Emory University Piedmont Project (2008–2009)

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Course: Economics 443SWR – Public Choice

I taught this course in Spring 2008 for the first time. At that time the course had a substantial sustainability component to it already, stemming from the fact that sustainability is inherently an economic concecpt: Many common definitions of the term "sustainability" incorporate the classical focus on efficiency ("how to best use scarce resources?") as well as allow a focus on equity and distribution ("what is a fair outcome?"). Both lie at the center of public economics, and both motivate policy. The course is therefore built around these centers, and explores them using both abstract models as well as concrete applications.

The course changed somewhat for Spring 2009, as it was turned into a seminar and received a writing requirement (indicated by the SWR tag behind the course number). This led me to make a few revisions. Most importantly, I gave the students almost complete choice over their writing topic as long as it was related to public policy and had some economic thought to it. About 8 students wrote on topics directly related to environmental sustainability, and presented their work in the last class. Another 8 or so students wrote on topics that can be viewed within a broader sustainability frame (for example, two students wrote on recent microcredit markets to help entrepreneurs in developing nations). I found most students to be enthusiastic about their papers. Some turned in truly wonderful pieces, and a handful of students conducted original research. All who presented gave visually stunning presentations. Overall I've been very pleased with the outcome.

Attached is the syllabus for this course, as well as the final schedule of presentations. Please note that presentations were voluntary and so not all papers are included. Nontheless, the scheduled should convey a sense of the depth and breadth of topics chosen by the students.

EMORY UNIVERSITY
DEPARTMENT OF ECONOMICS

ECONOMICS 443: PUBLIC CHOICE (SEMINAR)

SPRING 2009

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Classes: T,Th 11:30 am – 12:45 pm
Room: Math & Science Center N302
Office Hours: T,W 2:00 – 3:00 pm
              and by appointment

Course website: http://userwww.service.emory.edu/~tklumpp/443

Text: Jean Hindriks and Gareth D. Myles: *Intermediate Public Economics*, MIT Press, 2006.

We will mostly follow the textbook chapters. Sometimes, however, we may move beyond the book, and it is your responsibility to take notes of any additional material in these cases.

Description:

Should government intervene in free markets (and if so, how)? Should the government redistribute income (and if so, how?) What is the "peoples' will" and can we find it through free and fair elections?

We will examine these and many other questions in some detail in this course. Our goal is to develop an understanding of public choices and collective action using the tools of economics. We will examine the possibilities and limitations of markets, as well as the possibilities and limitations of government action. You will learn how general and abstract concepts from economic theory can be useful in understanding a diverse range of contemporary public policy issues. A strong emphasis will be placed on the constraints that individual incentives place on the functioning of society as a whole.

The following topics will be examined (the dates are tentative and may be adjusted):

1. Background and context

1.1	Markets and the invisible hand	01/15	Ch. 2
1.2	The public sector	01/27	Ch. 3, 4

2. (Some) departures from efficiency

2.1	Public goods	01/29	Ch. 5, 6
2.2	Externalities	02/10	Ch. 7
2.3	Asymmetric information	02/19	Ch. 9
2.4	Intertemporal efficiency	03/03	Ch. 19, 20

3. Social compromise, equity, and distribution

3.1	Voting and democracy	03/19	Ch. 10
3.2	Comparing individuals	03/31	Ch. 12
3.3	Inequality and poverty	04/09	Ch. 13

Writing requirement:

This course has a writing requirement (see attached guidelines).

Grading:

Your course grade will be calculated on the following basis:

Participation		throughout semester		10% weight
Take-home midterm test		available:	March 3, 2009	
		due:	March 5, 2009 in class	30% weight
Paper	Initial draft	due:	April 9, 2009	15% weight
	Final version	due:	April 28, 2009	15% weight
Presentation (voluntary)			April 14–23, 2009	5% (extra)
Final exam			May 1, 2009, 8:30 – 10:30 am	30% weight

I will keep numerical grade records of all assignments and exams, on a scale from 0 to 100. Your final letter grade will be determined according to the following table:

	77–79 B+		67–69 C+		55–59 D+		
90–100 A	73–76 B		63–66 C		50–54 D		0–49 F
80–89 A–	70–72 B–		60–62 C–				

(Note: A+ and D– are not valid grades at Emory College.)

Policies:

- Students will adhere to the Emory College Honor Code. Academic misconduct will not be tolerated and will result in your removal from the course.

- The prerequisite for this course is Economics 201 (Intermediate Microeconomics). It is your responsibility that you meet the prerequisite.

- Attendance will be taken occasionally, and your participation grade may be adjusted in case you are absent regularly.

- Students are allowed to collaborate on the take-home test, but each student must submit a separate test and indicate which classmates he/she has worked with.

- Accommodation for religious holidays and certain university-sponsored activities (athletics, conferences, etc.) will be granted; however, students wishing to seek accommodation must inform me as soon as possible.

- If you miss a test due to unforeseen reasons (illness, accident, etc.), your deadline will be extended or a makeup test will be given at my discretion, and only if I deem the reason valid. Zero points will be awarded otherwise.

Writing Requirement Guidelines

- Your paper should be approx. 10–15 pages in length (12 pt., 1.5-spaced, standard margins).

- You should come up with your own topic.

    – You may write about **any topic of your interest**, as long as it is related to issues of public economics and public policy.

    – Your topic does not have to be directly related to the material covered in class.

    – You may take sides and advocate a particular position in your essay. You will be graded based on the quality of your writing and not on which side you take.

    – Your essay **must contain an economic element** (e.g. a discussion of the costs and benefits associated with a particular government program, a discussion of how some policy affects individual incentives, an identification of externalities, etc.)

- Your paper must contain the following sections:

    – A **title page** with the paper's title, your name, and an abstract.

    – An **introduction**, in which you outline your topic and outline what you will do in the main part of the paper (1–3 pages).

    – A **main part**, in which you present your arguments. You are free to organize this part in any way you feel is appropriate, but in most cases it is a good idea to break it up into three or so sections in order to provide some structure for the reader.

    – A **conclusion**, in which you summarize what you have done in the main part (at most 1 page).

    – A **bibliography** of all referenced sources.

- Your essay must be written in clear prose (no bullet lists, etc.) and be free of spelling and grammatical mistakes.

- Please observe the following deadlines/dates:

    – A tentative **title** of your paper and a one-paragraph **abstract** are due **March 19**.
    (I will let you know if I have reservations about your choice of topic.)

    – An **initial draft** of your paper is due **April 9**.

    – You will receive a brief list of comments from me (per e-mail) by **April 21**. In the final version you should incorporate my comments.

    – The **final version** of your paper is due **April 28**. Both your initial draft and the final version will be graded.

- All materials must be submitted via e-mail to tklumpp@emory.edu.

- Feel free to discuss your choice of topic, the organization of your paper, or any other question, with me during my office hours.

Economics 443SWR: Public Choice (Spring 2009)

Prof. Tilman Klumpp

Presentation Guidelines

During the last four sessions **(April 14, 16, 21, 23)** you have the opportunity to give a short presentation of your paper topic and let your classmates know what you have been working on. You will also earn extra credit for your presentation.

Please e-mail me the following information together with the initial draft of your paper:

- Whether or not you want to present.

- Your preference order regarding the day of your presentation.

I will try to assign the days according to your preferences. However, I will also try to group related topics together on the same day. Thus, there is not guarantee that you get your most preferred slot.

Some details concerning the presentations:

- Your presentation should be about 7 minutes long. (More time is possible if not everybody presents their topic. I will inform you of this as soon as the schedule is ready.)

- Include in the presentation the things that YOU think are most important for everyone to know about your topic. You may want to allow 1-2 minutes for questions or comments.

- The extra credit for presenting is 5%.

- Attendance is mandatory on all presentation days, even if you do not present.

- You should use either Powerpoint or Acrobat, as these programs are installed on the classroom PC. Please come to class ten minutes ahead of time to upload your presentation to the computer.

1.1   Markets and the invisible hand

(a) The metaphor of the invisible hand

What did Adam Smith say? What did he mean? Why is the "Invisible Hand" a metaphor?

(b) Exchange economies, Edgeworth Box

We develop the simplest of all economic models in which we can study the exchange of goods: The two consumer, two goods, exchange economy. The graphical representation of this model is the "Edgeworth Box."

(c) Pareto efficiency

When should people trade, and when not? What does "efficiency" mean? Is efficiency a reasonable "social goal?" Is it the only reasonable goal? Which aspect of Smith's idea does the concept of efficiency capture?

(d) Prices and competitive markets

A market with a price system is one way to exchange goods (think of other ways!) We use standard economic analysis to formulate how persons behave in a price system. Which aspects of Smith's idea does this capture?

(e) Walrasian equilibrium

We now study how agents interact in a price system. How do prices link people's behavior? What is the "right" price for a good? Which aspect of Smith's idea does this capture?

(f) First Welfare Theorem (FWT)

We are now ready to develop a formal statement of the "Invisible Hand," the First Welfare Theorem: A competitive market achieves efficient outcomes. Think about what it says. Think about what it does not say. What assumptions have we (implicitly) made?

(g) Extension to production economies (compare to (b))

We develop the simplest of all economic models in which we can study the transformation of goods: The "Robinson Crusoe Economy," where leisure (immaterial consumption) can be transformed into a physical consumption good. We repeat steps (c)—(f) for this case.

(h) Redistribution and the Second Welfare Theorem (SWT)

We now turn to the question whether there might be other social goals besides efficiency. What about "fairness" or "equality"? Can such goals be achieved within a market? How much intervention is required to achieve them?

1.2   The public sector

This topic covers a <u>very brief</u> overview of some trends and patterns in government activity. This serves to illustrate that government intervenes in the economy and in peoples' lives to a significant degree, virtually everywhere in the developed world.

(a) Reasons for government

Why is there a government in market economies? We offer four different reasons (roughly ordered from "right" to "left" on the political spectrum): Government exists

> *(1) to play the role of the "Minimal State,"*
> *(2) to correct for market failures (correct inefficiency),*
> *(3) to redistribute resources (correct inequality),*
> *(4) to play a "paternalistic" role.*

(b) Scale of government activity: Spending

In most developed countries, 30—60% of GDP is spent by governments, with an upward trend throughout the last 100 years. What reasons are there for spending growth?

> *(1) Economic development*
> *(2) Wagner's Law (high income elasticity of public sector goods)*
> *(3) Baumol's Law (public/private sector compete for input factors)*
> *(4) Rising inequality*
> *(5) Ratchet effect*

We also examine differences across countries, spending categories, and government level. Can we determine which of the four cases in (a) is reflected in the type of public spending?

(c) Scale of government activity: Revenue

Due to the government budget constraint, revenue by and large tracks spending patterns. However, countries differ greatly in their sources of government revenue. Can we find country characteristics that influence where public revenue comes from?

(d) Scope of government

Can all government activity be easily measured in revenue/spending terms? Can all government activity be measured in "value terms" ($$$, percent of GDP, etc.)? Should it?

2.1 Public goods

Note: For this topic, we depart from the textbook. (We cover the same insights as in the book, but we use a "different geometry.") It is important that you take careful notes.

(a) Definitions

We categorize goods by whether or not they are rivalrous, and whether or not they are excludable. A rivalrous excludable good is private; a non-rivalrous, non-excludable good is public (the remaining combinations are called club goods and common property.) Market trade requires excludable goods, and efficient market trade requires private goods. Thus, the first welfare theorem breaks down with public goods.

(b) Economies with public goods: The Kolm Triangle

We develop the simplest of all economic models in which we can study the production and allocation of public goods: The Kolm Triangle, which has two consumer, one private good, and one public good. It mirrors the Edgeworth Box economy for private goods.

(c) Efficiency

An allocation in the Kolm Triangle is efficient if it satisfies the same Pareto criterion we already know: No consumer can be made better off by reallocating resources in the economy, without hurting another consumer. We geometrically derive a rule for efficient provision, called the Samuelson rule.

(d) Voluntary contributions

The first allocation mechanism we study is through voluntary contributions to public goods. We show that voluntarily provided goods are underprovided (the free-rider problem). We also show that re-distribution of resources may not change that fact (Warr's neutrality theorem).

(e) Personalized prices, Lindahl equilibrium

The next allocation mechanism we study is a price system. We show that this can yield efficient allocations if we allow for prices to be different for each consumer. However, personalization makes the system manipulable if consumers' preferences are not publicly known (the free-rider problem persists).

(f) Mechanism design

The third allocation mechanism we examine is a tax system that is designed deliberately with the fact in mind that we need to rely on consumers to somehow communicate their preferences to the government. We show that this requirement puts tangible costs on society. Can you relate our findings to examples from the real world?

2.2   Externalities

(a) Definitions

An externality is a link between economic agents which lies outside the market price system. (An "externality" that arises through price links is a "pecuniary externality.") An externality arises if the actions of one individual directly affect the welfare of another. We distinguish production and consumption externalities, and positive and negative externalities.

(b) Efficiency

Competitive market allocations are inefficient in the presence of externalities. The market failure arises because agents do not take into account the effects their decisions have on others. In equilibrium, the amount of negative externalities is too high, and the amount ot positive externalities is too low.

(d) Mandatory reductions/increases

To correct the market failure, governments can mandate the "right" amount of externality for each agent, i.e. change allocation directly. Is this intervention reasonable? Do you know examples? How much does the government need to know about individuals?

(d) Pigouvian taxation

Alternatively, governments can change prices, i.e. tax negative externalities and subsidize positive externalities, to align private costs and benefits with social costs and benefits. Can you find examples? Can efficiency always be achieved that way?

(e) Licenses/Cap-and-Trade systems

Third, governments can mandate an aggregate amount of externalities, but let the market find the right allocation. Such a system requires licenses, i.e. the establishment of a market for the externality separate from the market for the underlying good. Can you find examples? Can efficiency always be achieved that way?

(f) Property rights and the Coase Theorem

Externalities lead to inefficiencies because of ill-defined property rights. If we assign property rights to all goods, externalities become tradeable and markets will achieve efficient allocations. The Coase Theorem states that this is so regardless of the precise assignment of property rights, if transaction costs are zero. According to the Coase Theorem only a "minimal state" intervention (enforce property rights) may be necessary to achieve efficiency.

2.3 Asymmetric Information

(a) Definitions

Information is asymmetric if some individuals are better informed than others about the goods or services tradedl. We distinguish hidden knowledge and hidden actions as sources of asymmetric information. A consequence of hidden knowledge is adverse selection (b). A consequence of hidden actions is moral hazard (e).

(b) Adverse selection and market unraveling

Willingness to trade at a certain price can convey information about an agent's knowledge. This information transmission can result in inefficient market outcomes and even market breakdowns. We demonstrate this market failure in the context of insurance markets.

Compulsory insurance causes demand to be uninformative of an individual's risks. This policy enhances welfare but has strong redistributive effects.

(c) Screening

Screening is a tool used by the uninformed party to prevent market breakdowns. The uninformed designs a set of contracts that allows individuals to self-select into a particular market for their type. This problem is similar to the mechanism design problem discussed in topic 2.1. (Application: Auto insurance deductibles.)

Government-mandated cross subsidies can lead to Pareto improvements because they weaken the incentive compatibility constraints.

(d) Signaling

Signaling is a tool used by the informed party to prevent market breakdowns. The informed sends a message that conveys information because it is costly. (Application: The role of education in labor markets.) A special form of signaling is certification, i.e. the transmission of verifiable messages. (Application: Genetic information in insurance markets.)

Signaling can create new inefficiencies, and sometimes it even makes the market "too informative." The government may therefore restrict the use of certain signals.

(e) Moral hazard

Moral hazard refers to the difficulty in designing incentive schemes that ensure that the right actions are taken. We demonstrate this inefficiency again in the context of insurance markets. The optimal insurance policy provides the insured individual with an incentive to exert preventive effort. Similar to the screening problem and the mechanism design problem, this has a welfare cost.

2.4   Intertemporal efficiency

(a) Overlapping generations model

Overlapping generations (OLG) models describe the lifecycle of individuals from birth to death in a way that at each time, both young and old cohorts are alive. These models allow us to study a broad range of topics, from the emergence of money, to savings and capital formation, to social security and pension systems.

(b) Entitlement programs

Intertemporal transfers can be a susbtitute to private savings. In primitive societies or within families, such transfers are made on the basis of trust or custom. In large anonymous economies, such transfers must be instituted per government policy by means of entitlement programs.

If the program transfers resources from young to old, it becomes inefficient once population growth slows down, but is then difficult to eliminate due to the presence of a large cohort who hasalready earned its entitlement. If the program tranfers resources from old to young, it is difficult to get started due to the presence of an old cohort who has not received anything when young.

(c) Production economy in the OLG model

We explore the dynamic path of an OLG model with production. Since production requires capital, it can be used as a private savings device. The consumption-maximizing level of capital is given by what is called the "Golden Rule:" The market return to capital the equals population growth rate. As we show, in the competitive equilibrium capital may be under or over-accumulated. In the latter case, the economy is said to be dynamically inefficient.

(d) Intertemporal transfers and the Golden Rule

If the economy does not operate at the Golden Rule (which would be purely accidental), then a lump-sum transfer scheme can bring it there. The transfers may either go from old to young (this encourages savings and helps if capital is under-accumulated in the competitive market), or from young to old.(this discourages savings and helps if capital is over-accumulated)

3.1   Voting and democracy

(a) The preference aggregation problem

Can we understand social/public decisions (i.e. policy choices) in the same way as individual ones? That is, does society maximize some preference relation? We take the perspective that societies do not have fixed preferences of their own. Any social preference order must in some way be derived from the preferences of the individuals.

(b) Examples of aggregation rules

There are many ways to aggregate preferences: Majority voting, unanimity rule, dictatorship, the Borda rule. We argue that each of these methods has its own drawbacks. In particular, majority rule may yield so-called Condorcet cycles (i.e. an intransitive social preference).

(c) Arrow's Impossibility Theorem

Arrow (1951) asked, Is there a rule which satisfies the following axioms: Unrestricted Domain, Transitivity, Pareto Efficiency, Independence of Irrelevant Alternatives, and Non-Dictatorship. If there are more than two alternatives to choose from, the surprising answer is no. While each of the axioms in itself is weak, taken together they are so strong that no single aggregation rule can satisfy them.

(d) Median voter theorems

Simple majority rule works well when only two alternatives need to be compared. With more than two alternatives, one can use some multi-stage version of majority rule (e.g. round robin, binary agenda). The following domain restrictions guarantee the existence of a Condorcet winner, i.e. an alternative exists which beats all others in pairwise majority elections:

Single-peaked preferences: The alternatives can be ordered such that each individual preference has a single peak. Then the median most prefered alternative is the winner.

Single-crossing preferences: The alternatives and the individuals can be ordered such that whenever a voter prefers a "left alternative" to a "right alternative" so does every voter to her left, and vice versa. Then the most prefered alternative of the median individual is the winner.

(e) Agenda manipulation

If no Condorcet winner exists, an amendment agenda can still be used to make majority decisions. In this case, the final outcome depends heavily on the agenda, and this is so with sincere and strategic voting. Thus, the person in control of the agenda has control over the final outcome.

3.2   Comparing individuals

(a) Social welfare functions

If society has distributional concerns, then a simple way to resolve these is through a social welfare function: A function which maps individual utilities into welfare. The policy maker can then select the welfare-maximizing outcome (which will automatically be an efficient outcome). Two important welfare functions are:

> *Utilitarian: Individual utilities are perfect substitutes.*

> *Rawlsian: Individual utilities are perfect complements.*

There are many interpretation where a welfare function may come from: It may reflect the personal view of the policy maker, it may reflect fundamental ethical concerns, or it may be the result of aggregating individual preferences.

(b) Pareto efficiency vs. social welfare

The concept of a social welfare function assumes that individual utilities are measurable quantities which can be compared to each other. The concept of Pareto efficiency deliberately ignores any such comparisons. It thus allows us to judge social outcomes only on the basis of individual preference orders: Neither does the intensity of individual preferences matter, nor utilities need to be compared across persons. To make any distributional judgements, however, it is necessary to assume at least some degree of comparability. This approach may also resolve Arrow's impossibility result.

(c) The role of the Second Welfare Theorem

In the context of allocation problems, the Second Welfare Theorem even tells us which policy will achieve the welfare-maximizing allocation: Lump-sum transfers among the individuals, plus encouragement of competitive markets. However, lump-sum transfers may be hard or even impossible to implement.

(d) Measurement theoretic approaches to social welfare

Two quantities are comparable if we can apply a restricted set of transformations to them, and their relationship is unchanged in a certain way. Notions of comparability differ in what "a certain way" is, and thereby induce different restrictions on the set of permissible transformations.

The utilitarian philosophy is based on the idea that individual utilities ("happiness") can be measured in the same way as temperature. Scientifically speaking, this requires what is called cardinal unit comparability. The Rawlsian philosophy requires a weaker notion of comparability, called ordinal level comparability. This means that utilities can be measured in a way similar to, say, hotel quality or consumer satisfaction.

3.3 Inequality and Poverty

(a) Income and its Measurement

Income is measured as the market value of resources received over a time period. Unlike utility measurements, income measurements are practicable. The consumption that a particular income level allows can depend on geographic location of the earner as well as household composition..

(b) Inequality and its Measurement

Complete income equality arises when all households or consumers have the same income. Complete inequality arises when one household has all income, and all other have none. An inequality measure assigns a number between 0 (complete equality) and 1 (complete inequality) to an income distribution. Some inequality measures are the relative range, the relative mean deviation, and the coefficienct of variation.

(c) The Lorenz curve and the Gini coefficient

The Lorenz curve plots cumulative income against households, where households are sorted from poorest to richtest. Both axes can be normalized to percentages. With complete equality, the curve is the 45-degree line. With complete inequality, the curve has an inverted L-shape. The area between the actual Lorenz curve and the 45-degree line, divided by the area of the triangle below the 45-degree line, is the Gini coefficient. The Gini coefficient is the most commonly used inequality measure in practice.

What is the Gini-coefficient in different countries? Compare before-tax and after-tax Gini measures.

(d) Inequality and Social Welfare

If policy makers care for efficiency, and also for equity in the sense that for the same total income a more equal income distribution is preferred to a less equal one, we can construct a social welfare measure directly from income data. The welfare function associated with the Gini inequality measure is called the Gini social welfare function. It is a weighted sum of individual incomes, with higher weight given to smaller incomes.

(e) Poverty and its Measurement

Poverty is the lack of resources required to achieve an acceptable standard of living. The poverty line is the income that separates poor from non-poor households. It can be defined in absolute or relative terms. A poverty measure assignes a number between 0 (no poverty) and 1 (maximimum poverty) to the income distribution; the measure depends also on the poverty line itself. Common measures are the headcount, the income gap ratio, the Sen measure, the FGT measures, and the Watts measure. The latter two are decomposable.

Economics 443 (Public Choice)
Presentation Schedule

Tuesday, April 21, 2009

Lending and Borrowing: The Macro and the Micro Perspective

11:30 Luke Haller:

"The Relationship between 90's Interest Rates and Our Current Financial Situation"

11:38 Stefanie Rubin:

"A Market for Microfinance"

11:46 Angela Shin:

Title TBA (Microcredit Experiment)

Economic Aspects of Voting and Elections

11:54 Yeana Lee:

Title TBA (Compuslory Voting)

12:02 Lara Ortega:

"School Bond Elections and Their Implications"

Healthcare and Drug Control in the U.S.: Reforming the System

12:10 Mishal Ali and Eddie Lopez-Lugo (joint presentation):

"Health Care For All: A Proposal for Universal Coverage in the United States" and "Single Payer Healthcare System: An Engine for Economic Survival"

12:26 Michael Boyd:

"The True Cost of America's Drug Control Policy"

12:34 Course Evaluations

Thursday, April 23, 2009

Social Security and Insurance

11:30 Wanzhe Zhu:

"Asymmetric Information in the Field of Insurance"

11:38 Brandon Bassett:

"Is There Any Way Out? A Look At Our Current Social Security Trap"

Economics of Technology and the Environment

11:46 Man-Ki Law:

"Is the Pollution in China a Remedy or a Poison?"

11:54   David Lane:

"Maglev Trains"

12:02   Sara Hostalet:

"Carbon Emissions: The efficiency of Government Intervention through a Restrictive Tax vs. a More Free Market Approach of a Cap-and-Trade System"

12:10   Adam Moroff:

Title TBA (Emissions Control and Cap-and-Trade)

12:18   Jennifer Mindlin:

"Tradable Emissions Permits: The Rising Prevalence of Auctions"

12:26   Katherine Morris:

"A Comparative Evaluation of President Barack Obama's CO_2 Cap-and-Trade Proposal and its Potential Effects"

12:34   Tyler Fletcher:

"President Barack Obama's Cap-and-Trade Emissions Program:
A Critical Study"

12:42   Brent Staton:

Title TBA (Effects of the Drought on Atlanta and Lake Lanier)

Have a Great Summer!!!