

“hard (eco) theory”  
economic regional development theories  
why do cities exist?

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this version: Monday 5<sup>th</sup> February, 2018 22:41

## outline

a quick and general intro to eco theory

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why cities exist? (O'Sullivan, 2009, ch3)

city size (O'Sullivan, 2009, ch4)

urban growth (O'Sullivan, 2009, ch5)

## NECESSARY readings

- Friedman (1970)
- Wirth (1938)
- <http://www.economist.com/node/18111592>
- <http://www.economist.com/blogs/prospero/2011/11/triumph-city>
- <http://www.governing.com/is-it-time-to-retire-jane-jacobs-vision-city.html>

- BARRO, R. (1991): "Economic growth in a cross section of countries," The Quarterly Journal of Economics, 106, 407–443.
- (1999): "Determinants of democracy," Journal of Political Economy, 107, 158–183.
- BERRY, B. AND A. OKULICZ-KOZARYN (2012): "The city size distribution debate: Resolution for US urban regions and megalopolitan areas," Cities, 29, Supplement 1, S17–S23.
- BERRY, B. J. L. AND A. OKULICZ-KOZARYN (2009): "Dissatisfaction with City Life: A New Look at Some Old Questions," Cities, 26, 117–124.
- BETTENCOURT, L. AND G. WEST (2010): "A unified theory of urban living," Nature, 467, 912–913.
- BETTENCOURT, L. M., J. LOBO, D. HELBING, C. KÜHNERT, AND G. B. WEST (2007): "Growth, innovation, scaling, and the pace of life in cities," Proceedings of the National Academy of Sciences, 104, 7301–7306.
- BETTENCOURT, L. M., J. LOBO, D. STRUMSKY, AND G. B. WEST (2010): "Urban scaling and its deviations: Revealing the structure of wealth, innovation and crime across cities," PloS one, 5, e13541.
- BLAKELY, E. AND N. LEIGH (2009): Planning local economic development: Theory and practice, Sage Publications, Beverly Hills CA.
- CHRISTENSEN, C. (1997): The innovator's dilemma: When new technologies cause great firms to fail, Harvard Business Review Press.
- FLORIDA, R. (2008): Who's your city?, Basic Books, New York NY.

- FRANK, R. H. (2005): "Does Absolute Income Matter," in Economics and Happiness, ed. by L. Bruni and P. L. Porta, Oxford University Press, New York NY.
- FRIEDMAN, M. (1970): "The social responsibility of business is to increase its profits," The New York Times Magazine.
- GLAESER, E. (2011): Triumph of the City: How Our Greatest Invention Makes Us Richer, Smarter, Greener, Healthier, and Happier, Penguin Press, New York NY.
- GREEN, G. AND A. HAINES (2012): Asset building & community development, Sage Publications, Beverly Hills CA.
- MANKIW, N., D. ROMER, AND D. WEIL (1992): "A contribution to the empirics of economic growth," The quarterly journal of economics, 107, 407–437.
- O'SULLIVAN, A. (2009): Urban economics, McGraw-Hill.
- SCHKADE, D. AND D. KAHNEMAN (1998): "Does living in California make people happy? A focusing illusion in judgments of life satisfaction," Psychological Science, 9, 340–346.
- STUTZER, A. AND B. FREY (2003): "Stress That Doesn't Pay Off: The Commuting Paradox," IZA Discussion Paper.
- WIRTH, L. (1938): "Urbanism as a Way of Life," American Journal of Sociology, 44, 1–24.

- i post comments in sakai's dropbox as comments.txt
- you may want to ask me questions about my comments

## old ps1 comments

- be specific; show numbers!
- think about the phenomenon—is it big or small?
- it depends on the comparison! all numbers mean nothing without a comparison/base-case/yardstick
- say, is my income of \$40,000 big or small?
  - yes in Camden, not in NYC (given median)
  - yes for a HS dropout, not for a PhD (given median)
  - yes for a person in 20s, not in 40s (given median)
  - yes in rural China, not in Beijing (given median)
  - yes in 1870, not in 2012 (given median)
- and you can repeat the above given your family/field etc

## show most meaningful quantities

- number of single-parent families, number of poor etc
- should be adjusted for population!
- all over time \$ values should be adjusted for inflation!
- when you present something ask yourself “so what?”
- why does it matter ? how it matters? how i can rephrase/redo it so it's more meaningful
- what's new ? what's unexpected ? otherwise, what's the point of creating n-th document that reiterates what everybody knows
- surprise me; in-depth analysis, or broad approach (several disciplines), unique data, etc



## show me some sophistication

- do something that only a PhD can do
- eg a basic impact analysis of, say a policy enacted, eg govt takeover of Camden—may start with a graph
- eg 1918 pandemic is an “intervention” <https://www.stata.com/features/overview/i/graph-editor-life-graph.png>
- RD
- <http://www.socialresearchmethods.net/kb/quasird.php>
- [http://changingminds.org/explanations/research/design/regression\\_discontinuity.htm](http://changingminds.org/explanations/research/design/regression_discontinuity.htm)

## general notes on theories

- don't forget data: connect data and theory/literature
- theories need to be tested in different settings
- may get some counterintuitive results
- whatever you believe in, you'll find a theory to support it
- so important to test! paper: test theories
- i try to be impartial, and present a range:
- O'Sullivan (2009): economics: market forces
- Green and Haines (2012): sociology, public policy: social forces
- Blakely and Leigh (2009) somewhere in the middle
- today we'll focus on economics, later on others

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## opinion slide: my problem with economics

- economic theories are wrong much of the time
- some are wrong most of the time
- still, most eco theories are somewhat useful
- they clarify thinking
- the main problem though is that economists think that they and their theories are best in soc sci

## some key modern economics papers on dev

- Barro (1991)
- Mankiw et al. (1992)

## rational, full info

- rational, full info

## Adam Smith

- “invisible market hand”
  - oversimplifying: pub pol/adm should barely exist
  - bc market regulates itself
    - [http://tutor2u.net/economics/gcse/images/demand\\_supply\\_excess\\_demand1.gif](http://tutor2u.net/economics/gcse/images/demand_supply_excess_demand1.gif)
    - <http://www.pcecon.com/notes/noteimages/equilibrium/incrdemsup2.jpg>
- division of labor: just do one thing:
  - you get better at it, and can do it faster
  - pin factory
  - but less creativity, numbness, alienation, anomie
  - Smith lived in 18th century...had he lived now he could put it differently ... (see also Milton Friedman)

# John M Keynes

- no, we actually need government
- market won't regulate itself perfectly
- need government intervention
- eg increase public spending when economy is down to stimulate it (see also Paul Krugman, Joseph Stiglitz)
- [interestingly, Trump is up for public spending on infrastructure!]



## division of labor is great!

- still, division of labor is a must !
- think about it...
- you cannot produce everything you need yourself
- even simple stuff, like a pen, or a car seat
- you're better off doing whatever you do, getting paid for it
- and paying other people for other things
- everyday things like a car, a train
  - think how many people worked on them

## problems with division of labor

- you become like an automated machine, and you don't get the whole picture
- in research, too
- eg in medical research people work on very specific specialized tasks
- the research teams are big: dozens or hundreds of people
- and then the PI, who is more of a manager than a scientist, puts everything together and gets credit
- we still need great specialization to push research forward
- but at the same time we need interdisciplinary people with broad (but shallow knowledge)

## within and among

- division of labor happens within firms
  - different employees specialize in different things
- and among firms
  - different firms specialize in different things

## economies of scale=bigger can do more

- bigger companies can produce cheaper and provide cheaper services
- think local grocery store vs Walmart
  - “everyday low prices” “save money, live better”
- but problems: monopoly/oligopoly
  - destroying diversity (local groceries), driving profits for suppliers down
  - outsourcing health insurance to Medicaid
- yes, everyday low prices, but is life better?

Something Wall-Mart This Way Comes

<https://www.hulu.com/watch/250057>

# how economic growth happens?

- you need several things:
- physical capital
- labor
- technology
- and human capital
- (later we will talk about other capitals)
- for more discussion see Barro (1999)

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## neoclassical economic theory (M. Friedman)

- also called “the invisible hand”, based on Adam Smith
- equilibrium of economic systems
- mobility of capital
- if capital can flow without restrictions, all economic systems will achieve equilibrium
- it would mean that ghettos would attract capital because of low cost; but they don't
- if the model worked, all areas would have about the same level of development; obviously, it doesn't work
- but still it influenced deregulation in banking, utilities, etc
- and still an useful theory

## economic base

- localities should use local labor and materials and export it outside
- provide incentives (tax breaks, subsidies) for firms to start export-based businesses
- useful for hi-tech (it can be exported anywhere; eg ipad)
- but it risks being solely reliant on export and hence sensitive to demand fluctuations
- [but most things are produced globally (eg ipad)]



## location

- how firms chose loc? and hence how places grow/decline
- firms chose location that min costs of prod and transpo
- product weights less than inputs: firm close to inputs
  - “weight loosing” or “input oriented”
  - steel, ore refining, fruit canning
- final product weights more than inputs: close to market
  - eg auto assembly, baking
- but transportation costs declined so it makes more sense to think in terms of logistics rather than transport

# location

- other things matter too: cost of energy, education, local government, weather, etc
- and other things matter more and more—World is changing!
- eg data centers would locate where energy is cheap and where it is cold (computers like cold, otherwise need A/C)

## central place

- most relevant to retail activity
- each urban center is supported by series of smaller places that provide resources (industries and raw materials) to the central place which is more specialized and productive
- and these smaller places are surrounded by even smaller places, and so on

## central place

- the urban center contains specialized stores and services that serve the entire region
    - corporate lawyers, investment bankers, heart surgeons, symphony orchestra
    - haircuts and car repairs are everywhere
  - theory says that the development of the central place will improve the whole region
- more about central theory later today

## theory in practice-attraction models

- to attract people and businesses...
- ...by offering incentives and subsidies
- it used to be about attracting businesses
- now also attracting population, e.g the creative class (Florida, 2008)
- people bring buying power and skills that attract employers
- there was an ad on Cooper st: become a homeowner in Camden, get \$15k in incentives
- R faculty were encouraged during the orientation to live locally

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## the axioms...

- ... are self-evident truths
  - actually, they are not that self-evident, but still useful when thinking about regional development
- economists are like physicists – they're pretty sure they know the truth
- the five axioms of urban economics follow

## prices and locational equilibrium

- prices adjust to achieve locational equilibrium
  - it happens when no one has an incentive to move
- prices for better spots are higher
  - eg you'll pay \$1,500 rent for a 1 bdrm in Philly, and \$200 in Camden
  - had the prices been the same, everybody would move out of Camden
  - (yes, Camden is losing population, but there are also other reasons, and if the housing prices were higher it would lose much more people)



## self-reinforcement→extremes

- self-reinforcing effects generate extreme outcomes
- like a vicious(virtuous) cycle
- self-reinforcing effect is a change in something ...  
that leads to additional changes in the same direction
- eg many artists may locate in some city
  - then they will share ideas, collaborate, compete
  - share studios, tool suppliers, etc
- and all of the above would attract more artists and so forth...

## externalities→inefficiencies

- externalities cause inefficiencies
- (for economist an inefficiency means that not only the buyer/seller gets benefits/costs)
- externality is something external to a transaction
  - eg driving a car produces air pollution, and its cost is borne not only by you, but by everybody else
  - eg paying for education not only improves myself, but also my social network, community, etc
- [probably there's no transaction with exactly zero externalities]

## economies of scale

- **production is subject to economies of scale**: cost decreases as output increases (think Walmart); 2 reasons:
  - indivisible (lumpy) inputs that cannot be scaled down  
eg to produce a CPU, you need a bunch of equipment, whether you produce 1 or 1,000 per day
  - factor specialization: the more people you employ, the more they specialize and the more efficient they become:  
continuity: you don't spend time switching from one task to another; proficiency (experience and learning)  
“ A jack of all trades is master of none”
- it's critical for urbanization; if not economies of scale (and division of labor), there would be no cities

## competition and profit

- competition generates zero economic profit
- when there are no restrictions on the entry into a market, firms would enter until profit is zero  
(there are always some restriction on the entry)

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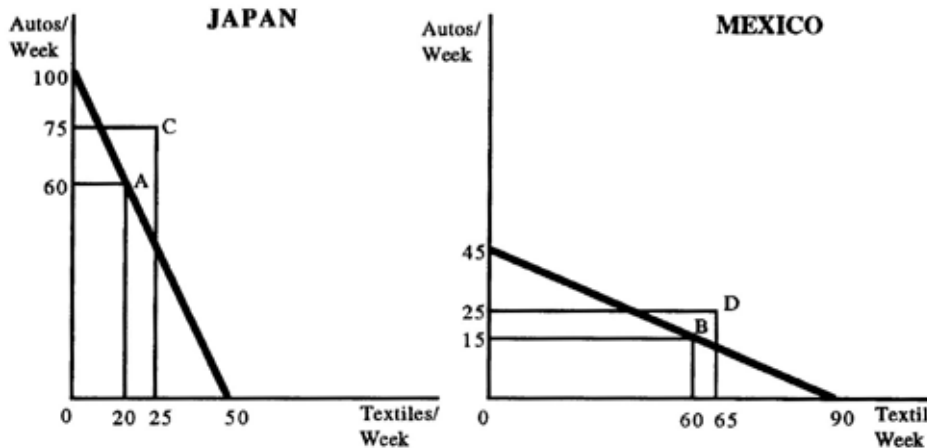
## regional development $\approx$ city development

- much of regional development is about cities
- over 80 % of the US population is urban
- even more of production, R&D and innovation is urban

# why do cities exist?

- because people are not self-sufficient  
(Smith's labor specialization)
- and production, consumption and exchange are easier done  
in cities

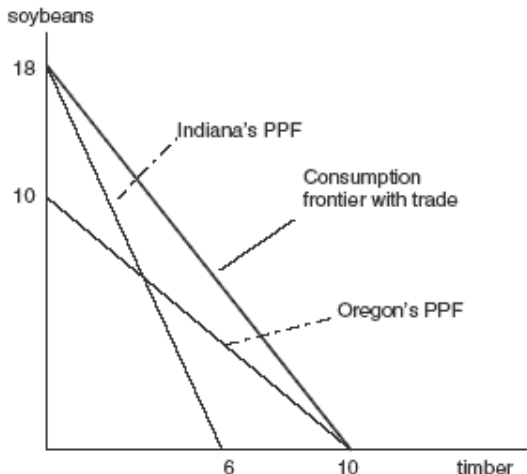
# comparative advantage



[//wps.aw.com/aw\\_miller\\_econtoday\\_13/29/7556/1934379.cw/content/index.html](http://wps.aw.com/aw_miller_econtoday_13/29/7556/1934379.cw/content/index.html)



# comparative advantage



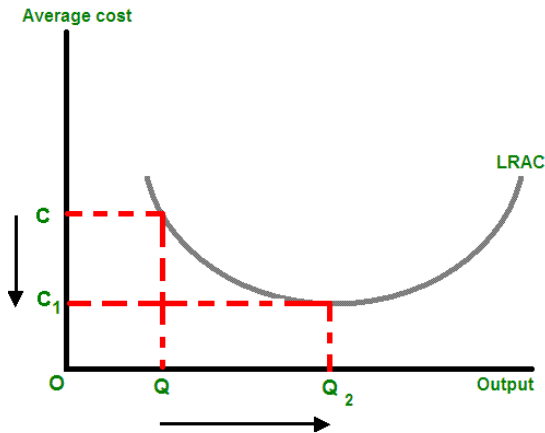
**Figure 17.3**

[http:](http://www.education.com/study-help/article/comparative-advantage-gains-trade/)

[//www.education.com/study-help/article/comparative-advantage-gains-trade/](http://www.education.com/study-help/article/comparative-advantage-gains-trade/)

## economies of scale

- increasing returns to scale
- think Walmart vs your neighborhood store



[http:](http://en.wikipedia.org/wiki/Economies_of_scale)

## clustering

- businesses cluster...
- counterintuitive, you would imagine competitors to locate far apart in order not to steal customers
- competing firms may cluster to share inputs:
  - labor, raw materials, capital (machines, equipment, etc)
  - eg if you want to start producing movies, you may want to locate in Hollywood for easy access to actors, camera operators etc
  - if you are an IT startup, Silicon Valley would provide you with an unparalleled opportunities for venture capital

## reasons for clustering (O'Sullivan, 2009, p 62)

- to share a supplier of an input that is subject to economies of scale
- to share labor pool
- large cities provide better skill matches leading to higher productivity and wages
- large cities facilitate knowledge spillovers, learning and social opportunity
- agglomeration economies cause self-reinforcing changes in location: the movement of a firm to a city increases incentives of other firms to move, and you end up with NYC, Tokyo, etc

# agglomeration (dis)economies

- agglomeration economies=productivity rises with density
  - because of: economies of scale + network effects
  - 
  - a term stressing (dis)advantages of economies of scale/clustering
    - input sharing, labor pooling, skills matching, knowledge spillovers
    - crowding, congestion, noise, pollution, alienation, crime
- (Wirth, 1938)

## trading countries/regions/cities

- and you observe comparative advantage economies of scale and clustering all around
- China with cheap labor produces much of the simple goods
- Iowa is producing lots of agricultural output
- Silicon Valley produces much of the software
- Detroit used to produce lots of cars
- Many stores are located in malls

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## laws

- interesting! some laws governing the city size
- now we're talking science, like Physics! eg [Berry and Okulicz-Kozaryn \(2012\)](#)
- few big cities, some medium, and lots of small
- Zipf's Law:
  - the number of people in a city is inversely proportional to the city's rank among all cities
  - the biggest city 2x size of 2nd biggest; 3x size of 3rd biggest, and so on
- there are more laws, eg 1.15: "the city constant" (Bettencourt et al., 2010, Bettencourt and West, 2010, Bettencourt et al., 2007)

city size (D'Sullivan 2009, ch4) and everything greater by 15perc: crime rd



## are big cities good or bad?

- where do you live ? Philly ? Rural NJ ?
- apart from agglomeration dis(economies):
- most of the economic growth, innovation, R&D happens in the cities (Glaeser, 2011)
- but people are less happy in big cities (Berry and Okulicz-Kozaryn, 2009), and there's alienation, impersonality, shallow soc capital (Wirth, 1938)
- but it's even worse in the suburbs (?)
- towns and villages are the best for non-homo-oeconomicus

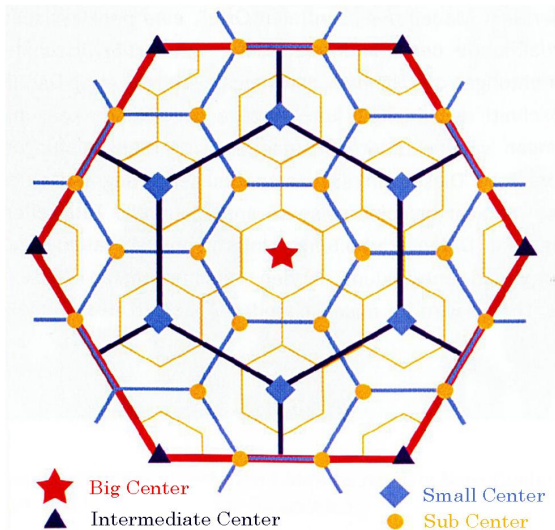
# happiness research

- people are most unhappy when commuting (Stutzer and Frey, 2003, Frank, 2005)
- and they overestimate utility from big houses in suburbs (Stutzer and Frey, 2003, Frank, 2005)
- and underestimate costs of congestion, think California (Schkade and Kahneman, 1998)

## central place theory (O'Sullivan, 2009, p86)

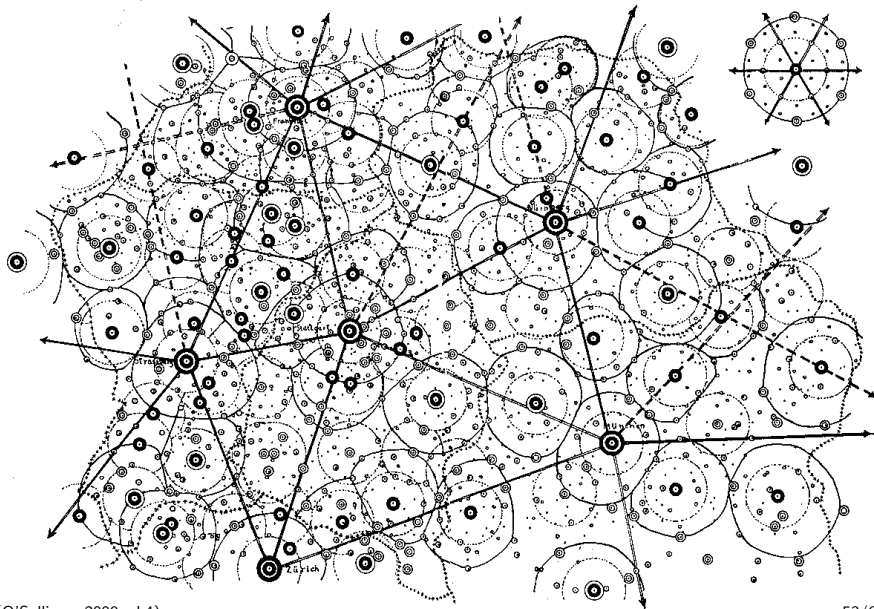
- market size of businesses vary by industries
- eg brain-surgery per capita demand is low  
and equipment for it generates large economies of scale  
so brain surgeons will be in big cities serving people from  
smaller areas all around
- with haircuts it's the other way round

# central place hierarchy



# central place hierarchy

Rationales Schema der zentralen Orte



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## economists see two kinds of growth

- economic growth: increase in per capita income
- employment growth: increase in employment

## economic growth comes from:

- capital deepening: more physical capital per worker  
(Obama: we have fewer horses and bayonets)
- increase in human capital: knowledge, skills from education and experience
- technological progress (innovation [Christensen \(1997\)](#))
- agglomeration economies (input sharing, labor pooling, labor matching, knowledge spillovers)



# human capital

- lots of talk about it everywhere...
- politicians talk about headstart, community colleges
- lots of talk everywhere, eg TED

## human capital and other capitals

- it not only increases person's knowledge
- but also persons learn from each other  
so there are network effects  
(one reason you're on campus, not in online class)
- also it increases technological innovation
- HS dropouts don't innovate
- on the other hand, Jobs and Gates are both college dropouts
- and we will talk more later about creative class (Florida, 2008)

## but wait, innovation is key...

- there is a lot of talk about innovation these days especially among business people
- an important term is a disruptive innovation
- it's an innovation that disrupts the industry like Netflix for Blockbuster
- and Blockbuster spent millions fighting traditional competition only to find out it fought the wrong war
- see [Christensen \(1997\)](#) and <http://www.claytonchristensen.com/>

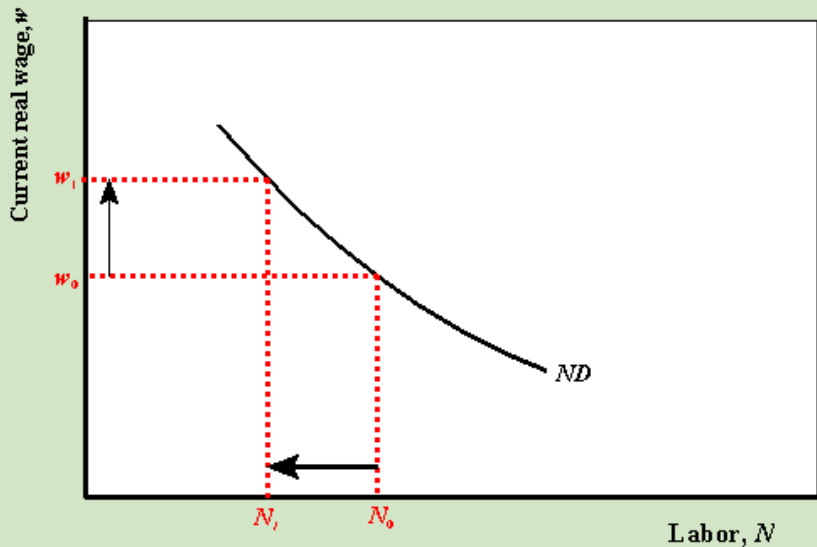
## production and employment (O'Sullivan, 2009, p96)

- local: haircuts, bakery
- export: steel, software...etc
- multipliers: increase in export employment is great for local employment

## labor demand curve

- labor demand is negatively sloped:
- substitution effect: increase in wages leads to firms to substitute capital, land, materials for relatively expensive labor
  - and computers!(drones, etc)
  - again, better become a friend with computers (learn programming)
- output effect: wage increase leads to product's price increase

## labor demand curve



[http://faculty.washington.edu/ezivot/econ301/labor\\_demand.htm](http://faculty.washington.edu/ezivot/econ301/labor_demand.htm)

next week...

- let's have a look at next week...