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AVIATION TRANSPORTATION TOURISM

TURKISH AVIATION ACADEMY

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Regulation of Airports

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Airport Planning and Management

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Outline

A. Types of Regulation

A. Safety Regulation

B. Economic Regulation

B. Costs of Regulation

C. Local Government Regulation

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Types of Regulation



Regulation

Government intervention in the airport business

- Will vary by country

Two main types

- Safety (i.e., runway standards)
- Economic (i.e., prices)

Other forms

- Environmental
- Labor
- Local government

Why Regulate?

Airports are being commercialized and privatized

- Some have market power
  and could abuse this power

Regulation aims to allow airports to:

- Receive an acceptable return on capital
- Have incentives towards efficient operations and investments

Source: Graham (2001)

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Safety Regulation



Aerodrome vs. Airport

Aerodrome or airdrome

- a location from which aircraft flight operations take place

Aerodrome

Aerodrome vs. Airport

Airport

- Implies a certain stature
  - Satisfaction of certain certification or regulatory criteria
- Commercial flights can only be performed to/from a certified airport
- An airport needs a certificate or a license

Airport


Existing
East-West
Runway
Airport Perimeter
Road
M5 East
New Runway
Safety Area
SWSOOS
SWSOOS
Cooks River

ICAO

International Civil Aviation Association

- Montreal, Canada

Aviation safety is one of their main objectives

- Air Navigation
- Runways
- In-flight

Aim is to create a safe and efficient environment globally

International and National Standards

The Convention on International Civil Aviation (1944)

- Established ICAO
- Gave it the power to promulgate SARPs
- Annexes to the Convention
  - Personnel Licensing (Annex 1)
  - Operation of Aircraft (Annex 6)
  - Airworthiness of Aircraft (Annex 8)

International and National Standards – Cont.

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Relevant international law principles

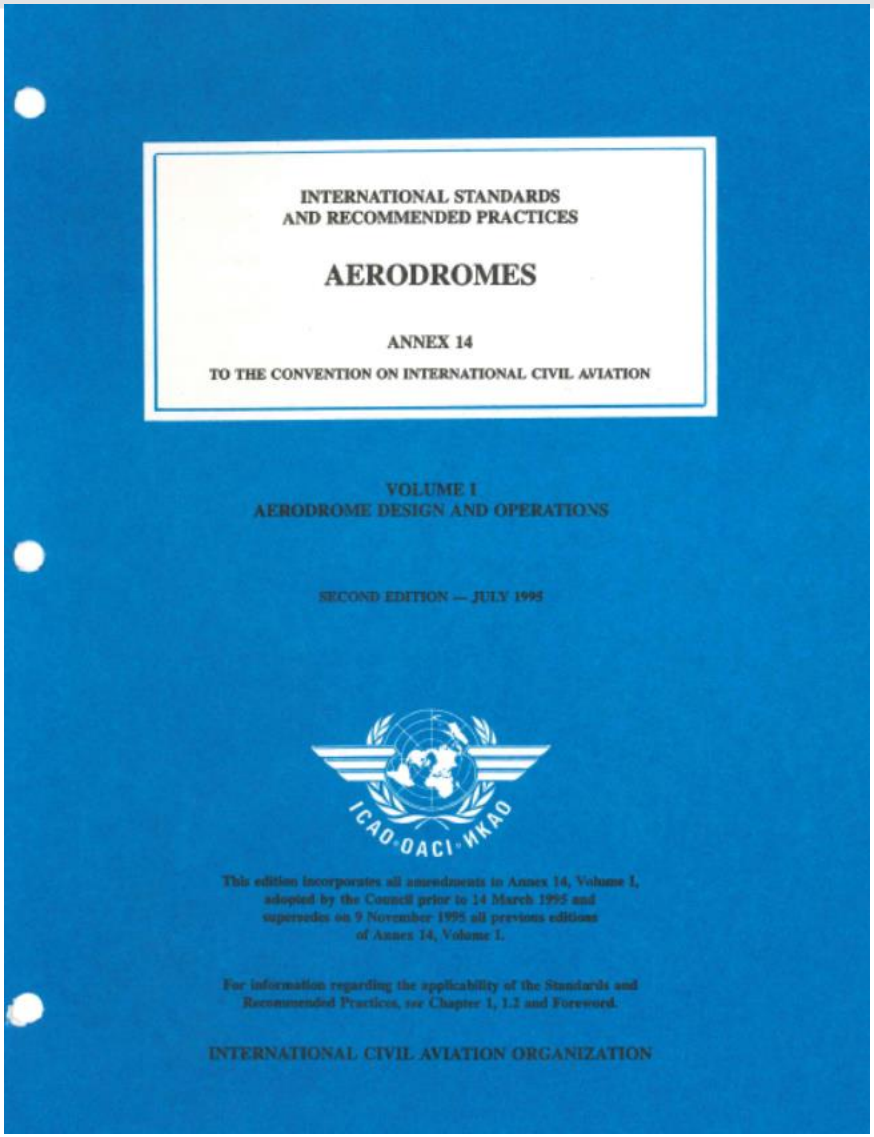
- Uniformity of safety standards (Article 12, 37)
- Domestic laws, regulations and rules must conform with ICAO prescribed standards
- Unless states notify ICAO that they cannot comply

ICAO – Promulgates Global Safety Standards

- **Promulgate:**
  - Make known to the public
  - Disseminate
  - Promote
- **ICAO researches and establishes recommendations for safety regulation**
  - Typically ICAO convenes committee on each aspect of safety
  - ICAO formally adopts and dates a recommended safety standard

Example ICAO International Standard & Recommended Practice

Aerodrome Design & Operations



Example ICAO International Standard & Recommended Practice

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Aerodrome Design & Operations

- Aerodrome data
- Physical characteristics
  - E.g., taxiway shoulders
- Obstacle restriction and removal
- Visual aids for navigation
- Runway markings
- Lighting
- Signs
- Markers
  - E.g., taxiway edge markers
- Visual aids for
  - denoting obstacles
  - Restricted user areas

Example ICAO International Standard & Recommended Practice

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Aerodrome Design & Operations

- Equipment and installation
  - E.g., fences
- Emergency and other services
  - Rescue & fire fighting
  - Bird hazard reduction
  - Ground servicing of aircraft

Translating ICAO Regulations into National Regulations

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States will generally use the SARPs from ICAO to create national laws

- Most nations have legislation that empowers the Minister of Transportation to create regulations
- Regulations must be officially published
- Regulations then have the force of law

Translating ICAO Regulations into National Regulations

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Canada

- Aeronautics Act empowers minister to create regulations
- Regulations published in Canada *Gazette* and become law

U.S.

- Federal Aviation Act
- 14 CFR
  - Code of federal regulations
  - Title 14: Aeronautics and Aviation (Federal Aviation Regulations)
  - Subdivided into parts
- Regulations published in the *Federal Register*

US CFR 14

- Part 1 – Definitions and Abbreviations
- Part 13 – Investigation and Enforcement Procedures
- Part 21 – Certification Procedures for Products and Parts
- Part 23 – Airworthiness Standards: Normal, Utility, Acrobatic and Commuter Airplanes
- Part 25 – Airworthiness Standards: Transport Category Airplanes
- Part 27 – Airworthiness Standards: Normal Category Rotorcraft
- Part 29 – Airworthiness Standards: Transport Category Rotorcraft
- Part 33 – Airworthiness Standards: Aircraft Engines
- Part 34 – Fuel Venting and Exhaust Emission Requirements for Turbine Engine Powered Airplanes
- Part 35 – Airworthiness Standards: Propellers
- Part 39 – Airworthiness Directives
- Part 43 – Maintenance, Preventive Maintenance, Rebuilding, and Alteration
- Part 45 – Identification and Registration Marking
- Part 47 – Aircraft Registration
- Part 61 – Certification: Pilots, Flight Instructors, and Ground Instructors
- Part 65 – Certification: Airmen Other Than Flight Crewmembers
- Part 67 – Medical Standards and Certification
- Part 71 – Designation of Class A, Class B, Class C, Class D, and Class E Airspace Areas; Airways; Routes; and Reporting Points
- Part 73 – Special Use Airspace
- Part 91 – General Operating and Flight Rules
- Part 97 – Standard Instrument Approach Procedures
- Part 101 – Moored Balloons, Kites, Unmanned Rockets and Unmanned Free Balloons
- Part 103 – Ultralight Vehicles
- Part 105 – Parachute Operations
- Part 119 – Certification: Air Carriers and Commercial Operators
- Part 121 – Operating Requirements: Domestic, Flag, and Supplemental Operations
- Part 125 – Certification and Operations: Airplanes Having a Seating Capacity of 20 or More Passengers or a Payload Capacity of 6,000 Pounds or More
- Part 129 – is a foreign carrier or operator of U.S. Aircraft
- Part 133 – Rotorcraft External-Load Operations
- Part 135 – Operating Requirements: Commuter and On Demand Operations and Rules Governing Persons on Board Such Aircraft
- Part 136 – Commercial Air Tours and National Parks Air Tour Management
- Part 137 – Agricultural Aircraft Operations
- Part 139 – Certification of Airports
- Part 141 – Flight Schools
- Part 142 – Training Centers
- Part 145 – Repair Stations
- Part 147 – Aviation Maintenance Technicians Schools
- Part 183 – Representatives of The Administrator

Certification of Aircraft

Maintenance

Pilots, flight crew, medical

Flight rules, use of airspace

Types of air carriers

Certification of Airports

Challenges in Establishing Standards

Mexico

- Minister empowered to establish regulations & standards
- Formal and lengthy process to establish a new standard
  - Requires multi stage consultation
- Any standard must be published in English
- Standard is then published in the *Diario Oficial de la Federación.*

- Challenge
  - Mexico and most nations lack the resources to investigate and establish complex aviation standards
    - E.g., normally the country of the aircraft manufacturer is relied upon to establish the standard
    - The U.S. FAA tends to review everything, even for foreign aircraft and air carriers
    - And the European Joint Aviation Authority is starting to do the same
    - But otherwise nation generally accept FAA (or ICAO) recommendations
    - Some international standards state an official language for the standard
      Because translations can create ambiguity
  - Enormous, daily volume and additions and changes to int'l standards
  - Mexican Minister publishes *policy letters*
    - Adopt international standard (published in English)
    - But does not have the force of law

Mexico standards

The IATA Safety Audit for Ground Operations (IASGO)

- **aims to improve safety and cut airline costs by drastically reducing ground accidents and injuries.**
- **The standard has an official language, which is English.**
  - This is stated in Article 7 of the standard:
    "English is the official language of the IASGO program: documents comprising the IASGO Documentation System are written in International English in accordance with IATAS policy." (Emphasis added.)
- **IATA points out that a reason for adopting an official language for the standard is due to their experience with misinterpretation in other languages.**
  - The IASGO Standard states (also Section 7):
    "The GOPM requires Auditors to ensure the English language version of this GOSM and/or ISAGO Checklists is always used as the basis for a final determination of conformity or nonconformity with the GSSAPRs during the conduct of an Audit. Versions of the GOSM or ISAGO Checklists that have been translated into another langue are subject to misinterpretation; therefore any translated ISAGO document is considered an unofficial reference." (Emphasis added.)

Canada

- Canadian Aviation Regulation Advisory Council
  - Members from government, airports, airlines, ANSPs, pilots, …
  - Investigates potential changes to regulations and advises minister
- Minister publishes regulations in the *Canada Gazette*
  - CARS: Canadian Aviation Safety Regulation
- Minister must indicate that a cost-benefit analysis was done
  - Any new regulation must produce a net benefit

Challenges

- Languages
- Different terminology in different jurisdictions
  - Aircraft Noise
    - US: Stage 1 (or 2, 3, 4) aircraft
    - ICAO: Chapter 1 …
  - SIRO/LAHSO
    - Canada: Simultaneous Intersecting Runway Operations
    - US/ICAO: Land and Hold Short Operations
- Different implementation dates
  - Phase out of Stage 1&2 aircraft was earlier in Europe than US/Canada
- Incompatible regulations
  - Any airline in compliance on computer reservation system display in the US was in violation of EU regulations

Safety Management Systems

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Past Approach to Aviation Safety:

- Fly, crash, fix (regulate)
- Regulation enforced by inspection by government

SMS

- Goal is to engineer a system in which, to the extent possible, the causes of failure are designed out
  - Product characteristics
  - Monitoring and system interfaces
  - Training
  - Human capabilities

Safety Management Systems

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SMS

- Elements
  - Hazard identification
  - System theory
  - Risk management
  - Human factors
  - Engineering
  - Organizational culture
  - Engineering for quality
  - Quantitative methods
  - Decision theory
- Early leaders
  - Canada (Transport Canada), NZ, EC

Safety Management Systems

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SMS

- ICAO
  - Requires/recommends nations to develop and implement SMS programs to improve safety
  - Definition
    - An organized approach to managing safety, including the necessary organizational structures, accountabilities, policies and procedures
      - ICAO 2006

Safety Management Systems

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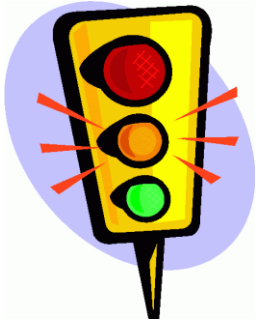
SMS

- No longer government prescriptive safety approach

- Instead, government role is to
  - Require all operators to have SMS
  - Monitor SMS programs
    - E.g., is the SMS comprehensive?
  - Monitor systems for compliance

Safety Management Systems

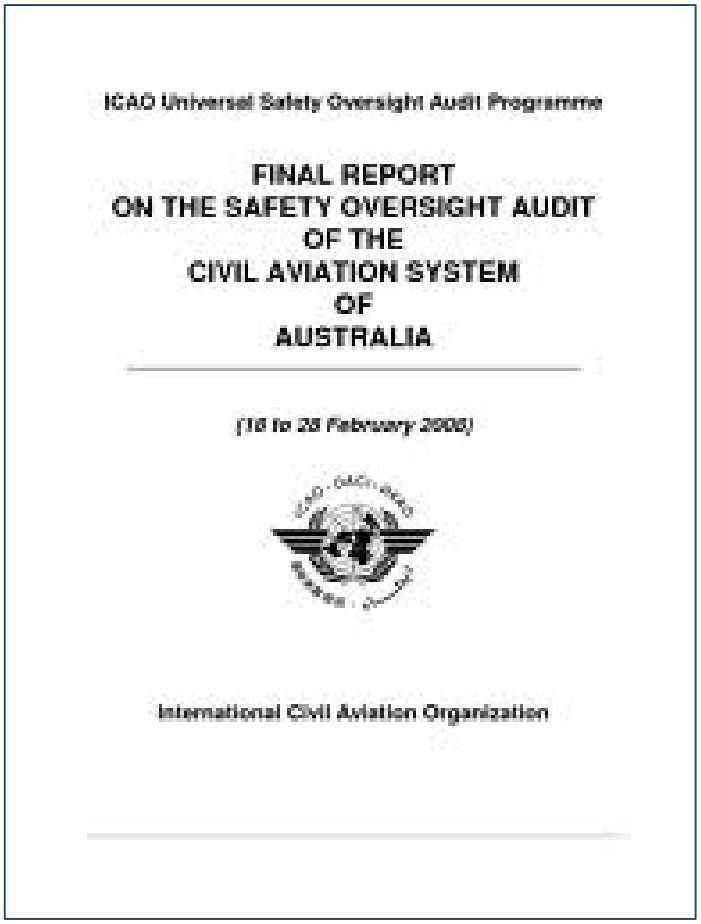
SMS



- Traffic lights
  - Minister of Transport no longer inspects every traffic light
  - Minister inspects whether city traffic dept. has SMS for traffic lights
    - SMS might have a predictive model for failures
      keep records of bulb installations of specific types and bulb life
      proactive replacement
      spot inspections
      records on all of this
      evidence that records are up to date and reviewed and acted upon
- Substantial penalties for SMS failures

Compliance

ICAO and IATA safety audits and reports



ICAO Universal Safety Oversight Audit Programme

FINAL REPORT
ON THE SAFETY OVERSIGHT AUDIT
OF THE
CIVIL AVIATION SYSTEM
OF
AUSTRALIA

(18 to 28 February 2006)

International Civil Aviation Organization

Aviation Safety Management Systems

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Annex 19 (new in 2013)

- Safety Management
  - SARPS related to State safety programs and safety management systems
  - Applies also to aircraft designers and manufacturers
- New Safety Management Manual
  - Risk mitigation
  - Enforcement policy and procedures
  - Data collection (reporting and protection)
  - Many other additions

Source: ICAO, Safety Management

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Economic Regulation



Economic Regulation

Economic regulation focuses on regulation of airport fees and charges

- Government owned airports
  - Generally not regulated
- Private, for profit airports
  - almost always regulated
- Not-for-profit airport authorities
  - These organizations have no shareholders
  - Presumably, they are not motivated to maximize profits
  - However, since profits are used to finance future capital projects, many not-for-profit airport authorities operate as if they are private companies
    - Profits used to generate retained earnings
    - Which can be used to finance capital projects
    - And which can result in higher bond rating and thus lower interest rate

US FAA Regulation of Airport Fees

- Federal Aviation Act (1958)
  empowers FAA to regulate airport fees
- Regulation is only upon complaint
  - I.e., airports set their fees without requiring prior approval
    But if users (airlines) complain, FAA will adjudicate

- Key principle: rates must be
  - Fair
  - Reasonable
  - Not unjustly discriminatory

US FAA Regulation of Airport Fees

- Reasonable
  - Generally interpreted to prevent abuse of airport market power
  - If the rates cover the airport's costs
    - Including financing costs and a reasonable return on invested capital
    - Then the rates are judged reasonable (not unreasonably high)
  - Rates must not be unreasonably low
    - This is the case where a user pays rates less than the cost providing service
    - Thus free services for small aircraft generally not allowed

US FAA Regulation of Airport Fees

- Not unjustly discriminatory
  - Different users should pay identical fees for identical services
  - Thus, cannot have lower fees for domestic vs foreign carriers
  - This allows different fees for different services
    - Landing fees that increase with aircraft weight are allowed
    - Landing fees may differ for passenger and cargo carriers
      If the fee includes coverage of passenger terminal facilities

- Weight based landing fees: justification
  - Original 1000 meter runway for 1940s aircraft
  - New jet aircraft required longer/wider runway
  - Older aircraft should not have to pay for new facilities that they do not need or benefit from
  - So new aircraft pay higher fees
    - Generally, these aircraft are heavier, so charge for heavier aircraft

US FAA Regulation of Airport Fees

- Fair
  - Not defined in legislation
  - Concept is that the price must be compensatory to the service provider and not an undue obstacle to the buyer

Price Cap Regulation

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Traditional Regulation

- Regulator had to approve each and every price
  - (Before deregulation, this was the case for most airlines)
- Cumbersome, time consuming
- Distorted markets
  - E.g., did not allow discount prices for advanced booking

Price Cap Regulation

- Gained favor in 1980s
- Applied to British Airports Authority
- Attempts to constrain pricing power (market power) of the regulated firm, but
  - With flexibility for the firm to adjust prices
  - Much less onerous process

Price Cap Regulation

UK Process for LHR, LGW, STN, MAN

- Pricing review every 5 years
- Government reviews costs, revenues, profits
- It sets a price cap for each year in next 5 years
- Airport operator must keep average price increase below the price cap
- But some fees can go up quite a bit provided other decrease or go up less
  - E.g., raise landing fees but reduce terminal fees

Price Cap Regulation

UK Process for LHR, LGW, STN, MAN

- Typically expressed as CPI-X
  - CPI – consumer price index
    Airport may increase fees each year to adjust for inflation
  - X – productivity & capital adjustment

  - Productivity
    - In general consumer prices increase less than the costs incurred by producers
    - Producers become more efficient over time
    - Hence, price cap might be set at CPI - 1.5% for each year in the coming 5 years

  - Capital Adjustment
    - If the airport has major new capital project, it will be allowed a price increase to cover these costs

Price Cap Regulation

UK Process for LHR, LGW, STN, MAN

- Typically expressed as CPI-X
  - Capital Adjustment
    - If the airport has major new capital project, it will be allowed a price increase to cover these costs
    - E.g., it might be allowed to increase prices by 5% in Year 3 of the coming 5 years to cover costs of new terminal improvements

    - So price cap might be
      - CPI - 1.5% for years 1 and 2
      - CPI + 3.5% for year 3
      - CPI – 1.5% for years 4 and 5

Price Cap Regulation

UK Process for LHR, LGW, STN, MAN

- Price Cap review typically takes 1 to 1.5 years
- Must be completed roughly half year before new term
  - To allow the airport to plan and publish and its rates
- The price cap review process can be expensive
  - But it is much less costly than traditional regulation
- Over time, the UK price review has become very complex
  - The regulator in now undertaking very detailed reviews of all capital programs, rather than leave this to airport-airline consultation

Price Cap Regulation - Australia

- Australia used price cap regulation when it originally privatized its airports in 1990s
  - Note that SYD was originally left in government
- 2002
  - SYD was to be privatized
  - 5 year review of other airports
  - Government decided
    - Airports charges were reasonable
    - Cost of price cap regulation was not justified
    - So it removed regulation
    - It now monitors prices
      with the threat that if airports start to charge unreasonably high prices it will re-impose price cap regulation

Single vs. Dual Till

Single-till

- Both aeronautical and non-aeronautical operations are included when setting prices
- Thus profits from non-aeronautical (commercial) activities must be used to reduce aeronautical charges

Dual-till

- Only aeronautical operations (revenues) are included when setting aeronautical fees

Single vs. Dual Till

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Single-till

- Airlines like this approach
  - Their view is that airline services bring passengers to the airport terminal, enabling the airport to earn profits from commercial services. Airline is entitled to share in these.
- Governments selling airports want maximum bid for the right to operate the airport
  - If new private sector operator can keep profit from non-aeronautical services, bids will be much higher
- Single till results in disincentives to develop commercial revenues

Single vs. Dual Till

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Hybrid till

- UK CAA sets price cap on LHR etc.
  only on aeronautical prices
  - This allows airport to keep commercial profits for 5 years
- For next 5 years,
  - the price cap is adjusted downward
    by amount of annual commercial profits
    averaged over previous 5 years
- Thus, airlines and passengers
  eventually benefit from the commercial profits

Single vs. Dual Till

Hybrid and Single till challenge

- It is possible that over time the commercial profits will be so large that airport will be required to charge zero landing fees (or pay airlines to land)
- This was a concern in 1990s with LHR
  - One of the most congested airports in the world would have very low landing fees

Cross Subsidy in Multiple Airport Systems

- After privatization in 1987, STN was cross subsidize from LHR revenues

Do Airports Have Market Power?

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Regulation only needed where competition is lacking or ineffective

Effective competition (or threat of) constrains ability to over-price

Various forms of competition:

- Shared local market
- Connecting or cargo traffic
- Destination
- Modal

Do Airports Have Market Power?

ACI-Europe Study

- Found significant competition between many European airports
- UK CAA ceased regulating MAN & STN
  - But continued regulation of LGW and LHR

Regulation and Airport Governance

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Governance model will affect regulation

- Government owned airports do not need regulation
  - If government dictates pricing policies
- Airports operated by not-for-profit entities
  - Ambiguity
  - Other issues such as “gold plating”

Is the organization motivated by earning profits?

- Beyond a reasonable level, regulation may be needed

Regulation of Prices – Cont.

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Other Regulatory Forms

- Consultation requirement in lieu of regulation
- Arbitration if airline complains
- Prices monitoring with threat of regulation
- Trigger regulation
  (price monitoring/"light-handed")
  - May trigger hard-handed regulation
  - Used in Denmark, Australia and New Zealand
- Contractual relationship between airport and airlines
  - When Chicago MDW was going to be privatized
  - Instead of regulation, the seller (the City) entered into long term contracts with the majority of airlines
    - Contract specified how much rates could increase in 1st 10 years and then process for rate adjustments in following years

Service Quality

Regulation used might affect service quality

- Airport seeking to increase profits when there is a price cap might reduce service quality

Some regulators will take this into account

- E.g., Irish Aviation Regulator measures various aspects of airport service quality
  - Reduces price cap when a minimum quality threshold is not achieved
  - Allows increase in price cap if service quality is greatly exceeded

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Local Government



Local Government Regulation

In some cases local governments regulated certain aspects of airports

- If airport is owned by federal government, even if it is leased to a private operator, then usually local government is unable to regulate the airport
  - In general, lower level government cannot impose regulations (or taxes) on the lands of higher government
    - Some governments may provide “grants/payments in lieu of taxes”
    - But not necessarily

Local Government Regulation

In some cases local governments regulated certain aspects of airports

- Zoning
  - Local government may regulate use of airport land via zoning bylaws
    - Again, if land is owned by the federal government, zoning bylaws cannot be applied to airport land
  - Zoning applies not only to land use
    - Can impose noise limits
    - Or emission limits
  - Airports may seek zoning on lands adjacent to airport or under flight path
    - Adjacent lands: reserve for commercial/industrial land uses to support airport activities
      - Cargo & freight forward facilities, specialty maintenance trades, post office, …
    - Lands under flight path: deny land uses impacted by aircraft noise
      - Residential homes
      - Schools, hospitals, …

Local Government Regulation

In some cases local governments regulated certain aspects of airports

- Building/Development Regulations
  - Most local governments regulate building (building permit)
    - Again, if land is owned by the federal government, bylaws cannot be applied to airport land
  - Building codes may include
    - Design
      - e.g., prohibit multistory masonry construction in earthquake zones
      - Structural requirements for roof strength, drainage, …
    - Construction materials
      - e.g., prohibit aluminum wiring
    - Safety
      - e.g., electric outlets in kitchens, bathrooms, …
    - Parking capacity
      - Minimum parking, maximum parking
  - Public spaces
    - Open spaces
    - Requirement for public art

Local Government Regulation

In some cases local governments regulated certain aspects of airports

- Some governments may impose restrictions on labor
  - Required used of unionized labor
  - Hours of work limits
- Restrictions can be imposed on airport tenants
  - Required city business license
- Taxi/bus regulations
- Development fees
  - Many cities impose fees/taxes on new developments
    - Fees are used to cover costs of public infrastructure
      - Road improvements, fire department improvements, policing infrastructure, transit improvements
    - Additional park space

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