Lynchburg College Pedagogical Experiment in Teaching Macroeconomic Principles: Teaching Macro Principles Using Handouts

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ABSTRACT

A critical concern for professors is how to engage students. This is of even greater concern when we realize that many students do not read the assigned textbooks for the course. In fact, some students see it as a badge of honor to complete college without having ever read an assigned book for class. Given that we rely heavily on books that many students do not use, how can we reach our students? To address this issue, a variety of teaching styles were implemented in various sections of Macroeconomics at Lynchburg College. We will discuss the implementation of a handouts-only approach to teaching Macroeconomics and compare the results of students' performance on a standardized economics test across various class sections that used other pedagogies. Based on the limited amount of data, we do not observe statistical differences in student performance based on pedagogy.

INTRODUCTION

Being a professor is often frustrating. You always want your students to learn more than they do, no matter how well or how poorly the class does. When we look back to our undergraduate days and use that as a guide to set up the pedagogy for our classes we make a critical mistake. After all, we became professors because we love to learn. But this is not necessarily true for the average student. Like you, we can remember spending time in the library working through textbooks and problems. We actually enjoyed it! It was a shock to find that many students avoid the textbook.

Roughly ten years ago in the last semester of the school year, Prinzinger had a senior Economics major come to his office for some help. At some point in the conversation the student said that he did not have a textbook for the course so Prinzinger lent him one. After the course was over he brought back the textbook and said, "Wow I did not realize how much a textbook could help with learning the material." "What do you mean?" Prinzinger asked. He said, "In my four years at college I never bought or even looked in a textbook." This got Prinzinger to asking some questions among the students and faculty. It turns out that among many students it is a badge of honor to pass a course and never buy the textbook. But more importantly, many students simply do not read the textbook. This explains the comment we get on teaching evaluations which is, "Does not use textbook." This is interesting since in class we tell them what pages to study before their exams. Why would they say this? We think it is

because they do not read the textbook at all and giving them the pages to study does not change that.

Back in 1993 Prinzinger was at an Economics and Finance meeting. He was attending a session on Economic History. It was a packed room of faculty from all over America. About a third of the way through the session, the presenter said that he had given up teaching and just showed movies because the students did not want to learn. Yes, of course, he was burned out after a very long teaching career, but it sparked a conversation in the room that was really interesting. There was a general consensus that, in the early 1990s, the students had changed. Before then students could be assigned a chapter in a textbook and they would study it for an exam and perform well on the exam even without class room instruction. Starting in the early 1990s this was no longer true. Now they need much more instruction since educators cannot depend on their students "studying" the text.

There are two big questions. One, what happened and two, what do we need to do about it? Although we do not know the answers, we can speculate on the first and try different approaches for the second. This paper is about trying a different approach to teaching Macroeconomics to compensate for not having students, on average, studying the textbook as intensely as was the case before the early 1990s.

BACKGROUND

Over the years we have thought back on the conversation in that Economic History session. We have asked other colleagues that have been teaching for a long time if they had experienced the same thing and if it had started occurring for them in the early 1990s. They always respond, "yes I have experienced the same thing with my students." The next question asked is, "Why do you think this has occurred?" Here there seems to be four different answers.

One: There has been a deterioration of reading skills because children spent time on computers instead of reading books (http://www.eurekalert.org/pub_releases/2011-05/uog-prs052311.php). Two: Student motivation has decreased. Three: Something has happened in students' previous educational experience that has lowered their study skills through time. And four: Students now see class more as a form of entertainment than as a part of the learning experience, i.e. "entertainion." Although many professors opine these ideas, we cannot find any of these documented. Yes there are discussions about study habits and motivation but there seems to be a lack of studies that have attempted to measure these over the years. Nevertheless if you talk to about any senior professor they likely express one or more of the above ideas.

HOW DO WE ADDRESS THIS PROBLEM?

How can we adapt our pedagogy to compensate for these changes in student ability? In our department we decided to try to eliminate the textbook in some of our classes and keep the textbook in other classes. We decided to experiment with different pedagogies and then compare the results to see what we could learn out of the different methods of teaching macroeconomic principles. This paper is an analysis of this experiment.

COURSE GOALS

Macroeconomic Relevancy

There were several things that were a priority to accomplish in this class. One was to show the students the relevancy of macroeconomics. How do you get an eighteen or nineteen year old students interested in changes to the money supply or levels of economic growth? To them this has little relevance to their immediate college life and few of them seem to be interested in things not related to THEIR college experience. To accomplish this task the Wall Street Journal was assigned. Yes, we know we have all tried this at some time in the past and the results are never what we had hoped that they would be. There appears to be two reasons for this. First is because we (the professors) think that when they read the Wall Street Journal, they can see it through the perspective of an experienced adult. In many ways our students still see themselves as people who are not the decision makers but people to be taken care of by the system. So reading the Wall Street Journal, which assumes that you are a decision maker, seems irrelevant and boring to them. Second, much of writings in the WSJ assume that you have both a historical perspective ("President Bush's first attempt at fixing the Clinton recession" is something they cannot relate to because they were small children at the time. Thus you have to explain to them the historical content) and an understanding of economic terms (there is no free lunch, supply side economics, or quotes from the Wealth of Nations). Therefore, it becomes necessary to take time (sometimes a lot of time) in class to bring the students "up to speed" before they can understand what is being written about. So articles were read to the students, and much time was devoted to explaining it to them in personal terms, terms a young college student could understand. Just how does having a decrease in the growth rate of the economy affect them? This approach is a very labor intensive task! But you can explain to them how their chances of getting a job decreases as the GDP growth rate falls (currently only half of college graduates are being employed. If you tell them that half of the students in the room will not be able to find work when they graduate they tend to get the message). When the idea was first conceived it was thought to be motivational as well as an educational task. It has turned out to be very informative about how much these young students know about what is going on around them. Although they can define terms like inflation and unemployment on our exams, students have little or no true understanding of what is actually implied by these terms in their personal life. Using the Wall Street Journal to engage them in the macroeconomic world is very time consuming, sometimes taking half or more of the class time. Of course that means less of the material that gets taught in the traditional course does not get covered. Is this tradeoff worth it?

Basic Excel Skills

The Board of Advisors to our business school have been telling us that a necessary skill to find employment after graduation is being able to use Excel at a high level. We have been told that some of the large financial companies give the student interviewing for a position an Excel test right on the spot. They give the student access to a computer and ask them to solve a problem using Excel which requires the use of a macro. This is often a make or break process where the applicant becomes disqualified on the spot if they are not able to accomplish the task. Because of this, a basic pedagogy was established to give them low level Excel skills (remember this is a sophomore class so basic skills are appropriate for this level student). Students were

required to compile data every week in an Excel spreadsheet and, using Excel, they had to graph each individual variable. This was graded and they had to hand it in every Friday. The basic idea was to accomplish a repetition of using basic Excel. This assignment worked out great. By picking variables which are used in Macroeconomic principles, such as inflation and the Fed funds rate, they already had some experience with these economic variables before we covered them in class. This made for much better discussion. By the end of the semester they knew how to gather financial data from the Wall Street Journal, how to do basic Excel data entry, and how to display data using Excel. It was surprising how many positive comments were made by the students on the course evaluation concerning the use of Excel.

Basic Macro Topics Covered

It is apparent that if so much time is being devoted to discussing current macroeconomic topics, then the amount of time for basic material coverage is decreased. The question we considered is "what are our students going to remember and use ten or twenty years from now in their professional and personal life?" To answer this we have talked with several of our Economic majors that have graduated more ten years ago. They really don't remember things like the difference between the tax multiplier and the expenditure multiplier. On the other hand they do remember that there is a Keynesian multiplier. Going through the material, we tried to sort out the basic material that students would remember from the material that they are most bound to forget. We have to admit that this was difficult. Much of the material that is the "in-depth" material is fun to teach. We don't think we purged enough. For example we probably left in too much material on inflating and deflating prices and, of course, the exchange rate section is very detailed.

The hardest decision was what to do about the Keynesian section. Do we use aggregate supply and demand or do we use the basic Keynesian cross model as our pedagogy? We thought that the basic Keynesian cross model got across the multiplier approach the best, and was sufficient to have the students understand fiscal policy. In this section we emphasized Keynes' MEI function since this models business expectations, changes to government regulation (expected and actual) and changes to taxes (expected and actual). This has turned out to work really well in discussing the current recovery. The MEI model is a good way to explain why businesses are holding such large cash reserves for future investment. As we will see latter, in terms of scoring well on the TUCE exam this was a mistake. The TUCE exam emphasizes aggregate demand and supply, not the basic Keynesian model.

All the basic definitional sections are there. Things like inflation, unemployment, money creation, and the structure of the Fed. These sections have also been trimmed to cover the basic material and not the details. Nevertheless, they still have to be able to calculate inflation, the rate of unemployment, and convert one currency into another currency using an exchange rate.

Finally, a section on incentive based macroeconomics was added. This section comes from two changes that are taking place in economics. One, many economists now believe that the best way to stimulate an economy is to build a better business environment. This is an environment where private property rights are predominate. The other reason is because of work done (mainly by Robert Barro, but by others as well) that indicate that the Keynesian multiplier even under the best of circumstances is less than one. If his research turns out to be validated by addition empirical work, then fiscal policy as now practiced will have to change to one of incentive based growth policy. Will this be the new macroeconomics ten years from now? We

don't know, but this debate has been growing and we think it is worth a week of class time to let the students understand the basic arguments.

Our colleagues tried a slightly different approach. They did not use handouts. In one class the standard textbook was used and in the other two classes, our colleagues did not use a textbook or any handouts. They did however use the aggregate supply and demand approach.

RESULTS

In the spring semester of 2012 our economics department offered five sections of macroeconomic principles taught by four professors. Four of these sections were taught without using a textbook and one of the sections was taught using a textbook. The assessment was done using TUCE.

TUCE stands for the Test of Understanding in College Economics (Walstand, p. 1). It is a standardized test for principles of economic courses. There is a separate test for macro principles and micro principles. TUCE was designed by the Committee on Economic Education of the American Economic Association and the National Council on Economic Education. The current version of TUCE is the fourth version and is used to norm results across colleges and universities (Walstand, p. 1).

The macro TUCE test is made up of six parts which are weighted differently. The six parts are: Measuring Aggregate Economic Performance; Aggregate Supply and Demand; Money and Financial Markets; Monetary and Fiscal Policy; Policy Debates; and International Economics. We chose to set up this course by emphasizing the basic Keynesian model (Keynesian cross model) whereas our colleagues decided to use the aggregate supply and demand model. This had effects on the outcome of the TUCE results since the TUCE exam emphasizes aggregate supply and demand (Walstand, p.3). TUCE Results are detailed in Appendix B

Looking at the TUCE results, we measured the difference between how LC students scored and how students nationwide scored. A plus sign indicates that LC students exceeded the nationwide norm as established by TUCE. A negative sign indicated that the LC students did worst that the national norm. Our measure of success was when the LC students exceeded that national average.

When looking at the TUCE results by category several things become apparent. In the category of "Measuring Aggregate Performance" there is no real difference between the section that used a textbook (Section B) and the other sections with the exception of Section E, the section that used the internet as the main focus did pretty good.

This is not true of the next section. Sections C and D used the handouts without using a textbook. However, the material covered in these sections emphasized the Keynesian T model and not aggregate demand and supply. Here sections A and E, both of which chose the aggregated demand and supply approach did much better. This may have been a measurement basis of TUCE. Although the aggregate supply and demand model and the Keynesian cross model are both ways of teaching the Keynesian model, TUCE by testing solely on aggregate supply and demand is not a good measure of how well students understand the Keynesian model if other pedagogies are used. It appears that is what has happened here.

In the category of "Money and Financial Markets" the section using the textbook outperformed all the other sections (although section A was close). This is interesting given that sections C and D are provided very comprehensive handouts on this material. These handouts

were posted on Moodle, LC's online course management system, but that should not have been a factor in the difference.

In the Monetary and Fiscal Policy section the results in all sections were weaker than any of us had hoped it would be. The best sections only scored fifty percent. However, section B (the section that used a textbook) scored worst than the others.

"Policy Debates and Application" had one section score 100% of LC students exceeding the national average. The lowest scoring section was the one using the textbook. It scored on 33% of the LC students exceeding the national average.

Finally the "International" section did not do well in sections C, D, and E. This is because in those classes, the semester ended before those courses got to cover international. Note that section A did have a perfect score.

ADDITIONAL ANALYSIS

In the spring semester of 2012 our economics offered five varieties of courses of macroeconomic principles. In Table B2, these sections are shown with the letters A, B, C, D, E. These sections are: section A (treatment 1) which used no textbook and no handouts in favor of lectures; section B (treatment 2) which used a traditional textbook; sections C and D (treatment 3) which used handouts; section E (treatment 4) which used the internet and no textbook or handouts. While we are interested in determining if our students performed better than the national average, we are also interested in determining whether or not a difference in pedagogy makes a difference in student outcomes.

Table 1 presents the average number of correct answers for all sections as well as by each section. EconMajor is a dummy variable that is equal to 1 if the student is declared as an Economics major or 0 otherwise. SOBE is a dummy variable that is equal to 1 if the student has declared a major in the School of Business and Economics or 0 otherwise. The section with the highest average is section 1 which did not use or textbook or a handout. The section with the lowest average is section 3 which used handouts but no textbook.

Table 1: TUCE Results Summary Statistics

Panel A: All Sections
N=115

	Mean	Median	Minimum	Maximum	Lower Quartile	Upper Quartile	Std.Dev.
# Correct Answers	13.39	13	4	30	10	16	4.40
EconMajor	0.10						0.31
SOBE	0.59						0.49

Panel B: Section A, Treatment 1 - no textbook and no handouts
N=27

	Mean	Median	Minimum	Maximum	Lower Quartile	Upper Quartile	Std.Dev.
# Correct Answers	15.07	16	7	20	12	18	3.83
EconMajor	0.11						0.32
SOBE	0.59						0.50

Panel C: Section B, treatment 2 - textbook
N=26

	Mean	Median	Minimum	Maximum	Lower Quartile	Upper Quartile	Std.Dev.
# Correct Answers	13.42	14	4	25	10	16	4.64
EconMajor	0.12						0.33
SOBE	0.54						0.51

Panel D: Sections C and D, treatment 3 - handouts and no textbook
N=46

	Mean	Median	Minimum	Maximum	Lower Quartile	Upper Quartile	Std.Dev.
# Correct Answers	12.22	12	7	30	9	14	4.26
EconMajor	0.13						0.34
SOBE	0.61						0.49

Panel E: Section E, treatment 4 - internet and no textbook
N=16

	Mean	Median	Minimum	Maximum	Lower Quartile	Upper Quartile	Std.Dev.
# Correct Answers	13.88	14	6	21	10	17	4.67
EconMajor	0.00						0.00
SOBE	0.63						0.50

Figure 1 is the histogram for number of correct responses for all class sections. Figure 2 shows the plots of number of correct answers for each treatment. Figure 3 displays the boxplots for number of correct answers by sections.

Figure 1: Histogram of Number of Correct Responses for all Class Sections

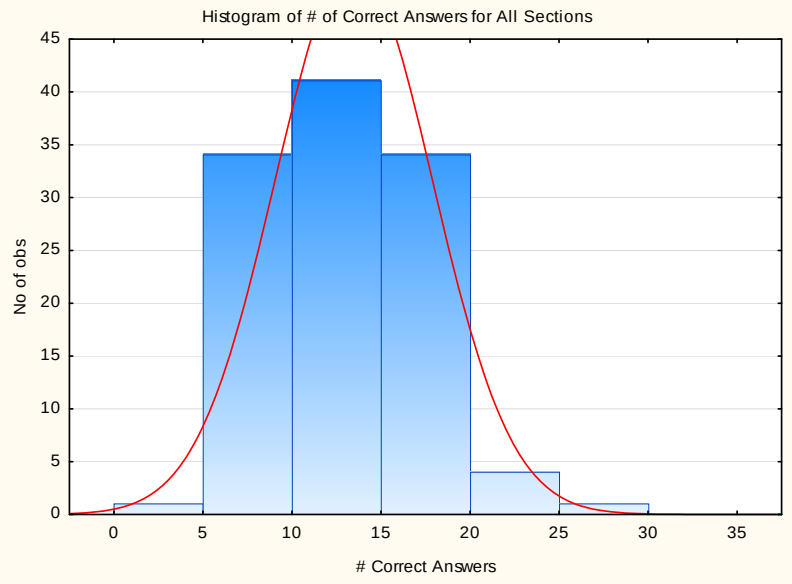


Figure 2: Plot of Number of Correct Answers by Treatment

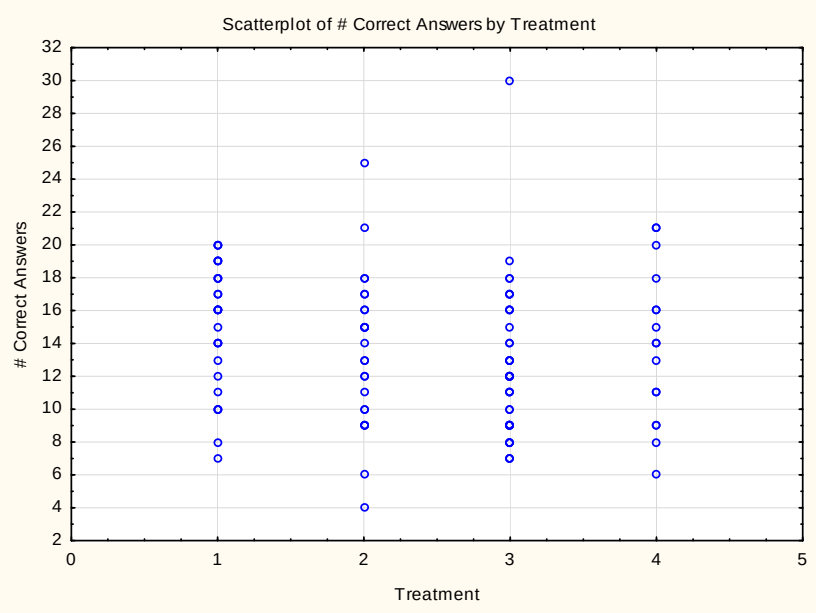
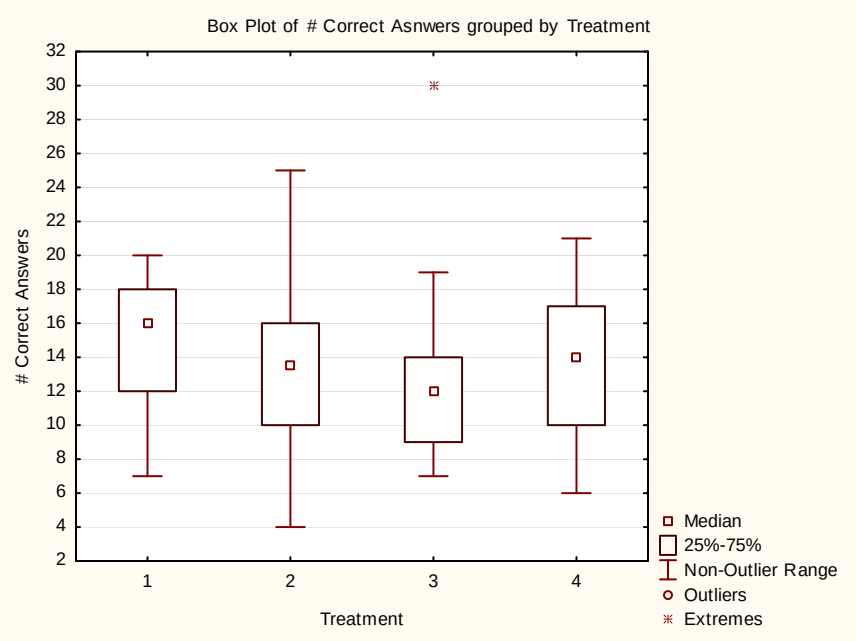


Figure 3: Box Plots by treatment



While, anecdotally, it appears that there are differences in the averages across sections, we wish to determine if there are statistical differences in overall TUCE performance across the four different pedagogies. To determine if there are differences across the classes, we run a simple ANOVA test. The results are presented in Table 2. The p-value of sections is 0.0577 which means that, at a 5% level of significance, we cannot reject the null hypothesis that there is no statistical difference in number of correct answers across the four sections.

Table 2: Fixed Effects ANOVA

	SS	Degr. of	MS	F	p
Intercept	18655.70	1	18655.70	1002.424	0.000000
Section	143.62	3	47.87	2.572	0.057717
Error	2065.77	111	18.61		

Limitations of this study include the fact that the sample size is fairly limited at this point. We hope to address this by applying these techniques in another semester and adding the results to the spring 2012 results. Another limitation is that this approach only determines whether or not there are differences in overall results. As mentioned earlier, TUCE tests six major concept areas. Future analysis will include determining whether or not there are statistical differences between the sections in terms of the six concept areas. For instance, does pedagogy affect student outcomes in the area of aggregate supply and demand or in the area of money and financial markets?

CONCLUSION

The class using the textbook did at least as well as the classes not using textbooks. In one of the two classes not using a textbook some of the scores increased compared the class using the textbook. However, the score differential is not enough to show that there was any correlation between classes that use textbooks and those that do not. The class that used handouts showed a lowered score on the whole than all the other classes. This is especially true in the area of aggregate supply and demand.

When using an ANOVA at the 5% significance level, there is no statistically significant difference between the class that used a textbook and those that did not. Likewise the two sections that replaced the textbook with handouts that were put on Moodle also showed no statically significant differences between any of the other sections as well. This is most interesting.

Could it be that some many students do not use their textbook or use it so inefficiently that it does not make a difference? The handouts used in two sections were designed to present the material at a lower reading level. Likewise they were designed to take less time to study than a textbook. Lowering the cost of studying the material should have meant that the students would read more of these and then would have done better on the TUCE test. They did not.

Could it be that students' major learning experience is only what takes place in the classroom? That textbooks and handouts are not effective in significantly increasing the depth of the knowledge beyond that classroom? Or could it be that our sample of students was not homogeneous? This is a real possibility. The LC administration would not share with us SAT scores or high school class standings per student. Given the small size of the classes, the results could have come from ability differences of the students. For example is it possible that the class using a textbook had a lower ability level than the other classes? What about TUCE? TUCE may not be an assessment tool that is good at making fine distinctions. Therefore the lack of difference may have been that TUCE is not capable of measuring the differences.

Nevertheless, these results are intriguing. Is the primary source of learning principles of economics the class room experience effected little by additional out of the classroom material? Further study needs to be done. Future studies should identify individual students by some ability determinants such as sat scores, their current college GPA and/or their high school

standing. This would give the control factors that would allow for a much cleaner statistical analysis of the results.

REFERENCES

Rosen, Monica. Poorer reading skills following changed computer habits of children. 2011. University of Gothenburg. <http://www.eurekalert.org/pub_releases/2011-05/uog-prs052311.php>.

Walstand, William, Watts, Michael, and Rebeck, Ken, Test of Understanding in College Economics. 2007. National Council on Economic Education.

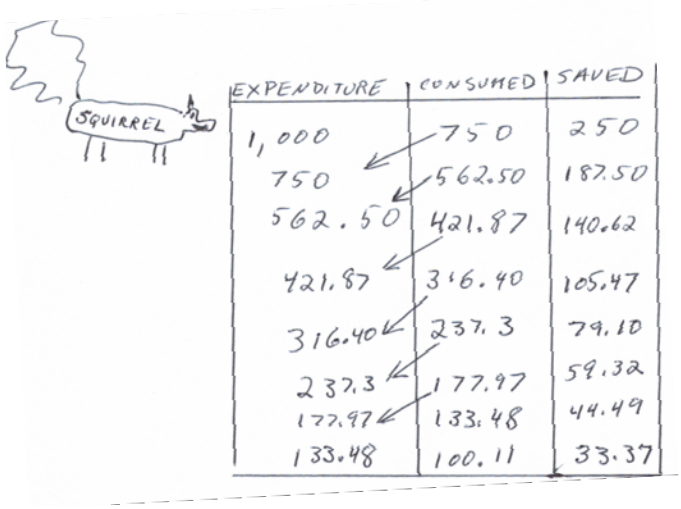
APPENDIX A: AN EXAMPLE HANDOUT

One of the more interesting and controversial parts of the Keynesian model is the multiplier. Think back to Dr. Porsche's description of the American economy in the middle of the great depression. There were thousands upon thousands of American factories shut down just waiting to start production and there millions upon millions of American workers who would do just about anything to get one of those jobs in those closed down factories. There was a huge disconnect in the American economy.

Suppose someone came to the owners of one of those factories and offered to buy the entire output from that factory. What would happen? The factory owner would open it up and would have to buy all the resources it would take to build product including all the employees needed to operate the factory. Once those employees were paid they would go out and buy stuff. This stuff would require more production in the economy and would require more workers to be hired. The additional workers would go out and buy stuff and … Could this go on until the economy is again up on the production possibilities curve? The answer is no. This process does occur over and over again but each time the power of the process becomes smaller. Here is how it works.

Suppose you have decided to go out on the dell and do some squirrel watching. All of a sudden a Canadian squirrel (he is here on vacation at LC) runs up to you and drops 10 one hundred dollar bills at your feet which he brought from Canada. The squirrel says, "Take this money and have a good day." He then runs away up into a tree. You are flabbergasted! You start thinking to yourself, "What am I going to do with all of this money?"

The answer lies back in the section where we discussed MPS and MPC. That is right you are going to consume some of it and you are going to save some of it. So now you think what would a squirrel do with all of this money? Obviously he would put some of it away for winter and he would consume the rest. So like a squirrel you take $250 and put it in your saving account (you squirrel it away). The remaining 750 dollars you spend. Those 750 dollars creates a little bit of aggregate demand ($750 dollars worth). So when you buy stuff (like nuts) with the money you create income for the people you buy the stuff from. They now find themselves with 750 dollars. They will spend some of it and they will save some of it. If the MPS is 25% (remember 1=MPC + MPS or 1 = .75 + .25) then they will save $187.50 (MPSx750) and they will spend $562.5 (MPCx750) of it. Let's look at this in a chart.



As we can see the squirrel gives you a $1,000. You save 250 dollars and you spend $750. The next step of the process is that the $750 goes to other people who spend $562.50 and save $187.50. Still the next step is that the $562.50 gets spent and out of that $421.87 gets spent and $140.62 gets saved. This process continues until finally all the money is saved (leaked out of the economy) and the amount of spending in total is $4,000. So how do I know that?

Well it is called the multiplier which is M=1 divided by the leakage (In this case the MPS). In this case the leakage is .25 so 1 over .25 is equal to four. Four times the initial increase in aggregate demand ($1,000) is equal to $4,000. So what is the lesson here? Well next time we elect a president to expand the economy maybe we should elect one of the LC squirrels since we are not allowed to elect a Canadian squirrel. ;>)

APPENDIX B: TUCE RESULTS

Table B1

ECONOMICS 202 - TUCE Exam Results, Spring 2008 - Spring 2012

National Average - 14.32%

Lynchburg College - 16.02%

Standard Deviation - 5.04

LC Performance Exceeds (+) Falls Short (-)

Question Type	Question #	National AVG	Spring 2012		Fall 2011		Spring 2011		Fall 2010		Spring 2010		Fall 2009		Spring 2009		Fall 2008		Spring 2008	
Measuring Aggregate Performance	1	53	39.1	-	40.8	-	41.8	-	0	0	45.0	-	0	0	48.2	-	42.2	-	45.8	-
Measuring Aggregate Performance	2	61	67	+	N/A	N/A	57.1	-	0	0	64.0	+	0	0	48.2	-	51.6	-	44.8	-
Measuring Aggregate Performance	11	59	62.6	+	62.4	+	61.5	+	0	0	72.0	+	0	0	25.9	-	61.3	+	68.7	+
Measuring Aggregate Performance	19	40	39.1	-	22.6	-	52.7	+	0	0	53.0	+	0	0	22.3	-	51.6	+	52.1	+
Aggregate Supply & Demand	4	46	30.4	-	33.3	-	41.8	-	0	0	44.0	-	0	0	11.8	-	61.3	+	37.5	0
Aggregate Supply & Demand	17	37	39.1	+	45.2	+	30.8	-	0	0	42.0	+	0	0	20.0	-	41.9	+	44.8	+
Aggregate Supply & Demand	3	69	71.3	+	64.5	-	64.8	-	0	0	71.0	+	0	0	15.3	-	67.7	-	71.2	+
Aggregate Supply & Demand	13	63	62.6	-	15	-	65.9	+	0	0	63.0	0	0	0	8.2	-	32.3	-	76.0	+
Aggregate Supply & Demand	14	48	43.5	-	44.1	-	42.9	-	0	0	46.0	-	0	0	24.7	-	61.3	+	59.4	+
Aggregate Supply & Demand	21	42	16.5	-	24.7	-	24.2	-	0	0	33.0	-	0	0	35.3	-	16.1	-	18.7	-
Aggregate Supply & Demand	23	36	30.4	-	36.6	+	36.3	+	0	0	42.0	+	0	0	23.5	-	42.0	+	29.2	-
Aggregate Supply & Demand	15	61	58.3	-	60.2	-	60.4	-	0	0	53.0	-	0	0	4.7	-	67.7	+	65.6	+
Aggregate Supply & Demand	20	60	67	+	71	+	71.4	+	0	0	77.0	+	0	0	55.3	-	90.3	+	70.8	+
Money & Financial Markets	5	59					58.2	-												
Money & Financial Markets	12	55					53.8	-												
Money & Financial Markets	16	38					44	+												
Money & Financial Markets	22	33					25.5	-												
Monetary & Fiscal Policies	8	50	62.6	+	70	+	69.2	+	0	0	51	+	0	0	21.2	-	58.1	+	71.9	+
Monetary & Fiscal Policies	17	37	39.1	+	45.2	+	30.8	-	0	0	42.0	+	0	0	20.0	-	41.9	+	44.8	+
Monetary & Fiscal Policies	6	47	37.4	-	20.4	-	34	-	0	0	53.0	+	0	0	16.5	-	41.9	-	53.1	+

Monetary & Fiscal Policies	7	60	64.3	+	3.2	-	69.2	+	0	0	67.0	+	0	0	15.3	-	71.0	+	68.7	+
Monetary & Fiscal Policies	18	45	34.8	-	10.7	-	28.6	-	0	0	29.0	-	0	0	18.2	-	29.0	-	44.0	-
Monetary & Fiscal Policies	23	36	30.4	-	36.6	+	36.3	+	0	0	42.0	+	0	0	23.2	-	42.0	+	44.8	+
Monetary & Fiscal Policies	20	60	67	+	71	+	71.4	+	0	0	77.0	+	0	0	55.3	-	90.3	+	70.8	+
Monetary & Fiscal Policies	24	33	39.1	+	31.2	-	33	0	0	0	39.0	+	0	0	34.1	+	32.2	-	45.8	+
Monetary & Fiscal Policies	25	60	53.9	-	21.5	-	53.8	-	0	0	50.0	-	0	0	16.5	-	58.1	-	65.6	+
Monetary & Fiscal Policies	27	33	17.4	-	26.9	-	25.3	-	0	0	21.0	-	0	0	32.9	-	32.2	-	41.7	+
Policy Debates & Application	9	33	41.7	+	31.2	-	37.4	+	0	0	38.0	+	0	0	25.9	-	61.3	+	54.2	+
Policy Debates & Application	10	41	47.8	+	41.9	+	40.6	-	0	0	43.0	+	0	0	10.6	-	35.5	-	33.3	-
Policy Debates & Application	26	31	24.3	-	37.6	+	38.5	+	0	0	25.0	-	0	0	27.0	-	48.4	+	38.5	+
International (Macro)	30	44	45.2	+	18.3	-	46.1	+	0	0	50.0	+	0	0	32.9	-	51.6	+	59.4	+
International (Macro)	28	51	55.7	+	54.8	+	56	+	0	0	54.0	+	0	0	27.0	-	64.5	+	72.9	+
International (Macro)	29	34	27.8	-	2.9	-	29.7	-	0	0	40.0	+	0	0	17.6	-	38.7	+	46.9	+

Table B2

ECONOMICS 202 - TUCE Exam Results, Spring 2012
National Average - 14.32%
Lynchburg College – 13.39%
Standard Deviation – 4.40

LC Performance Exceeds (+) Falls Short (-)

Question Type	Question #	National AVG	LC AVG Spring 2012	Spring 2012 ECON 202A		Spring 2012 ECON 202B		Spring 2012 ECON 202C		Spring 2012 ECON 202D		Spring 2012 ECON 202E	
Measuring Aggregate Performance	1	53	38.57544	51.8	-	34.6	-	29.4	-	35.7	-	37.5	-
Measuring Aggregate Performance	2	61	67.55175	51.8	-	88.5	+	76.5	+	53.6	-	75.0	+
Measuring Aggregate Performance	11	59	63.14035	66.7	+	57.7	-	52.9	-	67.8	+	68.7	+
Measuring Aggregate Performance	19	40	39.45263	40.7	+	42.3	+	35.3	-	35.7	-	43.7	+
Aggregate Supply & Demand	4	46	30.68947	29.6	-	34.6	-	29.4	-	28.6	-	31.2	-
Aggregate Supply & Demand	17	37	39.44912	51.8	+	46.1	+	17.6	-	28.6	-	50.0	+
Aggregate Supply & Demand	3	69	70.17632	92.6	+	61.5	-	58.9	-	60.7	-	75.0	+
Aggregate Supply & Demand	13	63	64.02281	66.7	+	61.5	+	64.7	+	57.1	-	75.0	+
Aggregate Supply & Demand	14	48	44.70965	55.5	+	46.1	-	47.0	-	28.6	-	50.0	+
Aggregate Supply & Demand	21	42	29.2386	68.0	+	15.4	-	17.6	-	17.8	-	18.7	-
Aggregate Supply & Demand	23	36	31.5386	29.6	-	30.7	-	17.6	-	35.7	-	43.7	+
Aggregate Supply & Demand	15	61	57.87719	40.7	-	69.2	+	64.7	+	53.6	-	68.7	+
Aggregate Supply & Demand	20	60	68.40789	85.2	+	65.4	+	52.9	-	67.8	+	62.5	+
Money & Financial Markets	5	59	49.99386	63.0	+	69.2	+	23.5	-	39.3	-	43.7	-
Money & Financial Markets	12	55	48.19035	48.0	-	69.2	+	35.3	-	42.8	-	37.5	-
Money & Financial Markets	16	38	32.43684	29.6	-	38.5	+	17.6	-	46.4	+	18.7	-
Money & Financial Markets	22	33	23.67632	40.7	+	30.8	-	11.8	-	10.7	-	18.7	-
Monetary & Fiscal Policies	8	50	62.27895	70.4	+	42.3	-	58.8	+	64.3	+	81.2	+
Monetary & Fiscal Policies	17	37	39.44912	51.8	+	46.1	+	17.6	-	28.6	-	50.0	+
Monetary & Fiscal Policies	6	47	37.33509	25.9	-	46.1	-	38.7	-	39.3	-	37.5	-
Monetary & Fiscal Policies	7	60	63.76754	62.0	+	53.8	-	82.3	+	67.8	+	56.2	-
Monetary & Fiscal Policies	18	45	34.2114	33.3	-	30.8	-	29.4	-	39.3	-	37.5	-
Monetary & Fiscal Policies	23	36	31.5614	29.6	-	30.8	-	17.6	-	35.7	-	43.7	+

Monetary & Fiscal Policies	20	60	68.92368	85.2	+	65.4	+	52.9	-	69.9	+	62.5	+
Monetary & Fiscal Policies	24	33	38.58947	59.2	+	19.2	-	41.2	+	42.9	+	25.0	-
Monetary & Fiscal Policies	25	60	54.34649	55.5	-	53.8	-	47.0	-	50.0	-	68.7	+
Monetary & Fiscal Policies	27	33	18.41404	25.9	-	19.2	-	5.9	-	17.9	-	18.7	-
Policy Debates & Application	9	33	43.99211	59.2	+	26.9	-	35.3	+	39.9	+	62.5	+
Policy Debates & Application	10	41	47.35439	44.4	+	57.7	+	47.0	+	42.9	+	43.7	+
Policy Debates & Application	26	31	24.55439	29.6	-	23.1	-	47.0	+	14.3	-	12.5	-
International (Macro)	30	44	46.49912	66.7	+	53.8	+	41.2	-	28.6	-	37.5	-
International (Macro)	28	51	55.23947	55.5	+	57.7	+	47.0	-	60.7	+	50.0	-
International (Macro)	29	34	27.19912	40.7	+	30.8	-	11.8	-	14.3	-	37.5	+