The Economics of Ideas

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Introduction to Economic Growth

Ideas

We use the term “idea” to refer to any

- .. plan, blueprint, recipe, design, or business idea
- .. that tells us how to combine factors of production (labor, capital)
- .. to produce some product that someone might be willing to pay for

Ideas are not just about “technology”:

- The latest iteration of ChatGPT is an idea, yes
- ..but so is identifying a good place to locate a Starbucks
- ..and so is a restaurant concept that attracts patrons

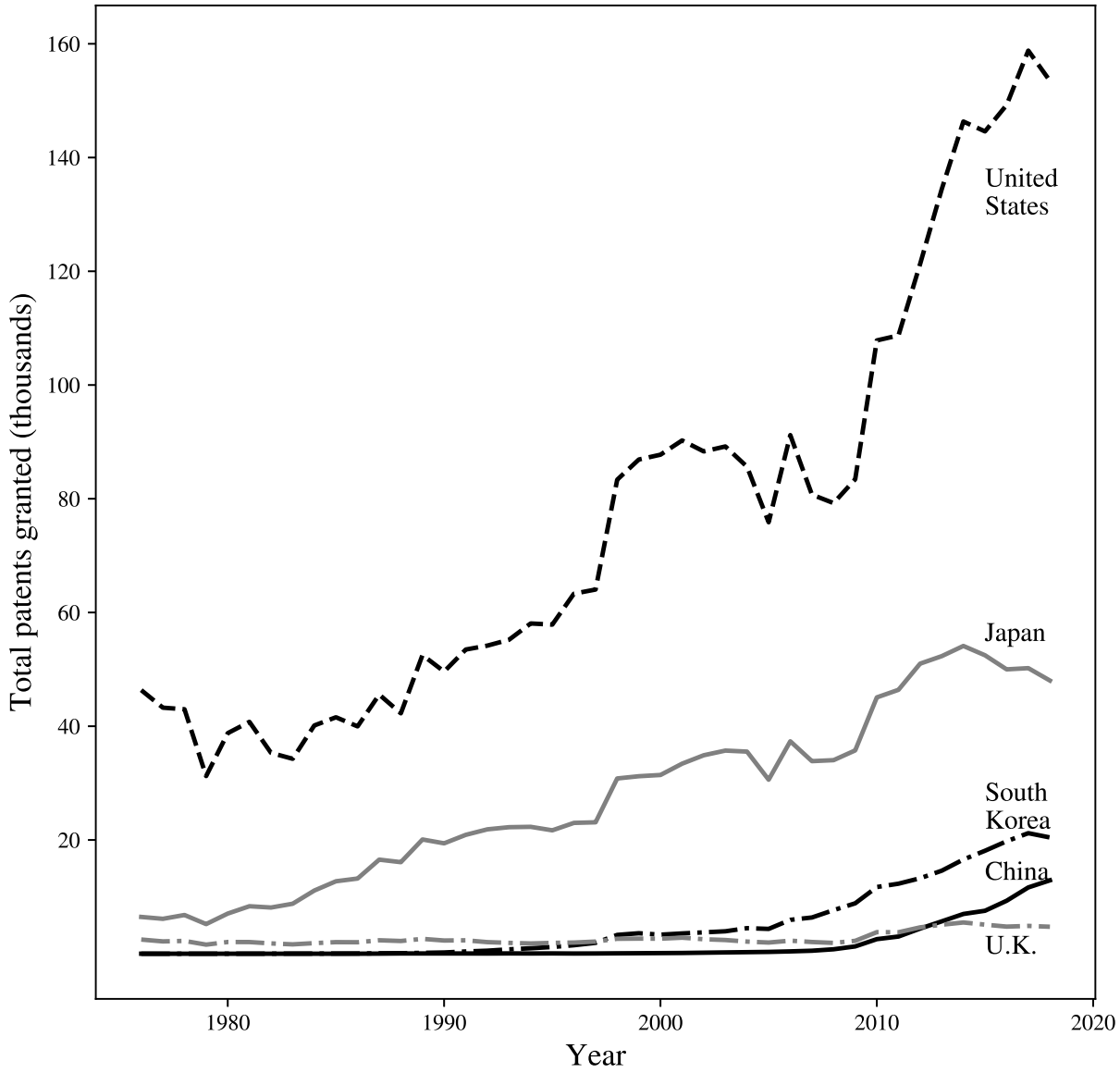
Measuring ideas

It's hard to measure this. *One* way is to look at formal applications for ideas, patents.

- Patents tend to skew towards technological ideas
- Patents do not cover all ideas (think of the Starbucks, or the recipe for Coke)
- Each patent is not equal. Some are dumb, some are transformative.

Patent data in the United States

Patents Issued in the United States, by Country of Origin



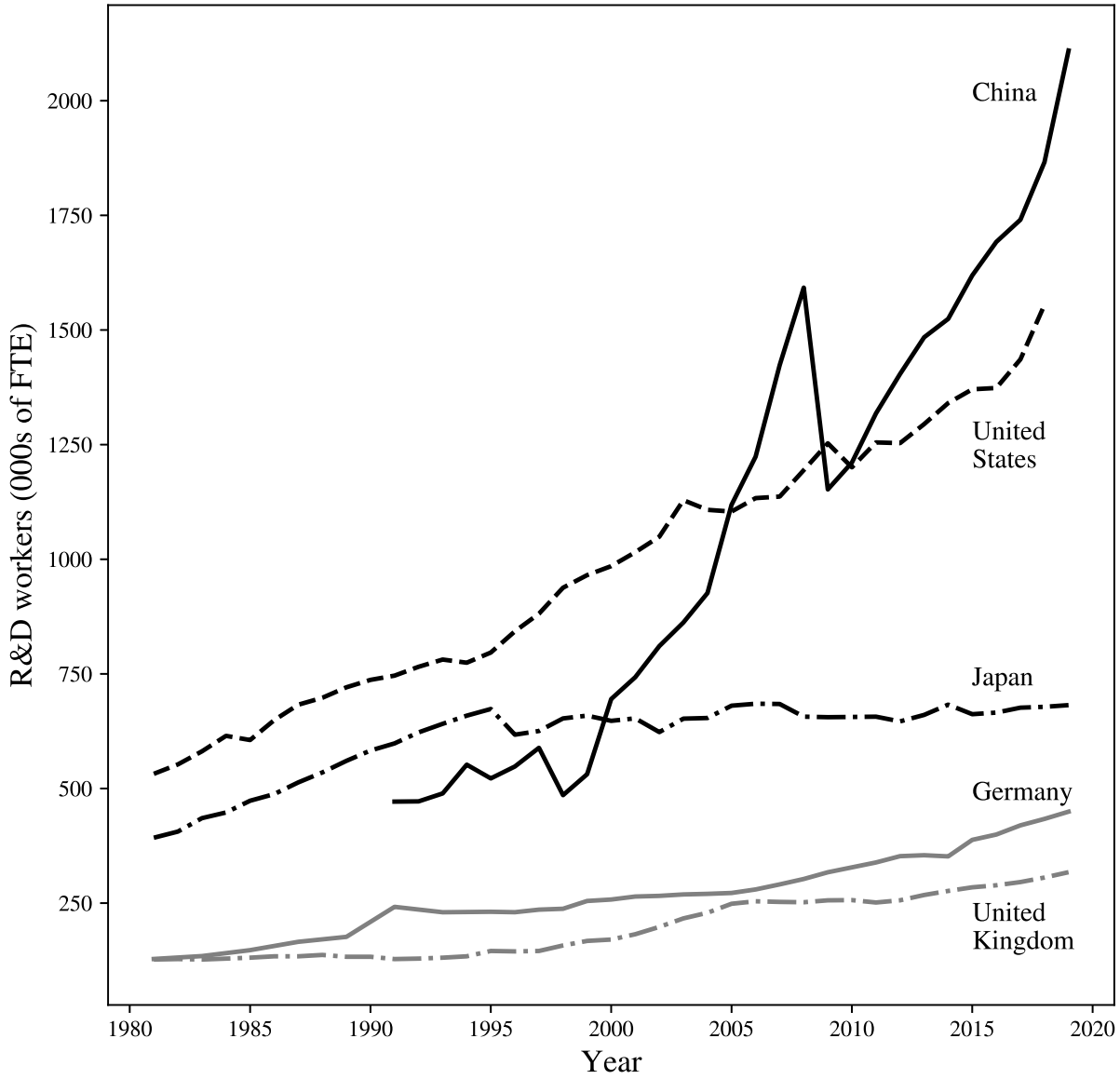
Measuring effort

A crucial concept is that creating ideas takes effort.

- Mainly time. Possibly capital in terms of labs, computers, etc.
- We typically call this effort R&D
- R&D uses productive labor and capital firms and individuals are making a deliberate choice to do this versus something else
- Ultimately the process of growth depends on this choice

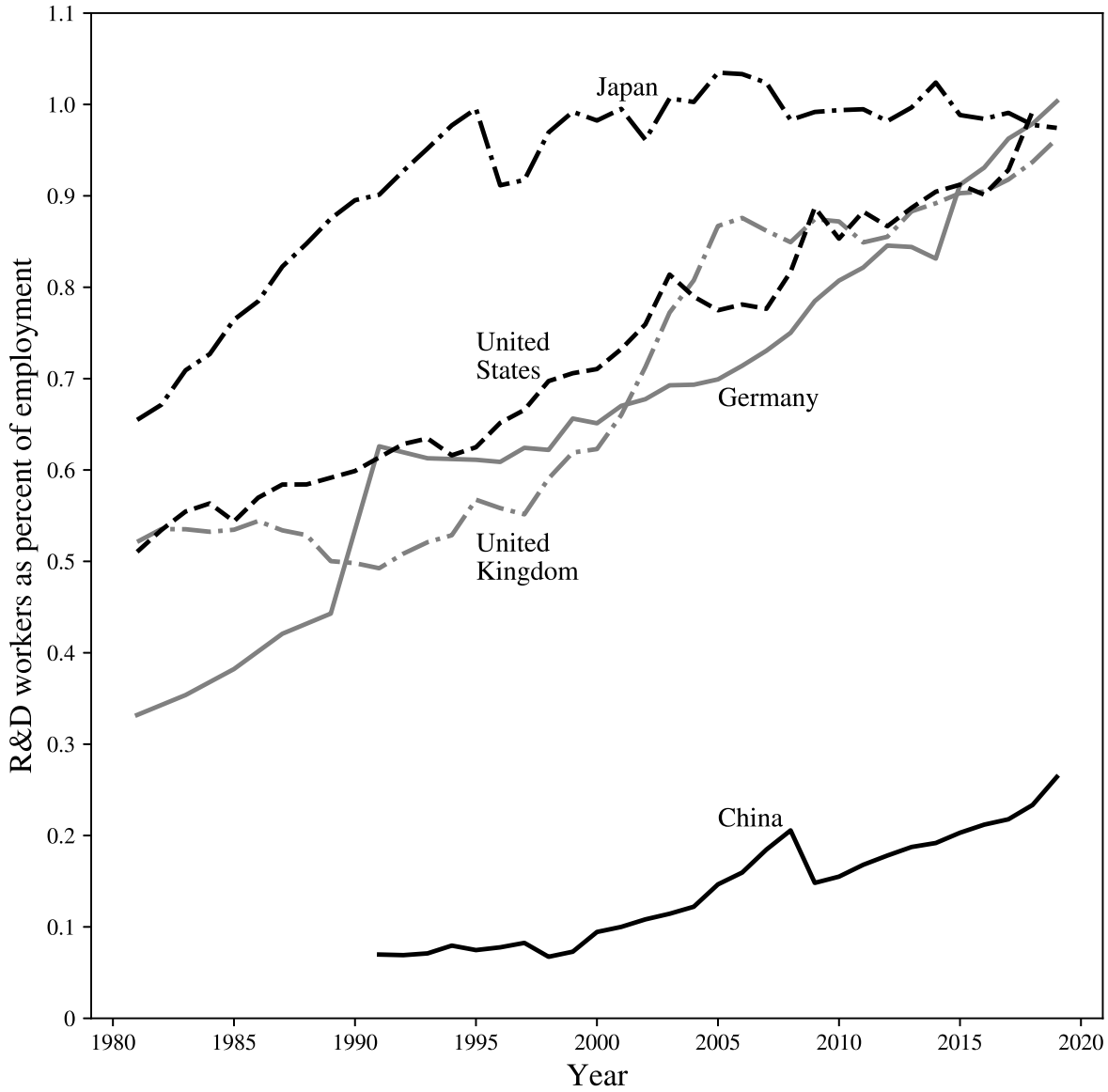
R&D effort

Number of R&D Workers (FTE), by Country



R&D effort

R&D Workers as a Percent of Employment, by Country



Non-rivalry

The key quality of ideas for growth is that they are **non-rival**.

- One person using the idea does not prevent someone else from using it
- They can be copied/used with zero or close to zero cost

Contrast this to things like labor and capital which are **rival**.

- If you use a rival good, I cannot
- It takes time and/or resources to copy a rival input

Why do R&D?

Economies are putting more effort into R&D. Why?

- Ideas are non-rival but it takes time/effort to create them *once*
- Once created the idea can be reused without diminishing it
- Production using an idea is increasing returns
- ..meaning high fixed costs and low/zero marginal cost

Intuition of increasing returns

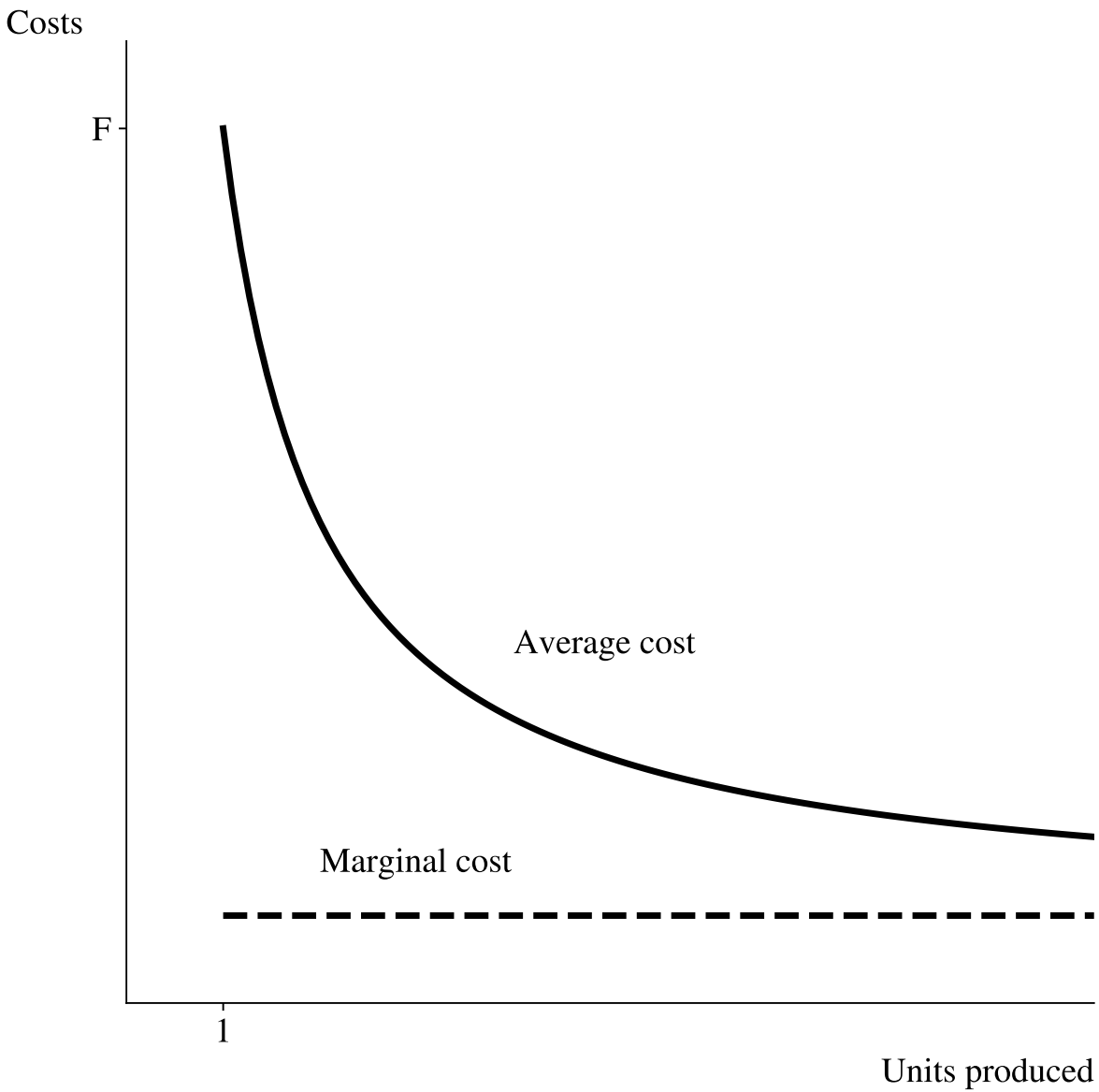
Think about a simple structure for possible innovators

- Someone can pay a fixed cost, F, to create an idea.
- With that idea they can earn operating profits $V = pY - cY$
- It only makes sense to innovate and operate if $V \geq F$

What does this imply about what price, p, you have to charge?

Increasing returns

Costs Functions with Increasing Returns



Imperfect competition

The only way someone will innovate and operate is if $p > c$

- Competitive markets (allowing entry of copies) will drive $p = c$
- Competitive markets maximize output of existing products, but $p < AC$ and profits are negative
- Innovation requires $p > c$ which implies *imperfect competition*
- Innovators need to market power to ensure $V \geq F$

Excludability

Excludability is what allows you to stop someone from using or copying your product or idea

- Excludability is closely related to property rights
- Excludability is almost always created by policy/law, not inherent
- Titles, patents, copyrights, etc. are ways to create excludability
- Excludability means other people need to pay for your non-rival idea

The importance of scale

Why does Houston (7 mil metro area) have better food than Tulsa (1 mil metro area)?

- There are more potential restauranteurs with more varied backgrounds. There are more novel ideas to try (e.g. a Nigerian/Mexican fusion food truck)
- There are more potential customers with more varied tastes. Weird niche ideas can thrive (e.g. *someone* will love Nigerian/Mexican food)

Scale and rivalry

Think about rival inputs like capital or natural resources:

- More people allows us to make (or mine or extract) more of the input
- The amount of input *per capita* goes down with more people
- There is a race between production and dilution of rival inputs

With non-rival inputs like ideas:

- More people still allow us to make more of the input
- But the per capita stock of ideas per capita *does not go down*
- There is no “race” between R&D and dilution of non-rival ideas

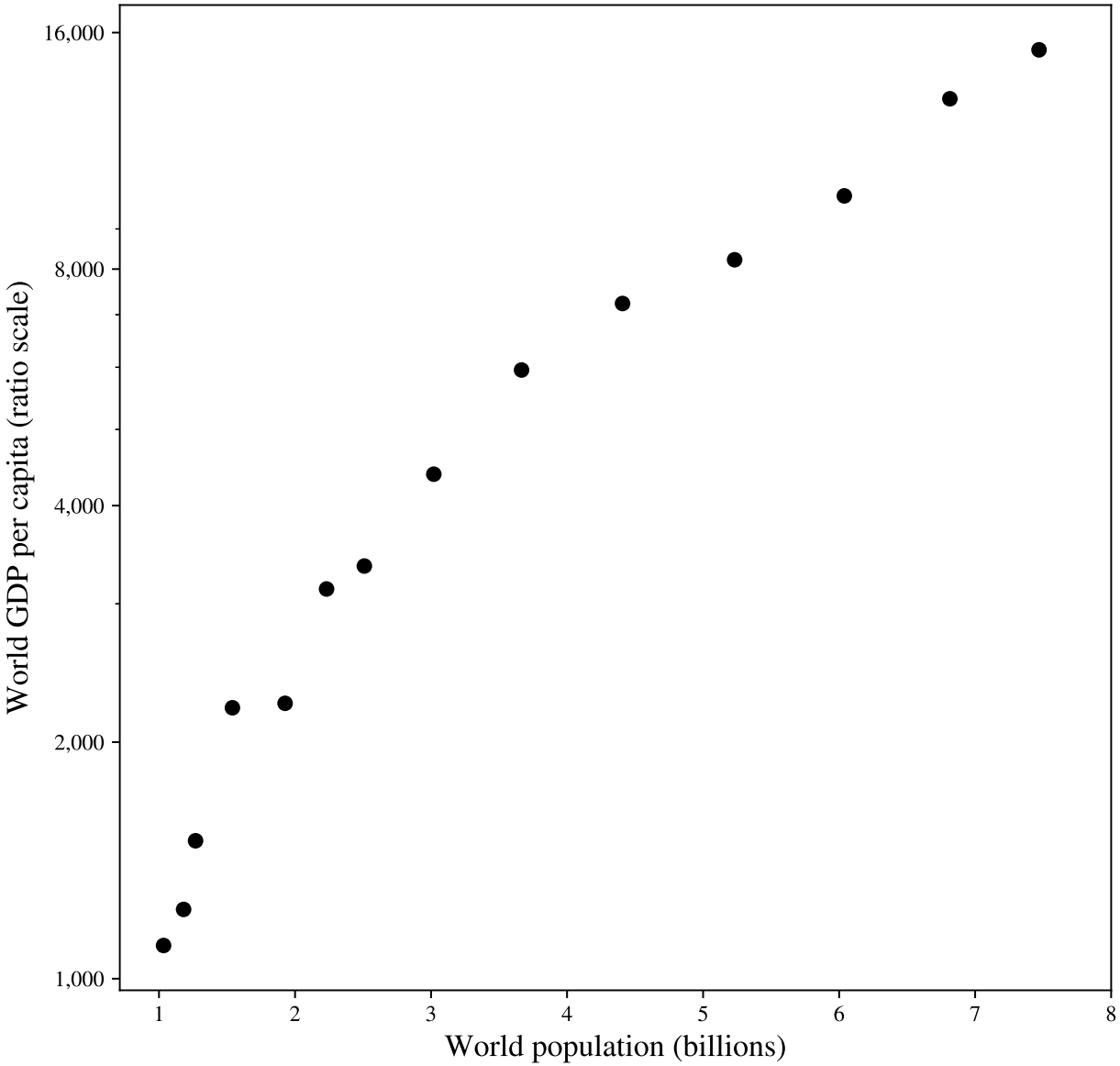
Ideas and scale

Take non-rivalry of ideas seriously:

- More people means more ideas
- More ideas means higher GDP per capita
- GDP per capita is *positively* related to the size of population/market
- Growth rate of GDP per capita is *positively* related to growth rate of population

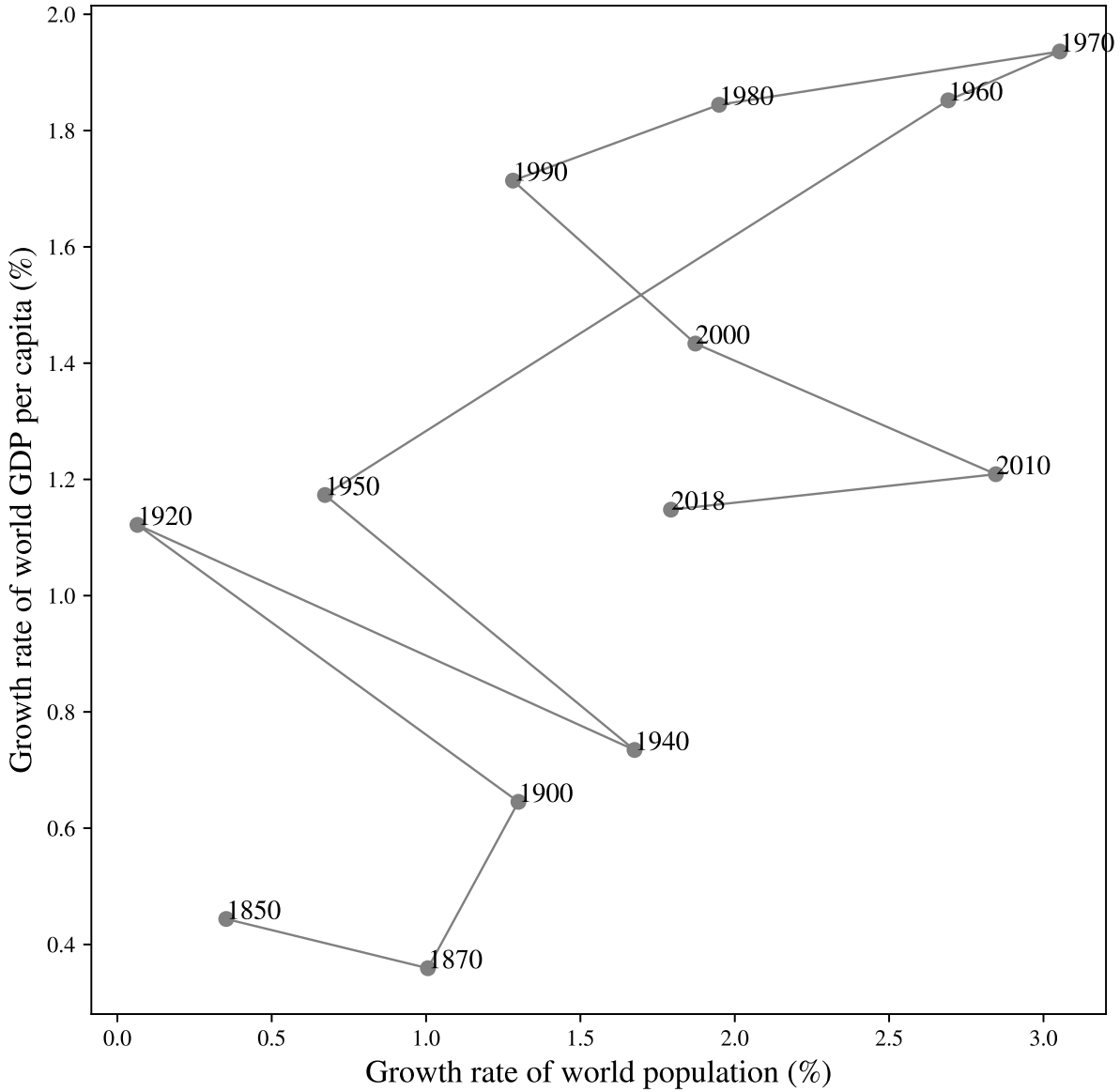
Population and living standards

World Population and GDP per capita, 1820-2019



Population and living standards

Growth Rate of World Population and GDP per capita, 1820-2019



Market size

Population/market size matters for implementing ideas:

- Assume entry makes $F \approx V$, so $F = (p - c)Y$:
- The more units you can sell, Y, the smaller the $p - c$ markup
- OR for a given $p - c$ markup the bigger F can be supported

Bigger markets allow for either lower markups (low $p - c$) or "harder" ideas (higher F)