L&S 39G

Health, Human Behavior, and Data

Prof. Ryan Edwards

Class 4

September 22, 2015

Today's agenda

- Some quick i>clicker questions about the readings

- Catherine and Kyle on the reading

- More in depth on the readings

- Term papers

  - Structure of a scientific research paper

  - Two examples of great undergrad research papers

Date	Reading	Presenters		Date	Reading
Sep 8	Bhattacharya chaps 1-2	Alastair & Catherine		Oct 27	Ashenfelter & Ziliak
Sep 15	Cutler et al. and Wachter	Eric & Natalie		Nov 3	Ruhm
Sep 22	Bhattacharya chap 3	Catherine & Kyle		Nov 10	Small & Rosenbaum
Sep 29	Bhattacharya chap 4			Nov 17	Buckles & Hungerman
Oct 6	Sutton and Bartholomew			Nov 24	Carpenter & Dobkin
Oct 13	Aron-Dine et al.			Dec 1	Edwards & Mason
Oct 20	Oster				

i>clicker question 4.1

Is a person's health like a <u>Zachary's pizza</u>?
Or is it more like a <u>laptop computer</u>?
Or is it more like a <u>bicycle</u>?

A. The pizza. It takes time to bake a pizza, and leftovers last in the fridge

B. The laptop. You pay a lot at first

C. The bicycle. You buy it, and then you repair it

D. None of these. Health is like nothing else

i>clicker question 4.2

According to the text, why would somebody with more education have better health?

A. Some people are endowed from birth with more

B. Some people are better at producing good health

C. Some people have better social networks

D. Some people live in better neighborhoods

i>clicker question 4.3

According to the text,
why does health decline with age?

A. Because health depreciates more rapidly with age

B. Because education declines with age

C. Because the rate of return associated with other activities rises with age

Reading this week

- Bhattacharya Chap 3: The Grossman Model

- Health is kind of like a bank account

  - You have an opening balance that might be larger or smaller depending on who you are

  - Over time and through life, the balance depends on

    Withdrawals

    Deposits

    The rate of return

Before we dive in

- The Grossman (1972) model is just a model

- It gives us a common baseline

- It emphasizes certain truths

- But it leaves out a lot of things that we think matter

- Economists think that models are useful even when we know they leave things out

- (And even though this model is "simple," it's also pretty complicated! We'll talk about where the insights lie)

Health is a form of "capital"

- The word "capital" means a lot of things

- In economics, capital usually means either:

  - Physical factors of production like equipment and buildings

  - The *value of those factors*, which can be dollars

  - A related concept, like *human capital* (education) or here, *health capital*

- Important characteristic: Capital takes time to create, and once created, it tends to last

Why study health as capital?

- Some things about health are short-term in nature

- But a lot of other things are long-term

- The textbook pitches:

  - It helps us understand the relationship between socioeconomic status (education) and health

  - It also helps us understand declining health among aging individuals

Some key insights about the nature of health

1. Health makes us happier in everything we do

   ("Health is a consumption good")

2. Health keeps us alive and makes our time healthy; healthy time can be enjoyed or traded for earnings

   ("Health is an input into production")

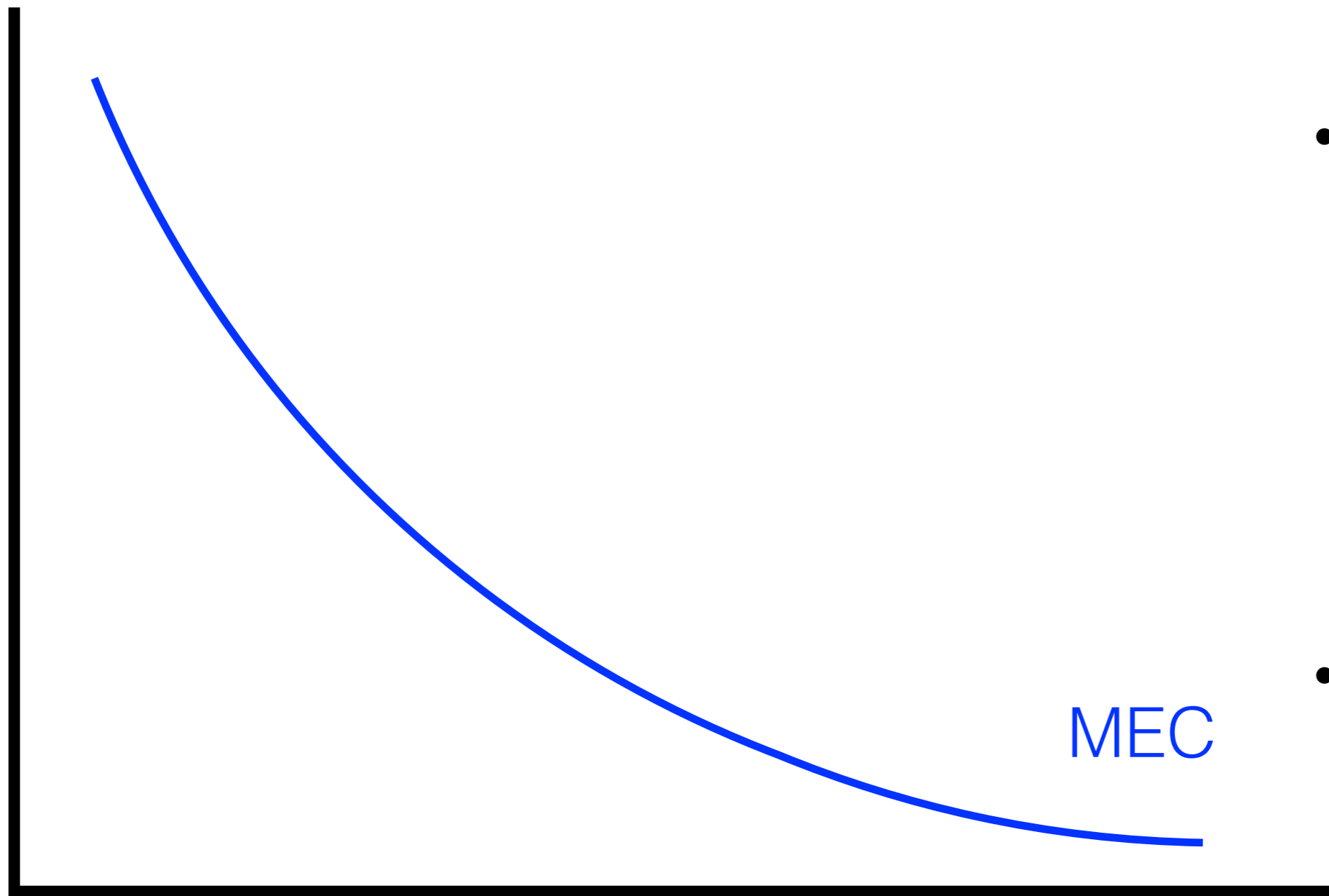3. Better health today also means better health tomorrow

   ("Health is a form of capital")

How do people choose levels of health?

- We know we can spend lots of time and money on being healthy

- But the more time and money we spend on health, the less we have for other enjoyments

- And other enjoyments of life are pretty fun!

- So far, this is the usual story of economic choice

- But a twist is that *we need health to enjoy anything*

One graph helps us the most
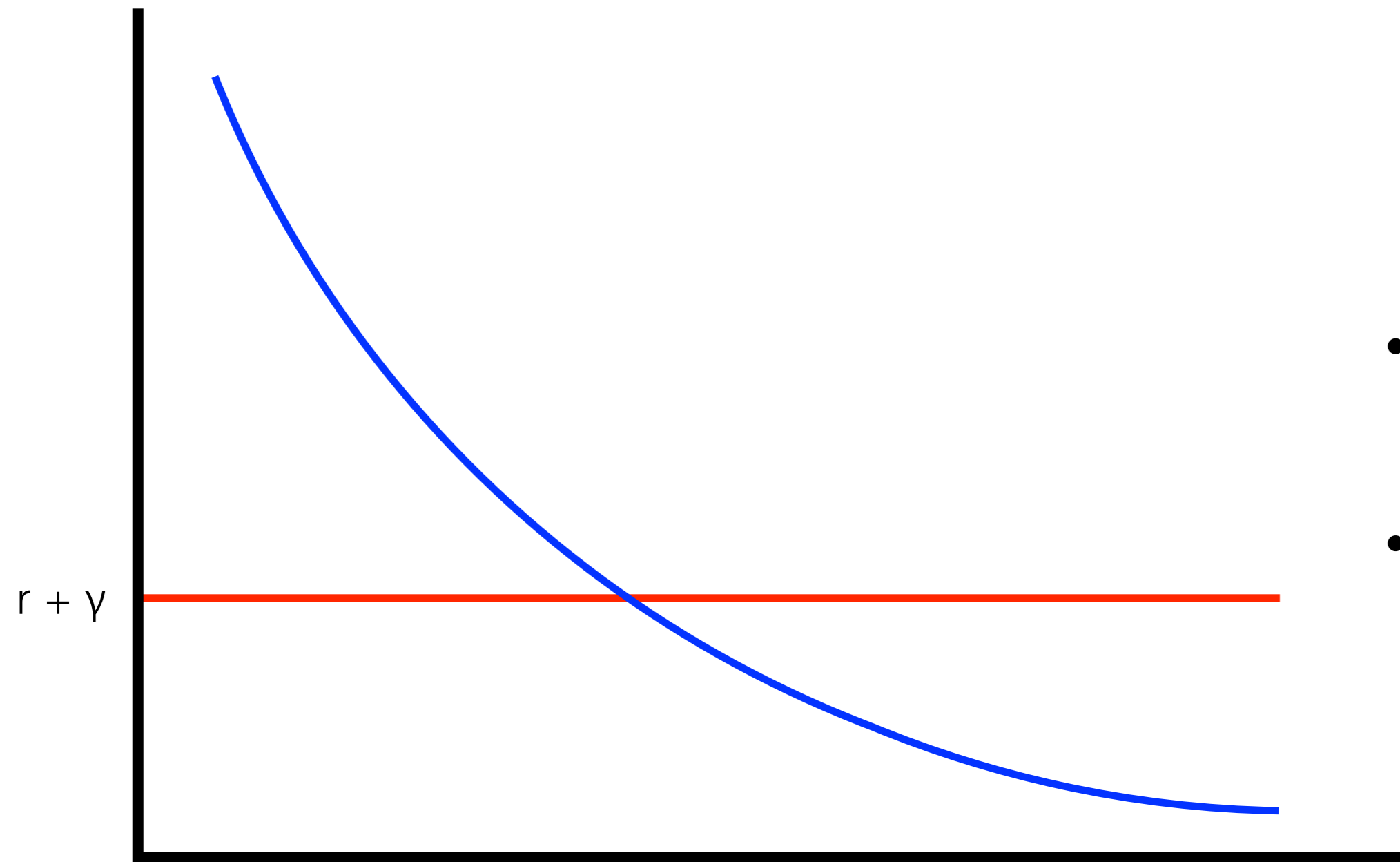
Rate of return

Stock of health, H

MEC

- The more health you have, the better off you are

- But the returns to additional health are diminishing:

  Healthy time rises strongly with health when sick, but slowly when already healthy

- Translation: The rate of return to holding health H falls with H

One graph helps us the most
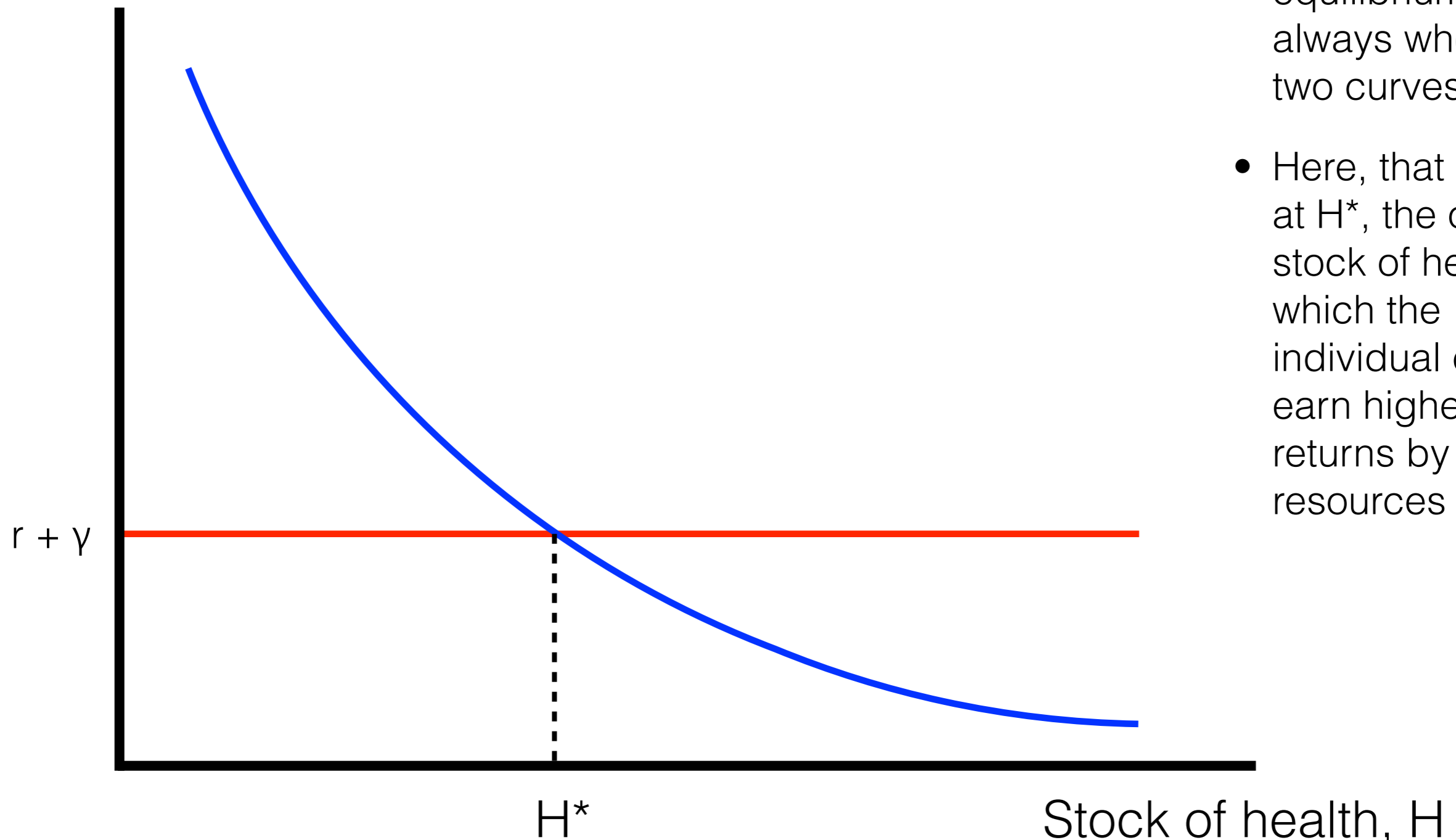
Rate of return

$r + \gamma$

Stock of health, H

- Rational people choose only so much H so that its return equals what they could get doing other things

- Suppose that alternate rate of return is **r**

- Because H depreciates at rate γ the individual must receive from H at least **r + γ**

One graph helps us the most

Rate of return

r + γ

H*

Stock of health, H
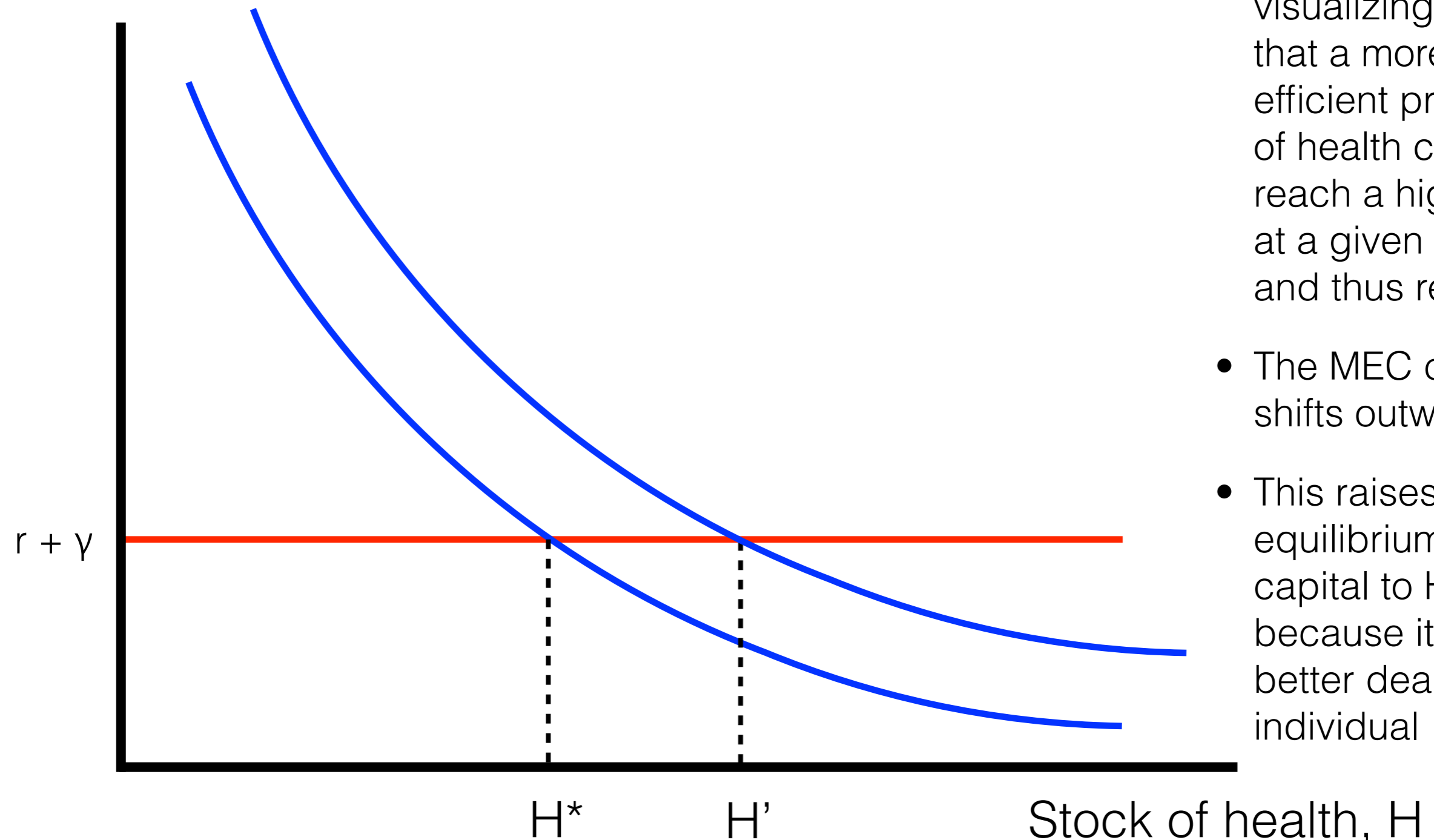
- In economics, the equilibrium is always where the two curves cross

- Here, that occurs at H*, the optimal stock of health at which the individual can't earn higher returns by shifting resources

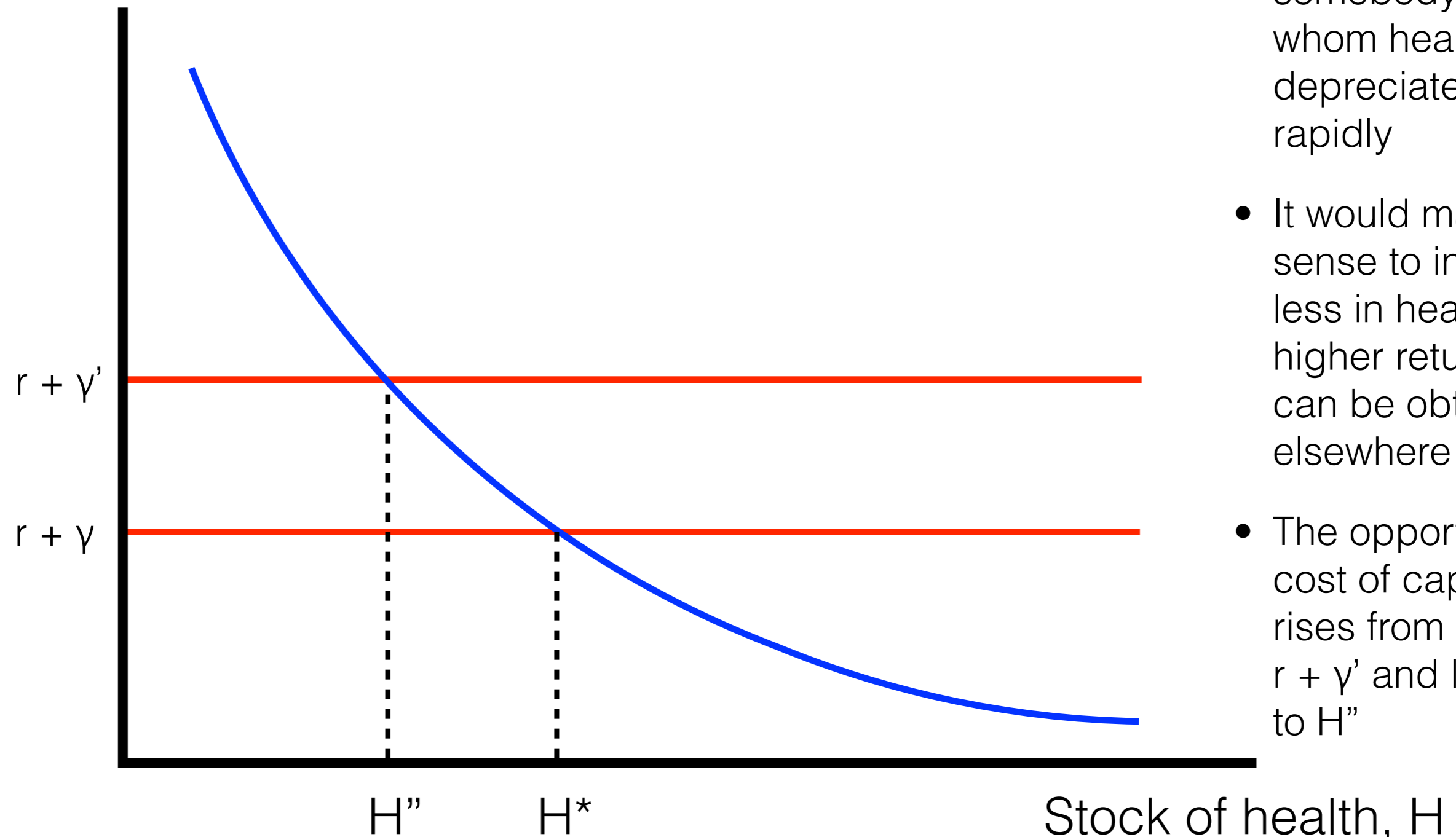# Suppose some individuals were more efficient at producing health

Rate of return

r + γ

H* H'

Stock of health, H

- One way of visualizing this is that a more efficient producer of health can reach a higher H at a given cost and thus return

- The MEC curve shifts outward

- This raises equilibrium health capital to H' because it's a better deal to the individual

Suppose health depreciated more quickly

Rate of return

- Imagine somebody for whom health depreciated more rapidly

- It would make sense to invest less in health; higher returns can be obtained elsewhere

- The opportunity cost of capital rises from $r + \gamma$ to $r + \gamma'$ and lower H to H"

$r + \gamma'$

$r + \gamma$

H" H*

Stock of health, H

Term papers

A good topic is three sentences:

1. What is the question I'd like to answer with data

2. What is the data source I think can use to answer it

3. What answer do I think I will likely find

Your finished product should be about 5 pages of text plus more space for tables, figures, and references

Don't procrastinate

- Starting early will help you in two ways

  – You'll get done sooner with less stress

  – You'll have more time to identify a project *that you can actually pull off*

    - Don't bite off more than you can chew!

    - Just get it done. It doesn't have to be a work of art

Methods

- Use any method you want

- Simple histograms, which will be discussed in Stat/CS 94, are fine

- Use any program you want

- MS Excel is fine, Python is fine, literally anything

- The tools may vary, but your desired output is the same: figures or charts and/or tables

Wikipedia

- Use it to jumpstart your knowledge

- Never

- Ever

- Ever

- Ever cite it as a source. Never.

- It doesn't cite itself. It's not a source, it's practically anonymous cloud opinions

Basic structure of a scientific paper

I.   Introduction

II. Data and methods

III. Results

IV. Conclusion

V.   References

VI. Appendix (charts, figures)

5 pages MAX!

I. Introduction

- State the topic: What question are you trying to answer? (e.g. Does immigration depress wages?)
- Motivation
  - Why do we care?
  - Acknowledge other people who have worked on your topic if your idea was sparked by theirs.
  - (optional) Facts about what we think we know so far
- State the hypothesis/thesis
  - What relationship do you expect to find?
    - Directional: e.g. if education is high, then income is high
    - Non-directional: incomes will differ by race/ethnicity
- Preview results (optional)

II. Data and methods

- What data are you using?

  - Source: e.g. American Community Survey extracted from IPUMS for 1980-2000.

  - Which variables used, for what time period and population? How many observations?

III. Results

- For each graph/table/chart, state clearly what your analysis shows

  - Refer to the figure numbers in order

    - "Figure 1 shows the percent foreign-born in the U.S. versus GDP per capita over time."

  - What is the observed relationship?

    - "When the percent foreign-born went up by X, per capita income went down by Y."

    - (For clarity, refer to the variable names, not to the general concepts that they're indexing)

III. Results (continued)

- For each chart, interpret your results.

  - What does the observed relationship say about your research question?

    - Relate variables back to concepts:

    - "Greater immigration is associated with lower wages."

  - Be cautious about causal relationships

    - Good: "Immigrants **may be** attracted to areas where incomes are lower."

    - Not so good: "Immigrants reduce incomes."

IV. Conclusion

- Summarize your findings (briefly!)

- Be skeptical! What are the limitations of your analysis? (Do *not* say you ran out of time)

  - Selection bias (representativeness)

  - Reverse causality

  - Measurement problems

  - Omitted variables?

- Potential avenues for further research

  - If you had more time, what other types of analysis would you do?

V. References

- Also known as a bibliography

- COMPLETELY cite everything!

- Cite your data sources

- Include URLs if relevant

VI. Appendix

- Number all your figures and tables

- Place them in the order that you talk about them in the paper

- Completely LABEL everything

- Don't include anything that is not also discussed somewhere in the paper

Tips

- GET STARTED thinking about this. Don't procrastinate!

- Have a friend proofread it. It's only 5 pages

- Too long? Cut. Or move material into endnotes

- Label your sections clearly, make sure graphs are readable on the screen and printed

- Number your pages!

- Save a tree and print double-sided

Two examples of great papers

The first uses very straightforward graphing of data

The second uses complicated regression analysis!

You should use methods that:
- you understand
- are appropriate to the task, no more & no less

Accessibility of Mental Health Services for
Whites and Non-Whites:
How Much Do Income and Language
Differences Explain?

"Cigarette Smoking and Work-Related Stress: A Multiple Regression Data Analysis"