The economics of transportation

The cost of connections...

12 Feb 2013, David Zetland

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I. Basic economics: the "market"

Adam Smith (Wealth of Nations I.3, 1776)

That the Division of Labour is limited by the Extent of the Market

"AS it is the power of exchanging that gives occasion to the division of labour, so the extent of this division must always be limited by the extent of that power, or, in other words, by the extent of the market.

When the market is very small, no person can have any encouragement to dedicate himself entirely to one employment, for want of the power to exchange all that surplus part of the produce of his own labour...

There are some sorts of industry, even of the lowest kind, which can be carried on nowhere but in a great town... as by means of water-carriage a more extensive market is opened to every sort of industry than what land-carriage alone can afford it, so it is upon the sea-coast, and along the banks of navigable rivers, that industry of every kind naturally begins to subdivide and improve itself"

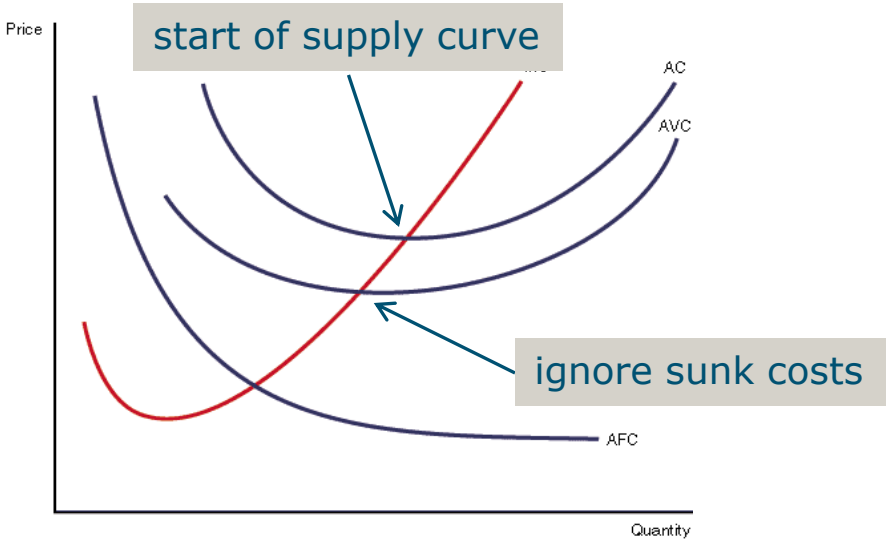
I. Basics: Demand for transport

- Transportation costs are a transaction cost (cf, information, contracts, etc.) that drives a wedge between supply and demand. TCs equal waste.
- Demand for a good depends on its TOTAL price. Same good may have different prices in two places. The price difference falls as TCs fall, e.g., better information (from Sears to internet) or cheap moving (oil + cars).
- Consumers demand more transport as total prices fall (demand slopes down), e.g., China vs the farmer down the road.
- Fashion matters, e.g., vacations and/or "own your own home."
- TCs for deals (VCs) can be lowered by spending more on infrastructure and/or institutions, but those FCs can be large. Example: rails or tolls...
- Example: Living in Amsterdam, working at WUR plus

  http://www.colbertnation.com/the-colbert-report-videos/164482/march-20-2008/aqua-colbert

I. Basics: Supply of transport

- Supply depends on technology (infrastructure and machines) and techniques (rules, prices, institutions), i.e., extra roads (S) can fill up (D), fixing nothing
- Technology can give us a 300kph Ferrari, but rush hour makes it a 30kph car
- Institutions modify CapEx and OpEx, e.g., cars @ light or roundabout
- Average cost from fixed costs and marginal costs but not all costs are charged



- What's the marginal cost of an empty seat on a bus? a plane?

I. Basics: Complications

- Sunk costs: ignore them to lower cost of transport (e.g., “freeways” or “old car”) and thus increase quantity demanded.
- Opportunity costs: Radio or phone in your car; eating and make up
- Subsidies or taxes: gasoline, tickets, bikes
- FUD: pickpockets, SUVs, lost, accidents, bad drivers, etc.
- Complements: demand for cars rises with cheaper parking or gas
- Substitutes: demand falls with cheaper public transport
- Network effects: Value of car to *users* (demand) depends on possible locations Value of road to *builders* (supply) depends on number of drivers. Congestion lowers value (rising marginal costs).
- Path dependency: Amsterdam (compact) due to history; now handy for bikes.

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II: The environmental dimension

- Market costs (e.g., fuel or bike) may be distorted by subsidies and/or taxes -- by accident or as policy – that shift demand between modes.
- Non-market costs (e.g., time, pollution, congestion) are uncounted, hard to count or addressed by policies.
- Non-market costs are higher in the transport sector than other sectors due to its intrinsic, collective, nature and the subsequent political and/or collective management structures.
- Policies to address/internalize non-market costs can be distorted by bias, corruption and/or lobbying, e.g., corn ethanol or electric cars
- Feedback loops can reinforce trends, e.g., fossil fuels > melting arctic > additional shipping > +/- fuels burnt, "need" a car because no market near your house or bikes plus small kitchens in compact A'dam.

III: Specific cases to discuss

- Global modes: Trains, planes, ships, lorries
- Urban modes: Bikes, foot, car, tram/bus
- Goods: shipping raw and finished goods; backhauling and waste
- Workers (telecommute, conferences, suburbs)
- Consumers (vacations, Amazon, kids to school)

Think about the role of transport in the tangle of your life.

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