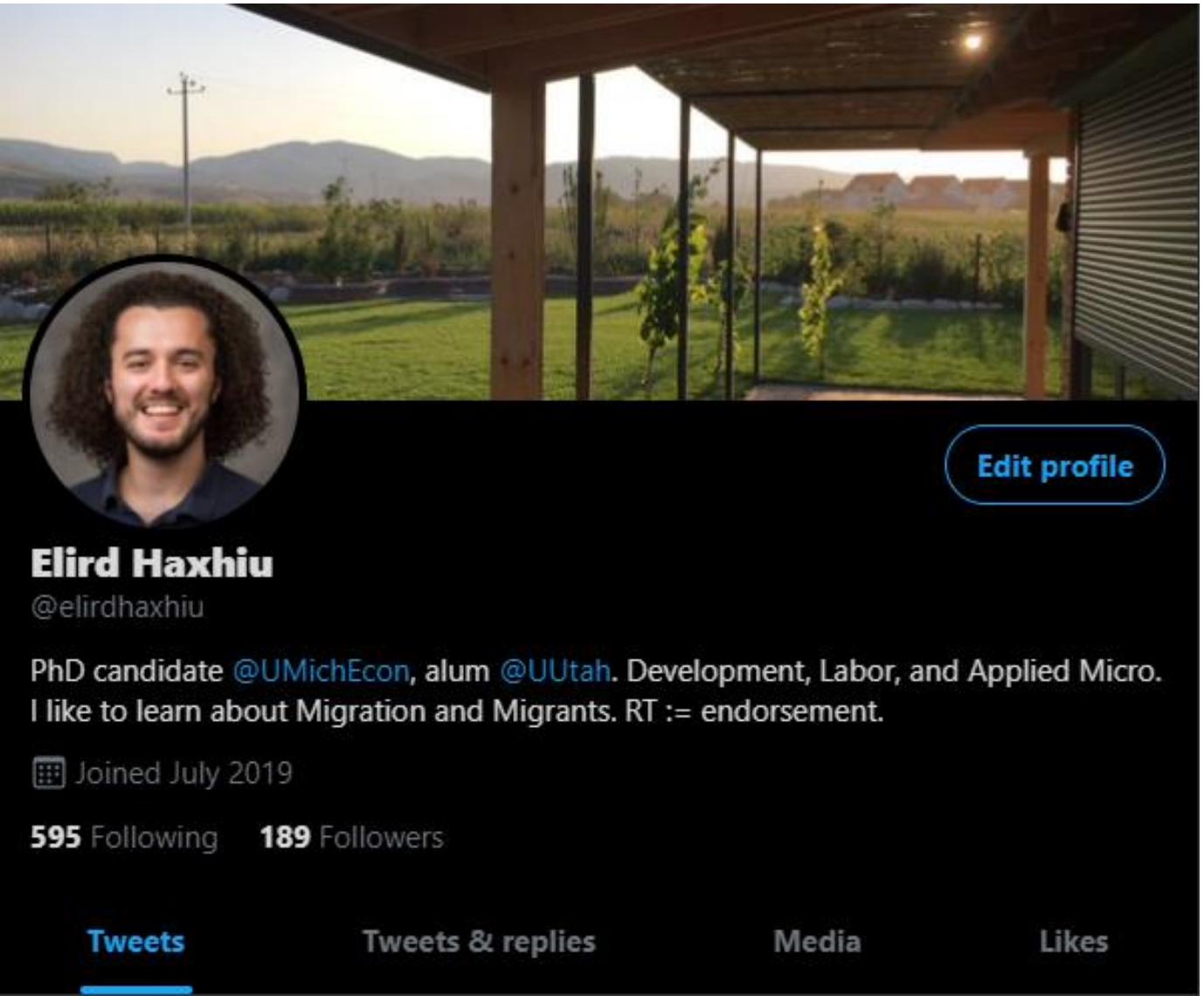
Principles of Applied Microeconomics

Ross Summer Connection (2022)
Elird Haxhiu

About me!


Edit profile
Elird Haxhiu
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PhD candidate @UMichEcon, alum @UUtah. Development, Labor, and Applied Micro.
I like to learn about Migration and Migrants. RT := endorsement.
Joined July 2019
595 Following
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Likes

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Covid Economics Issue 76, 23 April 2021

COVID-19 and stay-at-home orders: Identifying event study designs with imperfect testing[1]

Jaedo Choi,[2] Elird Haxhiu,[3] Thomas Helgerman,[4] Nishaad Rao[5] and Taeuk Seo[6]

Date submitted: 10 April 2021; Date accepted: 14 April 2021

This paper estimates the dynamic effect of Stay-At-Home (SAH) orders on the transmission of COVID-19 in the United States. Identification in this setting is challenging due to differences between real and reported case data given the imperfect testing environment, as well as the clearly non-random adoption of treatment. We extend a Susceptible-Infected-Recovered (SIR) model from Epidemiology to account for endogenous testing at the county level, and exploit this additional structure to recover identification. With the inclusion of model-derived sufficient statistics and fixed effects, SAH orders have a large and sustained negative effect on the growth of cases under plausible assumptions about the progression of testing. Point estimates range from a 44% to 54% reduction in the growth rate of cases one month after a SAH order. We conclude with a discussion on extending the methodology to later phases of the pandemic.

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Elird Haxhiu
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Lockdowns reduce the growth rate of COVID-19 cases by up to 54% after one month. Credibly estimating this treatment effect is difficult because

i) reported cases != actual cases, and
ii) the functional form of cases matters a lot

A quick thread on what we do!

(1/n)

> **CEPR** @cepr_org · Apr 23
> Out Now!
> Issue 76 of #CovidEconomics: Vetted and Real-Time Papers - mailchi.mp/cepr/press-rel...

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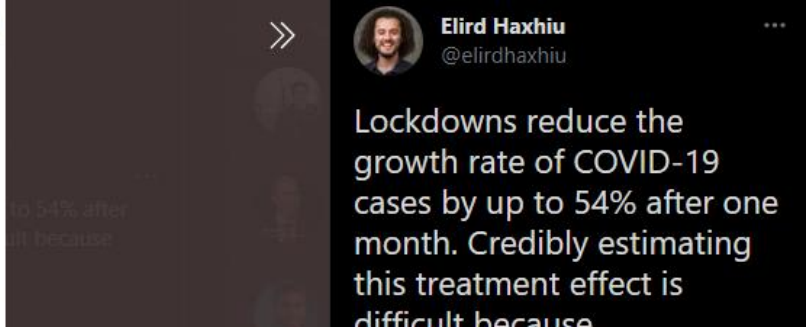

Low Dose or No Dose? Continuous Difference-in-Differences with Unknown Controls

Elird Haxhiu * Thomas Helgerman *
haxhiu@umich.edu tehelg@umich.edu

April 4, 2022

Abstract

This paper studies difference-in-differences research designs where all units receive a continuous treatment, or dose, so there is no group that is *ex ante* unexposed. We present a framework to identify and estimate average treatment effect and causal response parameters when the continuous treatment takes effect only after some cutoff value. In applied settings, this parameter is usually unknown and hence neglected from econometric analysis. Under a range of data-generating processes, we illustrate the bias from Two-Way Fixed-Effects (TWFE) estimators when treatment is defined as (i) the full dose or (ii) an indicator for units with doses above some researcher-specified value or percentile, such as the median. For large jumps or sharp discontinuities at the cutoff value, researchers should instead jointly estimate the threshold along with treatment effect parameters using existing methods. This restores identification and produces correct standard errors but fails when parametric assumptions do not hold or the dose response function is flat around the true cutoff. In these cases, we argue that researchers should instead target binned average treatment effects and document an intuitive bias-variance trade-off in recategorizing low dose units as controls in estimation. We then exploit this trade-off to derive the MSE-optimal estimator, show that it depends on the unknown cutoff, and propose a minimax constraint and partial identification procedure to make progress on inference.

JEL codes: C14, C23, C24.

Key words: Difference-in-Differences, Parallel Trends, Threshold Estimation, Dose Response curves

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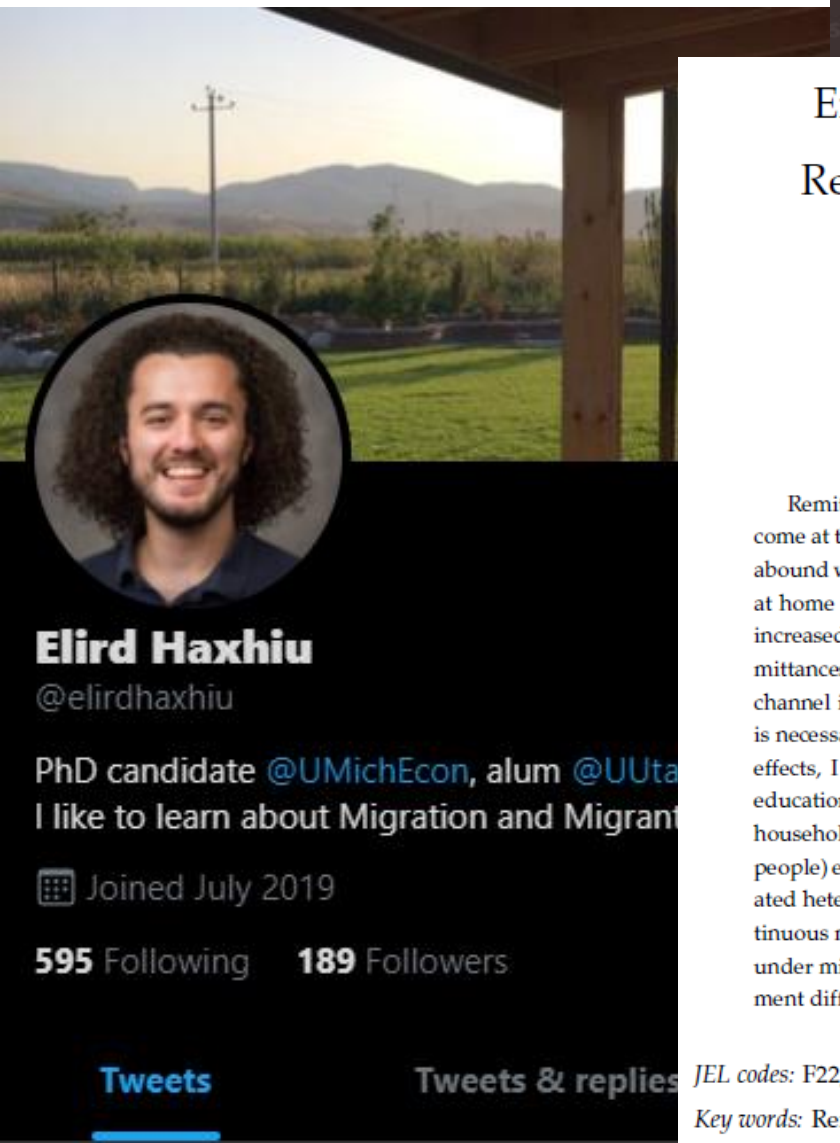

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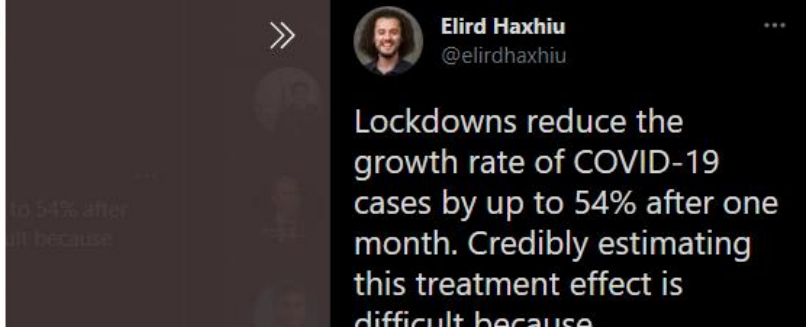

Emigration and Education: Separating Remittance from Wage Premium Effects

Elird Haxhiu*
University of Michigan
July 19, 2022

Abstract

Remittances are a large source of international capital in developing countries, but come at the cost of losing workers to destination labor markets. Fears of "brain drain" abound when migrants are positively selected, but may be assuaged by "brain gains" at home that make up for the initial loss. These effects are usually motivated by an increased wage premium for skill, but also arise when constrained households use remittances to finance education investments. I argue that dominance of the premium channel is sufficient for long run losses, while dominance of the remittance channel is necessary for persistent gains. To infer their relative contributions to reduced form effects, I show that remittances are more dominant whenever emigration increases education rates and closes gaps in schooling between constrained and unconstrained households. I study Romania in 1990-2016, when 13% of the population (3 million people) emigrated. In 2002, Schengen visas were waived for all Romanians but generated heterogeneous opportunities for emigration at the local level, mediated by continuous measures of foreign migrant networks. To identify reduced form parameters under minimal assumptions (parallel trends), I use new methods in continuous treatment difference-in-differences (DD) designs without pure controls.

JEL codes: F22, I25, O15.
Key words: Remittances, Migration, Human Capital, Networks, Credit Constraints.

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Elird Haxhiu * haxhiu@umich.edu
Thomas Helgerman * tehelg@umich.edu
April 4, 2022

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This class = tools from micro-econ + real world issues

- Tools
  1. Marginal analysis
  2. Markets for goods and labor
  3. Causal inference w/ observational data
  4. Decomposing gaps in outcomes
  5. Consumer welfare theorems
  6. Dynamic consumption and saving theory
  7. Discrimination: taste-based, statistical, and systemic
- Real world issues
  1. International migration
  2. Gender wage gap
  3. Racial wealth gap

Common Theme

- Preventing people from engaging in economic activity when they otherwise could and would always results in
  1. gaps between the prevented and the free
  2. lower total production for both the prevented and the free
  3. obvious solutions that involve perturbing the social order and distribution of wealth in society (i.e. stop preventing, start enabling economic activity)

	MON	WEDS	THURS
Migration Week 1		LEC 1: Marginal analysis and markets HW 0 assigned and due HW 1 assigned OH	LEC 2: Markets and migration READ: Clemens (2011)
Gender Wage Gap Week 2	LEC 3: Causal inference, and Clemens (2011) READ: Blau & Kahn (2000) EC 1 assigned OH	LEC 4: Gender wage gap, decomposition analysis HW 2 assigned READ: Cortes & Pan (2017) OH HW 1 due	LEC 5: Welfare theorems, and Cortes & Pan (2017) EC 1 due
Racial Wealth Gap Week 3	LEC 6: Racial wealth gap, and discrimination theory READ: Cook (2014) OH HW2 due	LEC 7: Cook (2014) EXAM assigned OH	EXAM due

Marginal Analysis & Markets

Ross Summer Connection (2022)
Elird Haxhiu

But first, some context…

- What is economics?
- What is the field of economics?
- What is the field of academic economics?
  - Then, now, and tomorrow?

But first, some context…

- NPR (2020) podcast, Story of a Paper

https://www.npr.org/2020/06/11/875445743/story-of-a-paper

But first, some context…

- NPR (2020) podcast, Story of a Paper

- We will read **Cook (2014)** at the end of the class!
- By that time, we'll have some powerful tools to understand her analysis, conclusions, and its broader implications for society
- Get pumped for it!

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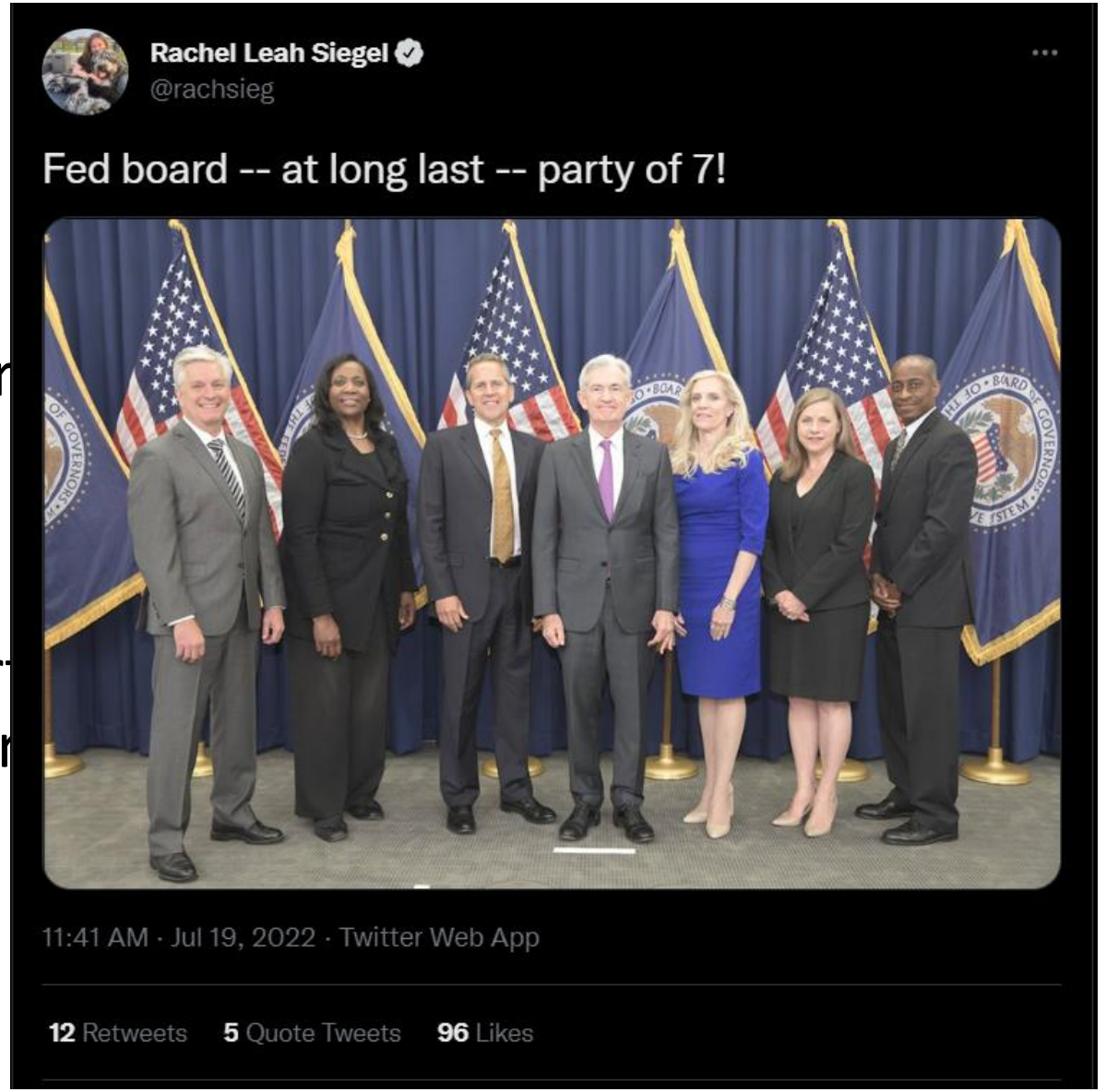

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What is economics?

- Textbook: study the allocation of scarce resources.
- Alternative: study human behavior as the result of optimal decisions in the presence of physical constraints and institutional constraints.

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- **Example 1**: product purchases
  - Human behavior: consumer purchasing behavior
  - Optimal decision: how much to consume of a good
  - Physical constraints: price of goods and available income
  - Institutional constraints: price changes given aggregate purchasing behavior

What is economics?

- Textbook: study the allocation of scarce resources.
- Alternative: study human behavior as the result of optimal decisions in the presence of physical constraints and institutional constraints.

- **Example 2**: labor supply
  - Human behavior: consumer trade-off between labor and leisure
  - Optimal decision: how many hours to spend at work
  - Physical constraints: wages and available (non-labor) income
  - Institutional constraints: wage shifts given shocks, level of competition…

Models

- Definition: a model is a simplified representation of the economy that is used to understand how it works
- **Ceteris paribus** assumption: all other factors relevant to the situation being studied are held constant, or do not change

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- **Ceteris paribus** assumption: all other factors relevant to the situation being studied are held constant, or do not change

- What can models teach us?
  - Positive statements: how the economy "actually" works
  - Normative statements: prescriptions about how the economy should work
- Why do economists disagree?
  - Different normative value judgements
  - Different assumptions used to build a model

EX: Supply & Demand

1) Product Market

2) Labor Market

Break!

- Let’s chill for about 10 minutes
- Then we start building our toolkit…

Scarcity

- Resources in society are always finite or limited…
  - Another word for scarcity is physical constraint!
  - Means we can’t have it all, and we are faced with *trade-offs*

Scarcity + Opportunity Cost

- Resources in society are always finite or limited…
  - Another word for scarcity is physical constraint!
  - Means we can't have it all, and we are faced with *trade-offs*

- Opportunity Cost (OC): how much of one thing you have to give up to get a single unit of another thing

- Example: watching this lecture
  - Explicit OC: $X for tuition (or $0 if you live that RSC life)
  - Implicit OC: monetary value of the time you spend here

Opportunity Cost

- Formal definition: if X and Y are two goods or services that can be measured in the same units, then the opportunity cost of X in terms of Y is given by

$$OC_{XY} = \frac{\Delta Y}{\Delta X}$$

where $\Delta Y \leq 0$ and $\Delta X > 0$

EX

- You only consume apples and oranges, and to get 4 more oranges you must give up 8 apples

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- We say that the opportunity cost of an orange is two apples
  - In other words, the "price" of oranges is two apples
  - What is the price of an apple? $OC_{AO} = \frac{1}{OC_{OA}} = -\frac{1}{2}$

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Implications for **ca$h** money…

EX

- You only consume apples and oranges, and to get 4 more oranges you must give up 8 apples: $OC_{OA} = \frac{\Delta A}{\Delta O} = \frac{-8}{4} = -2$

- Assume: tradeoff remains constant regardless of how many you have
- Assume: you use up all resources available at each point

  ⇒ constant **Production Possibilities Frontier** (PPF)

Decision-Making

- Scarcity (of any kind!) implies that decisions are constrained
- We study decision-making in this context and derive some general and intuitive “decision rules”
- Economic agents face two types of choices
  1. Whether-or-not decisions
  2. How-much decisions

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- Economic agents face two types of choices
  1. Whether-or-not decisions
  2. How-much decisions

- The first is a *discrete* type of decision, and the agent should undertake the action if the total benefits of doing so outweigh the total costs
- Examples: going to college, applying for a job, opening a company

Decision-Making

- How-much decisions are *continuous*, and finding the optimal choice requires using **marginal analysis**
- Think of it as a series of whether-or-not decisions!

- Example: how many cupcakes should I eat?
  - Should I eat the first cupcake? If benefits exceed costs, then eat it and move onto the next decision; if not, then we're done!
  - Should I eat the second cupcake?
  - …

Marginal Analysis

- Context: consuming units of some good

- Definition: if you consume Q units of a good, then

$$TB(Q) \quad \text{and} \quad TC(Q)$$

are functions which give the total benefit and total cost associated with consuming the Q units of the good

Marginal Analysis

- Definition: if you consume Q units of a good, then

$$MB(Q) = \frac{\Delta TB}{\Delta Q} \quad \text{and} \quad MC(Q) = \frac{\Delta TC}{\Delta Q}$$

  are functions which give the **marginal** benefit and **marginal** cost of consuming one extra unit of consumption…

- When making how much decisions, economic agents consider the marginal costs and benefits of each unit of consumption

EX: Years of Schooling

- A person wants to decide how many years of schooling to complete
- Each additional year of schooling is associated with…
  - Marginal costs: both explicit (tuition) and implicit (foregone wages)
  - Marginal benefits: higher wages, better job, etc.

- The following table summarizes (monetary value of) costs and benefits

EX: Years of Schooling

Quantity (Q)	Total Cost (TC)	Marginal Cost (MC)	Total Benefit (TB)	Marginal Benefit (MB)
0	0	–	0	–
1	30,000	30,000	300,000	300,000
2	70,000	40,000	450,000	150,000
3	130,000	60,000	540,000	90,000
4	220,000	90,000	600,000	60,000
5	350,000	130,000	650,000	50,000

EX: Years of Schooling

- The optimal decision is to accumulate 3 years of schooling!

- There are three ways to arrive to this solution:
  1. Complete each additional year of schooling as long as $MB(Q) > MC(Q)$ for that year. Stop going to school when $MB(Q) = MC(Q)$, and if this doesn't occur then stop at the last unit for which $MB(Q) > MC(Q)$

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  2. Complete the number of years which maximize "total profits", defined as

$$\pi(Q) = TB(Q) - TC(Q)$$

Note: profits here mean *economic profits* (which deduct total costs, or opportunity costs) not *accounting profits* (which deduct explicit costs only)

EX: Years of Schooling

Q	TC	MC	TB	MB	$\pi = TB - TC$
0	0	–	0	–	0
1	30,000	30,000	300,000	300,000	270,000
2	70,000	40,000	450,000	150,000	380,000
3	130,000	60,000	540,000	90,000	410,000
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  2. Complete the number of years which maximize total profits, defined as

$$\pi(Q) = TB(Q) - TC(Q)$$

  3. Choose Q where the $MB(Q)$ curve crosses the $MC(Q)$ curve

EX: Years of Schooling

Marginal Analysis

- An economic agent can make an optimal decision about which quantity Q to choose by
  1. Picking the last Q where $MB(Q) \geq MC(Q)$.
  2. Picking the Q which maximizes $\pi(Q) = TB(Q) - TC(Q)$.
  3. Picking the Q where the $MB(Q)$ curve intersects the $MC(Q)$ curve.

Conclusion

- Marginal analysis solution technique is very general!

- Other examples of economic decisions
  1. Should I migrate to another country? (see everything this week!)
  2. How many hours per week should/can I work? (see mig + GWG topics)
  3. How much time should I spend inventing? (see Cook (2014) + related topics)
  4. Should I buy a house? How many children should I have? (see *all* topics!)

- Note: Supply and Demand (of anything) “=“ Marginal Analysis

Next time

- Next lecture: tomorrow @ 12pm!
- Next office hour: today @ 4pm! -> Lorch Hall M101

- HW0: available and due by @ 11:59pm tonight (free points, allows me get to know you and your interests!)

- HW1: available and due next Wednesday!
  - No rush on this, still learning tools you'll need to answer all questions…
  - Good to get going early… read the questions, think about how you'd tackle them
  - Come back with questions!