

Urbanization and Agglomeration Economics

Bhanupong

Lecture 29

Demonetization policy: India

- How well will the economy withstand the government's abrupt decision to withdraw large-denomination banknotes? Growth figures today will reveal the economy's strength in the July-September quarter, before "demonetization" started on November 8th—and therefore provide a useful benchmark for assessing the measure's economic cost.
- The data are expected to show healthy growth of about 7.5%, thanks to a generous monsoon and bountiful pay hikes for government employees.

Demonetization policy: India

- The decision to replace 500- and 1,000-rupee notes is intended to curb “black money”, which circulates outside the formal banking system, making it hard to tax.
- But the surprise move has also caused disruption, interrupting supply chains and prompting long queues at banks.
- This upheaval may reduce growth by half a percentage point in the fiscal year ending March 31st, reckons Fitch, a rating agency. A large bill to pay for replacing large bills.

Loaded barrels: oil

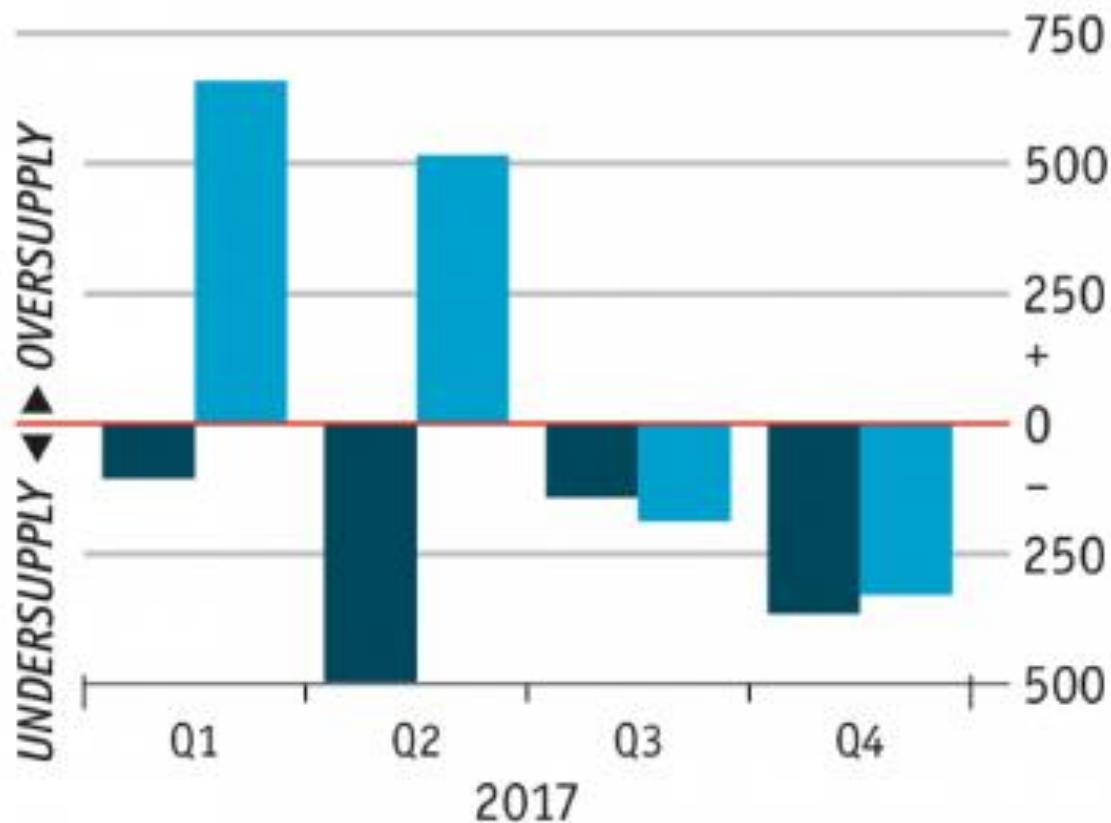
- OPEC has been written off many times. But at today's meeting in Vienna, more than the cartel's future is at stake; so too is Saudi Arabia's sway over oil markets.
- OPEC has failed already this year to prop up prices by rigging production.
- It then promised to agree to cut output by 1m barrels a day, to as low as 32.5m b/d, by today.

Cut or glut

Forecast global oil supply minus demand

Barrels per day, '000

- OPEC production cut, Russia freeze
- No OPEC production cut, no Russia freeze



Sources: IEA; Goldman Sachs

Loaded barrels: oil

- The resulting brinkmanship between Saudi Arabia, Iran, Iraq and non-OPEC Russia has the oil market on tenterhooks.
- Failure to reach agreement could send oil prices plummeting; an accord could rescue them. Iran and Iraq want Saudi Arabia to make the biggest production cuts; it is loth to do so.
- The price of failure is steep for all, so it would be striking if they do not reach at least the semblance of a deal.
- Still, oil markets put the chances of success at only 30%.

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.

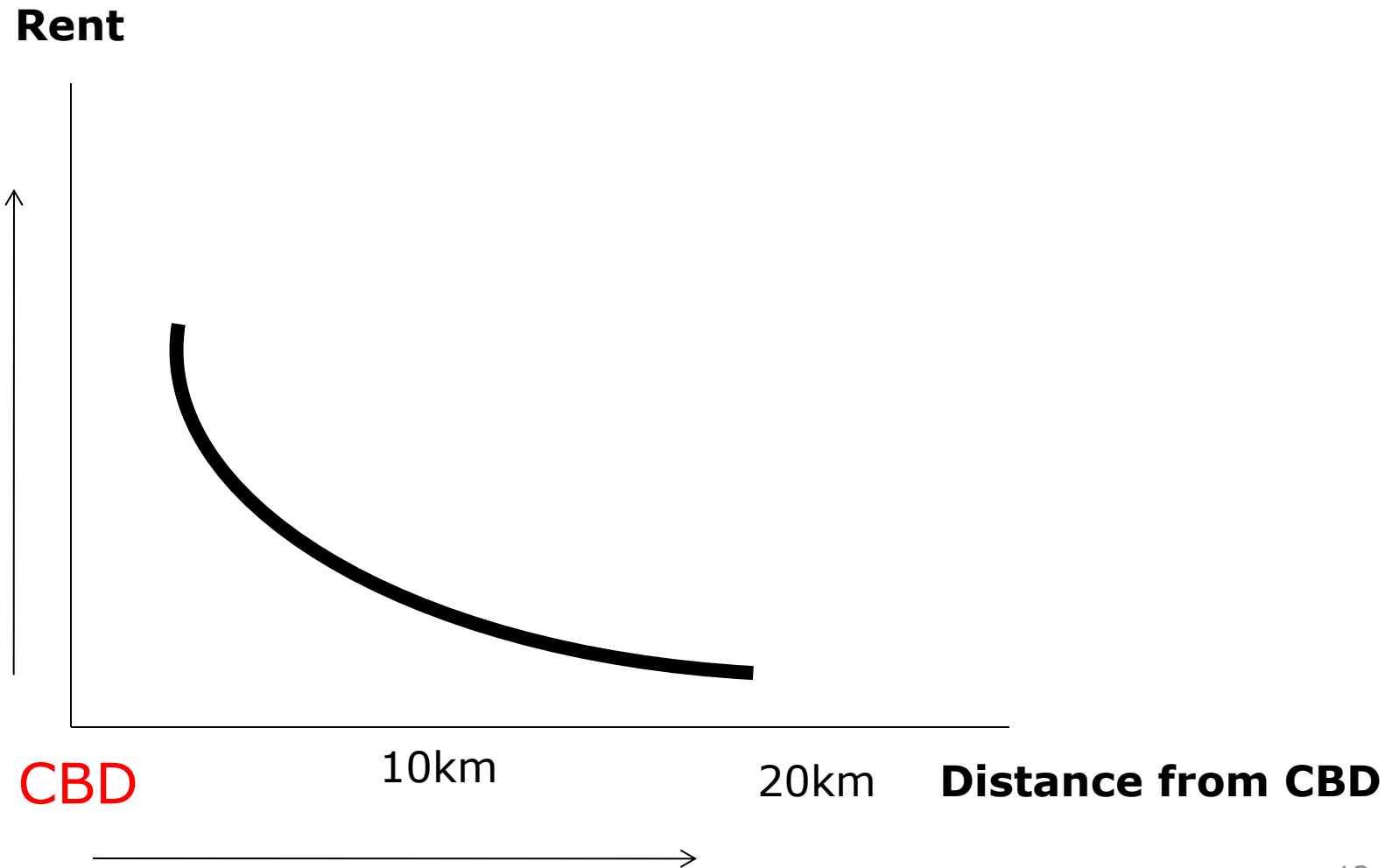
Retail gravitation

- 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 this year, BigC Supercenter posted 97 billion baht revenue and a net profit of 2.8 billion baht.

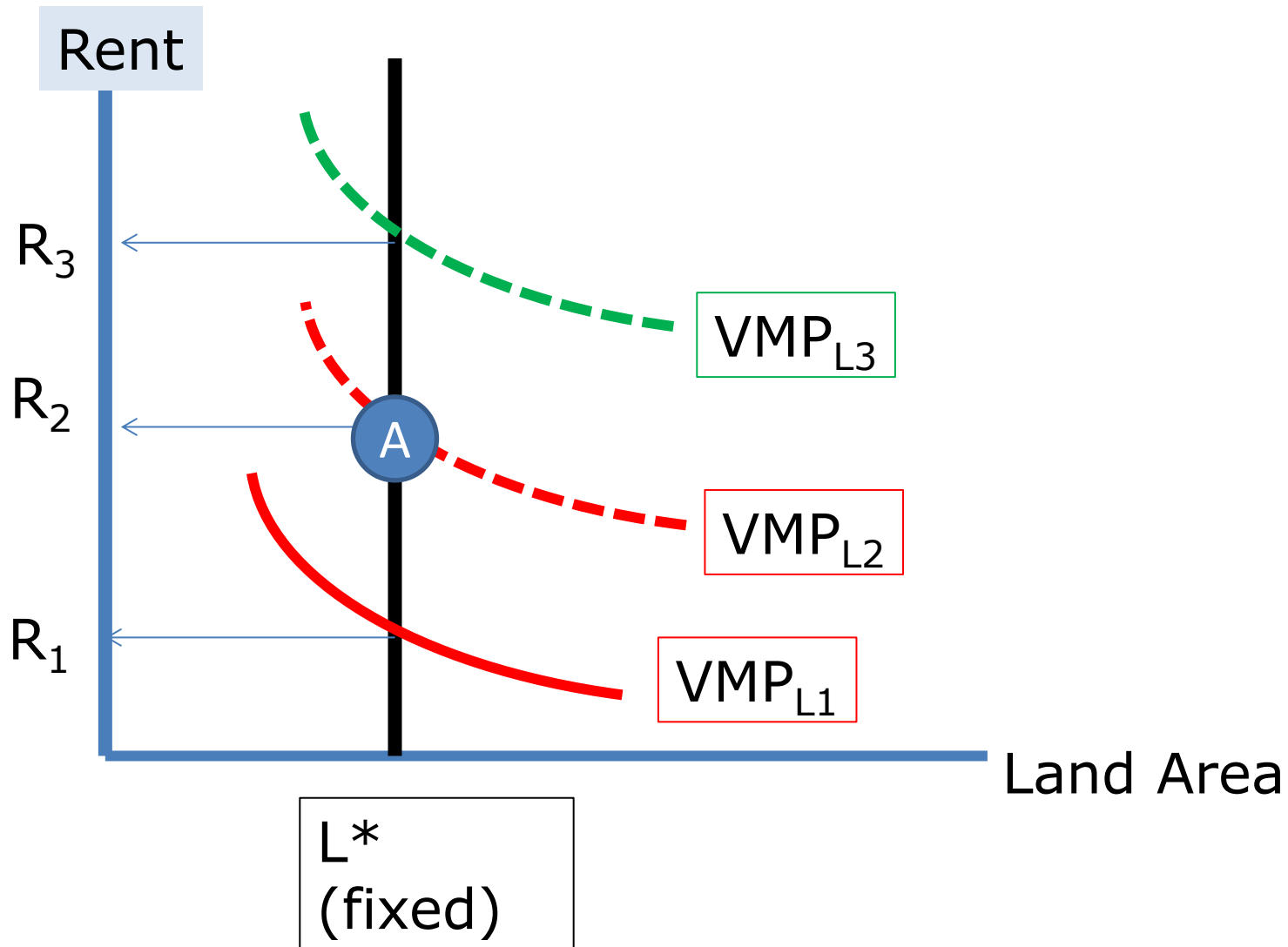
High rent at the CBD, because of high demand for space

- (1) When moving near the CBD, transportation and communication costs will be decreasing
- (2) Sales will be increasing as distance from the center diminishes.

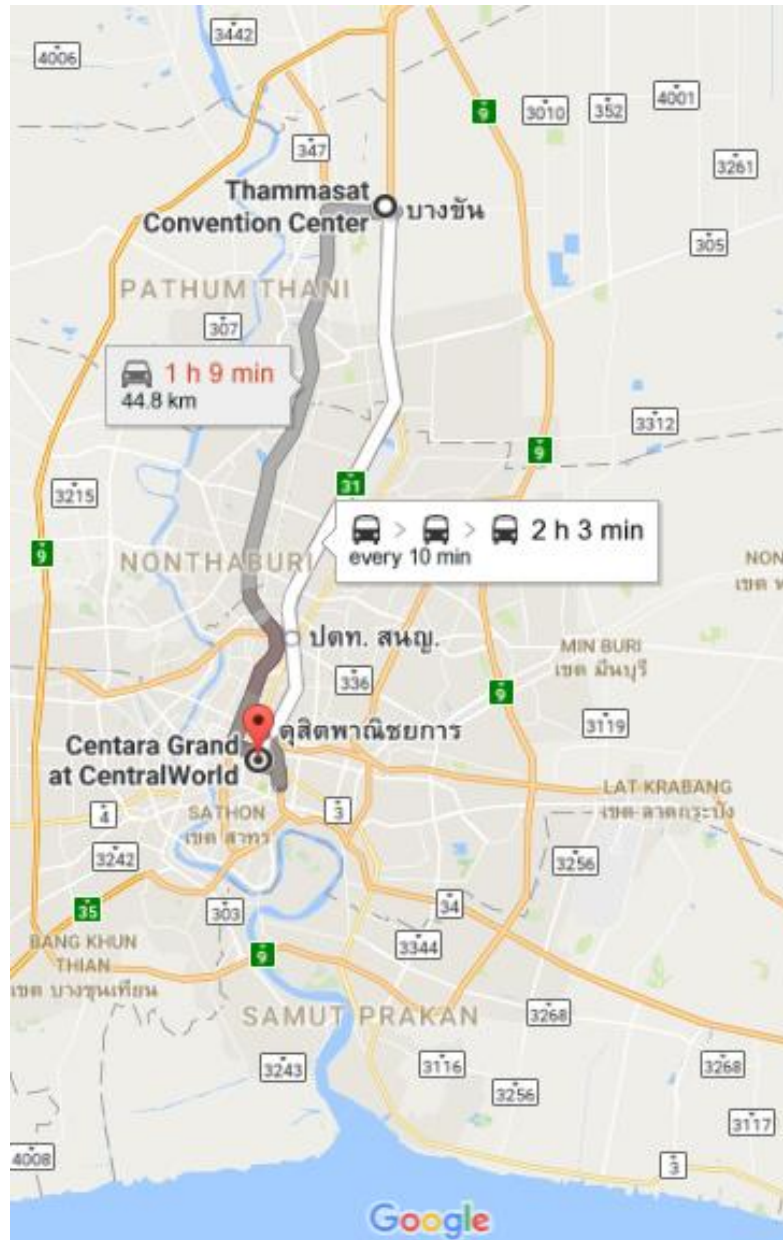
Rent Gradient



Rent = $(MP_{\text{Land}} \times P) =$ 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: 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)

Reports by Agency for Real Estate Affairs

Land prices in 2014 were increased for 3.5% from 2013.

During 2012 to 2013, land prices were increased for 4.6%, implying a slowing down in economic growth.

Land prices increased substantially during 1985 to 1996 by 33 times.

However, during 1998 to 2000, land prices decreased by 23%.

Since 2001, land prices have steadily increased until today.

Land price and coup d'etat

After the 1998-2000 crisis, the highest increase was during 2004 to 2005 (5.7% per annum) and the lowest increase was 2.9% in 2009 during the world economic crisis and after a coup d'etat in Thailand.

During the period of 16 years (1998 to 2014), the total increase in value was 84% or almost double the prices.

Land price in Bangkok and suburbs

Land prices in the city was increased for 158%; whereas, prices outside the city or in the suburbs were increased for only 69-89% because of the existing mass transit system in the hub of the city.

There were few new infrastructure developments outside the hub.

During the period 2009 - 2014, land prices increased for 55%. It was 75.8% in the inner-city areas; whereas, the increases in the outskirts of Bangkok were 39.9-49.9%.

Infrastructure development reduces transportation costs.

Land price in CBD went up 75.8%

Stay nearby the mass transit system

Although the overall average increase was 3.5% in 2014; land parcels along the mass transit system were increased more than the average.

It was 8.5% increase in the land parcels along the BTS (sky train) and MRT (underground) mass transit.

It was even higher at 9.8% for the purple line to Bang Yai.

Where high-so people live

Land parcels along the BTS at Siam, Chidlom and Ploenchit stations were among the highest in prices at Baht 1.75 million per sq.wah or Baht 437,500 (\$13,258) per sq.metre or \$1,232 per sq.feet.

Land parcels along the BTS at Nana and Asoke stations were valued at Baht 1.7million per sq.wah (\$1,197 per sq.feet).

Where the low-so live

The lowest land price was 2,500 baht per sq.wah or USD 7.04 per sq.feet.

These prices had been stable for years.

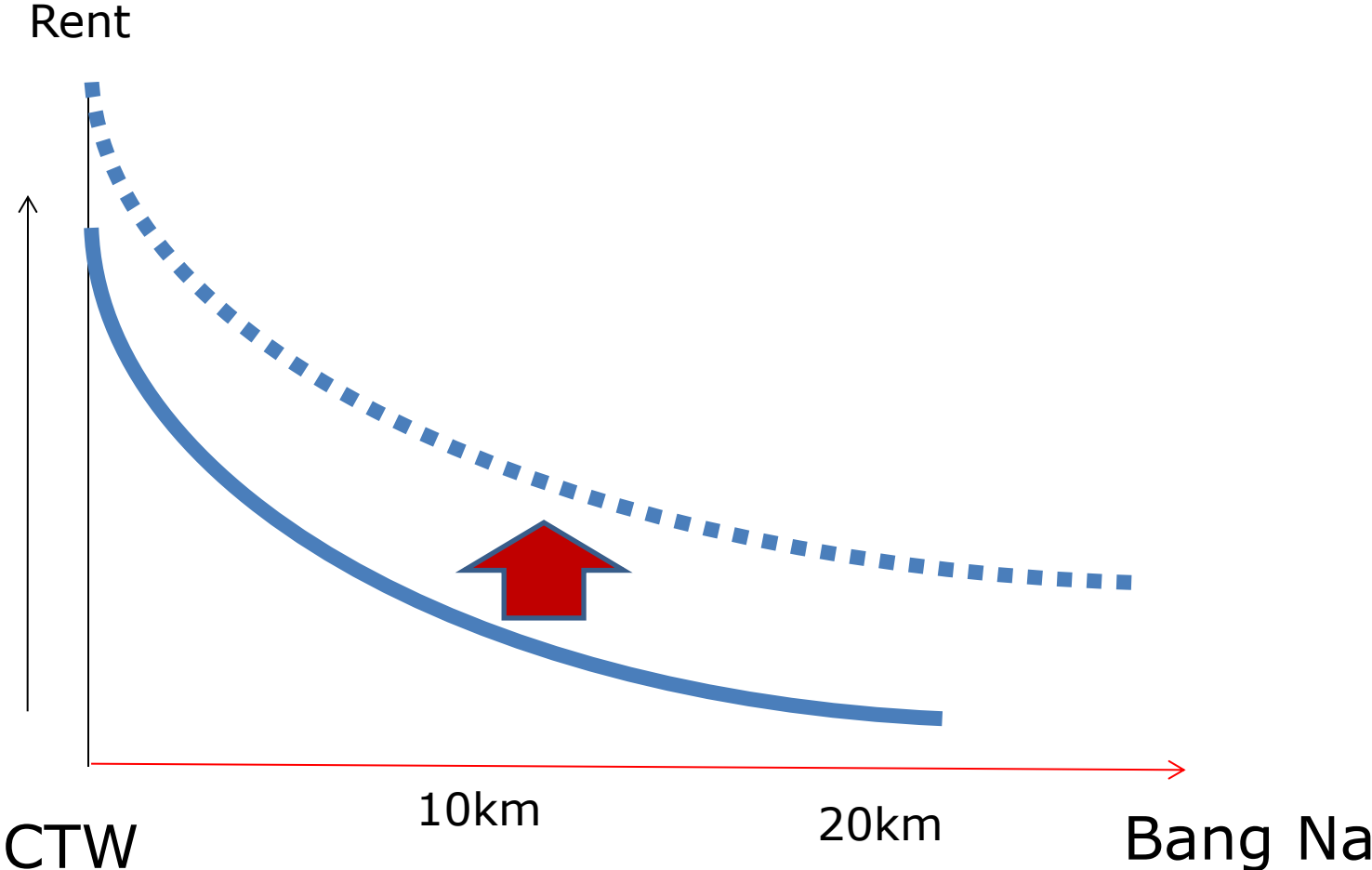
In 1996, it was valued at Baht 3,500 per sq.wah or USD 9.9 per sq.feet.

The decrease was due to the lack of infrastructure plans in the area.

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



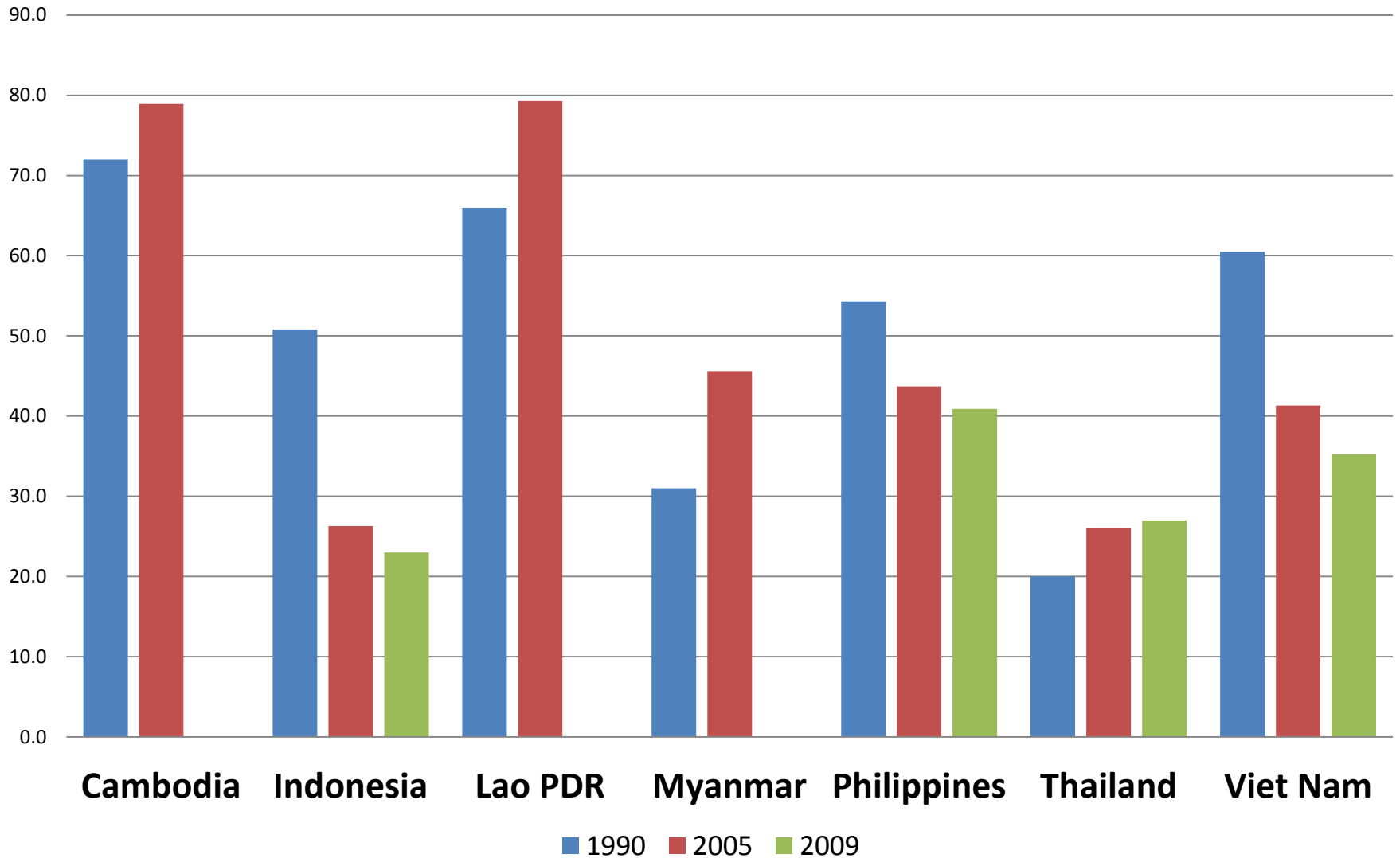
A trade-off: accessibility and space

- 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.

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.

Slum Population in SEA (% of urban population)



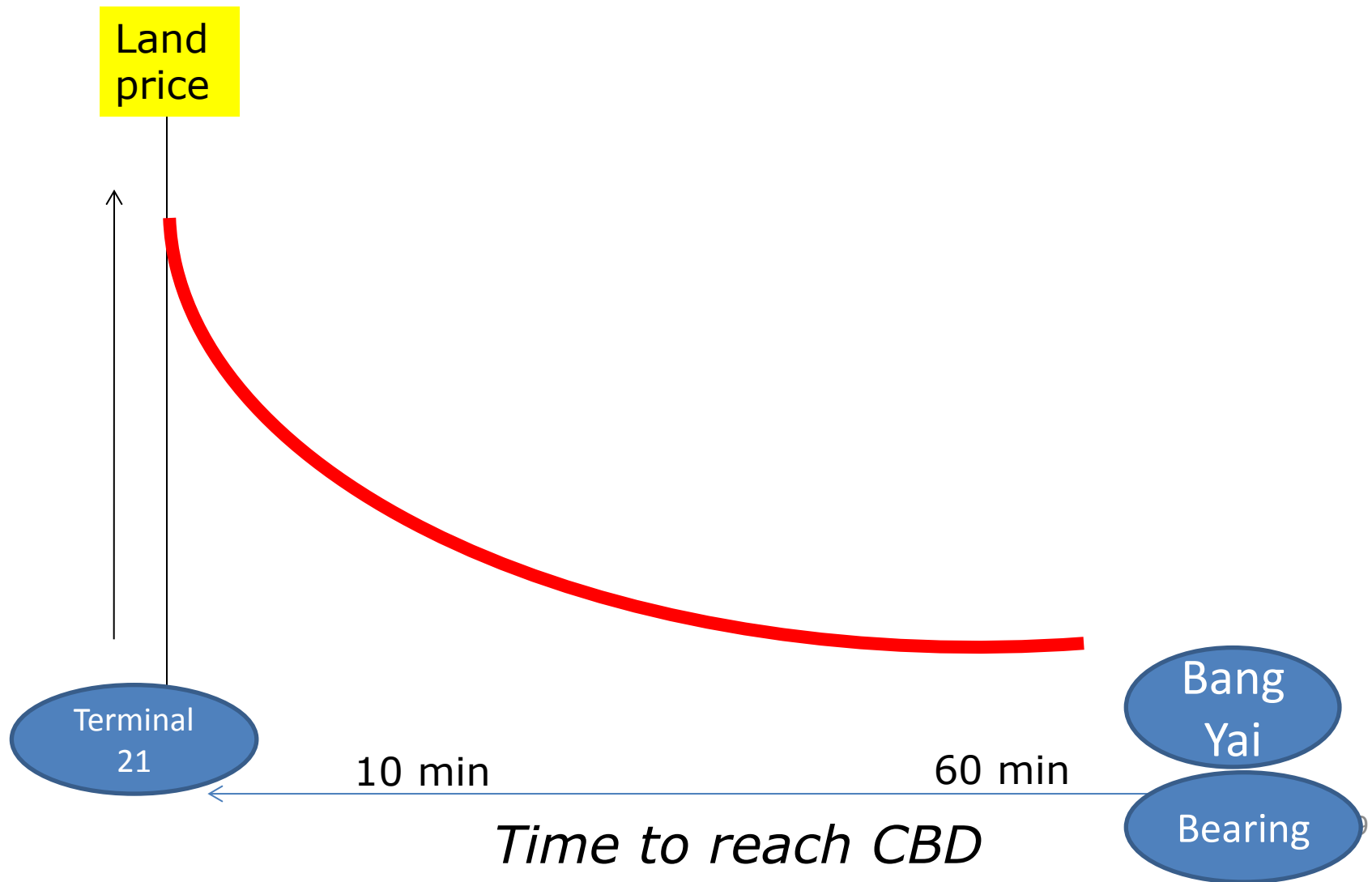
Other factors affecting land prices

- 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 cage

- As the cost of commuting 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.

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 of Spillover Effects

- 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 agglomerates into one specific place.

Economies of agglomeration

- Firms obtain benefits when they locate near each other.
- Economies of scale and net work effects (network externality).
- IT centers, Panthip plaza, MBK mall
- Pratunam, Platinum mall, Bo Bae tower
- K(orean) Village and J(apanese) village in Sukhumvit area

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 form 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.

Why too much concentration in mega cities?

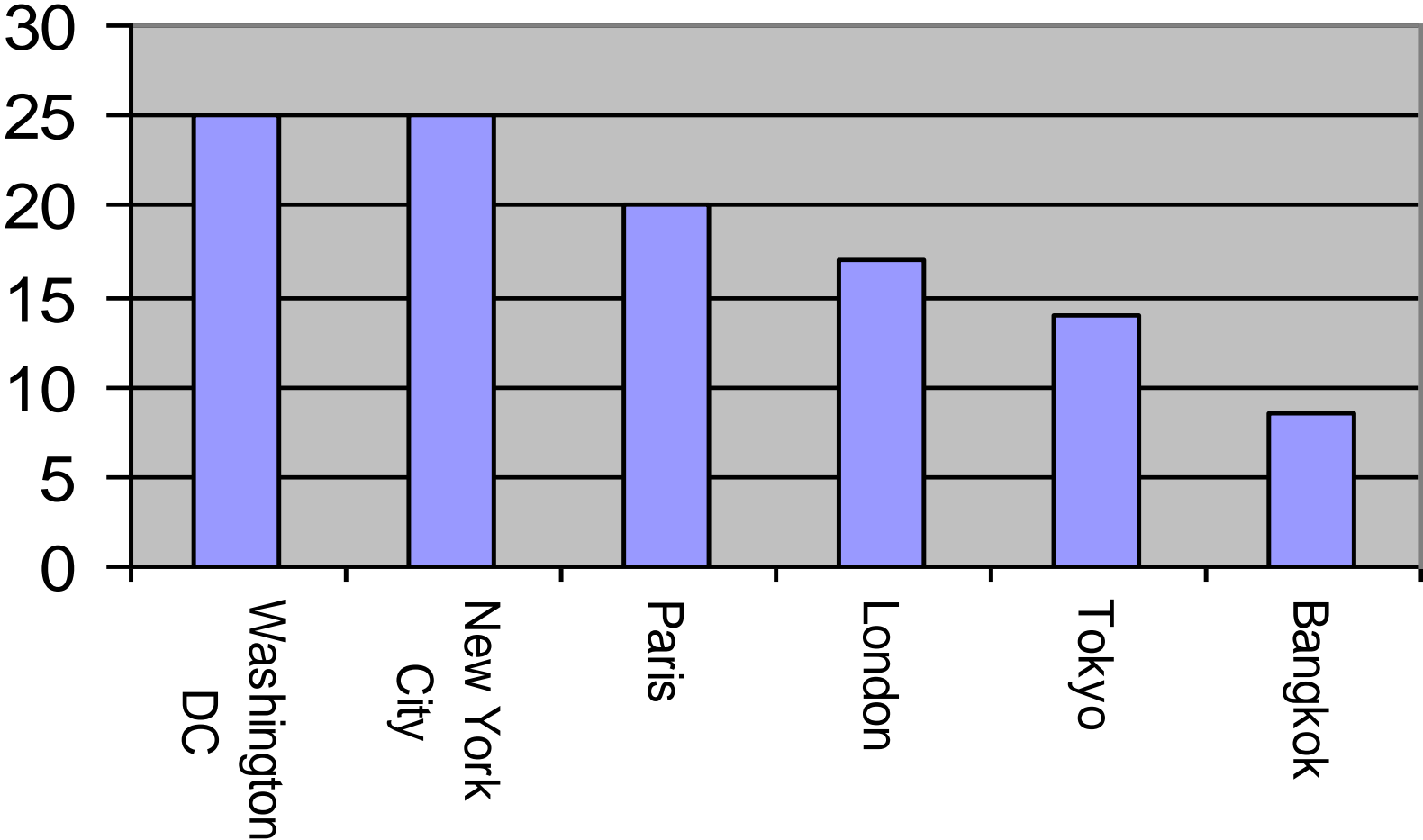
- Underdeveloped institutions for urban planning and management
- Inadequate human resources
- Externalities of congestion and pollution are relatively ***underpriced*** in megacities, encouraging overpopulation in larger cities.
- Excessive concentration significantly **reduces** economic growth.

Consequences of heavy concentration

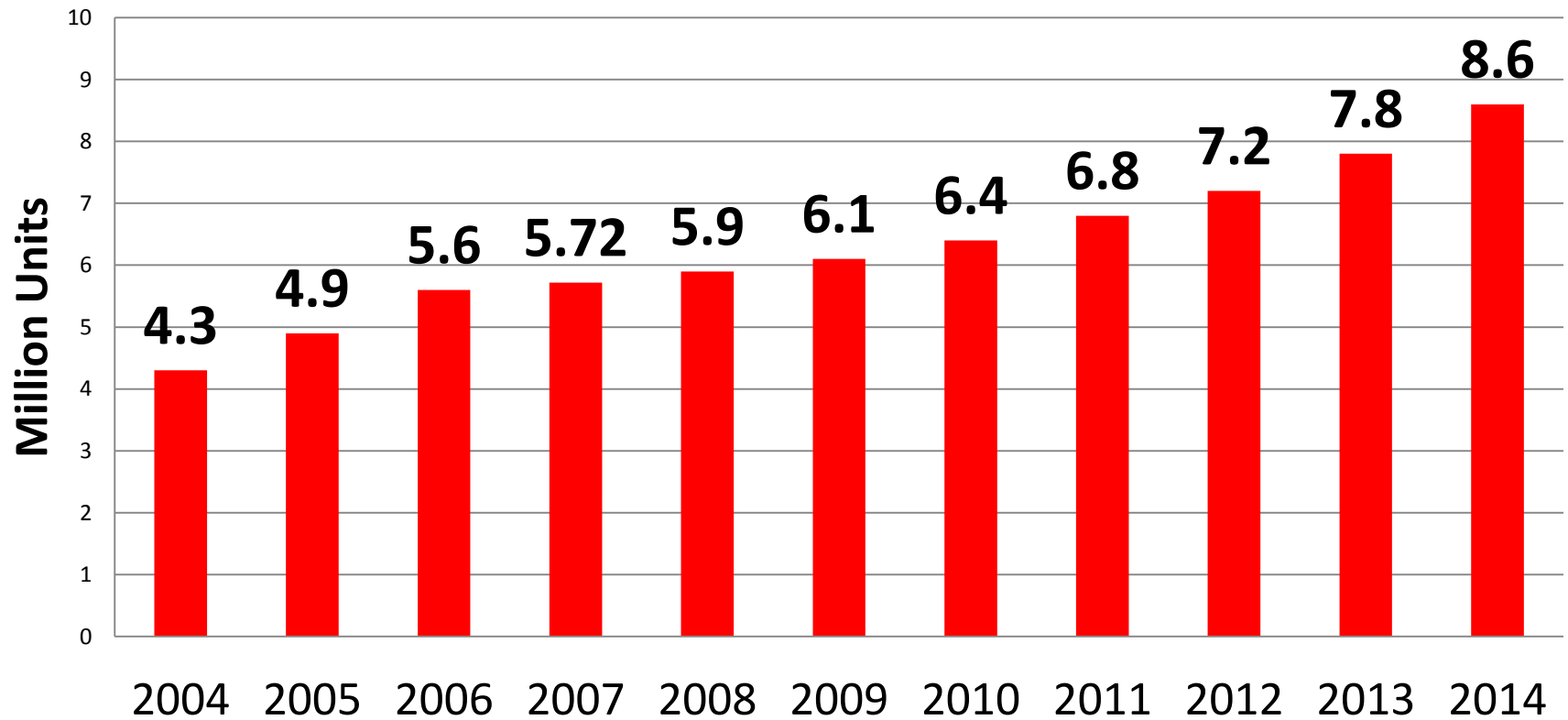
- **Growth losses** in countries with excessive mega-cities resulting from significantly deficient human and physical capital investment.
- Wages, land and infrastructure costs escalate with mega-city size relative to scale benefits for standardized products, making it more difficult to attract foreign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



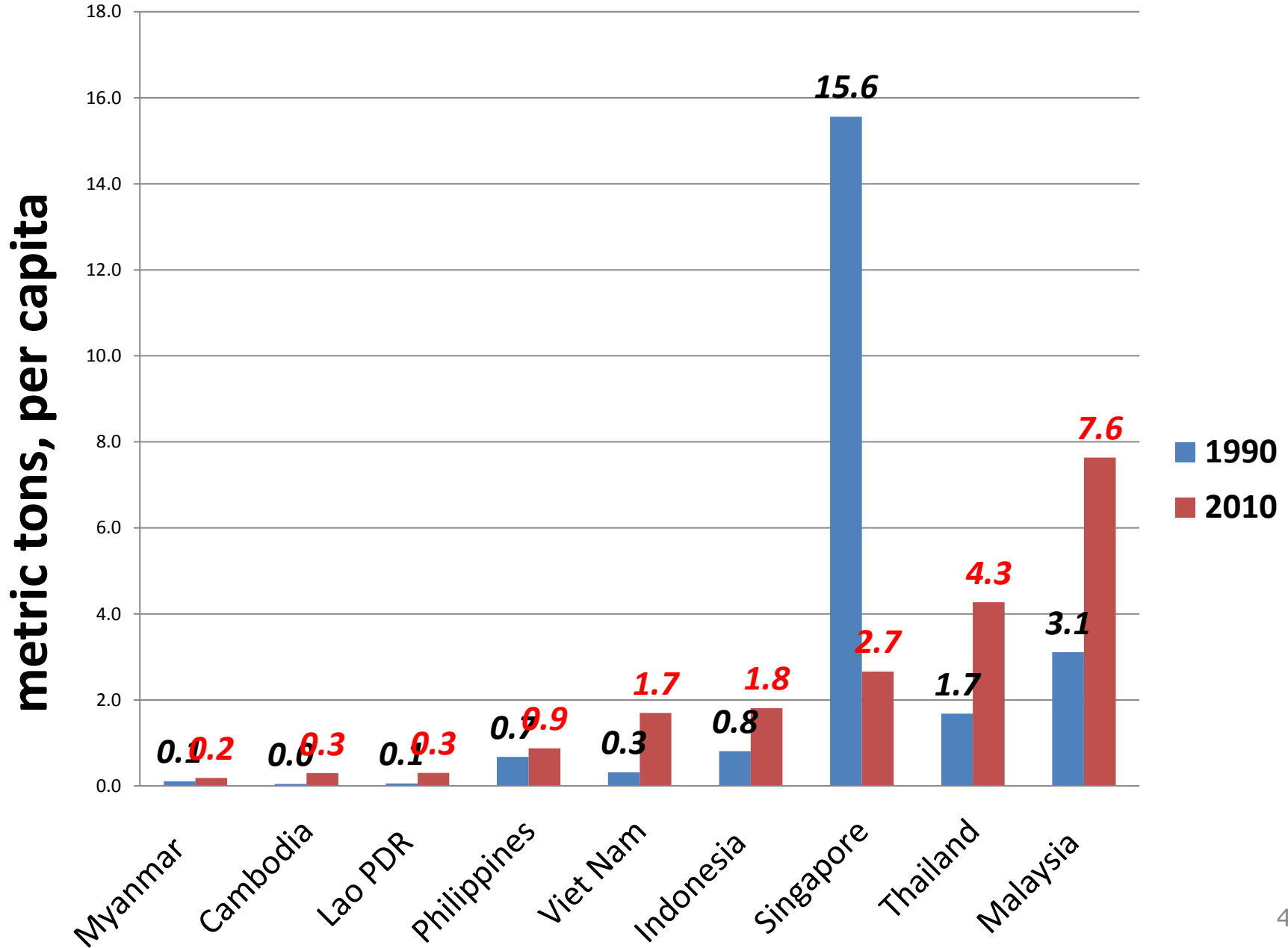
Accumulated Number of cars registered in Bangkok



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.

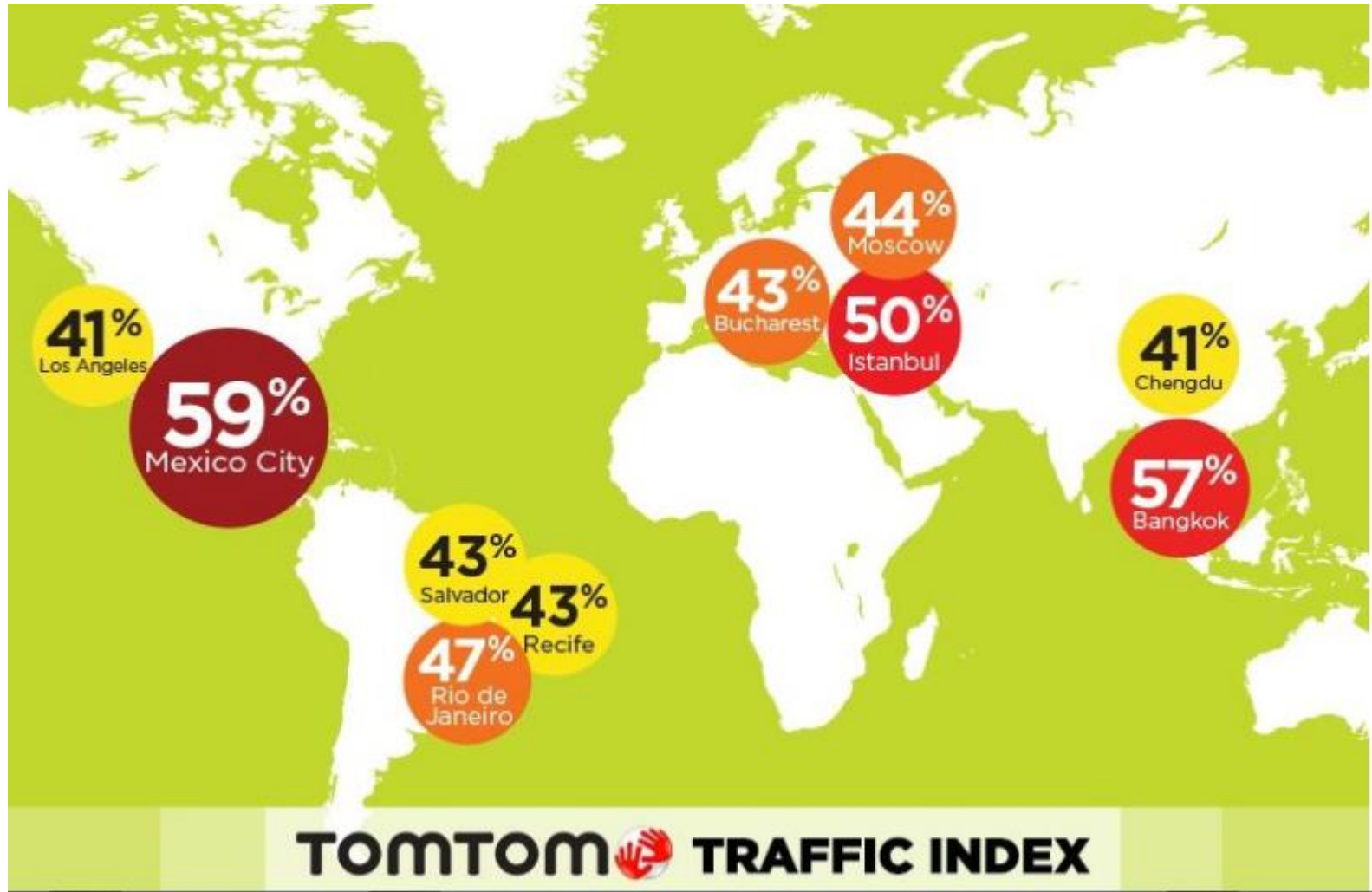
Carbon Dioxide Emissions



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)



TomTom Traffic Index 2016

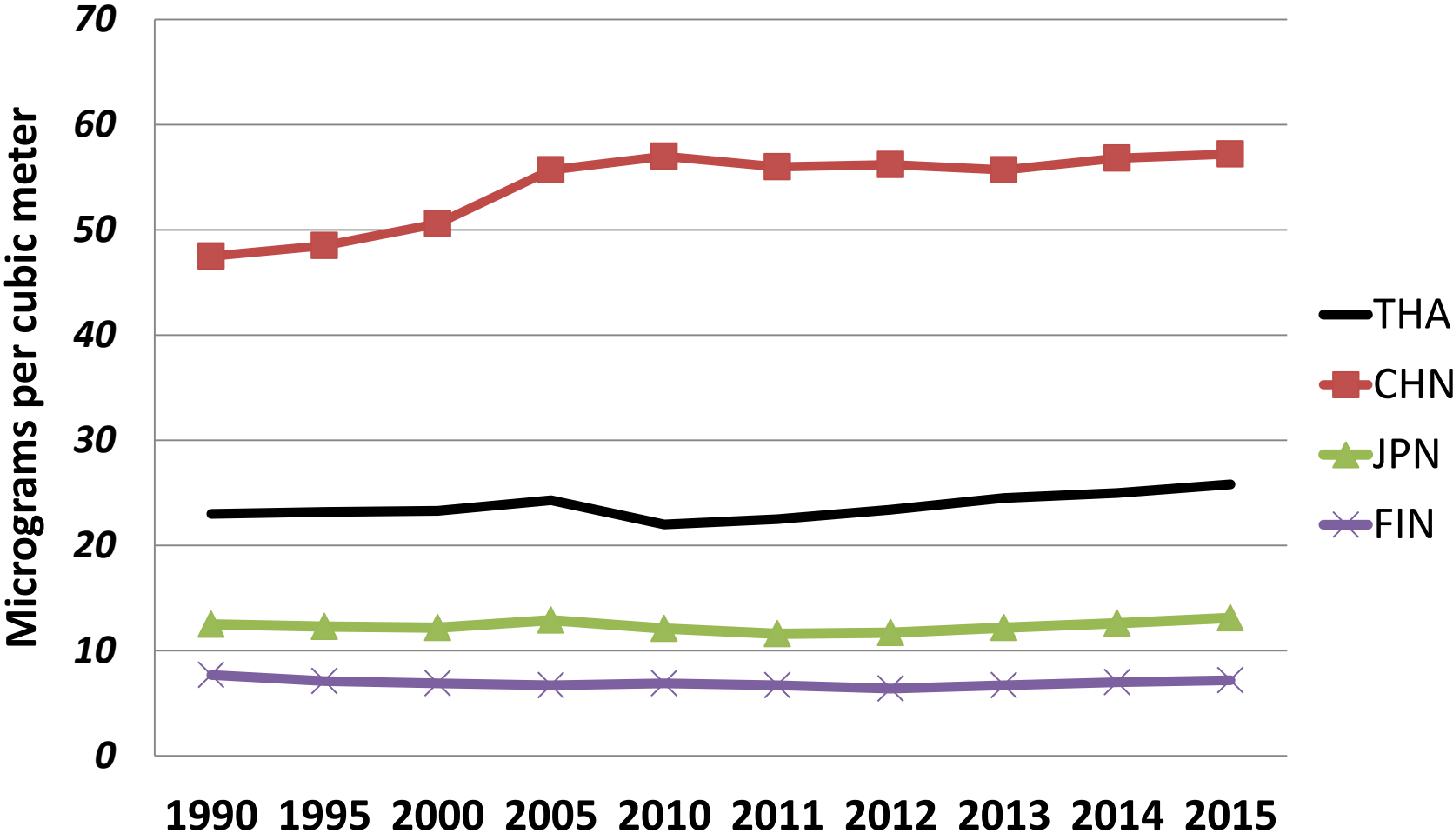
From 85% in the morning to 114 % in the evening

- 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).

PM 2.5

- The effects of inhaling particulate matter that have been widely studied in humans and animals include asthma, lung cancer, cardiovascular disease, respiratory diseases, premature delivery, birth defects, and premature death.
- The World Health Organization (WHO) estimated in 2005 that “Fine particulate air pollution (PM_{2.5}), 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



BANGKOK DANGEROUS

Areas with excessive levels of pollution.

Benzene*



- Chulalongkorn Hospital
- Chokechai Si Road
- Din Daeng community
- Bansomdejchaopraya Rajabhat University, Thon Buri district

Small dust particles



- Rama IV, Rama VI, Phahon Yothin roads
- Din Daeng area

Noise level:



- Lat Phrao Road
- Tri Phet Road

***Note:** Benzene is a chemical used in manufacturing. It is also present in petrol and tobacco smoke. Contact with low to moderate levels of benzene over a short time can cause headaches, vomiting, disorientation, shakiness, elevated heart rate and loss of consciousness.

Source: Department of Pollution Control and www.benzenefyi.com

POSTgraphics

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 85db 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.

A modern plague

- In 1990, 13.6% of the Thai population had some form of hearing disability, 3.9% of students in Bangkok, 6.1% of students in rural areas had hearing problem.
- Environmental noise pollution is a threat to health and well being. More severe and wider spread because of population growth, urbanization, and the use of increasingly powerful and highly mobile sources of noise: A modern Plague

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 Thailand's international competitiveness.