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Perspectives - Summer School 2014

Economics

The Economist in You

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OUMC Summer School 2014 Economics Module

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The Economist in You

"Most of economics can be summarised in four words: 'People respond to incentives.' The rest is commentary."
- The Armchair Economist by Steven Landsburg

However, the definition I like the most is still, **"Economics is the allocation of limited resources to satisfy unlimited wants."**

The aim of this tutorial is to show how economic concepts are very much grounded in common sense. In our daily life, we regularly decide how to allocate our resources (eg: time, money and energy). Basic economics is not difficult to grasp. Unknowingly, we are using economic concepts in our everyday life. However, more advanced economic concepts can be

i. A combination of different basic concepts
ii. Incorporated with mathematical backings and hence, look/sound more sophisticated
iii. Formed by slightly more subtle (less obvious) economic instincts

As a starter, we explore basic economics and understand how we are unconsciously applying basic economics. Hopefully by the end of this module, you will know a little of what it is like to see the world around you through the eyes of an economist.

Answer the questions at the end. The readings are optional, but will help you answer the questions.

http://www.slate.com/articles/double_x/doublex/2013/02/time_is_money_opportunity_cost_can_help_you_figure_out_how_much_your_time.html

Time Is Money

So how much is yours worth?

by Emily Oster (associate professor of economics at the University of Chicago Booth School).

You know your time is valuable, but how much is it really worth? As you fume about a delayed plane, a late doctor, a long line, is it possible to quantify—to put a concrete number on—the time being wasted? To say not just, "My time is valuable!" but "That's $123 of my time down the drain!"

I tell my micro students everything I teach them is important, but the truth is that some things are more useful than others, and opportunity cost is near the top. (Yes, I guess I waste some of their time. Let's not quantify that.) Here's the idea, in business school terms: Imagine you are thinking of opening a restaurant. You expect some revenues from the restaurant (I hope!). There are also some costs: You have to buy the food, pay the waiters, rent the building. But there is another cost: You'll have to spend all of your time at the restaurant—you can't have another job. This means giving up some earnings—whatever your salary would be at that other job. That amount? That's the opportunity cost. When you think about whether it's a good idea to open that restaurant, you must consider this cost, just as you consider the cost of the food.

It's not too hard to see how this applies in your life. How much is an hour of your time worth? It's worth whatever wage you would get if you spent that hour working. If you work for an hourly rate, this is an easy calculation. Even if you work for a salary and a fixed number of hours, the principle is the same: It's whatever your salary works out to per hour. (I realize that your boss probably won't pay you more if you work more hours. But you could always get a second job, probably at the same wage rate, so don't overanalyse it.) Same logic if you don't work at all: If you did get a job, what would the wage be?

You may be thinking: Don't be ridiculous, I don't want a second job! I would much rather spend my free time relaxing, playing with my family, reading a book, exercising. No problem. The opportunity-cost equation simply tells you what the cost of your time is, not how you should spend it or how you want to spend it. If you would prefer to read a book than work another hour, that says that you value the time relaxing more than your wage rate. All this calculation gives you is a benchmark against which to consider what you are doing with your time.

OK, so this is pretty simple. Why is it useful, other than for being able to vent in very specific terms to a flight attendant? For me, the crucial application is in thinking about household chores. Specifically, whether I should do them or not. Consider grocery shopping. There are really two options: I can order online and have the groceries delivered by a company like FreshDirect or Peapod, or I can go out and spend two hours wandering the aisles at my local supermarket. There's a delivery fee for the former, maybe a mark-up also. So which is the better way to shop? This opportunity-cost idea makes the decision easy: Is the fee plus mark-up smaller than the value of two hours of my time? If yes, delivery. If no, head to the car.

(This grocery example is actually how I learned about opportunity cost as a child. My mother, also an economist, always had the groceries delivered. As a 10-year-old I thought of going to the Stop'n'Shop as a glamorous activity and asked why we didn't get to do this. My mother promptly explained that the other children's parents "didn't understand the idea of opportunity cost." And that was the end of that.)

Once you start thinking like this, you may find you are not outsourcing enough. Should you hire a cleaning service, rather than spending three hours every other week cleaning the bathrooms yourself? Depends on the opportunity cost of your time—more or less than the hourly rate for the service? You may initially think that paying someone to clean your home is a waste of money or a luxury, but unless you make less than the rate you'd be paying (or unless you actually enjoy cleaning), if you're not choosing to work in those hours, you shouldn't be cleaning either. Ditto for laundry, yard work, snow shovelling, and on and on. You like opportunity-cost theory, eh?

Of course, this doesn't mean you should outsource everything. There may be chores you enjoy. My father insists on mowing the lawn by himself with a hand mower from 1985, obviously inefficient but seemingly fun. Every few weeks my daughter and I make a trip to Whole Foods to look around, do some shopping, eat some free samples. Again, just fun. And while it may be more cost-effective for you to work late and let a baby-sitter put your kids to bed, some things are more valuable than money.

If you're still struggling to think about whether some outsourcing is worth it, ask yourself this: Would you do this chore for someone else if they paid you the market wage for it? Would you, say, go grocery shopping for your friend if she paid you the delivery fee? If not, you probably shouldn't be doing it for yourself either.

Opportunity cost isn't just useful for outsourcing. Consider commuting. Many people face a choice: spend less on a house and commute farther, or spend more and commute less. How do you know how much the commuting is worth in rent or mortgage payment? It's easy: hours of commuting time per month times your hourly wage (plus gas, train fare, etc). That's how much extra you should be willing to pay to live in the same kind of house closer to work.

Applying opportunity-cost theory won't always change your behaviour but can simply be a useful tool to understand why things are the way they are. When I was pregnant and visiting my OB every few weeks, I waited for the doctor every single time. Sometimes for as long as an hour. I was furious. Didn't they know my time was valuable? But consider this: Because of the way appointments like this work—because they are unpredictable in length—someone will have to wait. Either the doctor schedules long appointments and sometimes she waits for you, or she schedules short appointments and sometimes you wait for her. Doctors are very highly paid, and, therefore their opportunity cost is very high. For most of the rest of us, our opportunity cost is lower. If someone has to wait, it's efficient for it to be the person with the lower opportunity cost. In other words, you.

The only inefficiency here is that you can't outsource waiting for the doctor. Now there is a missing market.

http://www.overthinkingit.com/2011/11/09/hunger-games-pareto-efficiency/

The Odds are Never in Your Favor: Pareto Efficiency in The Hunger Games *by John Perich*

ONE NATION, UNDER BREAD

The Hunger Games takes place in the dystopian nation of Panem, an oligarchy built on the ruins of what was once North America. Panem is divided into twelve Districts ringing a great Capitol, located somewhere in the Rocky Mountains. Citizens of the Capitol live in modern luxury, while most of the Districts scrape by in subsistence level farming or industry.

Each District specializes in the production of one commercial good or resource. District 12, located in the Appalachian Mountains and home of the narrator Katniss Everdeen, produces coal. Everyone who lives in District 12 either works in the coal mines or works in a support industry (clothing, food service, etc) that services the miners.

Let's say you're born into District 12. You will probably do what your parents did for a living. If your parents don't have a job (Katniss's father, a coal miner, dies prior to the start of the series), you'll have to fend for yourself. But don't expect to go into business on your own and become an entrepreneurial success. The best you can hope for is to make something that people within your District want to buy.

But what if you're really good at something else? Let's say you have a gift for baked goods, as Peeta Mellark does in *The Hunger Games*. What options do you have? Could you go into business for yourself and become a world-famous pastry chef? No. Fine pastries are the province of District 1, makers of luxury goods. And travel between Districts is forbidden.

> "We make a goat cheese and apple tart at the bakery," [Peeta] says.
>
> "Bet that's expensive," I say.
>
> "Too expensive for my family to eat. Unless it's gone very stale. Of course, practically everything we eat is stale," says Peeta. [...]
>
> Huh. I always assumed the shopkeepers live a soft life. And it's true, Peeta has always had enough to eat. But there's something kind of depressing about living your life on stale bread, the hard, dry loaves that no one else wanted.

So Peeta's not just wasting his natural talents at covering things in frosting (don't laugh; it becomes relevant during the Games themselves) because he lacks access to the master chefs of District 1. Peeta's forbidden by law from being successful at his trade. There may be a huge demand for the kind of bread or cakes that Peeta's capable of creating. But no one's ever going to know about it. The only thing that gets unloaded from the District 12 Trains had better be coal. No one in the Capitol cares about anything else.

This isn't just a problem for children with obvious gifts. Katniss is an excellent hunter by virtue of necessity: without her talents, her family would starve. There's not much demand for a hunter outside the wilds of Appalachia. But Katniss might have the capacity to be a brilliant engineer, or a doctor, or a farmer, or a supply chain manager. None of those options are available to her, however. Since she was born in District 12, her options (prior to the fame that comes from winning the Hunger Games, of course) are to mine coal or live on the fringes.

> For the first time, I allow myself to think about the possibility that I might make it home. To fame. To wealth. To my own house in the Victor's Village. My mother and Prim would live there with me. No more fear of hunger. A

> new kind of freedom. But then … what? What would my life be like on a daily basis? Most of it has been consumed with the acquisition of food. Take that away and I'm not really sure who I am, what my identity is.

When we learn the setup of Panem, we have an instinctual understanding that this isn't the best way to run a country. There have to be some missed opportunities here. But is there theory to bear out our instincts? Actually, yes.

PARETO ET PANEM

Suppose you have a game board with red, blue and yellow pieces and red, blue and yellow squares. Each piece is worth one point when it's on a coloured square or four points when it's on a square of its own colour. If a red and a blue piece are on a blue and a red square, respectively, it's in both players' best interests to trade. Each of them loses a point for vacating a coloured square, but gains four points for taking a square of their own colour, for a net gain of three points.

A move that makes everyone better off and nobody worse off is called a Pareto improvement move. It's named after the Italian economist Vilfredo Pareto, whom business types might recognize from the Pareto principle, commonly called the "80/20 rule." It doesn't get much use in board games as described above, since most games have competing players. But it's very useful in describing cooperative exchanges in economics.

Suppose I'm Gale Hawthorne and I have a freshly killed squirrel. My friend the baker has a freshly baked loaf of bread. I have lots of squirrels and can easily get more by hunting, so the loss of one squirrel doesn't diminish me too much. The baker stands in front of an oven all day and churns out bread, so giving up one burnt loaf isn't a big imposition. I don't get much fresh bread and he doesn't get much fresh meat. If we trade a squirrel for a loaf of bread, we're both better off: we both have something that's hard for us to come by and have given up something we have easy access to. This is a Pareto improvement and we both walk away satisfied. I take the loaf back to my friend and Platonic love interest Katniss for lunch.

It's worth noting that, unlike the stores in video game RPGs, this exchange won't work exactly the same way every time. If I show up at the bakers with twenty dead squirrels, he might not give me twenty loaves of bread. Each loaf of bread he trades away puts him a little closer to running out, and each new squirrel he eats is a little less satisfying. Here we get the notion of *diminishing marginal utility*. I will probably only trade squirrels for loaves until the utility I get for one more loaf just barely exceeds the utility I give up for losing one more squirrel.

(Some economists like to plot out diminishing marginal utility on a chart and give utility an arbitrary value in "utils." So the first loaf Gale acquires is worth 100 utils, while the second one is worth 90, the third worth 70, and so forth. I don't like doing this because no human being actually thinks this way, unless they're an economist. Most of us just go around with an instinctive sense of when we need more bread and when we have enough. That's good enough for me, although that might explain why I dropped out midway through the grad school application process and contented myself with a B.A. in Economics. I'm talking about "me, the author," at this point, not "me, Gale Hawthorne, dreamy and brooding love interest of Katniss Everdeen")

Pareto improvements are great because both parties are better off. We've had nothing more than an exchange of products from one side to the next, but we're both happier. When everyone within a closed set has made exchanges such that no more Pareto improvements are possible, the outcome is said to be Pareto-optimal. Now obviously, we'll never reach a point in the real world where no further improvement in material circumstance is possible. New people enter the world every day and disaster strikes us at random. But it's a desirable goal.

It's easy to see how Pareto improvements apply to exchanges of goods. But labor is a good as well, perhaps one of the most important goods there is. You can't have a Pareto-optimal outcome (or even approach one) without being able to exchange labor as freely as you exchange goods.

The state of Panem seems to be doing their damnedest to prevent Pareto efficiency. They forbid any sort of trade between districts. All the coal that District 12 mines gets loaded onto trains and shipped

to the Capitol, presumably to be distributed from there to other Districts. And someone who's born into District 12 can't trade their valuable skills – their labor – with people from other Districts. By creating impermeable borders and preventing migration across them, Panem is doing its best to keep its people poorer.

Is this deliberate or accidental?

http://www.slate.com/articles/double_x/doublex/2012/11/dividing_the_chores_who_should_cook_and_who_should_clean.html

You're Dividing the Chores Wrong

No, you shouldn't always unload the dishwasher because you're better at it

By Emily Oster

No one likes doing chores. In happiness surveys, housework is ranked down there with commuting as activities that people enjoy the least. Maybe that's why figuring out who does which chores usually prompts, at best, tense discussion in a household and, at worst, outright fighting.

If everyone is good at something different, assigning chores is easy. If your partner is great at grocery shopping and you are great at the laundry, you're set. But this isn't always—or even usually—the case. Often one person is better at everything. (And let's be honest, often that person is the woman.) Better at the laundry, the grocery shopping, the cleaning, the cooking. But does that mean she should have to do everything?

Before my daughter was born, I both cooked and did the dishes. It wasn't a big deal, it didn't take too much time, and honestly I was a lot better at both than my husband. His cooking repertoire extended only to eggs and chili, and when I left him in charge of the dishwasher, I'd often find he had run it "full" with one pot and eight forks.

After we had a kid, we had more to do and less time to do it in. It seemed like it was time for some reassignments. But, of course, I was still better at doing both things. Did that mean I should do them both?

I could have appealed the principle of fairness: We should each do half. I could have appealed to feminism—surveys show that women more often than not get the short end of the chore stick. In time-use data, women do about 44 minutes more housework than men (2 hours and 11 minutes versus 1 hour and 27 minutes). Men outwork women only in the areas of "lawn" and "exterior maintenance." I could have suggested he do more chores to rectify this imbalance, to show our daughter, in the Free To Be You and Me style, that Mom and Dad are equal and that housework is fun if we do it together! I could have simply smashed around the pans in the dishwasher while sighing loudly in the hopes he would notice and offer to do it himself.

But luckily for me and my husband, I'm an economist, so I have more effective tools than passive aggression. And some basic economic principles provided the answer. We needed to divide the chores because it is simply not efficient for the best cook and dishwasher to do all the cooking and dishwashing. The economic principle at play here is increasing marginal cost. Basically, people get worse when they are tired. When I teach my students at the University of Chicago this principle, I explain it in the context of managing their employees. Imagine you have a good employee and a not-so-good one. Should you make the good employee do literally everything?

Usually, the answer is no. Why not? It's likely that the not-so-good employee is better at 9 a.m. after a full night of sleep than the good employee is at 2 a.m. after a 17-hour workday. So you want to give at least a few tasks to your worse guy. The same principle applies in your household. Yes, you (or your spouse) might be better at everything. But anyone doing the laundry at 4 a.m. is likely to put the red towels in with the white T-shirts. Some task splitting is a good idea. How much depends on how fast people's skills decay.

To "optimize" your family efficiency (every economist's ultimate goal—and yours, too), you want to equalize effectiveness on the final task each person is doing. Your partner does the dishes, mows the lawn, and makes the grocery list. You do the cooking, laundry, shopping, cleaning, and paying the bills. This may seem imbalanced, but when you look at it, you see that by the time your partner gets to the grocery-list task, he is wearing thin and starting to nod off. It's all he can do to figure out how

much milk you need. In fact, he is just about as good at that as you are when you get around to paying the bills, even though that's your fifth task.

If you then made your partner also do the cleaning—so it was an even four and four—the house would be a disaster, since he is already exhausted by his third chore while you are still doing fine. This system may well end up meaning one person does more, but it is unlikely to result in one person doing everything.

Once you've decided you need to divide up the chores in this way, how should you decide who does what? One option would be randomly assigning tasks; another would be having each person do some of everything. One spousal-advice website I read suggested you should divide tasks based on which ones you like the best. None of these are quite right. (In the last case, how would anyone ever end up with the job of cleaning the bathroom?)

To decide who does what, we need more economics. Specifically, the principle of comparative advantage. Economists usually talk about this in the context of trade. Imagine Finland is better than Sweden at making both reindeer hats and snowshoes. But they are much, much better at the hats and only a little better at the snowshoes. The overall world production is maximized when Finland makes hats and Sweden makes snowshoes.

We say that Finland has an absolute advantage in both things but a comparative advantage only in hats. This principle is part of the reason economists value free trade, but that's for another column (and probably another author). But it's also a guideline for how to trade tasks in your house. You want to assign each person the tasks on which he or she has a comparative advantage. It doesn't matter that you have an absolute advantage in everything. If you are much, much better at the laundry and only a little better at cleaning the toilet, you should do the laundry and have your spouse get out the scrub brush. Just explain that it's efficient!

In our case, it was easy. Other than using the grill—which I freely admit is the husband domain—I'm much, much better at cooking. And I was only moderately better at the dishes. So he got the job of cleaning up after meals, even though his dishwasher loading habits had already come under scrutiny. The good news is another economic principle I hadn't even counted on was soon in play: learning by doing. As people do a task, they improve at it. Eighteen months into this new arrangement the dishwasher is almost a work of art: neat rows of dishes and everything carefully screened for "top-rack only" status. I, meanwhile, am forbidden from getting near the dishwasher. Apparently, there is a risk that I'll "ruin it."

http://mainlymacro.blogspot.com/2013/02/ricardian-equivalence-and-political.html

Ricardian equivalence and political uncertainty

I like teaching Ricardian Equivalence. Ricardian Equivalence is the idea that consumers will respond to a tax cut by saving the full amount, and not spending any of it. (Here we are concerned only with the impact of the tax cut on income, and we ignore any incentive effects.) It is counterintuitive, so it makes students think. It illustrates the importance of inter-temporal budget constraints: that a tax cut financed by borrowing, and holding future spending fixed, must imply higher future taxes to either pay back the borrowing or pay the interest on that borrowing.[1] So a consumer that thinks ahead (and that faces the same interest rate as the government) will have to decide not just how they respond to the tax cut, but how they will pay for future tax increases. Finally it gets across the idea of consumption smoothing in the absence of credit constraints: if a consumer wanted to spend more today and spend less when taxes go up, they will have already done so by borrowing themselves.

Now macroeconomic textbooks will tell you many reasons why Ricardian Equivalence does not hold. Some of these are also interesting for students to explore. However one basic point often does not get the emphasis it deserves, and that is the assumption that the future path of government spending on goods and services remains unchanged. Only by making this assumption can we say that a tax cut today will mean tax increases tomorrow.

In reality consumers who receive tax cuts have very little information about what the implications will be for future taxes or spending. (Things are probably getting better, but as the IMF paper discussed in this post from Carlo Cottarelli makes clear, there is a long way to go.) Even if the current government did say that the tax cut was temporary, and would require higher future taxes to pay back the borrowing, and the consumer believed that government, it is quite possible that a different government might be in power when the time for higher taxes came. If that different government chose to cut its spending rather than raise taxes, then the consumer would be better off in terms of their income as a result of the tax cut.[2] A tax cut today paid for by lower government spending tomorrow will lead to higher consumption today.

The practical importance of this point for temporary tax cuts is probably not great. One of the points I try to get across when teaching is to distinguish between the implications of internalising the government's budget constraint (which is 'economics' for thinking about how the government will eventually pay for a tax cut) and the implications of consumption smoothing. In the standard consumption model, a temporary tax cut, even if it is eventually paid for cutting government spending, will still lead to a quite small immediate increase in consumption, because the consumer will want to spread the benefits over time.[3] If you want to argue that temporary tax cuts will lead to significant changes to consumption, you need to focus on alternative models of consumer behaviour.[4]

The lack of information provided by governments about future fiscal plans, and their inability to commit to such plans in a democracy, is also relevant in trying to distinguish between temporary and permanent tax cuts. Governments often like to pretend tax cuts are permanent even when they cannot be. Those in the US do not need reminding that occasionally governments pretend tax cuts are temporary when they want them to be permanent. Tax cuts could be permanent if they are paid for at some later date by a permanent reduction in government spending. As a result, a tax cut could be a signal that government spending will at some stage be permanently reduced.[5] If that signal is correct, it makes sense to consume all of the tax cut.

So Ricardian Equivalence is a great thought experiment, but never a realistic possibility in a world where governments cannot commit on fiscal plans. Perhaps useful for the macroeconomist as scientist, but never the final answer for the macroeconomist as engineer. The macroeconomist as engineer needs to think about the possibility that a tax cut today implies a change in future plans for government spending, and that consumers might act on that possibility.

[1] We also assume no default or printing money.

[2] Whether the consumer's overall welfare is higher is another matter, but that is beside the point here.

[3] Under certain conditions, a Barro type consumer who cares about their children will just consume the interest their receive on the amount of the tax cut.

[4] In particular, both the existence of credit constraints and precautionary saving really matter here.

[5] A further possibility is that the tax cut represents favourable news about future growth, which also implies that the consumer is permanently better off.

Problem set:

1) Explain, in your own words, the following concepts:

- Opportunity cost
- Pareto efficiency
- Diminishing marginal utility
- Absolute advantage
- Comparative advantage
- Ricardian equivalence
- Intertemporal budget constraint

2) Suppose you win a ticket to see a football match in which your local Oxford team will be playing. You cannot re-sell it. Radiohead is performing on the same night and their concert is the only other activity you are considering. A Radiohead ticket costs £30, and you would be willing to pay up to £50 (in other words, if Radiohead tickets were more than £50, you would pass on attending even if you had nothing better to do). There is no other cost of attending either event. What is your *opportunity cost* of going to the football game?

3) *Thinking at the margin:* Let's say you are booked on a honeymoon to the southern French coast. Your spouse comes down with a high fever a day before the flight. The big items have been paid for - airplane tickets, accommodation, tour guide, gym sessions - totalling RM 10,000. What are your considerations when you decide whether or not you should still go for the French honeymoon?

4) In which situation would you be more willing to take a half-hour (round-trip) bus ride that costs £2?
    a) You consider whether to buy a laptop for £1,500 in downtown Oxford, or to take the bus to another store to buy the same laptop for £15 less.
    b) You consider whether to buy a DVD for £30 in downtown Oxford, or to take the bus to another store to buy the same laptop for £15 less.

5) Joe and Martha get to split $100. Suppose that Joe gets x dollars, that Martha gets y dollars, and that 100-x-y dollars is thrown away. For which values of x and y is the allocation *Pareto-efficient*?

6) Draw a diagram which describes *diminishing marginal utility*.

7) Beth and Dan live on an island by themselves and eat only pastries. Beth can frost 10 cupcakes per hour or glaze 30 doughnuts per hour. Dan can frost 30 cupcakes or glaze 60 doughnuts per hour. Who has *the absolute advantage* in frosting cupcakes and in glazing doughnuts? Who has the *comparative advantage* in frosting cupcakes? How does *the theory of comparative advantage* apply to international trade?

8) Suppose that consumers live for two periods, the present and the future. Each consumer has income y_1 in the present and y_2 in the future, can borrow and save at the real interest rate r, and has current and future consumption c_1 and c_2.

   The government levies a lump sum tax T on each consumer in the present, invests the tax collected in bonds paying interest at rate r, and returns the amount T, plus interest, to the consumer in the future.
   - How will this affect c_1 and c_2?
   - Would the answer be different if the consumer faced borrowing constraints? Why?

9) "A tax cut during a recession will have no impact on consumption because it will all be saved to pay for a tax increase in the future." Discuss.