jaccard similarity measure to examine the distance to the research frontier by assessing the overlap between each development economics course offered in a developing country with each of the 16 courses offered in the top-20 U.S. economic departments. On average, undergraduate development economics courses taught in developing countries have an overlap in terms of topics of 23 percent with the courses offered in the top U.S. schools. The course with the highest overlap, achieves on average an overlap of about 50 percent with the syllabi of the top U.S. schools, while the course with the lowest overlap on average has an overlap of only 1 percent with the top U.S. schools.⁴

4.2 Emphasis on Theory and Empirics

⁴ The course with the highest overlap has on average a Jaccard measure with a course offered at one of the top 20 U.S. economic departments of 0.4974 and is offered at the Pontificia Universidad Javeriana in Colombia. The course with the lowest average overlap has a mean Jaccard measure with the top 20 U.S. economic departments' courses of 0.0104 and is offered at the University of Cape Coast in Ghana.

We asked the survey respondents what percentage of the class they devote to theory and models, empirical methods, and empirics, including empirical findings and stylized facts. We also coded the syllabi we received accordingly. Table 3 summarizes the results. We see that both undergraduate and masters level classes in developing countries devote a larger share of the course to teaching theoretical concepts and models than is the case in both top-20 U.S. and other U.S. departments. In contrast, they devote much less time to empirical methods, with this comprising of only 8 to 9 percent of the content on average in developing countries, compared with 23 percent in top-20 departments. They also devote less time to empirical findings and data.

4.3 Teaching Material Used

Table 4 compares the key source materials used for the different classes. We see that most classes use a textbook, with 94 percent of developing country undergraduate classes using one and 81 percent of undergraduate development classes in top-20 U.S. departments using a textbook. Only 18 percent of developing country classes use content from news sources like the Economist, or the Financial Times, which expose students to current economic issues. We then examine the use of two journals which aim to summarize current research in an easy-to-read format: the Journal of Economic Perspectives (JEP) and the World Bank Research Observer (WBRO). We see top-20 U.S. departments are more likely to use the JEP than developing country courses, while usage of the WBRO is low overall. Developing country courses are less likely to use both older and newer research articles in class, and working papers than top-20 departments, although use them at a similar rate to U.S. departments outside the top-20. They are also less likely to direct students to blog posts, but are equally likely to use reports and documents from international organizations, such as the World Bank's World Development Report or the United Nations Human Development Report.

Overall these results show developing country courses to be much more reliant on textbooks than courses in top-20 departments, and to expose students less to both current news debates and to recent research findings. We then examine which textbooks are used in more detail in Table 5. This lists the textbooks identified by at least 10 percent of courses. Todaro and Smith (2014) is the most used textbook in undergraduate classes in developing countries, and in non-top-20 U.S. courses, but is used in none of the top-20 U.S. economics departments for which we have syllabi. Across 110 courses in developing countries, 43 percent use Todaro and Smith. The only region

where it is not the most used is Latin America and the Caribbean, where 18 percent of courses use it compared to 48 percent using Ray (1998). Ray is the most used textbook in top-20 programs. Although masters-level classes in developing countries are less likely to use Todaro and Smith than undergraduate courses, it is still used in 28 percent of masters courses, and the other alternatives are not used any more than they are at the undergraduate level.

The more recent book of Banerjee and Duflo (2011) is only used in 11 percent of undergraduate development courses and 15 percent of masters courses, compared to 44 percent of top-20 courses and 35 percent of non-top-20 U.S. courses. Top-20 departments are also much more likely to use chapters from a set of 28 essays on development topics edited by Banerjee et al. (2006).

4.4 Methods for Assessing Student Performance

Table 6 details the different methods used by instructors to assess student performance. Most undergraduate classes require students to pass a written exam, with this the case for 81 percent of classes in developing countries and 94 percent in top-20 U.S. schools. One-quarter or less of classes give credit for class attendance, homework assignments using theory and models from class, essays, or empirical projects. The main difference that then arises is that top-20 U.S. departments are much more likely to give homework assignments requiring the use of statistical software (56 percent, versus 9 percent in undergraduate developing country courses, 6 percent in non-top-20 departments, and 18 percent in masters level programs in developing countries). Developing country courses are more likely to require class presentations, with this being particularly the case for masters level courses.

In order to examine the types of knowledge tested, we also asked instructors in developing countries for recent examinations and homework assignments. Many instructors were reluctant to share these, in part because they use the same or similar assignments in multiple years. We were able to obtain these for 21 courses at the undergraduate level and 21 at the masters level, and code the questions according to the extent to which they test the key learning goals of undergraduate economics education outlined in Section 2.3. As regards potential selective responsiveness to our requests for recent examinations and homework assignments, we observe that this bias might again be towards sampling from the courses which are best taught in developing countries: About 57 percent of the examinations and homework assignments come from institutions that are among the top 25 percent of each developing country and only 26 percent come from institutions that are not

among the top 25 percent, according to Repec.⁵ Moreover, the undergraduate courses for which we have detailed information on methods used for assessing students' performance are, on average, more similar to the leading U.S. economics departments in terms of topics covered using our Jaccard coefficients.

Table 7 describes the extent to which these exams test the different learning goals. Only in rare cases do single exam or assignment questions test only one of the five proficiencies in isolation. Nevertheless, for illustrative purposes, for each of the five learning objectives we provide examples of questions that fall more heavily into the relevant category (the Appendix contains even further example of exam questions for each of the five learning objectives and highlights the wide range of possible questions even within the same category). Not surprisingly, almost all classes aim at exposing students to existing knowledge in development economics, and require students to display understanding of economic knowledge. Questions that require students to know key concepts and definitions fall into this first category, such as: "Describe the theory of Demographic Transition", while understanding of concepts is asked through getting students to explain their answers or perform simple calculations such as "How quickly will a country growing at 2% a year double its income?" The ability of students to interpret and evaluate economic knowledge is tested in 86 percent of the courses assessed. Questions addressing this proficiency for example ask them to compare different theories or evaluate them such as in this example: "To what extent does Rosenstein Rodan's "big push" theory of development explain Zimbabwe's current development challenges?"

Only 62 percent of the undergraduate courses and 67 percent of the masters courses ask students to apply their knowledge to analyzing an economic problem. This is assessed through exam questions like:

"Suppose that, for example in India, a minimum wage is instituted in the modern sector above the market clearing wage, while the rural traditional wage is market determined at a lower level than in the modern sector.

- (a) Describe the impact of this policy on the rural labor force, urban unemployment, and the rural wage.

⁵ The remaining 17 percent of examinations and homework assignments come from countries where there are fewer than 4 institutions listed with scores, so that no ranking exists.

- (b) Will the modern sector wage be equal to the traditional sector wage after markets equilibrate through migration? Explain.
- (c) What effect might the introduction of factories to rural areas have on the equilibrium you described in part (b)?”

This proficiency is also tested through essay questions and presentations. For instance, in one course students were asked to write a group essay according to the following guidelines on the scope and topic: “Developing countries are currently dealing with a large flow of migrants from rural to urban areas. Discuss the pros and cons of internal migration. What shall the government do (or not do) in response to this migration? Highlight the pros and cons of different policies.”

Finally, and in line with the findings of the previous sections, by far the smallest proportion of courses asks students to interpret and manipulate economic data. And although at the undergraduate level almost 30 percent of the courses assess this proficiency, there is still wide variation in the type of data and manipulation asked. For instance, exam questions like the following fall in this category: “The table below indicates the incomes of 20 individuals in the Nkoranza district in Ghana. i) Copy and complete the table by filling in the Quintiles and Deciles. ii) Estimate the Kuznets ratios from both the Quintiles and Deciles. iii) Explain the meaning of the Kuznets ratios estimated and comment on them.” But also questions related to impact evaluation, requiring the knowledge of more sophisticated statistical and econometric methods, aim at this proficiency, such as for instance: “Explain three different empirical techniques which may be used to study wage differentials in labor economics, and highlight the advantages and disadvantages of each of these techniques.”

4.5 Summary

The above sections provide a consistent view of how development economics as taught in developing countries differs from the approach taken in top-20 U.S. programs. We see an emphasis on more macroeconomic topics and less coverage of micro topics and of some of the newer areas of research focus (with an exception being more attention to climate and the environment in developing country courses). Developing country classes rely largely on textbooks that do not emphasize the role of empirics and data interpretation and analysis, and this is reflected in both the lower share of class-time devoted to empirical findings, and in a lack of testing of the ability of students to interpret and use economic data. The change in the research field of development

economics over the past two decades is therefore not that reflected in the content of classes taught in developing countries.

One potential critique is to query whether we should think of the teaching of top-U.S. schools as best practice, versus instead seeing developing country instructors as tailoring their courses to be more relevant to the key questions facing their countries and to the learning styles of their students. We have three responses to this. First, while we agree that it is far from clear that the topic coverage in top U.S. courses is ideal, with some key topics under-covered, the topic coverage of top U.S. courses does reflect better the ideas, lessons and methods of recent development research. Second, for the large part it does not seem that developing country instructors are carefully tailoring their content to the most pressing policy questions affecting the countries in which they teach, but rather just following a selection of chapters of Todaro and Smith (2014). Third, and most importantly, even if one can argue about topic choice and the level at which the courses can be taught in developing countries versus at the top U.S. economics departments, based on the key learning objectives of an undergraduate education, we believe that the lack of attention to data and empirical findings in developing country courses is a deficiency.

5. Why do we see these differences?

We consider several possible explanations for the differences in the way undergraduate development economics is conceptualized and taught in developing countries compared to the top-20 U.S. schools. A first potential explanation is that less-developed countries are further behind the technological frontier, and so are less likely to be covering topics of current research. Figure 1 shows the correlation between the average Jaccard similarity score of the topics covered by courses with the log of per-capita GNI (in PPP terms).⁶ We see a positive and statistically significant correlation, with richer developing countries having more similar topic choices to the top-20 U.S. programs than poorer developing countries. We then turn to seeing whether this correlation persists after controlling for other potential explanations.

A second potential explanation for a difference in topic emphasis lies in the differing approach to the role of the state in development in different countries. Courses in countries in which the government plays a more active role in the economy may be more likely to emphasize topics of

⁶ Data from the World Development Indicators.

development planning and macro topics than is the case in the top-20 U.S. programs. We control for government expenditure as a percentage of GDP to allow for this possibility.

A third potential explanation is that the difference reflects differences in the educational level of the students. We have seen that there are few differences between masters level and undergraduate level classes in terms of topics in developing countries, suggesting this might not be so important. Nevertheless, we control for the average years of tertiary schooling for individuals aged 15 and above as a proxy for schooling achievement in the country.⁷

A final difference lies in differences in the backgrounds of the instructors, and how close they are to the research frontier.⁸ As a proxy for whether the course instructor is an active researcher, we consider whether they have a Google Scholar profile. The instructor is not listed for a number of classes, which can often reflect that it is taught by non-regular faculty who are unlikely to be researchers. We therefore also create a variable for no instructor listed.

We then examine the correlates of being more similar in topic coverage to the top-20 U.S. schools by means of the following regression for undergraduate course i in developing country j :

$$Similarity_{i,j} = a + b * \log GDP_j + c * GovtExp_j + d * Educ_j + f * GoogleScholar_{i,j} + e$$

Where the standard errors are clustered at the country level.

The first column of Table 8 reports the results. We see that courses in countries with higher levels of per-capita income are more similar to those offered in top-20 U.S. departments, while courses in countries with more involvement of the state in the economy are less similar. Instructors who are more research active also are more likely to cover topics closer to those in top-20 departments, while courses without an instructor listed (and for which the instructor is less likely to be a researcher) are further from the frontier. The general tertiary attainment level in the country is positively correlated with similarity to the top programs, but this is not statistically significant. The R^2 of 0.33 shows that just a few correlates account for a sizeable share of the variation in topic choice across classes.

⁷ This data is taken from the World Bank education statistics, and is the Barro-Lee measure. We also attempted to use PISA test scores but they were not available for most of the developing countries in our sample.

⁸ Ideally it would be useful to correlate the age and place of PhD of these instructors with their course content, but we were unable to collect this information for the majority of our sample.

The remaining columns of Table 8 then examine the extent to which these same variables are correlated with other clear differences of developing courses from top-20 courses. Column 2 considers the share of the course devoted to empirical topics. We see that these same variables have much less explanatory power for this outcome, with the only significant variable being having the instructor not listed for the course (which is associated with less focus on empirical topics). Column 3 looks at the adoption of the Banerjee and Duflo (2011) book. This is more prevalent in countries with higher overall tertiary education attainment, and less prevalent in more state-dominated economies. Column 4 looks at use of the Todaro and Smith (2014) book which is not used in top-20 U.S. courses. We see that it is less likely to be used in richer countries. Finally column 5 considers whether students are required to do homework that uses statistical software. This is again more prevalent in countries with higher levels of overall tertiary attainment, but conditional on this, less prevalent in richer countries.

The survey data allow us to examine one additional aspect of why development economics is taught as it is. One might hypothesize whether language is a barrier to teaching more modern materials to students, if recent research and resources are only in English. However, we find that 60 percent of the courses are taught in English, and 88 percent of the instructors surveyed say that availability of materials in the right language is not a constraint. Of course if these instructors were to seek out more empirically-oriented material they may then run across this constraint, but given the prevalence of courses in top universities in developing countries which are taught in English, we do not believe language is likely to be the principal barrier.

6. Conclusions and Suggestions for What Instructors Should Be Changing

The field of development economics has changed dramatically over the past 20 years. This is reflected in changes in the topics that command most research attention, and particularly in the rapid growth in data availability and empirical analysis. Our survey of how development economics is being taught in developing countries suggests that many classes have not kept pace with this change, and are not meeting key student learning goals of teaching students to be critical users and analyzers of data to answer economic questions. This is particularly the case in poorer developing countries, and countries with relatively low levels of overall tertiary attainment.

We hope that this paper may provide some guidance for instructors in developing countries seeking to learn how the subject is taught in other countries. In addition, we have the following concrete

suggestions for improving the teaching of development economics in developing countries, and to help students with the proficiencies of being critical readers and users of data, and creators of new knowledge:

- i) Take advantage of the availability of macro and micro data to have students do basic data analysis for their home countries. This could involve calculating poverty rates, plotting Lorenz curves, or estimating simple regressions that do not require complicated statistical knowledge. Free statistical packages like R, and simple calculations built into the sheets of Google Docs mean that such calculations can be carried out without requiring students to have licenses for expensive software.
- ii) Given the growing emphasis on experiential learning and teamwork, have students work in teams to collect and analyze basic data about their home country. This could include, for example, visiting local marketplaces to attempt to understand how small shops compete with one another, collecting wage data from spot labor markets during different weeks of the class to see how stable wage labor is, or visiting firms to learn how they hedge against exchange rate risk. More ambitiously, one could develop small panel surveys by having each new intake of classes return to the same settings year after year in order to build up rich knowledge of how the local economy works. This appears to be very rarely done, although one class in Guatemala had a weekend visit to a rural community to apply the concepts learned in class.
- iii) Assign students readings from current newspapers, blogs, or magazines in order that they can apply what they are learning to current economic debate in their country.
- iv) Consider using textbooks that emphasize more the use and interpretation of data and/or supplement these textbooks with content that does this.
- v) Consider ways to better share what is taught across instructors. Our analysis found very few syllabi were on the web. One noteworthy exception was a repository of Brazilian development economics syllabi collected by the Brazilian Network of

Development Economics Education.⁹ Regional economics associations could potentially play a role in helping instructors share learning materials.

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⁹ <http://www.ufrgs.br/redesenv/programas>.

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Figure 1: Countries with Higher Per-Capita Income Are More Similar to top-20 U.S. Schools in Topics Covered

Note: regression best fit line shown. Slope is 0.039, p-value is 0.010. Similarity to top-20 U.S. schools of a course in a developing country is assessed as the average over the Jaccard similarity coefficient of this course with each of the 16 courses offered in the top-20 U.S. economics departments.

Table 1. Topics covered in leading development economics textbooks

Topics	Ray – Development Economics	Todaro and Smith – Economic Development	Banerjee and Duflo – Poor Economics
(Measuring) poverty and inequality	+++	+++	
Theories and models of economic growth and development	+++	+++	
Dependency theory		+	
Population growth, fertility, demographic transition	++	++	++
Human capital, incl. health and education	+	++	+++
Agricultural transformation, rural development		++	
Entrepreneurship, social entrepreneurship			++
Urbanization, rural-urban migration	++	++	+
Behavioral economics and development			+
Environment and development, incl. climate change		++	
International migration, incl. remittances			
The role of the State		++	
The role of institutions, incl. corruption	+	+	++
Firm growth, industrial development	+		
The role of aid		+	+
International trade and trade policy	+++	++	
Macroeconomic management		++	
Land markets	++		
Labor markets	++		+
Credit markets, incl. microcredit	++	+	++
Risk, insurance	++		++
Data analysis, incl. the use of relevant statistical software	+ ¹⁰		

¹⁰ Elementary statistical methods are presented in the Appendix.

Experimental and quasi-
experimental methods for impact
evaluation/ policy evaluation

+

-
- +: Less than one chapter is dedicated to the topic.
 - + +: One chapter is dedicated to the topic.
 - + + +: More than one chapter is dedicated to the topic.

Table 2. Proportions of courses at the undergraduate and masters level covering different development economics topics by regions

	Undergraduate level						Masters level			
	LAC	SSA	MENA	EAP	ECA	SA	All developing countries	Top 20 US economics departments	Non-Top US economics departments	All developing countries
Theories and models of economic growth and development	0.852***	0.771**	1.000***	0.889**	0.917***	0.688	0.834***	0.438	0.765*	0.728**
(Measuring) Poverty and inequality	0.607	0.543	0.667	1.000**	0.750	0.750	0.648	0.563	0.824	0.580
The role of institutions, incl. corruption	0.492***	0.371***	0.889	0.889	0.833	0.563*	0.559**	0.875	0.882	0.593**
Human capital, incl. health and education	0.541**	0.457**	0.556	0.778	0.583	0.625	0.545**	0.813	0.765	0.519**
Population growth, fertility, demographic transition	0.410	0.400	0.556	0.778	0.583	0.438	0.448	0.625	0.647	0.444
The role of the State	0.230	0.429**	0.556**	0.778***	0.417*	0.375	0.372**	0.125	0.471**	0.259
International trade and trade policy	0.246	0.457	0.556	0.556	0.500	0.375	0.366	0.250	0.118	0.383
Agricultural transformation, rural development	0.197	0.457	0.333	0.778**	0.333	0.375	0.338	0.313	0.294	0.321
Urbanization, rural-urban migration	0.213	0.371*	0.333	0.667***	0.250	0.500**	0.324	0.125	0.353	0.321
Dependency theory ¹	0.380***	0.278**	0.500***	0.000	0.167	0.182*	0.304**	0.000	0.083	0.196*
Labor markets	0.213	0.229	0.222	0.556**	0.083	0.625***	0.276	0.125	0.059	0.309
Environment and development, incl. climate change	0.230	0.229	0.111	0.667***	0.417**	0.250	0.269*	0.063	0.412**	0.235
The role of aid	0.082	0.457*	0.556*	0.444	0.333	0.188	0.262	0.188	0.412	0.235

Credit markets	0.230***	0.086***	0.333**	0.444*	0.250***	0.438**	0.248***	0.813	0.588	0.358***
Macroeconomic management	0.098	0.371***	0.333**	0.333**	0.250**	0.438***	0.248**	0.000	0.176*	0.259**
Firm growth, industrial development	0.164	0.171	0.556*	0.444	0.333	0.250	0.234	0.188	0.118	0.198
Land markets	0.115***	0.143**	0.000**	0.667	0.167	0.500	0.200**	0.438	0.059**	0.222*
International migration, incl. remittances	0.082	0.229	0.444**	0.333*	0.333*	0.188	0.193	0.063	0.176	0.210
Risk, insurance	0.148***	0.057***	0.111**	0.333	0.167**	0.125***	0.138***	0.625	0.294*	0.185***
Experimental and quasi-experimental methods for impact/policy evaluation	0.098***	0.029***	0.000***	0.333	0.167**	0.125***	0.097***	0.563	0.294	0.136***
Data analysis incl. the use of relevant statistical software	0.066***	0.057***	0.111**	0.333	0.083***	0.063***	0.083***	0.563	0.059***	0.099***
Entrepreneurship, social entrepreneurship	0.016**	0.029	0.222	0.111	0.167	0.000	0.062	0.125	0.059	0.099
Average Jaccard binary similarity coefficient	0.262	0.182	0.417	0.361	0.317	0.284	0.238	0.375	0.372	0.224
#countries	17	14	5	4	9	4	54	1	1	34
#courses	61	35	9	9	12	16	145	16	17	81

*, **, *** indicate statistically different from non-top 20 U.S. economics departments at the 10, 5 and 1 percent level respectively.

¹ Data only from syllabi, not from survey responses.

Table 3. Average proportion of undergraduate and masters level courses devoted to ...

	Undergraduate level									Masters level
	LAC	SSA	MENA	EAP	ECA	SA	All developing countries	Top 20 US economics departments	Non-Top US economics departments	All developing countries
Theory and models	0.373**	0.383**	0.406***	0.389**	0.368**	0.338	0.374**	0.211	0.212	0.357**
Empirical methods	0.062***	0.083***	0.112*	0.103***	0.076***	0.091***	0.076***	0.231	0.101***	0.091***
Empirics (findings, stylized facts)	0.199***	0.146***	0.183***	0.194***	0.095***	0.227**	0.179***	0.375	0.311	0.232**
# countries	17	14	5	4	9	4	53	1	1	33
# courses	60	34	9	9	12	16	140	14	17	79

*, **, *** indicate statistically different from non-top 20 U.S. economics departments at the 10, 5 and 1 percent level respectively.

Table 4. Material used in undergraduate and masters level courses

	Undergraduate level									Masters level
	LAC	SSA	MENA	EAP	ECA	SA	All developing countries	Top 20 US economics departments	Non-Top US economics departments	All developing countries
Textbooks	0.948*	0.867	0.889	1.000	1.000	1.000*	0.940*	0.813	1.000*	0.875
Stories from The Economist, Financial Times, or other news sources	0.153	0.100*	0.333	0.222	0.333	0.214	0.176	0.313	0.471	0.125*
Journal of Economic Perspectives articles	0.373*	0.100***	0.222*	0.556	0.167**	0.357	0.287***	0.625	0.235**	0.412
World Bank Research Observer articles	0.119	0.167	0.222	0.222	0.167	0.071	0.140	0.188	0.059	0.213
Classic articles in	0.593	0.267***	0.444	0.222***	0.250***	0.500	0.441**	0.750	0.294***	0.563

development (published in journals before 2005)										
Recent articles published in journals	0.356***	0.300***	0.333**	0.556	0.250***	0.500	0.368***	0.750	0.294***	0.463**
Number of published journal articles ¹	10.686*	1.353***	3.667**	5.000*	1.400***	5.100**	6.869***	19.267	3.786***	14.083
Working papers and other unpublished research output (mimeos) ¹	0.491	0.118***	0.000***	0.400	0.300*	0.500	0.376**	0.667	0.333*	0.383**
Reports and documents from international organization such as the United Nations, the World Bank, IADB, ADB, governments or NGOs etc. ¹	0.528	0.176	0.167	0.200	0.300	1.000***	0.455	0.333	0.400	0.383
Blog posts ¹	0.019*	0.000	0.000	0.000	0.000	0.100	0.020**	0.133	0.067	0.000***
Online data sources, such as for instance the World Development Indicators, World Bank microdata catalogue, Penn World Tables ¹	0.057	0.118	0.000	0.000	0.100	0.200	0.079	0.067	0.267	0.033
# countries	16	14	5	4	9	3	52	1	1	33
# courses	59	30	9	9	12	14	136	16	17	80

***, ** indicate statistically different from non-top 20 U.S. economics departments at the 10, 5 and 1 percent level respectively.

¹ Data only from syllabi, not from survey responses.

Table 5. Proportion of undergraduate and masters level courses using the following textbooks (Cond. on using textbooks)

	Undergraduate level						Masters level			
	LAC	SSA	MENA	EAP	ECA	SA	All developing countries	Top 20 US economics departments	Non-Top US economics departments	All developing countries
Michael Todaro and Stephen Smith - Economic Development	0.180*	0.629***	0.556***	0.778***	0.583***	0.500***	0.428***	0.000	0.471***	0.284**
Debraj Ray - Development Economics	0.475	0.229***	0.222*	0.444	0.250*	0.500	0.379*	0.625	0.176***	0.395*
Abhijit Banerjee and Esther Duflo - Poor Economics	0.148**	0.057***	0.000**	0.222	0.083**	0.063**	0.110***	0.438	0.353	0.148***
Perkins et al. - Economics of Development	0.018	0.348***	0.167	0.000	0.100	0.083	0.108	0.000	0.133	0.082
Banerjee, Benabou and Mookherjee - Understanding Poverty	0.066***	0.029***	0.000**	0.000**	0.083**	0.438	0.090***	0.438	0.059**	0.086***
William Easterly - The Elusive Quest for Growth	0.098	0.057	0.000	0.111	0.167	0.000*	0.076	0.188	0.118	0.062*
#countries	17	14	5	4	9	4	54	1	1	34
#courses	55	22	6	5	10	12	110	15	15	61

*, **, *** indicate statistically different from non-top 20 US economics departments at the 10, 5 and 1 percent level respectively.

Table 6. Proportion of undergraduate and masters level courses using the following methods for assessing students' performance

	LAC	SSA	MENA	EAP	Undergraduate level		All developing countries	Top 20 US economics departments	Non-Top US economics departments	Masters level
					ECA	SA				All developing countries
Class attendance	0.151	0.071	0.778***	0.556	0.500	0.308	0.260	0.250	0.125	0.295
Homework Assignments that require students to use theory and models from class	0.057**	0.393	0.778***	0.222	0.250	0.154	0.220	0.250	0.125	0.295
Homework Assignments that require students to use statistical software	0.038***	0.071***	0.111**	0.111**	0.167**	0.154**	0.087***	0.563	0.063***	0.180***
Written exam	0.736*	0.857	0.889	1.000	0.917	0.769	0.811	0.938	0.875	0.689**
Essay(s)	0.245	0.250	0.444	0.333	0.333	0.077	0.260	0.188	0.250	0.246
Empirical project	0.019**	0.214	0.111	0.111	0.167	0.154	0.102	0.188	0.000*	0.148
Presentation	0.302	0.286	0.444*	0.444*	0.667***	0.154	0.339*	0.125	0.250	0.639***
Other type of assessment	0.642	0.286***	0.222**	0.556	0.500	0.538	0.488	0.688	0.813	0.590
# countries	15	14	5	4	9	4	52	1	1	31
# courses	53	28	9	9	12	13	127	16	16	61

*, **, *** indicate statistically different from non-top 20 US economics departments at the 10, 5 and 1 percent level respectively.

Table 7. Proportion of undergraduate and masters level courses in developing countries pursuing the different learning goals

Learning objective	Undergraduate level	Masters level
Access existing economics knowledge	1.000	0.952
Display understanding of economic knowledge	0.952	0.810
Interpret and evaluate economic knowledge	0.857	0.857
Apply economic knowledge to an analysis of an economic problem	0.619	0.667
Interpret and manipulate economic data	0.286	0.238
#countries	17	12
#courses	21	21

Table 8. Correlates of Being More Like the top-20 U.S. Schools

	Similarity in Topics	Share of Course to Empirics	Use Poor Economics	Use Todaro and Smith	Homework requires using statistical software
Log Per Capita Income (PPP)	0.044*** (0.015)	-0.013 (0.017)	0.272 (0.173)	-0.592** (0.234)	-0.581** (0.227)
Mean Years of Tertiary Education of Population 15+	0.026 (0.041)	0.022 (0.045)	2.844*** (1.043)	0.992 (0.679)	2.489*** (0.811)
Gov't Expenditure % of GDP	-0.004*** (0.001)	-0.001 (0.001)	-0.102*** (0.030)	0.012 (0.017)	0.003 (0.017)
Instructor has Google Scholar Profile	0.054** (0.026)	-0.016 (0.040)	0.171 (0.664)	-0.171 (0.394)	0.420 (0.557)
Instructor not listed for Course	-0.089** (0.033)	-0.070*** (0.019)	-0.413 (0.514)	-1.144** (0.470)	-0.590 (0.482)
R-squared or Pseudo-R-squared	0.33	0.13	0.01	0.12	0.04
Sample Size	91	81	92	92	92

Notes:

Robust standard errors in parentheses, clustered at the country level.

*, **, and *** indicate significance at the 10, 5, and 1 percent levels respectively.

Columns 1 and 2 are OLS regression coefficients, Columns 3, 4 and 5 marginal effects from probit estimation.

Appendix

List of Universities

East Asia and Pacific

Cambodia	Royal University of Phnom Penh
China	Fudan University Peking University Renmin University of China University of Nottingham Xi'an Jiaotong - Liverpool University Center for Economic Development Research of Wuhan University
Philippines	De La Salle University University of the Philippines
Vietnam	Ho Chi Minh City University of Economics Institute of Public Policy Management (IPPM)

Europe and Central Asia

Albania	Epoka University European University of Tirana
Azerbaijan	ADA University Khazar University
Bosnia and Herzegovina	University of Sarajevo
Bulgaria	American University in Bulgaria
Croatia	University of Split University of Zagreb
Georgia	International Black Sea University
Hungary	Central European University Corvinus University
Kosovo	University of Pristina
Kyrgyz Republic	American University of Central Asia Kyrgyzstan-Turkey Manas University
Montenegro	University of Montenegro
Romania	Babes-Bolyai University
Turkey	Kos University
Ukraine	Kyiv School of Economics
Uzbekistan	Westminster International University in Tashkent

Latin America and the Caribbean

Argentina	Universidad Nacional de Buenos Aires (UBA) Universidad Nacional de Tucumán Universidad Nacional del Sur Universidad Torcuato Di Tella Universidad de San Andrés
Bolivia	Universidad Catolica Boliviana Universidad Mayor de San Andrés Universidad Mayor de San Simón
Brazil	Unicamp

	Escola de Economia de São Paulo (EESP), Fundação Getulio Vargas
	FGV/EPGE - Fundação Getulio Vargas
	Inspira - Instituto de Ensino e Pesquisa
	Pontifícia Universidade Católica do Rio de Janeiro
	UNIFAL
	Universidade Estadual de Campinas
	Universidade Federal Fluminense
	Universidade Federal de Juiz de Fora
	Universidade Federal de Minas Gerais
	Universidade Federal de Santa Catarina
	Universidade Federal do Paraná (UFPR)
	Universidade Federal do Rio de Janeiro (UFRJ)
	Universidade de Brasília
	Universidade de São Paulo
Chile	Pontifícia Universidad Católica de Chile
	Universidad Alberto Hurtado
	Universidad de Concepción
Colombia	Pontifícia Universidad Javeriana
	Universidad EAFIT
	Universidad Externado de Colombia
	Universidad ICESI
	Universidad Tecnológica de Bolívar
	Universidad de Antioquia
	Universidad de los Andes
	Universidad del Norte
	Universidad del Valle
Costa Rica	Universidad de Costa Rica
Dominican Republic	Pontifícia Universidad Católica Madre y Maestra
Ecuador	Pontifícia Universidad Católica del Ecuador
	Universidad de las Americas
El Salvador	Universidad Centroamericana
	Universidad de El Salvador
Guatemala	Universidad Centroamericana
	Universidad de El Salvador
Jamaica	University of the West Indies
Mexico	Centro de Investigación y Docencia Económicas (CIDE)
	Instituto Tecnológico Autónomo de México (ITAM)
	Universidad Nacional Autónoma de México
	Universidad Nacional Autónoma de Nueva Leon
	Universidad de Guadalajara
	Universidad de Guanajuato
Nicaragua	Universidad Nacional Autónoma de Nicaragua-Léon
Panama	Universidad de Panama
Peru	Universidad de Piura
	Universidad del Pacifico
Uruguay	Universidad de la República
Middle East and North Africa	
Egypt	American University in Cairo

	Kafr Elsheikh University
	The British University in Egypt
Iran	University of Mazandaran
Iraq	Baghdad University
	Salah el Deen
Jordan	The Hashemite University
	University of Jordan
	Yarmouk University
Lebanon	American University of Beirut
Palestine	An Najah National University
South Asia	
India	Centre for Development Studies (CDS)
	Indira Gandhi Institute Of Development Economics (IGIDIR)
	Jadavpur University
	Jawaharlal Nehru University
	North-Eastern Hill University
	Pondicherry University
	Shiv Nadar University
	Symbiosis School of Economics
	University of Burdwan
	University of Calcutta
	University of Delhi
	University of Madras
	University of Mumbai
Nepal	Tribhuvan University
Pakistan	Lahore School of Economics
	Lahore University of Management Sciences
	University of Sargodha
Sri Lanka	University of Peradeniya
Sub-Saharan Africa	
Burkina Faso	Unite de formation et de recherche en sciences economiques et de gestion
Benin	Ecole Nationale d'Economie Applique et de Management (ENEAM-UAC)
Congo (DRC)	Universite Catholique de Bukavu
Ethiopia	Addis Ababa University
	Haramaya University
	Hawassa University
Ghana	Kwame Nkrumah University of Science and Technology (KNUST)
	University of Cape Coast
	University of Ghana
Kenya	Maseno University
Lesotho	National University of Lesotho
Namibia	University of Namibia
Nigeria	Bayero University Kano
	Obafemi Awolowo University
	University of Uyo
Senegal	Universite Gaston Berger

South Africa	Stellenbosch University University of Pretoria
Togo	Universite de Lome
Uganda	Makerere University
Zimbabwe	Bindura University of Science Education Great Zimbabwe University University of Zimbabwe
United States	Arizona State University Boston University Brown University Florida International University Georgia Institute of Technology Harvard University Iowa State University Massachusetts Institute of Technology Michigan State University Northwestern University Oberlin College Princeton University Rutgers University Stanford University Texas A & M University University of California, Berkeley University of California, Los Angeles University of California, San Diego University of Delaware University of Kentucky University of Maryland University of Michigan University of Notre Dame University of Oregon University of Texas, Austin University of Utah University of Wisconsin Yale University

Examples of exam questions and corresponding learning objectives

(1) Access existing economics knowledge

Example 1:

“During the 1950s most developing countries had an inward orientation. What were some of the main ingredients of development strategies which were based on import substitution at that time and why was import substitution discredited in the following decade?”

Example 2 (Multiple choice question):

“The Human Development Index is a combination of measures of

- A. Unemployment, GDP, Inflation.
- B. Education, Health, GNI.
- C. Education, GDP, Inequality.
- D. GNI, Poverty, Pollution.”

Example 3 (Words Matching):

“Match the following key terms with its definitions. Notice that there are more definitions than words. Write your answers in the boxes provided.

No.	Key terms	Definitions
1	Diminishing marginal product to capital	A. The process through which the economy increases the amount of capital per worker, k . Economies in which workers have access to machines, computers, trucks, and other equipment have a stronger base than economy with less machinery. These economies are able to produce more output per worker, y .
2	Constant returns to scale	B. A doubling of capital, labor, and other factors of production leads to more than a doubling in output. Thus, the impact of more investment in factors of production would be large than what other kinds of returns to scale suggest.
3	Productivity	C. The effectiveness with which factors of production are converted into outputs. If factors of production, representing the tools used, are controlled for, then the difference in outputs of any two economies might be attributable to it.
4	Efficiency	D. The degree to which two variables tend to move together. Two variables are positively correlated if high values of one tend to be associated with high values of the other. They are negatively correlated if high values of one variable tend to be associated with low values of the other. It also indicates causality.
5	Growth accounting	E. A doubling of capital, labor, and other factors of production leads to a doubling in outputs.

6	Capital deepening	F. It measures both the amount of labor and its effectiveness in the production process. An increase in technology or labor increases its effectiveness and therefore raises aggregate production.
7	Effective units of labor	G. A doubling of capital, labor, and other factors of production leads to a lower than a doubling in outputs.
8	Technology	H. An effectiveness with which factors of production and technology are combined to produce outputs. In other words, it is an umbrella concept used to capture anything that accounts for differences in productivity other than differences in technology.
9	Increasing returns to scale	I. Its progress has led to improvement in productivity in many countries. For example, the U.S. spends billions of dollars on it just to stay ahead of other countries and to boost production.
10	Development accounting	J. A situation in which an additional capital would lead to a slower increase in outputs when other factors of production and efficiency are held fixed. In other words, output would increase at a decreasing rate when more and more capital is added.
		K. An approach to derive the effectiveness of production when every other factors of production have been taken into account. It is something called Solow residual.
		L. An increase in capital stock just keeps pace with the expanding labor force and depreciation.
		M. An approach to derive the effectiveness of production that breaks down differences in income into the part that is accounted for by differences in productivity and the part accounted for by differences in factor accumulation.

Write your answers here

1	2	3	4	5	6	7	8	9	10

“

(2) Display understanding of economic knowledge

Example 1:

“Draw an environmental Kuznets curve and explain why it might occur.”

Example 2:

“‘Governments can never go bankrupt. So lending to them is always a wise idea. They can always repay.’ Using the concepts of involuntary and strategic default, examine this statement carefully.”

Example 3:

“Consider an economy whose production function is given by $Y = AK^\alpha L^{1-\alpha}$, where Y is output, A is the level of technological knowledge, K is the capital stock, L is the labor force (these three factors of production are always fully utilized in production) and $0 < \alpha < 1$ is a parameter. Gross aggregate investment, I , is determined as in the Solow growth model (i.e, aggregate saving is converted into gross aggregate investment). Moreover, the rate of depreciation of the capital stock is equal to zero, the growth rate of the labor force, n , is exogenous (and constant), and the level of technological knowledge is given by $A = K$.

- [a] Solve for the growth rate of the capital stock, $g_K = \hat{K} = \dot{K}/K$, in terms of K , L and parameters of the model.
- [b] Solve for the growth rate of output, $g_Y = \hat{Y} = \dot{Y}/Y$, in terms of g_K and n . What condition about the growth rate of the labor force has to be satisfied to ensure that the growth rate of per capita output (which is given by $g_y = \hat{y} = \dot{y}/y$, where $y = Y/L$) in the long-run equilibrium (steady state) is positive?
- [c] Redo the previous item [b] assuming that the level of technological knowledge is given by $A = K/L$.
- [d] Compare the results obtained in items [b] and [c] in terms of the condition which has to be satisfied. Do these results differ in some way from each other? Justify your answer using economic reasoning.”

(3) Interpret and evaluate economic knowledge

Example 1:

“Easterly discusses two political economy models in his article, ‘Pakistan, a case of growth without development’. What are these models and, in your opinion, are these applicable in the context of Pakistan?”

Example 2:

“Name three differences you consider fundamental between dependency theorists (neo-Marxists) and the theory of Marx, in analyzing the developing countries.”

Example 3:

“The convergence hypothesis states that poorer economies' per capita incomes will tend to grow at faster rates than richer economies. However, according to Moses Abramovitz the fact that a country is poor does not guarantee that catch-up growth will be achieved. Discuss your view points.”

(4) Interpret and manipulate economic data

Example 1:

“Consider the following production function on an agricultural farm (in a developing country setting)

$$Y = Af(k_1, k_2, k_3, \dots, k_n) = Ak_1^{\alpha_1} k_2^{\alpha_2} \dots k_n^{\alpha_n}$$

Here Y is agricultural yield in Kg/hectare and $k_1, k_2, k_3, \dots, k_n$ are inputs into agriculture such as labour, fertilizers, pesticides, capital intensity (access to irrigation, farm equipment etc.), farm size.

Suppose you have access to yields and physical inputs for a cross section of farms in the GB Nagar district.

1. From the above production function write down an econometric model that you can estimate using the survey data at hand.
2. Suppose you include farm size (in hectare) as an explanatory variable in the regression. Given the readings and discussion in class what is your prior belief about the sign of the coefficient on it (i.e the sign of the elasticity of yields with respect to farm size). Justify your claim.
3. Does the econometric model you wrote in part (1) give you causal estimates of the various elasticities? If not then give two omitted variables that might bias the results. Justify your claim.
4. After encountering this problem you look at the data again and notice something strange about land ownership patterns - some individuals in the data own non-contiguous pieces of farmland. Can you use this information to alleviate the problem that you mentioned in part (3) above? How?”

Example 2:

“Assume the following imaginary (does not necessarily reflect the reality) mobility matrix:

		2014				
		(1)	(2)	(3)	(3)	(5)
1980	(1)	50%	30%	20%		
	(2)	10%	50%	40%		
	(3)		10%	60%	30%	
	(3)			10%	70%	20%
	(5)				10%	90%

where the following categories are used:

- (1) income less than a quarter of the world average,
- (2) income between a quarter and half the world average,
- (3) income between half the world average and the world average,
- (4) income between the world average and twice the world average,

(5) income exceeding twice the world average .

Based on this mobility matrix we can conclude that:

- A. On average poor countries grew faster than middle income countries.
- B. On average middle income countries grew faster than poor countries.
- C. Rich countries did not change their relative position.
- D. There exists middle-income trap.
- E. There exists poor-income trap.”

Example 3:

“Using the information in the table below relating to indicators for two countries, Brazil and Mexico:

Indicators	Brazil	Mexico
GDP per capita (PPP US \$)	15,073.00	9,450.00
Life expectancy at birth (years)	49	74
Adult literacy rate (%)	84	100
Gross enrollment ratio (%)	58	88

HINT: the lowest ever registered per capita income is \$ 100.00 and the maximum expected per capita income in the coming years is \$40,000.00 while for life expectancy, the lowest ever registered life expectancy is 23 years and the highest registered life expectancy is 86 years.

(i) Calculate the following index numbers for each country:

- Life Expectancy Index [LEI]
- Adult Literacy Index [LI]
- Gross Enrollment Index [GEI]
- Income Index [II]
- Education Index [EI]
- Human Development Index [HDI]

(ii) Based on the values of HDI derived above, compare the two countries in terms of their level of development.”

(5) Apply economic knowledge to an analysis of an economic problem

Example 1:

“Full recovery of the Zimbabwean economy hinges much on enhancing agricultural productivity post land reform. What are some of the measures that the Zimbabwean government and its development partners should put in place in order to ensure that the latter is achieved?”

Example 2:

“Ray J. Barrell, Catherine Guillemineau, and Dawn Holland Barrell, economists at the National Institute of Social and Economic Research in the United Kingdom, studied the growth rates of Germany and the United Kingdom from 1993 to 2005. Prior to 1993, both countries grew at about the same rate. After 1993, the United Kingdom grew at an average annual rate of about 3%, while Germany’s growth rate fell to an average rate of 1.5%. The following table gives a summary of their results.

	Germany	United Kingdom
Total GDP growth	1.5%	3%
Labor growth	-0.8	0.8
Capital growth	1.2	0.4
Total factor productivity growth	1.1	1.9

Based on the table, discuss why the German economy grew more slowly after 1993 than did the British economy.

Source: Ray J. Barrell, Catherine Guillemineau, and Dawn Holland Barrell, “Decomposing Growth in France, Germany and the United Kingdom Using Growth Accounting and Production Function Approaches”, National Institute Economic Review, Vol. 199, No. 1, January 2007, pp. 99-113.”

Example 3:

Instead of an exam, and among other forms of assessments, students were asked to engage in a role play. This game was related to water resource management and a particular case study applying to the Central Asian region was chosen. In the roles of various community stakeholders, students discussed issues about effectively managing water resources for economic development to succeed from each stake-holders perspective.