MOTIVATING A CLASSROOM DISCUSSION OF CENTRAL PLANNING VERSUS DECENTRALIZED MARKETS

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ABSTRACT

Recent principles textbooks, in their discussion of central planning and decentralized markets, are void of details describing why central planning frequently fails. In light of recent economic crises, a strong understanding of why market organization generally leads to higher levels of GDP is essential. In order to give students this depth of understanding, we present to them data on GDP per capita, the Heritage Foundation's Index of Economic Freedom, and several indicators of resource and consumer heterogeneity. The goal of this paper is to outline the methods of presentation and classroom discussion that were used and to show, via pre- and post-test results, students gain a more in depth understanding of the material with the data presentation than with a usual "textbook" discussion alone.

KEYWORDS: *decentralized markets, central planning, comparative economic systems, teaching economics*

INTRODUCTION

It is common to find that principles of economics textbooks, in their coverage of planned versus market economies, simply define central economic planning as a system in which a central government answers the fundamental what, how, and for whom questions and then cite the collapse of the Soviet Union as evidence that central planning often fails as an economic system. The text then moves on to discuss market or decentralized economies. Very little is ever said about *why* central planning fails to produce the levels of output and growth we see in more decentralized market economies.

For instance, Frank and Bernanke (2009, 63-64) state "[w]hen implemented on a small scale, as in a self-sufficient family enterprise, centralized decision making is certainly feasible." But they offer little in the way of explaining why planning works well on small scales but not large ones. Cowen and Tabarrok (2010, 82) reason "[t]he central planning approach failed because of problems of information and incentives". Mankiw (2012, 11) expands this approach by noting "[i]n communist countries, prices were not determined in the marketplace but were dictated by central planners. These planners lacked the necessary information about consumers' tastes and producers' costs, which in a market economy is reflected in prices." Putting all these pieces together one begins to notice a more complete picture of why central planning can work on small scales whereas markets tend to be more efficient on larger ones. Information is easier to gather on small scales. Consumer preferences are more homogeneous and resources are fewer in number and scope. When there are fewer options as to what, how, and for whom to produce, the planner making optimal allocation decisions becomes much more likely. When resources and consumers are more heterogeneous, markets are necessary for efficient allocation.

However, most students will not have the incentives or the opportunities to piece together information from various texts on economics to develop the full picture. In light of the current world economic climate, it is essential to understand when and why markets work and why market organization leads to higher GDP per capita and more economic growth. For many students, even those who will go on to be business, political, and policy leaders, a principles course is as far as they will go in their formal economic education. Therefore it falls to these courses and their instructors to ensure that these future leaders understand the fundamentals of comparative economic systems. The question then becomes, how do we instill this in depth understanding of an extremely complex topic in students who have not yet taken the advanced math and statistical classes one usually associates with comparing economic growth and development across countries?

In order to spur classroom discussion on the topic and give students a more in depth understanding of the issues, the authors present students with data on GDP per capita, the Heritage Foundation's index of economic freedom (EFI), and several indicators of resource and consumer heterogeneity for various countries. The EFI gives students a measurement of the level of market decentralization in an economy while the resource variables are intended to be a proxy for the scope and scale of the economy. The goal is for students to discover, through analysis and discussion of the data, that central planning may lead to levels of GDP per capita similar to those of decentralized economies only when consumers and resources are relatively homogeneous.

In other words, central planning can work as well as decentralized markets if the task of answering the questions what, how, and for whom is simplified by having significantly less information or more homogeneous information for the planners to process. In general, a given level of planning will result in much lower GDP per capita in larger, more complex economies.

This paper presents a discussion of the data shown to students, an outline for presenting the data and guiding student discussions, and a summary of the results of in-class discussions. Using pre- and post-tests, we show students have a better understanding of the difficulties of central planning after viewing the data than they did after seeing only a "textbook" presentation of the material.

The rest of the paper is organized as follows: Section 2 gives a discussion of the data presented to students and the method used for presenting the data and guiding student discussions; Section 3 summarizes the results of in-class discussions and questionnaires; and Section 4 provides concluding remarks.

DATA AND METHODS

To begin the discussion of central planning and decentralized markets, students were presented with the textbook definitions of both types of economic organization. The students were then given a brief lecture along the lines of the Frank and Bernanke text stating central planning does tend to be efficient in very small-scale organizations but that it breaks down on larger scales due to a lack of information on the planner's part; households, small businesses, and national economies were used as examples. The students were then presented with a question, as seen in Figure 1, to test their ability to reason about the likelihood of central planning producing efficient outcomes in various countries. The data represented in the question is actual data from Qatar (Quinam) and Norway (Norland).

Given the information in the table below, for which of the two countries would central planning work better, i.e. lead to higher levels of GDP per capita? Justify your answer using the tools and terminology you learned in class. Where Education is the average years of schooling and Urban Population is the percent of the population living in urban areas.

Country	Education	Urban Population	Natural Resources
Norland	17	78	petroleum, natural gas, iron ore, copper, lead, zinc, titanium, pyrites, nickel, fish, timber, hydropower
Quinam	12	96	petroleum, natural gas, fish

Figure 1: Analysis question given to students both before and after the data presentation.

The following class period students were shown data on the Heritage Foundation's Economic Freedom Index (EFI), GDP per capita, and various indicator variables of consumer and resource heterogeneity. The EFI and GDP per capita were shown for all countries for which the Heritage Foundation calculates a Freedom Index. The other variables were shown only for those countries being used for comparison purposes. All data except the EFI was gathered from the CIA World Fact Book. At the beginning of class the graph in Figure 2 was displayed on the projector and the students were directed to note the positive relationship between a country's EFI and GDP per capita. The students were then asked if they detected any anomalies in this relationship and they quickly pointed out Luxemburg and Qatar both had higher levels of planning than several other countries but also had the highest levels of GDP per capita.

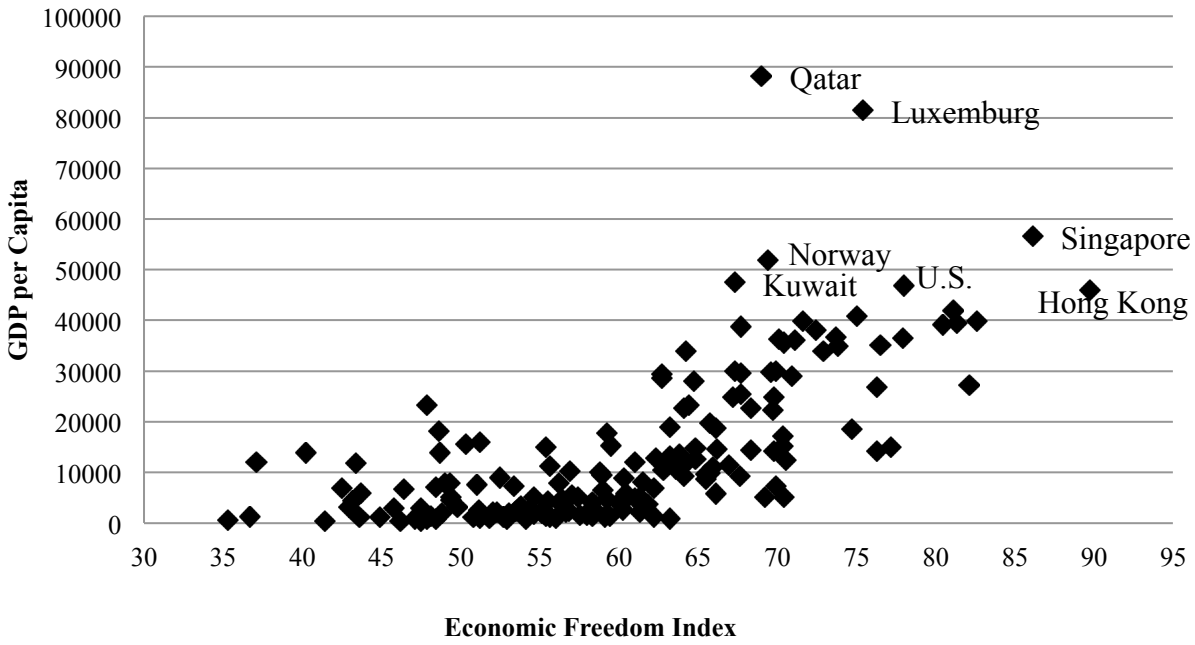

Figure 2: Scatterplot showing the relationship between GDP per capita and the Heritage Foundation's Economic Freedom Index

Once these outliers were noted, the students were shown the graphs in Figures 3 and 4. These highlight the range of the level of GDP per capita that results from roughly the same level of central planning. In particular students were directed to note the difference in GDP per capita between Qatar and Armenia and the difference between Luxemburg and Estonia. The instructor then encouraged the students to come up with explanations for why this might be the case. Initial responses were often variations of "Qatar and Luxemburg are small countries and central planning can work well on small scales". When it was pointed out that several of the countries in each subgroup with very low levels of GDP per capita were even smaller than Qatar and Luxemburg (for instance Barbados, Bahrain, and Mauritius) student explanations began to falter.

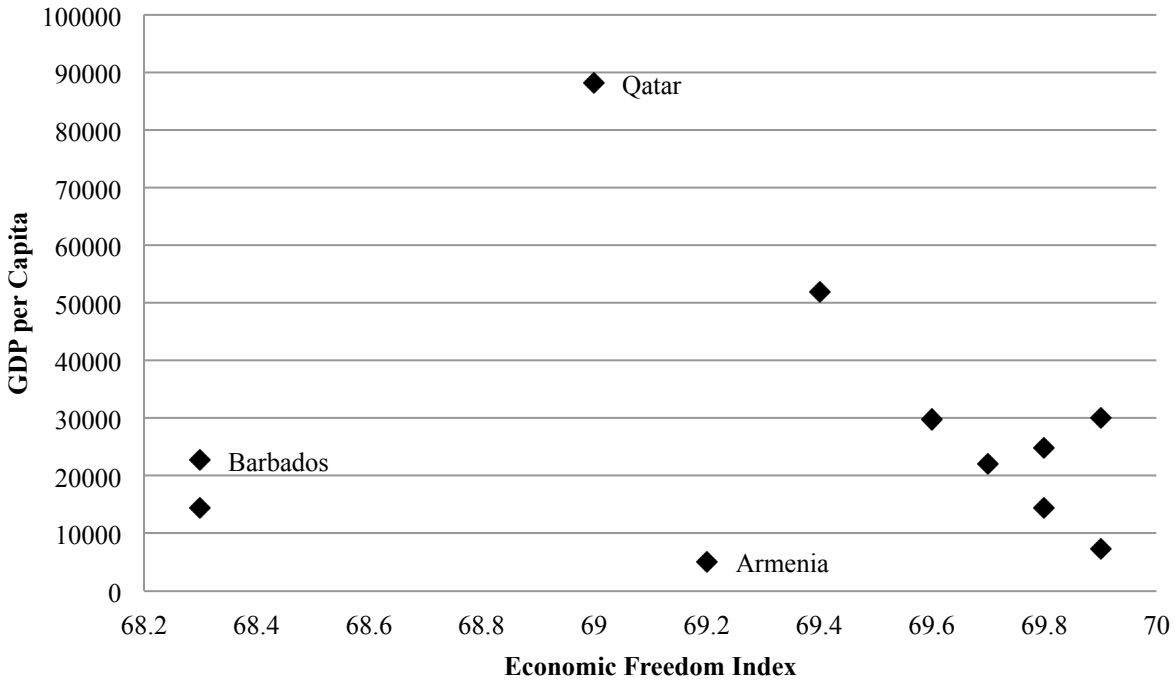

Figure 3: Scatterplot showing the GDP per capita of those countires with an EFI between 68.2 and 70.

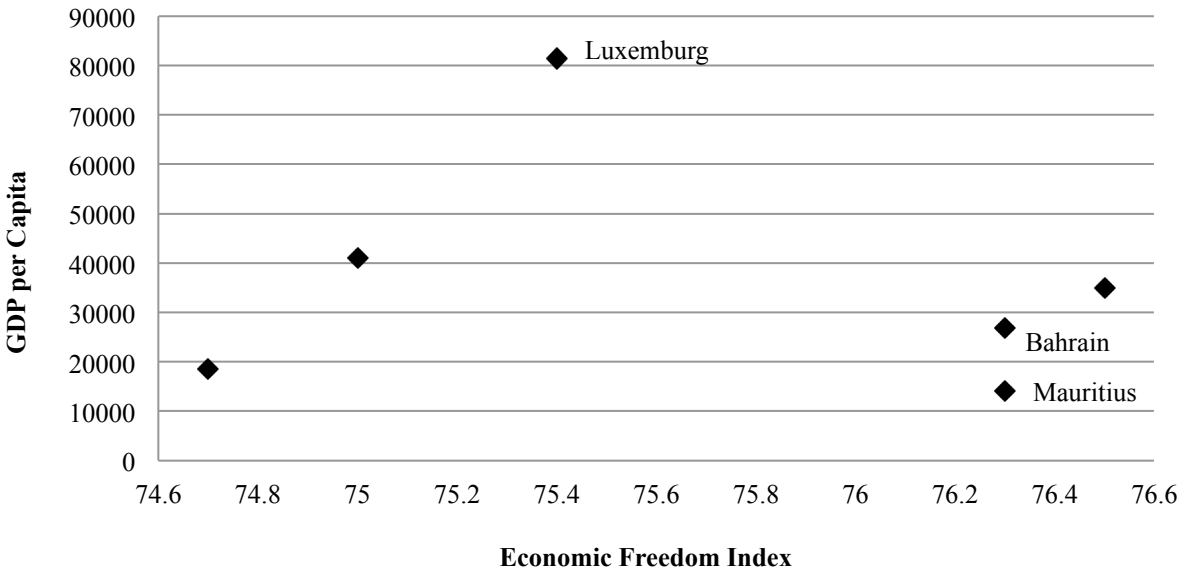

Figure 4: Scatterplot showing the GDP per capita of countries with an EFI between 74.6 and 76.6

When this happened the students were shown the data in Figure 5. This gives a breakdown of the major resources and industries (as listed in the CIA World Factbook) for each country. The students were asked to discuss why a given level of central planning would result in GDP per capita of over $85,000 for Qatar but only $5,453 for Armenia. The instructor told the students to imagine themselves as the planners and asked them to make lists of the various decisions they would have to make given the information in the table. The students quickly noted the variety of resources in Armenia and began to discuss the difficulties of trying to plan so many different types of industries. They also quickly noted the resources and industries in Qatar mostly revolved around oil. They reasoned that gathering information on a single resource would be much easier for a planner to accomplish than trying to gather information on many different resources. Once the discussion on industry planning and resource availability came to a close, the students were again given the question in Figure 1. The results of the pre-test and answers to the question were not discussed at all with the students prior to them completing the post-test. Only after all students had handed in their answers to the post-test was the question discussed in class.

Country	GDP/capita	EFI	Education	Urban Population	Natural Resources	Industries
Armenia	$5,453	69.2	12	64%	gold, copper, molybdenum, zinc, bauxite	diamond processing, metal cutting tools, forging-pressing machines, electric motors, tires, knitted wear, hosiery, shoes, silk fabrics, chemicals, trucks, instruments, microelectronics, jewelry manufacturing, software development, food processing, brandy
Qatar	$85,627	69.0	12	96%	petroleum, natural gas, fish	liquefied natural gas, crude oil production and refining, ammonia, fertilizers, petrochemicals, steel reinforcing bars, cement, commercial ship repair
Estonia	$18,410	74.7	16	69%	oil shale, peat, rare earth elements, phosphorite, clay, limestone, sand, dolomite, arable land	engineering, electronics, wood and wood products, textiles; information technology, telecommunications
Luxemburg	$82,600	75.4	13	85%	iron ore, arable land	banking and financial services, IT, telecommunications, cargo transport, food processing, chemicals, metal products (iron, aluminum, and steel), engineering, tires, glass, tourism

Figure 5: Data from the CIA World Factbook and the Heritage Foundation's Economic Freedom Index.

RESULTS

The results of the activity show a clear improvement in student understanding of the difficulties of central planning. Post-test results indicate viewing the data and engaging in class discussion about the details of the central planning process lead to more accurate reasoning about why decentralized markets lead to higher levels of GDP per capita in large-scale organizations. Table 1 presents the rubric used to score student responses to the question both before and after the data presentation. Tables 2 and 3 show a break down of student answers and rubric scores for both the pre- and post-test.

Scoring Rubric			
1	2	3	4
answer was not at all correct or simply stated that Norland would have a higher GDP because they have more resources	mentioned central planning works better on small scales but no other correct reasoning or explanation	noted that central planning can work on small scales but generally doesn't work on large scales, included some correct reasoning and explanation	noted that central planning tends to work well on small scales but not large ones, reasoning and explanation demonstrates proficient understanding of concepts

Table 1: Scoring Rubric used to analyze student answers to the pre- and post-test.

Answer	Pre-test	Post-test
Quinam	32	50
Norland	21	3

Table 2: Student answers to the first part of the question addressing for which country central planning would likely result in higher levels of GDP per capita.

Score	Pre-test	Post-test
1	23	4
2	10	8
3	11	23
4	9	18
Average	2.11	3.03

Table 3: Scores for student reasoning on both the pre- and post-test.

As shown in Table 2 there is a marked improvement in the number of students answering correctly that a given level of central planning would lead to higher levels of GDP per capita in Quinam than it would in Norland. A Chi-square test rejects the null hypothesis that the pre- and post-test answers are from the same distribution with 99.9% confidence ($X^2 = 17.5$). The data in Table 3 show a significant improvement in students' abilities to correctly reason as to why central planning would not work well in Norland, but could possibly be successful in Quinam. A Chi-square test rejects the null hypothesis that the pre- and post-test distributions are the same with 99.9% confidence ($X^2 = 20.9$).

CONCLUSIONS

Principles of economics textbooks seem to have dedicated less space to the discussion of comparative economic systems since the dissolution of the Soviet Union. Unfortunately, the time dedicated to a discussion of comparative systems in principles classes is often the only occasion that students have for formal education in this area. An understanding of when planned economies work and when they fail is essential for students who wish to grasp the nature of markets and the information that results from market activities.

Traditionally most principles textbooks have not included data in this area. Data is readily available and easily presented and the benefits to the students are clear. The findings from our classroom discussions suggest when data is presented and discussed, students develop a firmer grasp of the fact that countries that have large numbers of heterogeneous resources and consumers are more difficult to plan and therefore will have less output in the absence of decentralized markets.

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