Urbanization and Agglomeration Economics

Bhanupong

Lecture 29

Outline

- CBD and agglomeration economies
- Spillover effects and industry location
- Urbanization in comparison
- Cost of excessive concentration

Central Business District (CBD)

- CBD refers to the commercial center of a large city (Central World)
- CBDs are anything but static.
- Within the CBD, central office functions exert a mutual attraction, since they require frequent contact between firms.
- Firms will locate close together rather occupying scattered sites.

If firms can come to locate at the CBD,

- The closer each firm to the CBD, the less costly to it in time and transportation costs in maintaining contact with each other.
- Thus a location near the CBD will reduce the firm's own costs and other costs of maintaining contact with that firm.

Retail gravitation

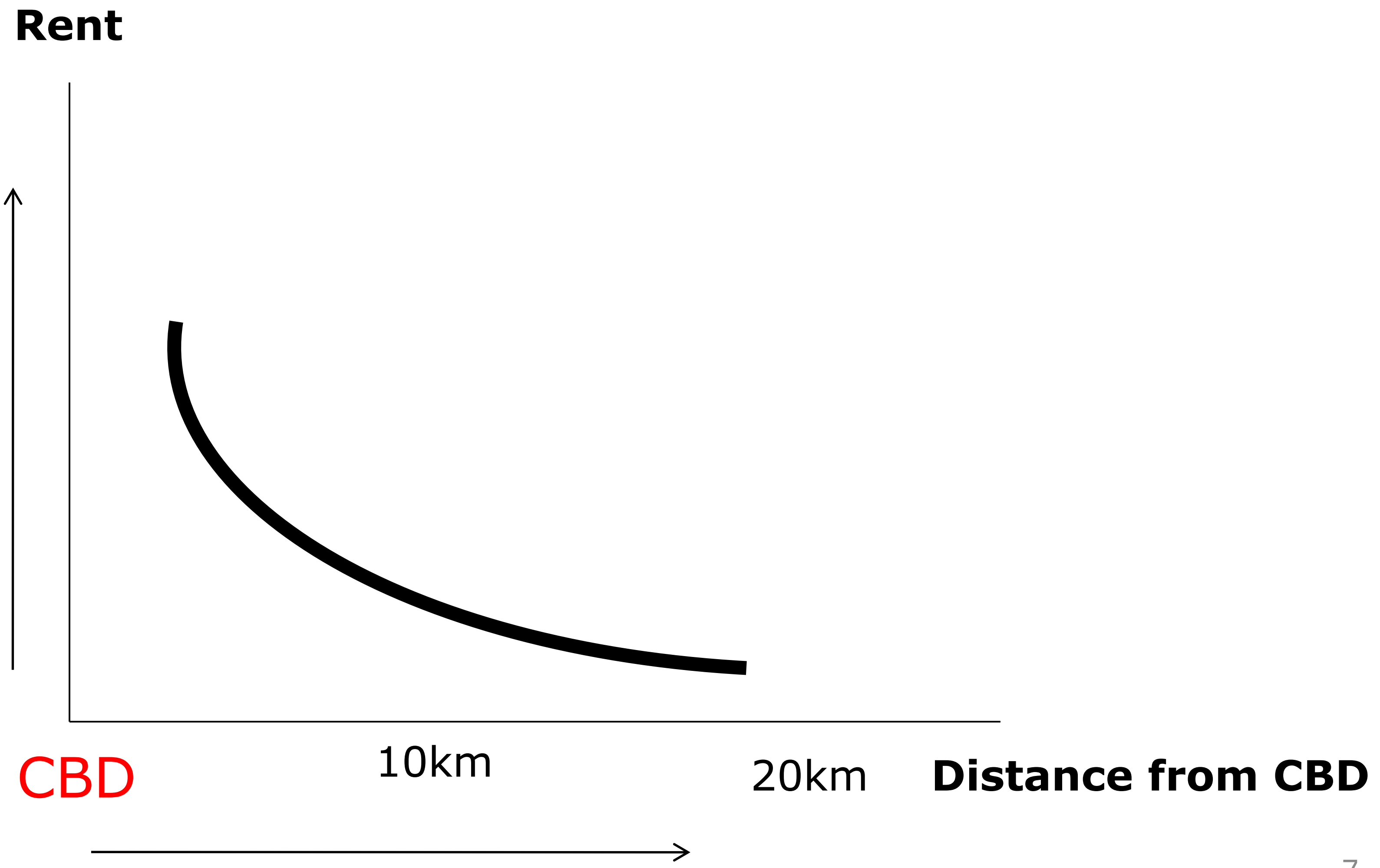
- Reilly’s law: The law of **retail gravitation** suggests that people are generally attracted to the largest shopping center in the area.
- Central World, Central Embassy, and M-District shopping areas in Bangkok.
- Shopping malls provide retail therapy for mall rats and generate employment of unskilled workers.
- For the first nine months of 2016, BigC Supercenter posted 97 billion baht revenue and a net profit of 2.8 billion baht.

High rent at the CBD, because of high demand for space

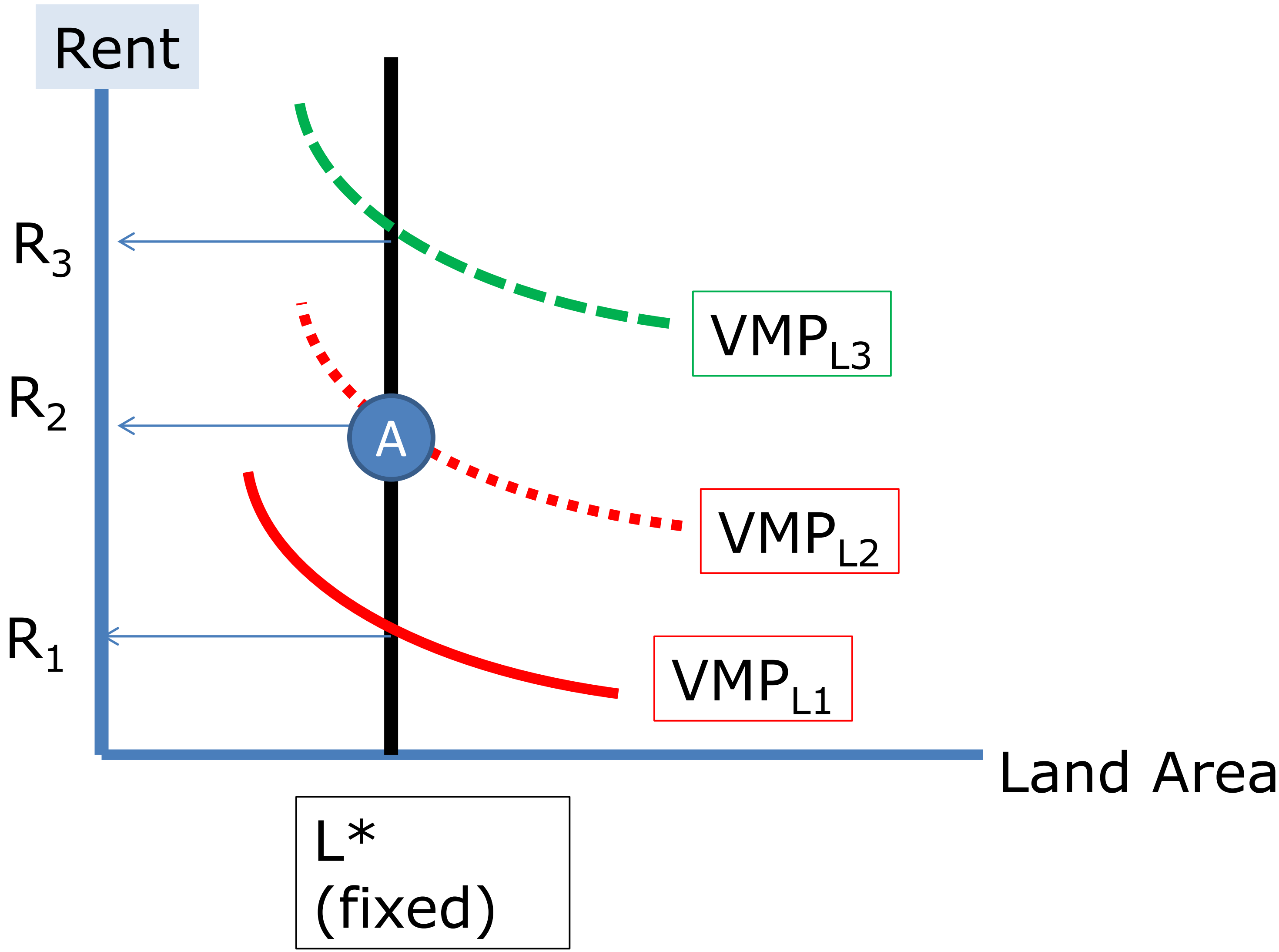
(1) When moving near the CBD, transportation and communication costs will be decreasing

(2) Sales will be increasing as distance from the center diminishes.

Rent Gradient



Rent = $(MP_{Land} \times P)$ = Value of Marginal Product of land



From Thammasat Rangsit Campus to Central World
45 km, 2 hours by bus, 1 hour 10 mins by car

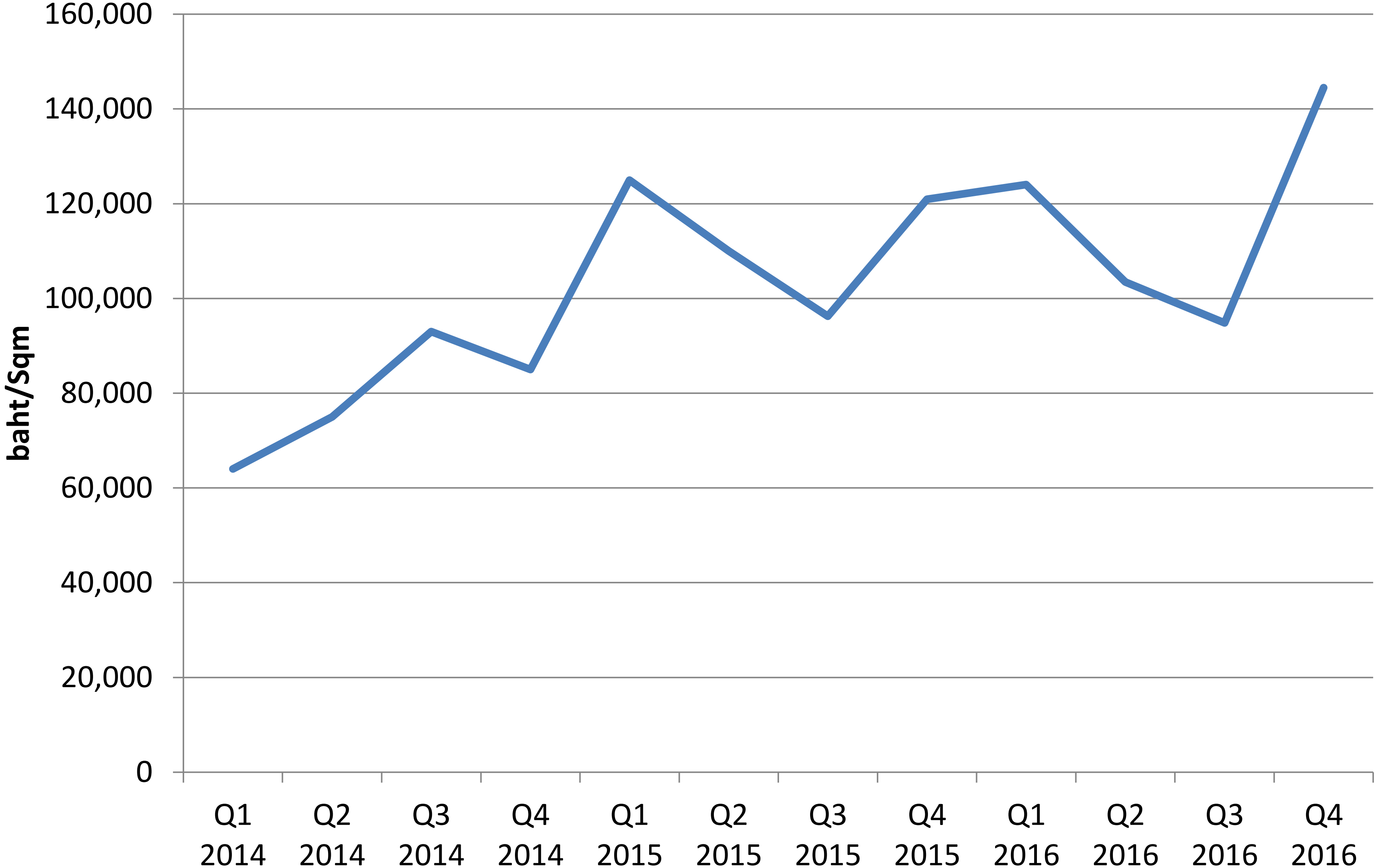
Land prices in Bangkok
Source: Agency for real estate affairs

- Bangkok land prices increased for 3.5% in 2014 and 3.0% in 2015. (not that much in real terms)
- The highest land price is in Siam Square, Chi Lom and Ploen Chit at Baht 1.75 million per sq.wah or Baht 437,500 ($13,258) per sq.metre or $1,232 per sq.feet.

(1 rai = 0.16 hectare)

(1 square wah=4 square meter)

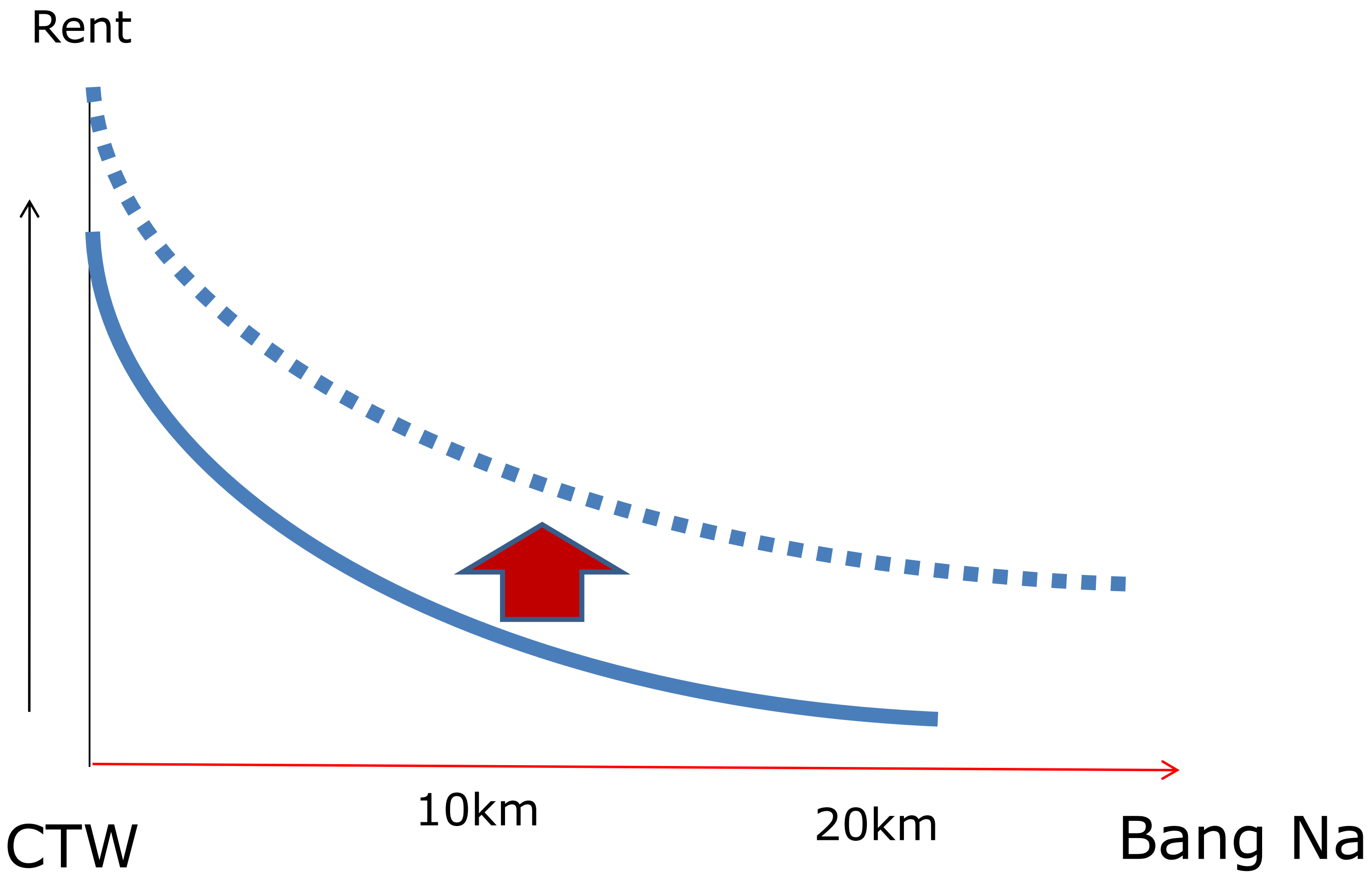
Average condo unit price
68,874 unsold units (34%) in 2016



Changing rent gradients: slope and intercept shifts

- Inflation (land as inflation hedge)
- Transportation cost (oil prices)
- Traffic jam (higher opportunity cost)
- New infrastructure: expansion of
  BTS and MRT
- De-concentration (new shopping malls away from old CBD)

Changes in factor affecting land rent slope and intercept shifts

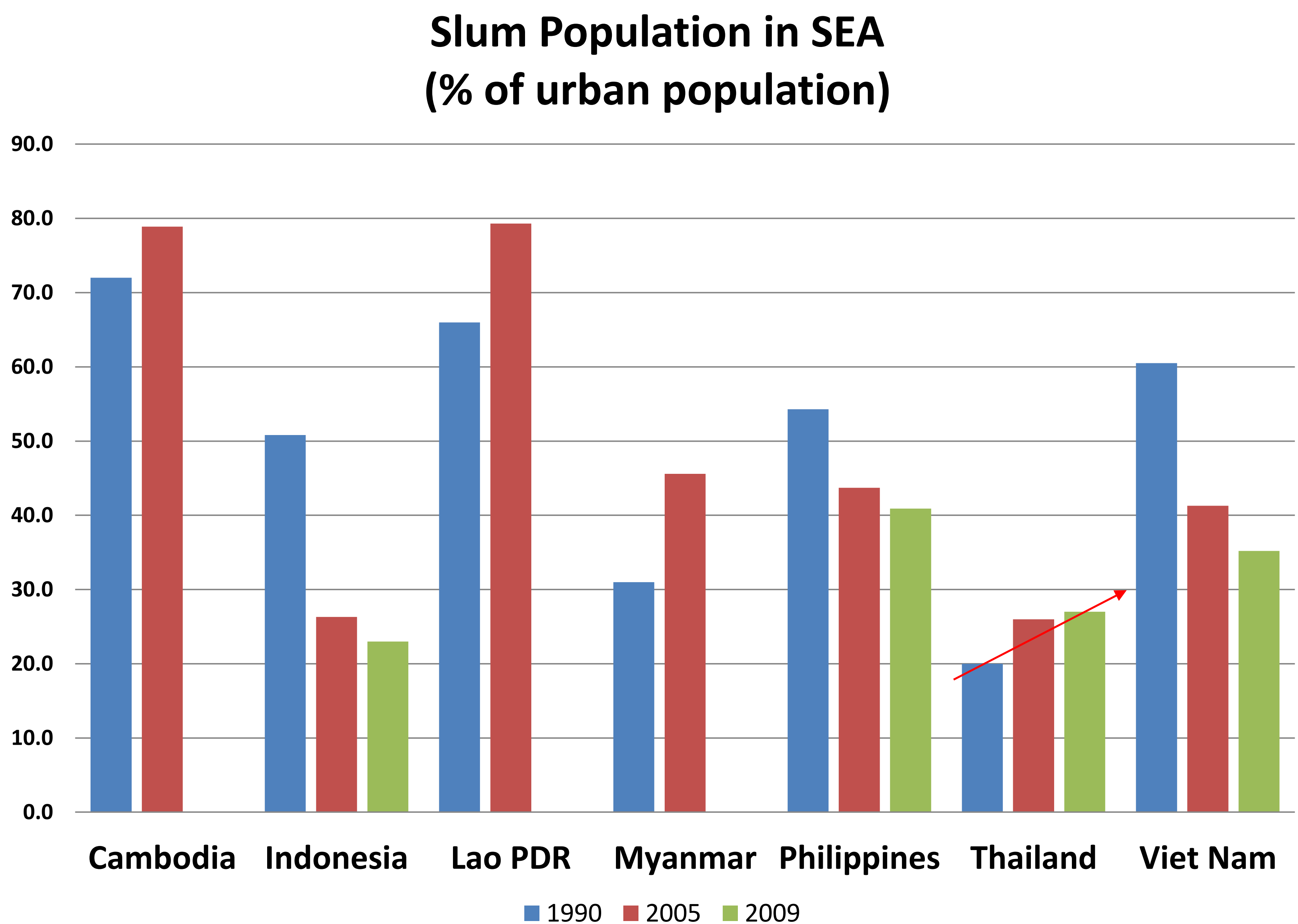


A trade-off: accessibility and space

- Land prices are required to decline with distance to compensate for higher transportation costs, as individual moves away from the CBD.
- The individual can acquire a larger piece of land in compensation for less convenient access to the CBD.
- Thus, there is a trade-off relationship between the access to CBD and space.

Cost of commuting: The rich and the poor

- The cost of commuting depends on distance.
- Wealthy families settle on large plots of relative cheap land toward the city’s edge.
- Poor families tend to occupy very small portions of higher priced land near the center.
- In developing countries, there are a large number of slums in capital cities (low commuting cost).


Slum Population in SEA
(% of urban population)
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
Cambodia
Indonesia
Lao PDR
Myanmar
Philippines
Thailand
Viet Nam
1990
2005
2009

Where do you live?

- For the poor family, the increase in commuting costs as distance increases will diminish rapidly the small fund of income available for housing.
- Consequently the poor cannot bid much for locations where commuting cost is expensive.
- The rich, who are prepared to spend large sums on housing, find the barrier of commuting costs rather *inconsequential* and can bid higher prices than the poor for land at distance locations.

Other factors affecting land prices

- Urban land markets are differentiated and can be segmented into sectors by transportation routes.
- **Quality of infrastructure and transportation routes** in different areas produces different impact on land prices.

life in a high rise condo(bird cage)

- As the cost of communing to CBD keeps on rising, land prices in CBD continue rising exorbitantly.
- To increase areas in CBD, buildings became taller and taller.
- Price per square meter of housing unit has increased dramatically.
- To seemingly maintain the unit price, the average size of condominium in the city has been declining, in some cases below 20 sqm.
- ***Shrinkation (stagflation, Agflation)***

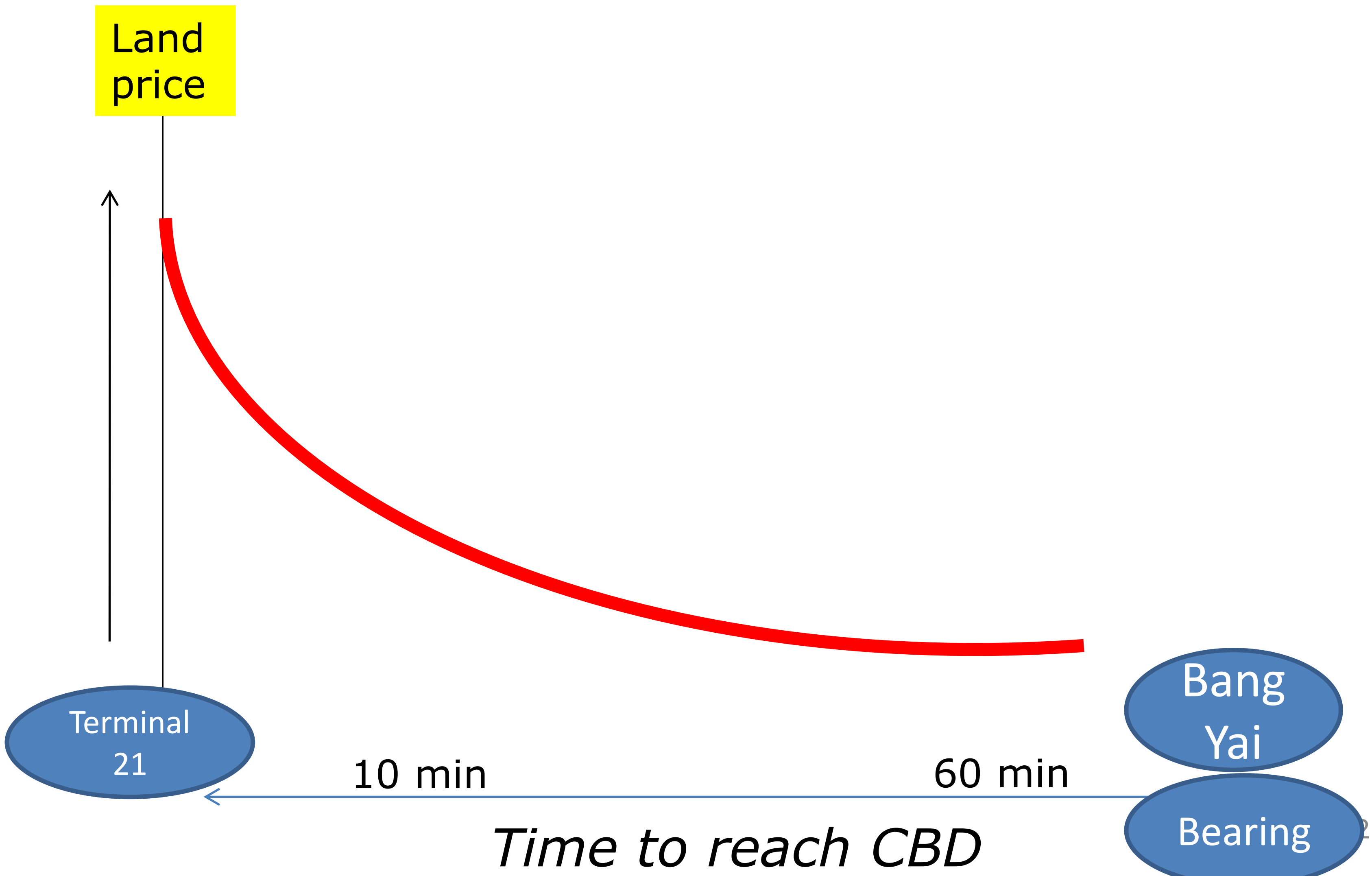
The purple Line and land price

- The prices of land along the purple mass transit line is going up with the areas near its terminal at Tao Poon.
- The Agency for Real Estate Affairs (AREA): the Purple Line from Tao Poon to Bang Yai had pushed up land prices along the 23km route by almost 10% on average last year.
- The area around Tao Poon station saw the most expensive price tag with the market price of 250,000 baht per square wah in 2015, a 15% jump from 2014.

The purple Line and land price

- The ***cheapest*** plots were at the end of the line near Khlong Bang Phai station in Bang Yai district in Nonthaburi, with the average price per sq w at 85,000 baht last year, still increasing almost 10% from a year ago.
- Land prices near Bang Rak Yai station saw the smallest increase, by 8.5% to 99,000 baht per sq. wah.
- Property developers are building estates and condominiums on expectations that the Purple Line will lure new buyers to the areas where the train passes.
- It costs 70 baht from Bang Yai to Hua Lumphong by train.

Travel time to the city center



Economies of Agglomeration

Productivity increases when other firms are located nearby

- Alfred Marshall(1890) explained spillover benefits for a plant to other plants in the neighborhood in terms of ***information*** **spillover** about technology, suppliers, purchases, and market conditions.
- Economic activity agglomerates (lot of many different things brought together) in cities because of local external economies of scale in production—a plant's productivity is enhanced if other plants are located ***nearby.***

Benefits from being near each other

- The proximity of buyers and sellers reduces *transportation costs* of trade and ***search costs*** in retailing.
- Increased diversity of suppliers to local producers.
- Search for workers and matching improvements between workers and firms in local labor markets.
- That is why they agglomerate into one specific place.

Economies of agglomeration

- Firms obtain benefits when they locate near each other.
- Maybe they want to know what their competitors are up to.
- Agglomeration implies economies of scale and network externality.
- IT centers, Panthip plaza, MBK mall
- Pratunam, Platinum mall, Bo Bae towerK(orean) Village and J(apanese) village in Sukhumvit.

Bangkok development is shaped by economies of agglomeration

- The ***more*** related firms that are clustered together, the ***lower*** the cost of production (firms have competing multiple suppliers, greater specialization and division of labor result) and the greater the market that the firm can sell into.
- Even when multiple firms are in the ***same*** (competitors) cluster, there may be advantages because that cluster ***attracts*** more suppliers and customers than a single firm could alone.
- Cities are shaped and grow to exploit economies of agglomeration.

Economies of Agglomeration

Diseconomies of agglomeration

- Diseconomies of agglomeration take place when additional competition drives down pricing power.
- Large cities encounter problems of crowding and congestion.
- It is this tension between economies and diseconomies that allows cities to grow, but ***keeps them from becoming too large***.

Who need a cluster?
Non-standardized products

- Industrialization occurs ***disproportionately*** in urban areas because of different opportunities to exploit scale economies of local agglomeration.
- In the cluster, there are scopes for local **intra-industry specialization** of plants in specific activities

Producers of non-standardized products need to stay in big cities

- Firms engaged in non-standardized products benefit from urbanization economies.
- The non-standardized production includes special-order machinery, **fashion apparel, entertainment services**, and **publishing**.
- Plants for non-standardized products need to obtain ***specialized services*** beyond their own industry.
- They need **large local market** to test their products; they need to stay in mega or big cities

Where to locate your firm: large or small cities?

- Production in ***large*** metropolitan areas focuses on *services* and *non-standardized* manufacturing.
- ***Standardized*** manufacturing production tends to be ***de-concentrated*** into ***smaller*** and medium-size metropolitan areas to avoid higher operating cost in big cities.

Localized economies of scale

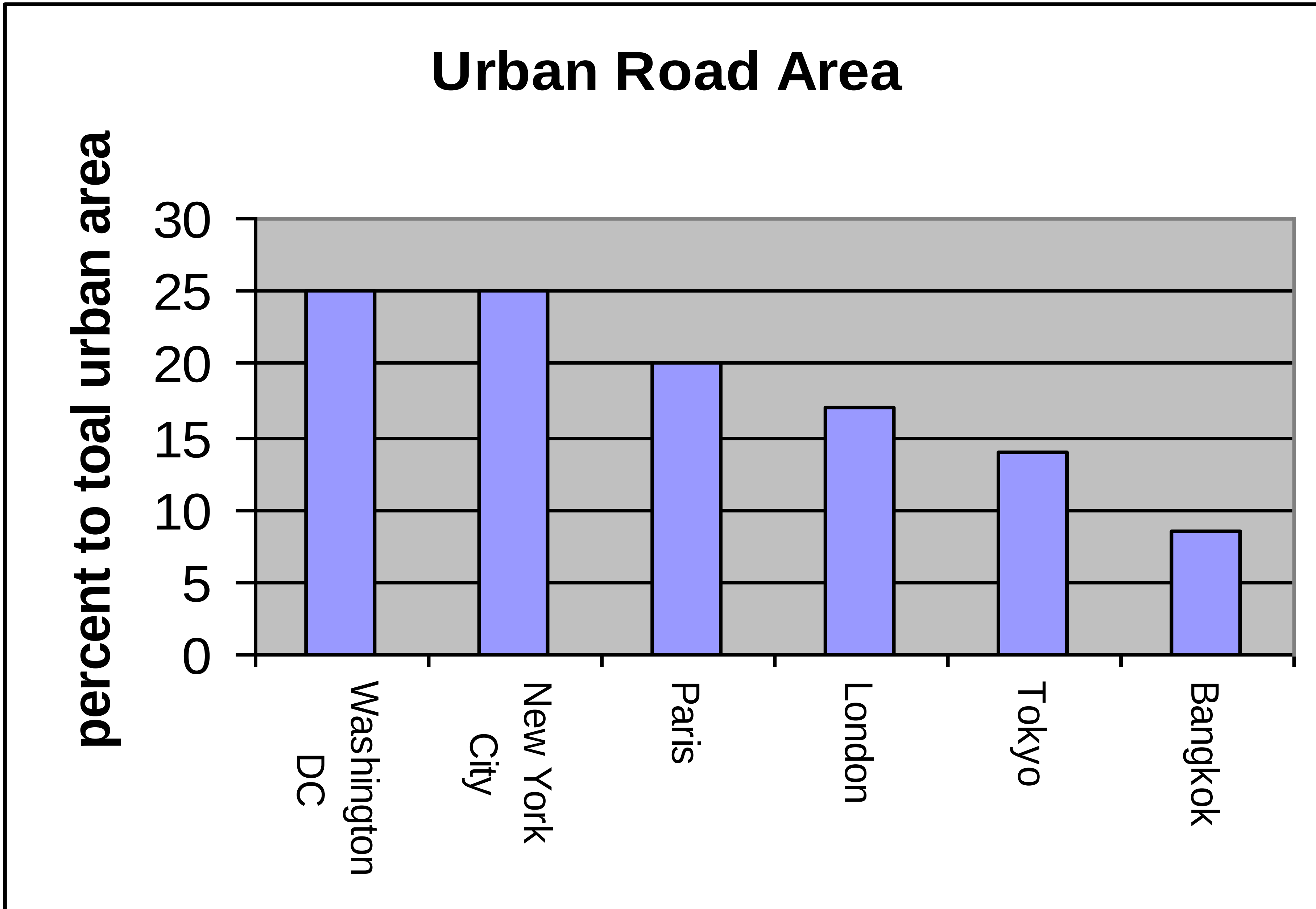
- Plants producing ***standardized*** products, such as textiles, steel, ceramics, food processing, ***learn mostly from other plants in the same industry locally***.
- They benefit primarily from what are called *localized economies*.
- Standardized firms need to stay (agglomerate) together to exploit localized economies of scale.

Why too much concentration in mega cities?

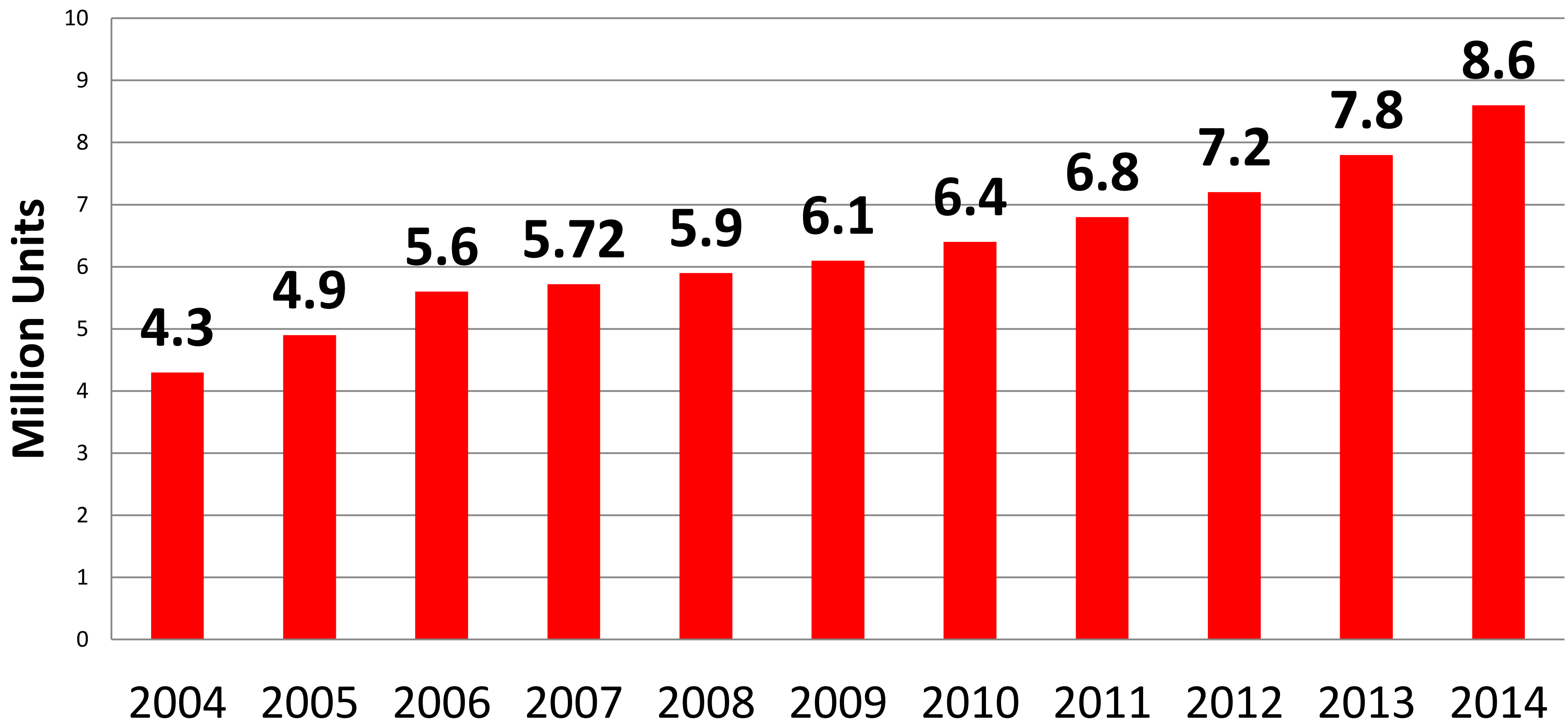
- Institutions for urban planning and management are underdeveloped, because of too fast growing cities and inadequate human resources
- Externalities of congestion and pollution are relatively ***underpriced*** in megacities, encouraging overpopulation in larger cities.
- In the end, excessive concentration significantly **reduces** economic growth.

Consequences of heavy concentration

- **Growth losses** in countries with excessive mega-cities resulting from significantly deficient human and physical capital investment.
- Wages, land and infrastructure costs escalate with mega-city size relative to scale benefits for standardized products, making it more difficult to attract foreign investment and to remain competitive in world markets.
- Bangkok is an example of city with excessive congestion.


Urban Road Area
percent to toal urban area
30
25
20
15
10
5
0
Washington DC
New York City
Paris
London
Tokyo
Bangkok

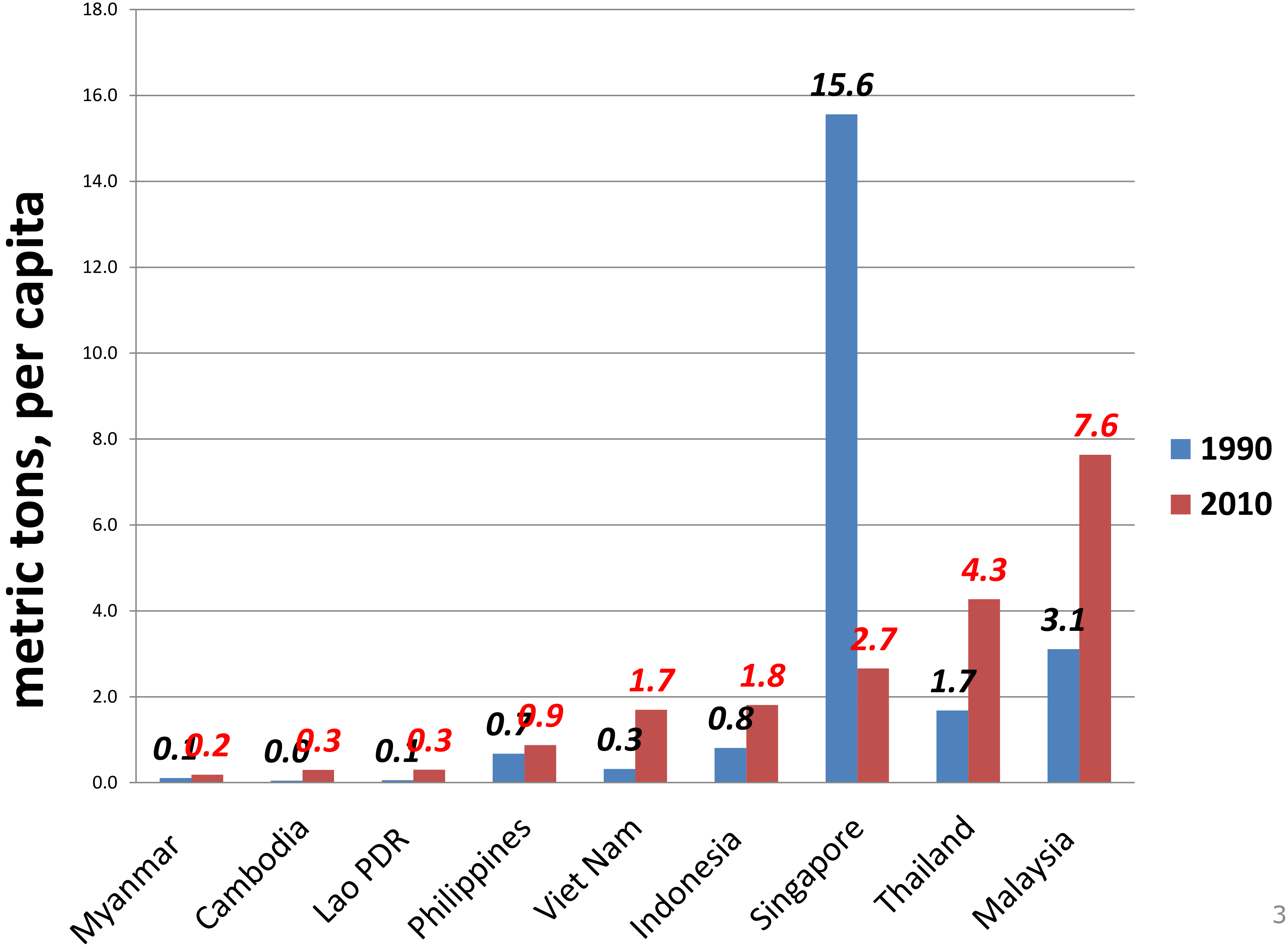
Accumulated Number of cars registered in Bangkok



Consequences of traffic congestion

- Huge economic cost in terms of time lost and energy consumption and cost of health treatment
- Alarming levels of CO, black smoke, Hydrocarbon, noise level and particulate matter (PM) .
- Road traffic is responsible for 70% of the dust.
- The main sources of dust are diesel and motor cycle exhaust and construction sites.
- High time for EVs.

Carbon Dioxide Emissions

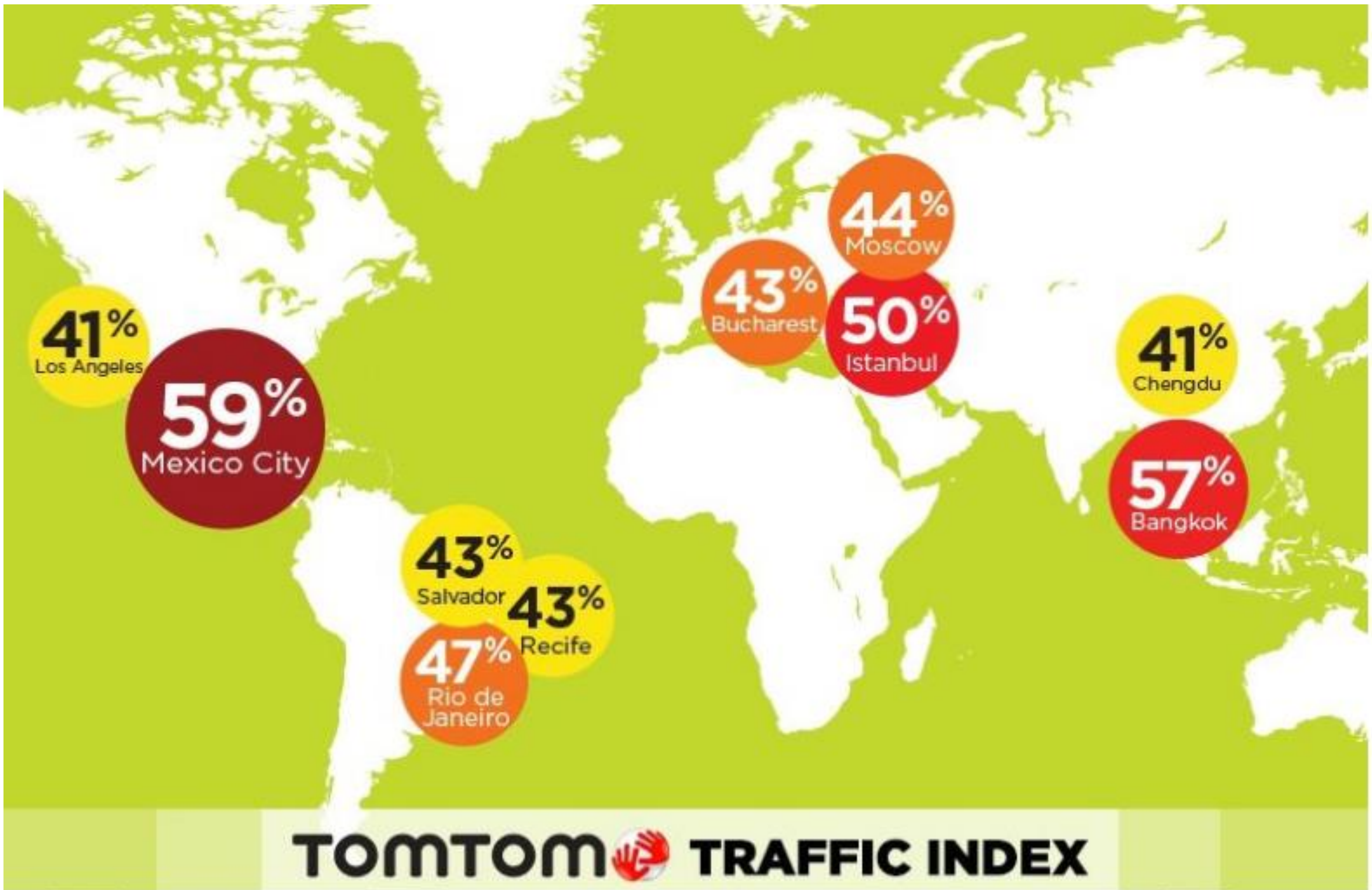


Further costs of excessive concentration

- Traffic accidents
- Health costs from exposure to high level of air and water pollution
- Contamination of ground water
- Gastrointestinal and infectious diseases
- Poor air quality
- Time lost due to long commutes

The Dutch navigation firm measured traffic congestion in 295 cities across 38 countries in the world to compile the rankings

(Extra travel time to travel in Bkk is 57%)



TomTom Traffic Index (TTTI) 2016

From 85% (morning) to 114 %(evening)

- Drivers in Bangkok spend on average 57 per cent extra travel time stuck in traffic at any time of the day, according to the TTTI 2016, which takes data from last year.
- It gets worse in the mornings, when Bangkok drivers spend up to 85 per cent extra time in traffic, while in the evening peak period that slows even further to 114 per cent.
- Bangkok was pipped to the top spot by the Mexican capital, where drivers spend 59 per cent extra travel time in traffic. Next was Istanbul (50 per cent), followed by Rio de Janeiro (47 per cent) and Moscow (44 per cent).
- Traffic jams damage air quality by creating dust

What are PM10 and where from?

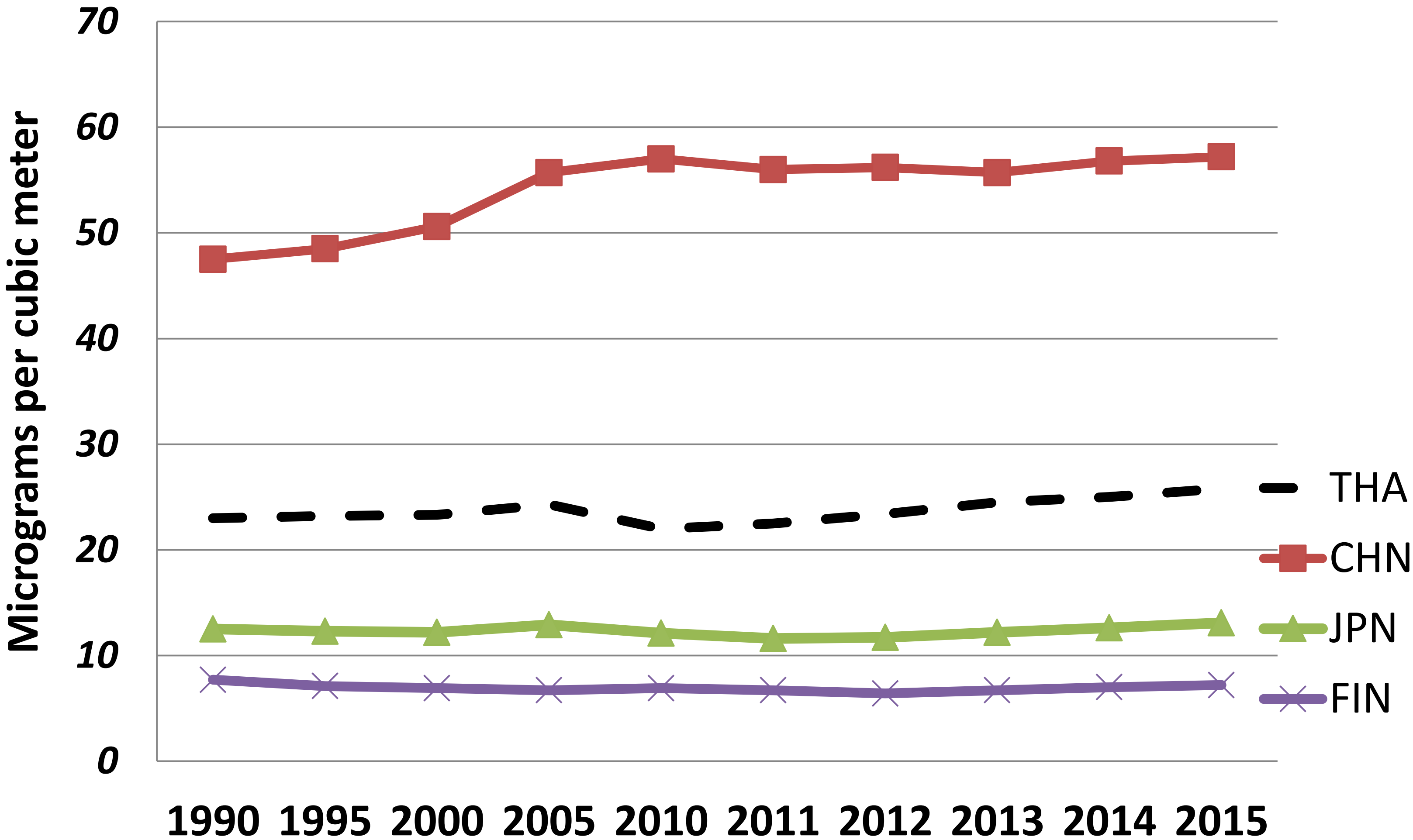
- Particulate matter (PM): Smaller than 10 microns or 1/7 of the thickness of a human hair.
- PM10 come from motor vehicles, slash-and-burn farming, waste burning, forest fires, heavy industries, and dust from construction sites
- PM 10 is among the most harmful of air pollutants
- When inhaled, these particles lodge deep in the lungs and can cause many kinds of illness:
- Asthma, lung cancer, cardiovascular disease, respiratory diseases, premature delivery, birth defects, and premature death.

Source: Pollution Control Department

PM 2.5

- The World Health Organization (WHO) estimated in 2005 that "**Fine** particulate air pollution (PM2.5), causes about 3% of mortality from cardiopulmonary disease, about 5% of mortality from cancer of the trachea, bronchus, and lung, and about 1% of mortality from acute respiratory infections in children under 5 years, worldwide
- Short-term exposure at elevated concentrations can significantly contribute to heart disease.
- A 2011 study concluded that traffic exhaust is the single ***most serious preventable cause*** of heart attack in the general public, the cause of 7.4% of all attacks

Particulate Matter: PM 2.5



How to alleviate urban concentration

- Investment in interregional transport and telecommunications to facilitate de-concentration of industry.
- The government creates investment promotional zoning to attract investors to rural areas.
- Fiscal de-concentration: small cities can raise fiscal resources and provide services need to compete with primate cities for industry and population.

Noise pollution
(even in the BTS)

- Maximum permissible level of noise was at 70 decibel.
- When exposing yourself to noise, think of three things: ***How loud, how long, and how close?***
- A normal conversation is about 60db.
- Noise that is louder than **85 db** may damage your ears.
- Repeated exposure to noise-emitting machines and engines such as motorcycles can erode hearing more slowly but result in irrecoverable damaged ears.

As much as possible, avoid loud people

- Children become **aggressive** as their parents shout at one another.
- It inadvertently breeds a society full of aggressive people who cannot communicate with one another.
- Some even become suicidal, having suffered from persistent ringing in their ears.
- 21.4 % of Bangkok's population who lived along side the roads suffered from sensory neural hearing loss.

Summary

- Business cycles are related to booms and busts in housing markets because there are lags in supply adjustment to price changes.
- This is a trade-off relationship between access to CBD and space, which explains choice of residential location among the rich and the poor in the city.
- Agglomeration economies explains choice of firms and business location as firms receive benefit network externality and spillover effects of being close together.
- Urbanization in developing countries is so rapid that they cannot prepare for the smooth transformation from rural to urban structure.
- Cost of excessive concentration prevails in mega cities.

State whether you agree or disagree with the following statement.

Provide brief reasons

1. Many poor people choose to live in slums in Bangkok, because of large wage differentials between urban and rural areas.
2. Since defense spending is public goods, the optimal level of military expenditure depends more on the level of threat by enemies rather than tax revenues.
3. The inflation rate in April 2010 was contained at 3 % (year-on-year); inflation targeting strategy is effective in Thailand.

State whether you agree or disagree with the following statement.
Provide brief reasons

4. Wider interest spreads of small commercial banks in Thailand indicate that they were less efficient and experienced lower profits than larger banks.

5. An proper exchange rate policy should aim at maintaining the stability of the bath-dollar exchange rate to avoid excessive foreign exchange risk that could lower international competitiveness of Thailand’s export sector.

State whether you agree or disagree with the following statement.
Provide brief reasons

6. Other things equal, political violence in 2014 reduced Thailand's long-term growth path.
7. The gravity model suggests that Thailand should engage in free trade agreements with neighboring countries rather than countries in other parts of the world.

State whether you agree or disagree with the following statement. Provide brief reasons

8. The sharp rebound of manufactured exports in the first quarter of 2010 underscored the increasing competitiveness of Thailand's manufacturing sector.
9. In 2010, as oil prices increased due to the recovery of the world economy it was likely that income inequality in Thailand would be worsened.
10. Both Baumal-Bowen cost disease and the Dutch disease have similar impacts on the Thai land's international competitiveness.