

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

adam okulicz-kozaryn  
adam.okulicz.kozaryn@gmail.com

this version: Tuesday 4<sup>th</sup> February, 2020 12:10

## outline

a quick and general intro to eco theory

general development theories (Blakely and Leigh, 2009, ch3)

urban eco axioms (O'Sullivan, 2009, ch1)

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.

- DUANY, A., E. PLATER-ZYBERK, AND J. SPECK (2001): Suburban nation: The rise of sprawl and the decline of the American dream, North Point Press, New York NY.
- 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.
- JACOBS, J. ([1961] 1993): The death and life of great American cities, Random House, New York NY.
- 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.

# let's sit in a circle

- rearrange seats

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



## 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

## outline

a quick and general intro to eco theory

general development theories (Blakely and Leigh, 2009, ch3)

urban eco axioms (O'Sullivan, 2009, ch1)

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

city size (O'Sullivan, 2009, ch4)

urban growth (O'Sullivan, 2009, ch5)

## 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)

# key assumptions/axioms (like rel beliefs)

- rational
- full info
- homo oeconomicus/"greed is good"
- more is always better
- only \$ matters

## 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)
- [a see eco possibilities of our grandkids

<http://www.econ.yale.edu/smith/econ116a/keynes1.pdf>

## 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, get paid for it
- and pay other people for other things
- everyday simple things like a table, pen, etc
  - 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 STEM: each author doing very specific/specialized task
  - research teams huge: dozens/hundreds of people
  - eg <https://www.sciencedirect.com/science/article/pii/S037026931200857X>
  - the PI/leader more of a manager than a scientist
- 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?
  - Southpark:Something Wall-Mart This Way Comes

# how economic growth happens?

- you need several things:
- physical capital (bldgs, machines, etc)
- labor (work)
- technology (computers, software etc)
- and human capital (education, training, skills)
- (later we will talk about other capitals)
- for more discussion see Barro (1999)

# outline

a quick and general intro to eco theory

general development theories (Blakely and Leigh, 2009, ch3)

urban eco axioms (O'Sullivan, 2009, ch1)

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

city size (O'Sullivan, 2009, ch4)

urban growth (O'Sullivan, 2009, ch5)

## 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]

# 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



# location

- other things matter too: cost of energy, education, local government, weather, etc
- and other things matter more and more—World is changing! Economics doesn't (like religions)
- eg data centers would locate where energy is cheap and where it is cold

## 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 encouraged during orientation to buy in Camden

## outline

a quick and general intro to eco theory

general development theories (Blakely and Leigh, 2009, ch3)

urban eco axioms (O'Sullivan, 2009, ch1)

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

city size (O'Sullivan, 2009, ch4)

urban growth (O'Sullivan, 2009, ch5)

## the axioms

- axioms are self-evident truths  
(of course they're not self-evident at all, but still useful)  
when thinking about regional development
- economists want to be like physicists—they're 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
  - \$1000 rent for a room in Philly, \$500 in Camden
  - had the prices been the same, everybody would move out of Camden
  - (yes, Camden was 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”

## economies of scale and urbanization

- economies of scale (and division of labor) are critical for urbanization!
- otherwise, there would be no cities
- for economist of course, again economists care only about \$: production and consumption]

## 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)  
(and people won't do things for zero profit or even small one)

# outline

a quick and general intro to eco theory

general development theories (Blakely and Leigh, 2009, ch3)

urban eco axioms (O'Sullivan, 2009, ch1)

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

city size (O'Sullivan, 2009, ch4)

urban growth (O'Sullivan, 2009, ch5)

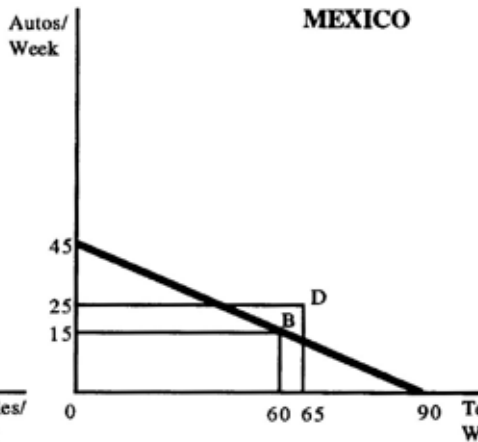
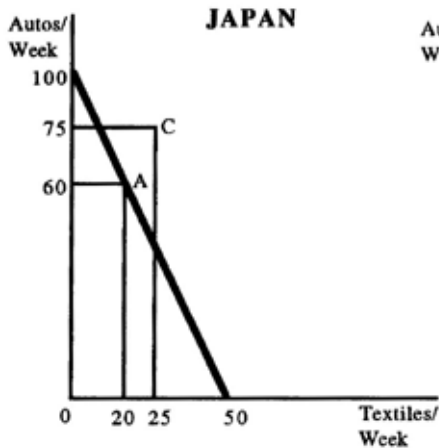
## regional development $\approx$ city development

- 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

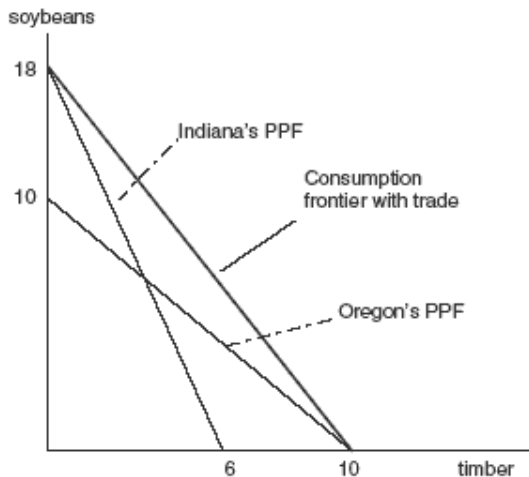
# comparative advantage



[http://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



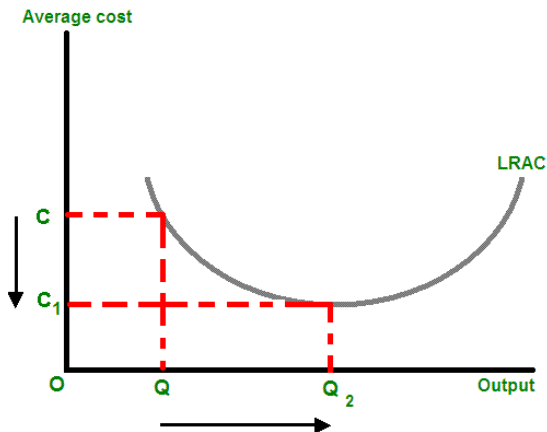
**Figure 17.3**

[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



## diseconomies of scale

- note that Long Run Average Cost (LRAC)
  - goes up at some point (at least in theory)
- some reasons:
  - communication costs
  - office politics
  - slow response time (big doesn't innovate)
  - [goeffrey west ted talk: all companies die; no cities die]
  - public, govt opposition
  - [Soros comments on Goog/FB in Davos]
  - [https://en.wikipedia.org/wiki/Diseconomies\\_of\\_scale](https://en.wikipedia.org/wiki/Diseconomies_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

# outline

a quick and general intro to eco theory

general development theories (Blakely and Leigh, 2009, ch3)

urban eco axioms (O'Sullivan, 2009, ch1)

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

city size (O'Sullivan, 2009, ch4)

urban growth (O'Sullivan, 2009, ch5)



## laws

- interesting! some laws governing the city size
- now we're talking science, like Physics (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)
- double size 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 (Jacobs, [1961] 1993, Duany et al., 2001)
- towns and villages are the best for non-homo-oeconomicus

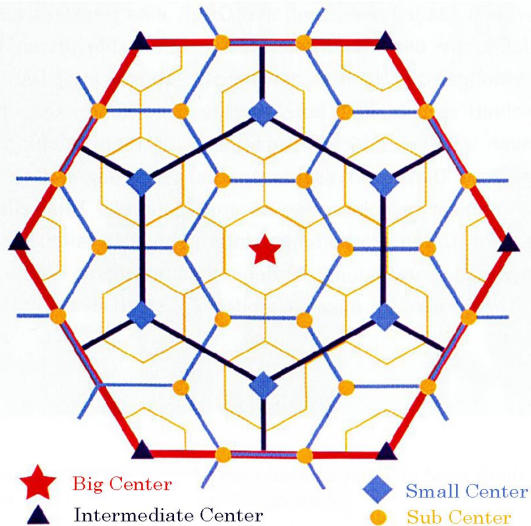
# happiness research

- 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)

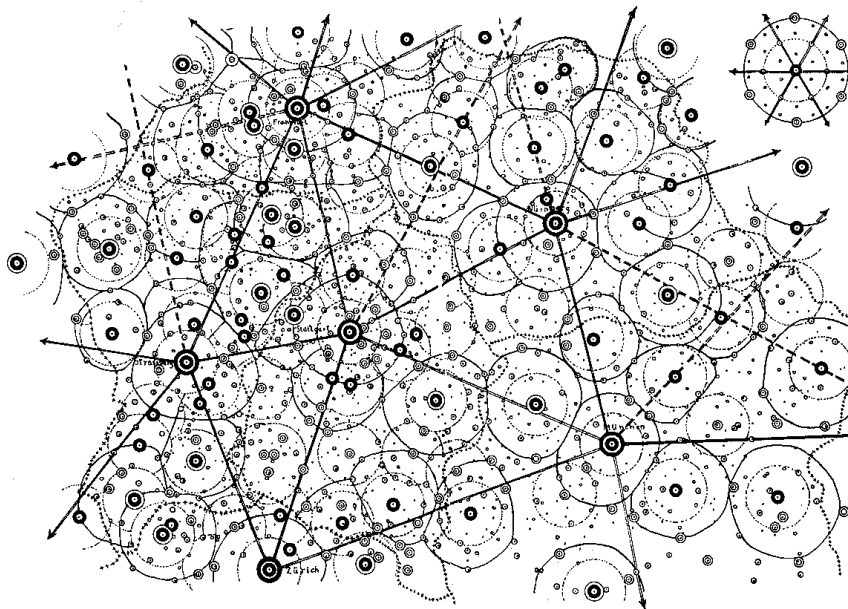
## central place theory (O'Sullivan, 2009, p86)

- 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



# outline

a quick and general intro to eco theory

general development theories (Blakely and Leigh, 2009, ch3)

urban eco axioms (O'Sullivan, 2009, ch1)

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

city size (O'Sullivan, 2009, ch4)

urban growth (O'Sullivan, 2009, ch5)

## 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/>

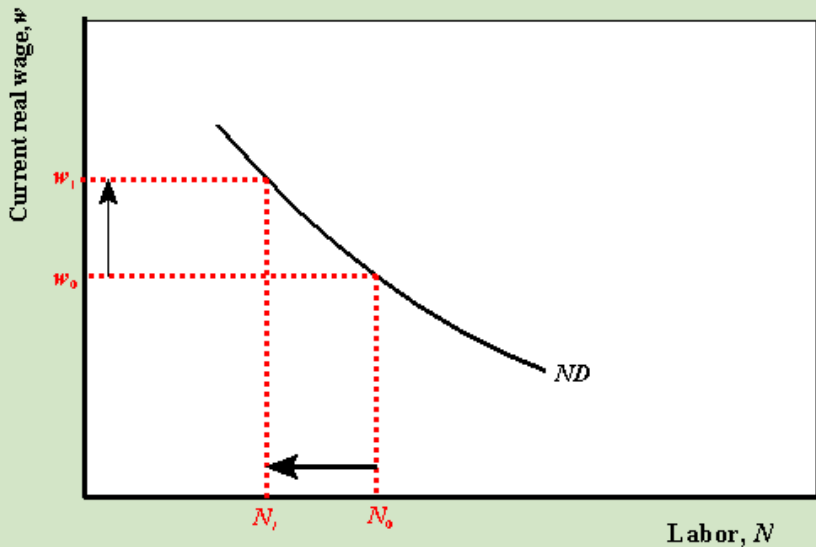
## production and employment (O'Sullivan, 2009, p96)

- 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...